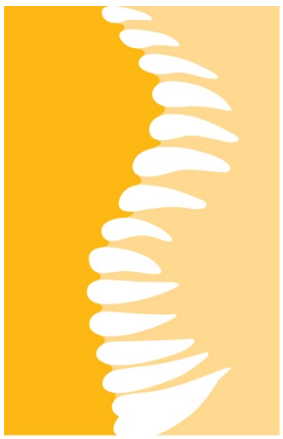
ANNUAL REPORT

2022

March 2023



ICP

Institut Català de Paleontologia

Miquel Crusafont

ANNUAL REPORT 2022

INSTITUT CATALÀ DE PALEONTOLOGIA MIQUEL CRUSAFONT

Institut Català de Paleontologia
Miquel Crusafont

HR EXCELLENCE IN RESEARCH

DAVID M. ALBA

Director

Institut Català de Paleontologia
Miquel Crusafont

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Patrons:

Generalitat de Catalunya

Universitat Autònoma de Barcelona

CERCA Center:

CERCA Centres de Recerca de Catalunya

WELCOME TO THE ICP

Greetings from the Director

At the ICP we are convinced that Paleontology, as a discipline halfway between Biology and Geology, should make fundamental contributions not only to the history of life, but also to evolutionary theory. Therefore, the research performed at the ICP clearly follows a paleobiological approach. In other words, for us it is not enough to know how past living beings were and what are their kinship relationships with extant ones. We also aim to know how they lived, how they moved, what they ate, how they developed and reproduced, how they interacted with one another, what environment they inhabited and, ultimately, how past interactions between organisms and environment have shaped the ecosystems that we know today. It is precisely the access to deep time (or geological time, the one which is measured in millions and millions of years), by means of the study of fossil remains, what provides Paleobiology with a unique perspective of utmost importance for understanding why and how living beings have evolved in relation to the environment than surrounds them through Earth's history.

For our research team, it is important to perform all the various steps of paleontological research, beginning with fieldwork (excavations and samplings), continuing with the study and analysis of fossil remains, and ending with the publication and dissemination of the results. In these regards, the basic task of description and taxonomic identification of the remains is still an essential aspect of our work. However, more and more, the study and analysis of the fossils is carried out using more sophisticated and computer-assisted techniques. Most noteworthy among them are virtual paleontology and three-dimensional visualization techniques, such as X-ray computed tomography, which enables the non-invasive study of the internal anatomy preserved by fossil remains. Also particularly remarkable are the analytical techniques allowing for quantitative comparisons and analyses, such as 3D geometric morphometrics, phylogenetic reconstruction software, or numerical analyses of paleobiodiversity dynamics, just to mention a few examples. Finally, paleogenomic and paleoproteomic techniques allow to retrieve molecular information from fossil organisms, thereby helping refine the phylogenetic relationships that we normally infer from their preserved morphology.

The specialized technicians of the ICP, in turn, perform a fundamental step between fieldwork and research, consisting in the preparation and conservation of the fossil remains that constitute the paleontological collections of our Institute. These collections are continuously growing thanks to the excavations and samplings performed by our researchers. However, before being able to study a particular specimen, it is required that specialized technicians carry out a process of paleontological preparation (cleaning, consolidation and, if necessary, reintegration). The process of paleontological preparation not only enables the manipulation of fossils, but it also guarantees their proper conservation once deposited in the collections. This

process is of utmost significance, given that fossils are our main source of data. In this regard, the ICP aims to become the benchmark center in Catalonia with regard to the conservation of the paleontological heritage of vertebrates. This is why we offer our technical advice, in this and any other paleontological matter, to those institutions and companies that request it.

Besides paleontological research, preparation and conservation, at the ICP we further place particular importance to outreach activities to popularize paleontological heritage. In this regard, exhibiting the fossils is not enough; it is required to disseminate to the general public our research results, so as to make understandable the stories that hide in all these petrified bones. Transmitting paleontological knowledge to society, especially based on the finds and research results of our investigators, is for us a heartwarming moral obligation. In the words of the late North-American paleontologist Stephen Jay Gould: “Science is an integral part of culture. It’s not this foreign thing, done by an arcane priesthood. It’s one of the glories of the human intellectual tradition”. This is why at the ICP we have the vocation to make it available to those who are interested the conceptual and material tools that enable a cultural and ludic use of paleontological heritage. And we do so not only by means of the exhibition halls of the ICP Museum, located at the center of Sabadell, but also by collaborating in the establishment and management of a network of local paleontological interpretation centers all over the country. Moreover, at these times of rampant antiscientific and creationist offensive, we feel a duty to help disseminating one of the most relevant scientific facts to comprehend the place of human being in nature: organic evolution.

I do not want to finish without addressing those youngsters that, captivated by the secrets of evolution, perceive the grandeur in this view of life (the one alluded by Charles Darwin on the last sentence of the Origin of Species) and aim to devote themselves to Paleontology. Becoming a researcher, from any discipline, is not an easy task... It requires a lot of study, tenacity, and sacrifice. And yet, if your fascination for fossils and your curiosity for evolution transcend any logical argument, if it is already too late for you, then I can only advise you to let yourselves be guided by your vocation. That you get trained in life and earth sciences, that you be ambitious and realistic at the same time, and that you try to put your talent at the service of paleontological research. You, as young people, are the future, not only of the ICP, but of the paleontological profession and of the scientific community as a whole. And only you, if you choose the correct questions, might hope to answer the multiple enigmas about the history of life that thus far remain unsettled.

With my warmest greetings,

David M. Alba
Director

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FOREWORD

Envisioning the future

Following the replacement of the former Director and the design of new policies and strategic aims, 2017 was a year of turnover and intense planning at the Institut Català de Paleontologia Miquel Crusafont (ICP). Then, 2018 was a year of very intense work with the main aim to take the ICP out of the 'survival mode' in which it had been installed for several years, as a result of the budget downsizing caused by the economic crisis. Many of the work performed was aligned with the aims of the new Strategic Plan (2018-2021) and/or with the HRS4R Action Plan following the Human Resources Excellence Award of the EU granted to the ICP in March 2018. Also very significant was the evaluation of the ICP performed by the CERCA institution at the end of the 2018, which confirmed that the ICP was performing well but had still plenty of room for improvement. During 2019, the ICP continued implementing the Strategic Plan and the HRS4R Action Plan, devised a plan to implement the multiple recommendations provided by the CERCA Evaluation Committee in 2018, started applying the recruitment protocol elaborated the year before, and released new important documents (such as the manual of best practices in research). In turn, the results of 2020 confirmed the trend of improvement started in 2018 in terms of scientific outputs and service provision—despite the complicated situation generated by the COVID-19 pandemic. In parallel, the implementation of the HRS4R progressed at a good pace (including the elaboration of a new Equality Plan), the Scientific Advisory Board (SAB) was partially renewed, research groups were restructured, and the accumulated deficit was finally overcome. The year 2021 was complicated in financial terms due to several contingent factors that we managed to overcome and very satisfactory in terms of research outputs and service provision. From a managerial viewpoint, it was a year of intense planning due to the elaboration of the new Strategic Plan for 2022-2025, while we continued to implement CERCA recommendations, the recruitment of new personnel, the implementation of HRS4R, and the SAB renewal.

This past year 2022 has been a continuation of all the aforementioned tasks, including the implementation of the new Strategic Plan, accompanied by excellent results in terms of research outputs fully comparable to those of 2021. It has not been a positive year in terms of service provision, but this has been compensated by an increase of competitive income for research projects and hiring personnel. But from a strategic viewpoint, two facts are most noteworthy. First, the City Council of Sabadell approved their incorporation to the ICP Board of Trustees, which hopefully will be materialized in 2023. Second, after almost three years of conversations, in 2022 we reached an agreement with the Institut de Biologia Evolutiva (IBE UPF-CSIC) to make a strategic alliance that might eventually imply to merge both institutions to function as a single entity. Taking this decision has not been easy, as it would imply loosing some independence and visibility. On the other hand, the research aims of the ICP and IBE are well aligned within the

framework of evolutioary biology and complemetary to one another, and we are convinced that this would be the best possible solution to consolidate vertebrate paleontology research in Catalonia in decades to come.

Finally, I would like to take this opportunity to thank all the ICP personnel, the Board of Trustees, and the SAB members for all their efforts to consolidate further the ICP as a benchmark and leading institution in vertebrate and human paleobiology worldwide.

PART 1

OVERVIEW OF THE ICP

Established as a CERCA center in 2006, the ICP is the heir of a longstanding tradition of vertebrate paleontology research in Catalonia. It owes its existence to several succeeding generations of paleobiologists devoted to deciphering the intricacies of the history of life based on the extraordinary fossil record from Catalonia. Our mission is focused on research, conservation and dissemination of vertebrate and human paleontology at the highest international level.

INTRODUCTION

Research, conservation, and dissemination in vertebrate paleontology

History

The Institut Català de Paleontologia Miquel Crusafont (ICP) is the heir of a longstanding tradition of vertebrate paleontology research in Catalonia. It owes its existence to several succeeding generations of paleontologists that have devoted their professional careers to decipher the intricacies of the history of life and the paleobiology of extinct organisms based on the extraordinary Catalan fossil record.

The ICP is the successor of the former Instituto Provincial de Paleontología de Sabadell (IPS), founded in 1969 under the auspices of the Diputació de Barcelona thanks to the efforts and charisma of paleontologist Miquel Crusafont—the 'father' of the Catalan school of vertebrate paleontology. After being renamed in his honor after Crusafont's decease in 1983, and coinciding with the incorporation of a new generation of researchers, the Institut de Paleontologia M. Crusafont witnessed a couple of successful decades. Nonetheless, by the early 2000s it was in peril of becoming a local museum and its prospects were most uncertain.

The situation of the IPS was reverted in 2006, thanks to the refoundation of the ICP within the framework of CERCA (Research Centers of Catalonia) under the auspices of I-CERCA (Generalitat de Catalunya). The last decade has been most successful in terms of research, but not exempt of problems due to the effects of global financial crisis since 2012, which or many years restrained the growth of the ICP and the implementation of several other aspects. After several years in 'survival mode', beginning in 2017 the ICP started implementing new policies that emphasized service provision and ultimately enabled to reverse the previous delicate financial situation in 2020. At the same time, in 2019 the ICP and IBE started coversations to joint forces, leading to a strategic alliance proposal in 2022 that might lead in years to come to the eventual merging of the two institutions to function as a single entity.

Mission

The mission of the ICP is focused on research, conservation and dissemination of vertebrate and human paleontology at the highest international level. We perform research based on the following premises:

- Fieldwork and collection-based research, focused on the extraordinarily rich fossil vertebrate record from Catalonia.
- Adherence to a paleobiological approach that departs from the classical descriptive paleontology (oriented toward stratigraphy), and instead aims to test evolutionary and macroecological hypotheses within the framework of life sciences.
- The use of modern visualization and analytical techniques (from CT to paleohistology).

- The distinction of different research groups, each one with clear research aims and scope.

Other important aspects of our mission include:

- The conservation of the paleontological heritage of Catalonia.
- The communication of the research results to the general public by means of scientific dissemination.
- The transfer of paleontological knowledge to the benefit of society as a whole by means of training and outreach activities, as well as the provision of services.

Scientific policy

The ICP scientific policy in regard to paleontological research is based on the following premises:

- A modern approach to paleontological research must be grounded on the paleobiological approach, which envisions paleontology as deeply entrenched among life sciences.
- Among life sciences, paleobiology has a voice of its own by uniquely providing direct access to life in the past, thereby adding a deep-time perspective that is essential for testing hypotheses on a geological timescale.
- Paleobiology is not only an idiographic (descriptive) discipline that contributes to the progress in the knowledge of the history of life on Earth, but also a nomothetic discipline based on a rigorous and quantitative hypothesis-testing framework.
- Paleobiological research must be therefore guided by clear research aims and specific hypotheses to be tested.
- Vertebrates have the greatest potential among continental animals and therefore the study of their fossil record is most promising for investigating the evolution of terrestrial ecosystems in relation to paleoenvironmental changes through time.
- Although paleobiology is mostly devoted to basic (fundamental) research, it has important implications for other disciplines among life sciences, such as evolutionary biology, ecology and conservation (paleo)biology.
- Furthermore, paleobiological research is not devoid of applicability and has a great potential with regard to knowledge transfer related to cultural heritage.
- Finally, human origins and evolution need to be approached following the same scientific methods as that for any other group of animals, as regularly done in the subdisciplines of paleoprimatology and paleoanthropology.

Vision

The ICP vision includes the following challenges:

- Perform high-impact paleobiological research at the international level.
- Promote the international visibility of the ICP as a worldwide renowned and benchmark center in vertebrate paleontology and paleoanthropology research.

- Contribute to the recuperation, conservation and dissemination of the paleontological heritage of Catalonia, including its valorization through research and the promotion of paleontological tourism based on it.
- Contribute to solving current societal challenges, with emphasis on the development of more efficient environmental policies to face climatic change, by means of providing data on a geological timescale as well as by testing macroecological and evolutionary hypotheses.
- Make paleontological knowledge and its evolutionary implications accessible to the society as a whole, by means of scientific dissemination, outreach, and training activities, with emphasis on humankind's origins and place in nature.
- Perform knowledge transfer activities by providing specialized paleontological services to research and educational institutions, public administrations, and private companies.
- Promote safe workspaces and working relationships based on freedom and respect among people.
- Adhere to a zero tolerance policy regarding any type of sexual harassment (due to sexual orientation, gender identity, or gender expression) and unambiguously reject offensive, discriminatory and/or abusive behaviors and attitudes.

ORGANIZATION

Research groups, research support, communication, and management

Legal structure

The ICP is a public research institute established as a non-profit foundation endowed with public funds, with the Generalitat de Catalunya and the Universitat Autònoma de Barcelona as patrons. The staff is composed of ca. 50 people (researchers, technicians and administrative staff), including a Director and a General Manager with executive powers delegated by the Board of Trustees. As currently conceived, the ICP is an autonomous research institute from CERCA (Research Centers of Catalonia), which has scientific excellence as its main objective. It is supervised by the Board of Trustees under the auspices of CERCA Institution, and guided by a Director (who plans the scientific policy and strategic goals) with the aid of an external Scientific Advisory Board.

Organization chart

A new Organization Chart, proposed by the Director, was approved by the Steering Committee in late 2017 and subsequently ratified by the Board of Trustees in 2018, with the aim to facilitate the coordination between technical areas toward the attainment of common strategic goals. Subsequent updates and minor modifications of this Organization Chart were approved by the Steering Committee in 2018 and 2019, being subsequently ratified by the Board of Trustees. The information provided below is based on the updated Organization Chart ratified by the Board of Trustees in May 2022 and the subsequent update approved by the Steering Committed in December 2022.

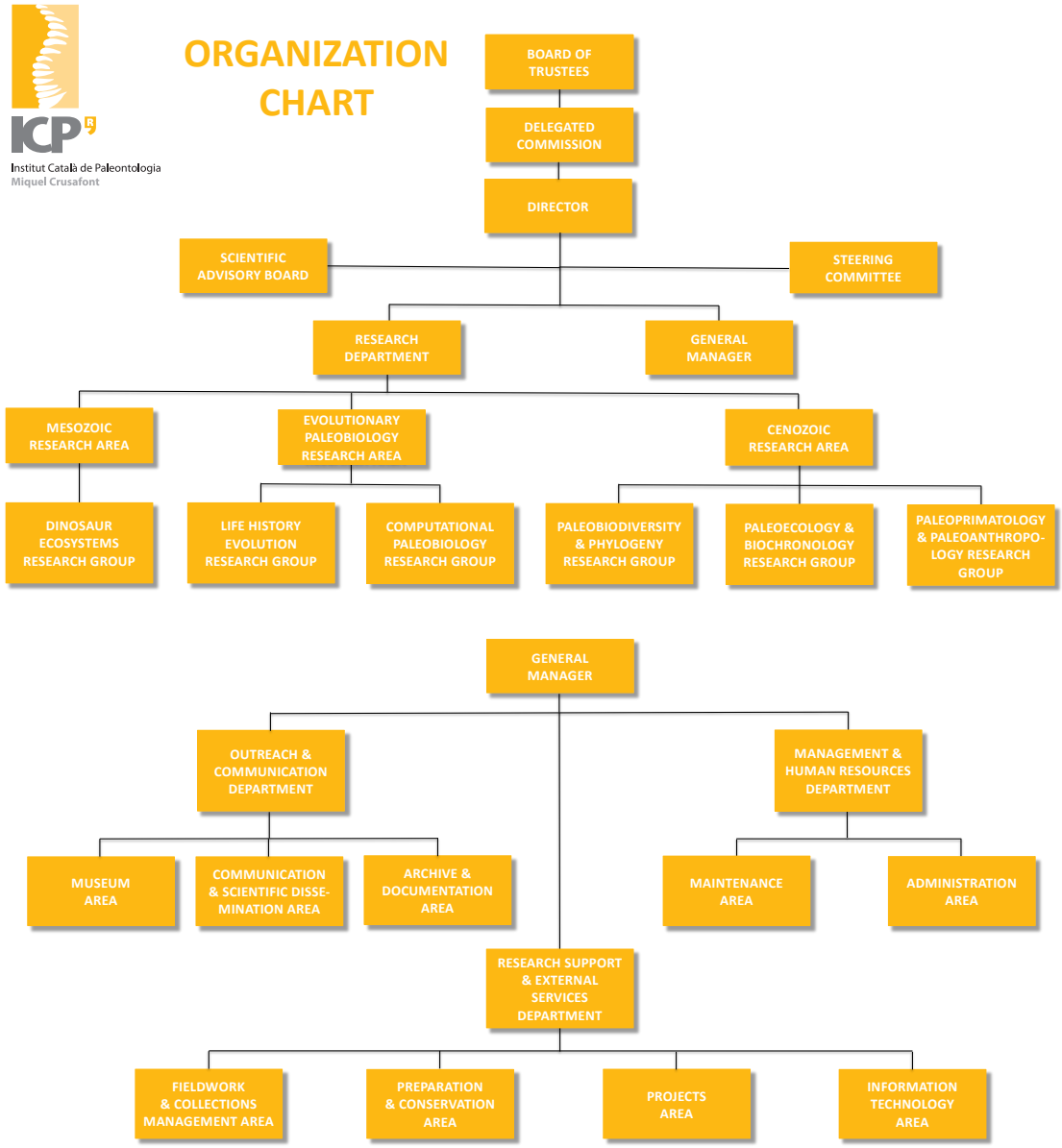
The hierarchical structure of our organization can be subdivided into the following bodies:

- Governing organs.
- Executive positions.
- Research groups.
- Technical departments.

Governing Organs	Executive Positions	Research Areas	Technical Departments
Board of Patrons	Scientific Directorship	Mesozoic	Outreach & Communication
Delegated Commission	General Managership	Cenozoic	Management & Human Resources
Scientific Advisory Board	Steering Committee	Evolutionary Paleobiology	Research Support & External Services
Directorship			

Governing organs

- Board of Trustees: It is the highest governing, administrative and representative organ, without prejudice that some of its functions may be delegated.
  - Delegated Commission: Designated by the Board of Patrons to delegate some of its functions.
  - Scientific Advisory Board: Advisory organ designated by the Board of Trustees.
    - ✓ Director: Designated by the Board of Trustees.
      - Steering Committee: Consulting and decision-making organ, designated by the Director.
      - Scientific Director: Designated by the Director (if different).
      - Managership: Designated by the Board of Trustees upon proposal by the Director.



Board of Trustees. It is composed of three trustees from the Generalitat de Catalunya (60%) and two from the Universitat Autònoma de Barcelona (UAB, 40%). Two trustees are permanent and three are designated.

BOARD OF TRUSTEES		
TYPE	POSITION	NAME
Permanent	Minister from the Generalitat de Catalunya in charge of research	Dr. Joaquim Nadal i Farreras
Permanent	Rector of the UAB	Dr. Javier Lafuente Sancho
Designated	Director General of Research, Generalitat de Catalunya	Dr. Joan Gómez Pallarès
Designated	Director of I-CERCA, Generalitat de Catalunya	Dr. Lluís Rovira Pato
Designated	Vice-Rector for Research and Transference of the UAB	Dr. Assumpció Malgosa Morera

The main functions of the Board of Trustees are the following:

- Approval of our annual budget and investment plan, inventory, and annual financial accounts, ensuring the accomplishment of the endowment and the correct destination of our assets to our foundational aims.
- Highest representation and definition of our general program of action.
- Appointment of the Director, of the General Manager (upon proposal by the Director), the President of the Delegated Commission, and the President of the Scientific Advisory Board, and establishment of the remuneration of executive positions.
- Hiring of works, services and supplies, and approval of the rules of internal functioning, collaboration agreements with other entities, etc.

Scientific Advisory Board. It is constituted by seven senior researchers from several countries, including Spain, France, Italy, South Africa, and UK. Following the action plan for the implementation of CERCA recommendations approved by the Board of Trustees in 2019, three members were renewed in 2020 and two more in 2021 (including the designation of a new President). The person that will replace Prof. Jorge Morales was decided in late 2022 and will be proposed by the Director to the Board of Trustees in the next meeting (scheduled for the spring of 2023), thereby completing the planned renewal of the SAB.

SCIENTIFIC ADVISORY BOARD		
TYPE	NAME	AFFILIATION
President	Prof. Lorenzo Rook	Università di Firenze, Italy
Member	Prof. Jorge Morales	Museo Nacional de Ciencias Naturales-CSIC, Spain
Member	Prof. Anusuya Chinsamy-Turan	University of Cape Town, South Africa
Member	Dr. Beatriz Azanza	Universidad de Zaragoza, Spain
Member	Dr. Clément Zanolli	Université de Bodeaux, France
Member	Prof. Tracy Kivell	University of Kent, UK
Member	Prof. Richard J. Butler	University of Birmingham, UK

The main functions of the Scientific Advisory Board are the following:

- Providing advice with regard to our scientific activities.
- Participation in the periodic evaluation of the ICP.
- Eventual participation in specific advisory commissions.

Executive and managerial hierarchy

- Director: Dr. David M. Alba.
  - Steering Committee: Director, General Manager, Heads of Department.
  - Scientific Director: Dr. David M. Alba.
    - ✓ Research Department:
      - Mesozoic Research Area: Dr. Àngel Galobart (Head of Area).
      - Cenozoic Research Area: Dr. David M. Alba (Head of Area).
      - Evolutionary Paleobiology Research Area: Prof. Meike Köhler (Head of Area).
  - General Manager: Enric Menéndez.
    - ✓ Departments:
      - Outreach & Communication: Pere Figuerola (Head of Dept.).
      - Management & Human Resources: Enric Menéndez (Head of Dept.).
      - Research Support & External Services: David Basanta (Head of Dept.).

Both the Director and the General Manager have multiple functions and responsibilities, including some specific of these positions, as well as others delegated by the Board of Trustees.

The Director. In brief, the Director has chief executive officer functions, including the direction, organization management, execution and inspection of research activities, as well as the determination of the strategic aims of the ICP and the proposal of a Strategic Plan to the Board of Trustees. The Director is appointed by the Board of Trustees following an open, transparent and merit-based selection process at the international level.

The General Manager. In turn, the General Manager has chief administrative officer functions, including the financial, accounting and treasury management, as well as administrative contracting and preparation of the documentation required to elaborate the annual accounts and balance sheet. It is appointed by the Board of Trustees upon proposal by the Director.

Committees and commissions

The ICP has several committees and commissions, aimed to boost the internal coordination as well as to promote the participation of the ICP staff in decision-making.

Committees. They are the following:

- **Steering Committee:** Involved in planning, organizational, foresight, strategic, decision-making and advisory functions.
- **Information Systems Security Committee:** Involved in guaranteeing the security of information systems, the safeguard of data, and the fulfillment of personal data protection laws.
- **HRS4R Implementation Committee & Working Group:** Involved in the implementation of the Human Resources Strategy for Researchers (HRS4R) of the European Union.
- **Non-Discrimination Committee:** Involved in the improvement and implementation of the Equality Plan.

STEERING COMMITTEE		
POSITION	NAME	ICP POSITION
Chair	Dr. David M. Alba	Director
Vice-Chair	Enric Menéndez	General Manager
Rapporteur	Pere Figuerola	Head of the Outreach & Communication Dept.
Member	David Basanta	Head of the Research Support & External Services Dpt.

INFORMATION SYSTEMS SECURITY COMMITTEE		
POSITION	NAME	ICP POSITION
Chair	Dr. David M. Alba	Director
Rapporteur	Pere Figuerola	Head of the Outreach & Communication Dept.
Member	Enric Menéndez	General Manager
Member	Josep Torres	Interim Head of the Information Technology Area

HRS4R IMPLEMENTATION COMMITTEEE & WORKING GROUP		
POSITION	NAME	ICP POSITION
Chair	Enric Menéndez	General Manager
Vice-Chair	Dr. David M. Alba	Director
Rapporteur	Xènia Aymerich	Head of the Preparation & Conservation Area
Committee Member	David Basanta	Head of the Research Support & External Services Dpt.
Committee Member	Pere Figuerola	Head of the Outreach & Communication Dept.
Committee Member	Teresa Esquirol	Head of the Museum Area
Committee Member	Dr. Judit Marigó	Rapporteur of the Researchers Commission
Working Group Member	Mónica Vincent	Administrative Officer
Working Group Member	Almudena S. Yagüe	Preparation Technician

NON-DISCRIMINATION COMMITTEE		
Chair	Xènia Aymerich	Head of the Preparation & Conservation Area
Vice-Chair	Dr. Judit Marigó	Rapporteur of the Researchers Commission
Rapporteur	Pere Figuerola	Head of the Outreach & Communication Dept.
Member	Dr. Júlia Arias-Martorell	R2 Researcher

Commissions. They are the following:

- **Researchers Commission:** Involved in providing advice to the Director, the Steering Committee, and other committees on HRS4R implementation and other aspects related to researchers.
- **Fieldwork Commission:** Internal coordination of resources for paleontological fieldwork performed and provision of external services to third parties.
- **Responsible Research & Innovation (RRI) Commission:** Aimed to provide advice and coordinate various aspects (governance, project management, knowledge transfer, outreach and public engagement, research and publishing ethics, open access and open data…) to ensure that R+D is optimally aligned with societal values, needs, and expectations.

RESEARCHERS COMMISSION		
Chair	Dr. Salvador Moyà-Solà	Representative of R4 (senior experienced researchers)
Vice-Chair	Dr. Judit Marigó	Representative of R3 (experienced researchers)
Rapporteur	Dr. Carmen Nacarino-Meneses	Representative of R2 (postdoctoral researchers)
Member	Chabier de Jaime-Soguero	Representative of R1 (predoctoral researchers)

FIELDWORK COMMISSION		
Chair	David Basanta	Head of the Research Support & External Services Dpt.
Vice-Chair	Dr. Josep M. Robles	Collection Manager
Rapporteur	Jordi Galindo	Head of the Fieldwork & Collections Management Area

RESPONSIBLE RESEARCH & INNOVATION (RRI) COMMISSION		
Chair	David Basanta	Head of the Research Support & External Services Dpt.
Vice-Chair	Pere Figuerola	Head of the Outreach & Communication Dept.
Rapporteur	Dr. David M. Alba	Director
Member	Xènia Aymerich	President of the Non-Discrimination Committee
Member	Dr. Josep Fortuny	Data Curator

Coordination meetings. In parallel to the meetings of the established committees and commissions, coordination meetings will take place on a quarterly basis, including the Director, the General Manager, the Heads of Research Groups, Departments and Areas, and the persons in charge of remaining Areas.

Working groups. Besides the aforementioned HRS4R Implementation Committee & Working Group, a temporary Strategic Plan Working Group composed of volunteers was established in 2021 to perform a SWOT analysis and elaborate the ICP Strategic Plan for 2022-2025. However, this group was dissolved once the new plan was approved in early 2022, and hence it is no longer detailed here.

Persons in charge. Some staff members have specific functions in addition to those corresponding to their respective positions in the Organization Chart or in the committees and commissions:

- Person in charge of Information Systems Security.
- Ombudspersons.
- Person in charge of University Teaching Coordination.
- Data curator.
- Data manager.
- Staff delegates.
- Occupational risk prevention delegate.

PERSONS IN CHARGE		
Information Systems Security	Pere Figuerola	Head of the Outreach & Communication Dept.
Ombudspersons	Pere Figuerola Judit Marigó	Head of the Outreach & Communication Dept. R3 Researcher
University Teaching Coordination	Dr. Josep Fortuny	Computational Paleobiology Research Group Junior Leader
Data curator	Dr. Josep Fortuny	Computational Paleobiology Research Group Junior Leader
Interim data manager	Dr. Alejandro Serrano	Lab Technician
Staff delegates	Dr. Josep M. Robes Xènia Aymerich Mònica Cucurella	Collection Manager Head of the Preparation & Conservation Area Receptionist
Occupational risk prevention delegate	Dr. Josep M. Robes	Collection Manager

Personnel

Our personnel can be divided into the following categories:

- **Staff sensu stricto:** Either tenured (with a permanent contract), temporary (with a fixed-term contract), or in tenure-track (with a fixed-term contract that may become permanent).
  - ✓ **Own staff:** With a contractual employment relationship with the ICP.
  - ✓ **Seconded staff:** With a contractual relationship with other institutions (civil servants from the Generalitat de Catalunya, research professors from the Institució Catalana de Recerca i Estudis Avançats, university professors) but ascribed to the ICP.
- **Other personnel:** Without a contractual relationship or formal ascription to the ICP:
  - ✓ **Research Associates:** With a written agreement that implies ICP affiliation.
  - ✓ **Research Collaborators:** With a verbal (or, exceptionally, written) agreement that implies ICP affiliation.
  - ✓ **PhD Students:** Students who perform their PhD dissertation at the ICP without a grant.
  - ✓ **Other:** Trainees, visiting researchers, master and bachelor students, volunteers, etc.

Researcher categories. We distinguish several professional categories of researchers based on the EU researcher profiles (R1–R4) specified on the European Framework for Research

Careers of the European Union. They are divided into early-stage researchers (R1 & R2) and experienced researchers (R3 & R4):

- **R1:** First Stage Researchers (up to the point of PhD).
- **R2:** Recognized Researchers (PhD holders not yet fully independent).
- **R3:** Established Researchers (with a certain level of independence).
- **R4:** Leading Researchers (leaders in their area or field).

RESEARCHER CATEGORIES			
ICP Category	Profile	Type	Type of Contract
Predoctoral Researcher	R1	Early-stage	ICP predoc / External agency fixed-term (e.g., FI, FPI, FPU)
Postdoctoral Researcher	R2	Early-stage	ICP postdoc / External agency fixed-term (e.g., JdC, BP…)
Researcher	R3	Experienced	ICP researcher (tenured or in tenure-track) or distinguished junior researcher / Civil servant / External agency tenure-track (e.g., RyC, ERC Starting or Consolidator Grant)
Senior Researcher	R4	Experienced	ICP researcher or distinguished senior researcher / Civil servant / External agency permanent (e.g., ICREA, ERC Advanced Grant)
Research Collaborator	R1–R2	Early-stage	Verbal agreement
Research Associate	R2–R4	Early-stage/ Experienced	Written agreement
Lab Technician	R1–R2	Early stage	ICP technician / External agency fixed-term (e.g., PTA)

RESEARCH

A single department with three areas and six research groups with definite aims and scope

Scientific policy

Main guiding principles. The research performed at the ICP pivots on the following three main guiding principles:

- Collection- and fieldwork-based research focused on the study of fossils as the main source of raw data, with emphasis on the rich and varied vertebrate fossil record from Catalonia—especially for the Permo-Trias, the Late Cretaceous, the Eocene, the Miocene, and the Pleistocene—and with particular relevance of the paleoichnological record of the latest dinosaurs from Europe and the extraordinary record of Miocene apes.
- A paleobiological approach that clearly situates paleontology well within the framework of life sciences in general, and of evolutionary biology in particular, and which emphasizes a quantitative and nomothetic approach based on hypothesis testing—thereby far from the more classical descriptive approach to paleontology (largely oriented toward its stratigraphic implications).
- The application of modern techniques and methodological approaches to paleontological research, such as paleohistological analysis to infer the life-history of extinct organisms, computer-assisted imaging techniques that enable the non-invasive study of internal anatomy, or theoretical approaches to quantitatively analyze the dynamics of paleobiodiversity through time.

Research areas and groups. For many years, since the refoundation of the ICP as a CERCA center, the research performed was organized around four research groups. However, the recommendations provided by the CERCA Evaluation Committee in late 2018 included the need to define a strategy to replace the two group leaders that will retire during the next few years. The action plan elaborated by the ICP Steering Committee to cope with the CERCA recommendations, approved by the Board of Trustees in May 2019, proposed to reorganize the structure of the ICP research groups within more stable strategic research areas within a single Research Department. This enables more flexibility in terms of the number of research groups at the ICP and their specific aims, while ensuring the continuity of the main research lines on the long term. These changes—which expanded the number of research groups from four to six but reunited them into three research areas—were introduced in late 2019 and ratified by the Board of Trustees in May 2020. The current ICP research areas and groups are the following:

- Mesozoic Research Area (Head of Area: Dr. Àngel Galobart).
    - Dinosaur Ecosystems Research Group (Senior Group Leader: Dr. Àngel Galobart).
- Cenozoic Research Area (Head of Area: Dr. David M. Alba).
    - Paleobiodiversity & Phylogeny Research Group (Senior Group Leader: Dr. David M. Alba).
    - Paleoecology & Biochronology Research Group (Junior Group Leader: Dr. Isaac Casanovas-Vilar).
    - Paleoprimatology & Paleoanthropology Research Group (Senior Group Leader: Prof. Salvador Moyà-Solà).
- Evolutionary Paleobiology Research Area (Head of Area: Prof. Meike Köhler).
    - Life History Evolution Research Group (Senior Group Leader: Prof. Meike Köhler).
    - Computational Paleobiology Research Group (Junior Group Leader: Dr. Josep Fortuny).

The Head of the Research Department is established as the current Director of the ICP, although it must not necessarily be that way, being equivalent to the optional figure of Scientific Director as recognized in the Organization Chart. Each research area is led by a head of area, who is a senior researcher (R4), and may include one or more research groups, each led by a group leader, who may be a senior researcher (R4) or another (experienced) permanent researcher (R3). Each group may include other researchers (R3) and/or postdoctoral researchers (R2), predoctoral researchers (R1), as well as research associates, collaborators, and technicians.

The Mesozoic Research Area is focused on dinosaurs and associated faunas, and currently includes a single research group (Dinosaur Ecosystems), although it has possibilities to grow on the mid-term. The Cenozoic Research Area, in turn, is focused on primates and associated faunas, and currently includes three different groups: Paleobiodiversity & Phylogeny, Paleoecology & Biochronology, and Paleoprimatology & Paleoanthropology. Finally, the Evolutionary Paleobiology Research Area includes two different groups: Life History Evolution and Computational Paleobiology.

Mesozoic Research Area

The Mesozoic Research Area focuses on the paleobiodiversity and paleoecology of terrestrial ecosystems during the Mesozoic era (252-66 Ma), with emphasis on those time intervals best represented in the fossil record of Catalonia, which include the Permo-Trias and the latest Cretaceous. Both the Permian-Triassic and the Cretaceous-Tertiary boundaries reflect important mass extinction events that took place, respectively, at 252 Ma (end-Permian extinction or 'Great Dying') and 66 Ma (K-T extinction). These mass extinctions wiped out a large proportion of terrestrial vertebrates (including the disappearance of non-avian dinosaurs at the K-T extinction), and therefore the study of the associated paleoecological changes at the community level is of utmost relevance. The Dinosaur Ecosystems Research Group builds on the extraordinary fossil record from the Catalan Pyrenees of the latest dinosaurs from Europe and

the associated fauna. Besides bony remains, the former also consists of an exceptional paleoichnological record (including eggs, tracks and even skin impressions), which overall provides a unique window to dinosaur paleobiology. Furthermore, the group takes a multidisciplinary approach that, besides paleontologists specializing in several groups and ichnological remains, also involves paleobotanists, geologists and ecologists, in order to provide with accurate datings and paleoenvironmental reconstructions, as well as to apply trophic network modeling techniques.

RESEARCH GROUP OF MESOZOIC FAUNAS				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Dr. Àngel Galobart	Research Group Leader	Senior Researcher	R4	Civil Servant (GC)
Dr. Albert Prieto-Márquez	'Ramón y Cajal'	Researcher	R3	Tenure-track (GE)
Dr. Bernat Vila	Tenure-Track Researcher	Researcher	R3	Fixed-term (ICP)
Dr. Albert G. Sellés	Postdoc	Postdoctoral Researcher	R2	Fixed-term (ICP)
Bernat Vázquez§	Predoc	PhD Student	R1	—
Rafel Matamales-Andreu	Predoc	PhD Student	R1	—
Dr. Fabio M. Dalla Vecchia	Researcher	Research Associate	R3	—
Dr. Nicolas Malchus	Freelance/Independent	Research Collaborator	R2	—
Dr. Víctor Fondevilla	Freelance/Independent	Research Collaborator	R2	—
Dr. Diego Castanera†	Postdoc	Research Collaborator	R2	—

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Cenozoic Research Area

The Cenozoic Research Area focuses on the paleobiodiversity, evolution and paleobiology of continental vertebrates from the Cenozoic era (66 Ma to present, including the Paleogene, Neogene and Quaternary periods), with emphasis on the rich fossil record of mammals from Catalonia and nearby areas.

The Paleobiodiversity & Phylogeny Research Group is devoted to the reconstruction of the evolutionary history of continental vertebrates during this time interval, with emphasis on the rich Miocene and Pleistocene record from the Vallès-Penedès Basin. Besides investigating the phylogenetic relationships and adaptations of various vertebrate taxa, the group further takes a more holistic approach by focusing on the dynamics of paleobiodiversity in relation to global climate change and local paleoenvironmental indicators through time. In relation to the latter, both the Miocene and the Pleistocene record important faunal turnover events—such as the Vallesian Crisis and the Mid-Pleistocene Revolution, respectively. Therefore, the extraordinarily complete, abundantly sampled and accurately dated vertebrate record from these periods in the Vallès-Penedès Basin provides a unique opportunity to test evolutionary hypotheses on the mechanisms and interactions between biotic and abiotic factors that drive the course of evolution on a geological timescale—with significant implications to predict the future and future viability of extant terrestrial ecosystems in the light of current global climate change.

RESEARCH GROUP OF PALEOBIODIVERSITY & PHYLOGENY				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Dr. David M. Alba	Research Group Leader	Senior Researcher	R4	Permanent (ICP)
Dr. Joan Madurell-Malapeira†	Researcher	Researcher	R3	Permanent (ICP)
Dr. Àngel H. Luján	'Beatriu de Pinós'	Postdoctoral Researcher	R2	Fixed-term (AGAUR)
Dr. Andrea Villa	'Juan de la Cierva'	Postdoctoral Researcher	R2	Fixed-term (MCIN)
Kelly A. Vega Pagán‡	FI Predoc	Predoctoral Researcher	R1	Fixed-term (AGAUR)
Leonardo Sorbelli‡	Predoc	PhD Student	R1	—
Sharrah McKenzie‡	Predoc	PhD Student	R1	—
Maria Prat-Vericat	Predoc	PhD Student	R1	—
Guillem Pons-Monjo†	Predoc	PhD Student	R1	—
Sara G. Arranz§	Investigo Lab Technician & Predoc	Technician	R1	Fixed-term (AGAUR)
Dr. Massimo Delfino	Researcher	Research Associate	R3	—
Dr. Israel M. Sánchez	Researcher	Research Associate	R3	—
Dr. Daniel DeMiguel	Researcher	Research Associate	R3	—
Dr. Antonio Sánchez-Marco	Researcher	Research Associate	R3	—
Dr. Juan Abella	Researcher	Research Associate	R3	—
Dr. Saverio Bartolini-Lucenti§‡	Researcher	Research Associate	R2	—
Josep Aurell	Freelance/Independent	Research Collaborator	R1	—
Jordi Balaguer	Freelance/Independent	Research Collaborator	R1	—

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The Paleoecology & Biochronology Research Group emphasizes the study of fossils in time and space. It provides the necessary temporal background for the fossil record and one of its main goals is the precise dating of main biological and environmental events. In this regard it takes a multidisciplinary approach, using index fossils to correlate sites and rock units in combination with various geological techniques. Concerning paleoecology, it considers two different approaches. On the one hand, it studies the interrelationships between ancient organisms and the environments in which they lived to unravel not only the function of single organisms but also the structure of fossil communities. In addition, it also analyzes ecological phenomena through protracted intervals of geological time. This approach, termed evolutionary paleoecology, makes use of biochronological information and provides an approach not available to ecologists working in the present day. In both cases multidisciplinary techniques, including for example geochemical methods, are applied to the fossil record. This research group mostly—but not exclusively—focuses on the rich and continuous Miocene small mammal record of Europe, which is ideal for addressing these ecological questions. In addition, small mammals are key elements in Cenozoic continental chronology.

RESEARCH GROUP OF PALEOECOLOGY & BIOCHRONOLOGY				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Dr. Isaac Casanovas-Vilar‡	Junior Group Leader	Researcher	R3	Permanent (ICP)

Dr. Marc Furió‡	Serra Húnter Lecturer	Researcher	R3	Fixed-term (UAB)
Dr. Raquel Moya-Costa	'Margarita Salas'	Postdoctoral Researcher	R2	Fixed-term (UNIZAR)
Montse Grau-Camats	Predoc	PhD Student	R1	—
Shubham Pal§	Predoc	PhD Student	R1	—
Marc Misas-Alcántara	Investigo Lab Technician	Technician	R1	Fixed-term (AGAUR)
Dr. Chiara Angelone	Researcher	Research Associate	R3	—
Dr. Jan vam Dam	Researcher	Research Associate	R3	—
Dr. Yuri Kimura	Researcher	Research Associate	R3	—
Dr. Sílvia Jovells-Vaqué	Postdoc	Research Associate	R2	—
Dr. Israel García-Paredes‡	Freelance/Independent	Research Collaborator	R2	—

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The Paleoprimatology & Paleoanthropology Research Group, in turns, covers the entire evolutionary history of primates throughout the Cenozoic, with three main lines of research focused on the exceptionally rich primate fossil record from Catalonia and other nearby areas: Eocene primates; Miocene catarrhines, with emphasis on apes; and the Plio-Pleistocene record of monkeys and humans. The group studies the paleobiodiversity and phylogenetic relationships of these groups, as well as their paleobiology (diet, locomotion, etc.). Associated faunas are also investigated to contextualize the primate finds from a paleoenvironmental and chronological viewpoint, in collaboration with researchers from other groups within the Cenozoic area. Of particular relevance is the line of research focused on the evolution of hominoids—the group that includes lesser apes, great apes, and humans—with emphasis on the hotly debated phylogenetic and paleobiogeographic hypotheses on the origin and evolution of the great-ape-and-human clade, with further implications for deciphering the origin of gibbons, reconstructing the last common ancestor of apes and humans, and evaluating the importance of homoplasy in hominoid evolution.

RESEARCH GROUP OF PALEOPRIMATOLOGY & PALEOANTHROPOLOGY				
Name	Position	Category	Profile	Type of Contract
Prof. Salvador Moyà-Solà	Senior Group Leader	Senior Researcher	R4	Permanent (ICREA)
Dr. Judit Marigó†	Tenure-Track Researcher	Researcher	R3	Fixed-term (ICP)
Dr. Júlia Arias-Martorell	'Beatriu de Pinós'	Postdoctoral Researcher	R2	Fixed-term (AGAUR)
Dr. Arnau Bolet†	'Juan de la Cierva'	Postdoctoral Researcher	R2	Fixed-term (MCIN)
Florian Bouchet	FPI Predoc	Predoctoral Researcher	R1	Fixed-term (MCIN)
Oriol Monclús	FI Predoc	Predoctoral Researcher	R1	Fixed-term (AGAUR)
Georgina Raventós-Izard§	FPI Predoc	Predoctoral Researcher	R1	Fixed-term (MCIN)
Dr. Esther Lizano†	Lab Technician	Technician	R2	Fixed-term (ICP)
Víctor Fernández§†	Lab Technician	Technician	R1	Fixed-term (ICP)
Prof. Eric Delson	Senior Researcher	Research Associate	R4	—
Dr. Tomàs Marquès-Bonet	Senior Researcher	Research Associate	R4	—
Dr. Sergio Almécija	Senior Researcher	Research Associate	R4	—
Dr. Raef Minwer-Barakat	Researcher	Research Associate	R3	—
Dr. Amélie Beaudet	Researcher	Research Associate	R3	—
Dr. Marta Pina	Postdoc	Research Associate	R2	—

Dr. Alessandro Urciuoli‡	Postdoc	Postdoctoral Researcher	R2	—
Dr. Joan Femenias-Gual	Freelance/Independent	Research Collaborator	R2	—

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Evolutionary Paleobiology Research Area

The Evolutionary Biology Research Area is not restricted to a particular time span, but rather focused on the study of the patterns and causes of evolutionary change and extinction by combining fossil evidence with the biology of extant organisms.

The Life History Evolution Research Group is mostly devoted to the evolution of mammalian life-histories under changing ecological conditions. The group takes advantage of the unique deep-time perspective that only paleontology can provide to test hypotheses on the evolution of life-history strategies from the viewpoint of adaptation. To do so, this group takes a methodological approach that mostly relies on the paleohistological study of hard tissues (bone and teeth) of extinct mammals within the analytical framework provided by life history theory of biological evolution—which combines ecology, demography, physiology and adaptation, and further has significant implications for conservation biology (extinction) as well as evolutionary developmental biology (aging). By means of the study of skeletochronological markers and body mass estimation, the group can reconstruct the growth and developmental trajectories of extinct mammals and test the correlation of key life-history traits with environmental indicators, in order to test the evolutionary hypotheses of interest. Particularly relevant for this group is the study of the differential responses provided by large and small mammals to the peculiar ecological conditions provided by insular ecosystems, with emphasis on the study of extinct mammals from the fossil Mediterranean islands of the Mio-Pliocene.

RESEARCH GROUP OF LIFE HISTORY EVOLUTION				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Prof. Meike Köhler	Senior Group Leader	Senior Researcher	R4	Permanent (ICREA)
Dr. Josep Quintana*	Researcher	Researcher	R3	Permanent (ICP)
Dr. Carmen Nacarino	Postdoc	Postdoctoral researcher	R2	Fixed-term (ICP)
Teresa Calderón†	Predoc	PhD Student	R1	—
Manuel Fernández	Lab Technician	Technician	R1	Permanent (ICP)

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Finally, the Computational Paleobiology Research Group encompasses computational approaches that aim to digitally obtain paleobiological and evolutionary data of extinct organisms based on a wide range of techniques from imaging to functional approaches. To pursue these goals, the research group combines fossil evidence (particularly from Iberian fossil record, but also taking advantage of digital techniques to analyze fossil samples from all over the world) and biological samples. The researchers of this group are devoted to different groups of extant and extinct vertebrates, mainly (but not exclusively) amphibians and reptiles, with

their efforts focused on the functional morphology, ontogeny, and evolutionary history of these groups—and, when applicable, implications for conservation (paleo)biology. Of particular interest for the lines of research of this group are feeding ecology studies based on 3D masticatory mechanic models using finite element analysis (FEA) and multibody dynamic analysis (MDA), as well as inferences on past environmental conditions (given the great potential of ectothermic vertebrates in this regard).

RESEARCH GROUP OF COMPUTATIONAL PALEOBIOLOGY				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Dr. Josep Fortuny	Junior Group Leader	Researcher	R3	Permanent (ICP)
Dr. Jordi Pérez Cano§	'Margarita Salas'	Postdoctoral Researcher	R2	Fixed-term (UB)
Chabier de Jaime-Soguero	FI Predoc	Predoctoral Researcher	R1	Fixed-term (AGAUR)
Dr. Alejandro Serrano-Martínez§	Lab Technician	Technician	R2	Fixed-term (ICP)
Ángel García Pérez§†	Lab Technician	Interim Technician	R1	Fixed-term (ICP)
Laia Garcia-Escolà§	Investigo Lab Technician	Technician	R1	Fixed-term (AGAUR)
Marc Riccetto§†	Field Technician	Technician	R1	Fixed-term (other)
Dr. Jordi Marcé-Nogué	Researcher	Research Associate	R3	—
Dr. Eudald Mujal	Postdoc	Research Associate	R3	—
Dr. Borja Holgado	Postdoc	Research Associate	R2	—
Dr. Soledad De Esteban-Trivigno	Freelance/Independent	Research Collaborator	R2	—
Dr. David P. Groenewald	Postdoc	Research Collaborator	R2	—
Joan Cartanyà	Freelance/Independent	Research Collaborator	R1	—
Sergio Llácer	Lab Technician	Research Collaborator	R1	—

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Paleoproteomics and paleogenomics line of research

During the last couple of decades, the possibility to extract and sequence ancient DNA from fossils (first mitochondrial, and subsequently nuclear) has revolutionized fossil vertebrate phylogenetics, and particularly human evolutionary studies. However, ancient DNA is limited to remains younger than 0.5 Ma. A new discipline focused on the recovery of ancient proteins offers the prospect to go further back in time, and has already provided phylogenetically relevant data for fossils dating to 2 Ma. Since 2018, the ICP intends to establish a new research line focused on paleoproteomics and paleogenetics, with emphasis on fossil primates. With this aim in mind, in late 2018 the ICP reached a research collaboration agreement with ICREA Research Professor Tomàs Marquès-Bonet (Institut de Biologia Evolutiva, CSIC-UPF), who became research associate of the Paleoprimatology & Human Paleontology Research Group.

This collaboration was consolidated in 2019 thanks to the grant of a European Training Network (H2020-MSCA-ITN-ETN) project focused on primate paleoproteomics (PI Enric Capellini, University of Copenhagen), in which the ICP participates as a partner organization, with several group leaders involved. By virtue of this project, which started in 2020, the Paleobiodiversity & Phylogeny Research Group leader (Dr. Alba) is cosupervising two PhD dissertations on paleoproteomics with Prof. Marquès-Bonet and Prof. Rook (Università di

Firenze). Further collaboration between the Paleoprimatology & Paleoanthropology Research Group and Prof. Tomàs-Marquès' research group is planned for the following years. A renewal for a similar network (curretly termed Doctoral Networks in the framework of the Horizo Europe programme of the EU) was applied during 2022, under similar conditions as far as Prof. Marquès-Bonet and the ICP are concerned.

This line of research is compatible with the aims and scope of various ICP research groups but represents a most significant broadening of the ICP scientific focus as a whole—being entirely compatible with the ICP vision that paleobiology is deeply entrenched among the life sciences (and particularly evolutionary biology). It will be of upmost significance to further promote the ICP as one of the leading and benchmark centers of vertebrate and human paleobiology at an international level, because it offers the promise to boost the visibility, impact and competitiveness of the ICP much beyond their current levels.

Research associates

Research associates are researchers that lack an employment relationship with the ICP but nevertheless actively contribute to the research performed at our institution. The terms of this collaboration (including the ICP and the researcher's commitments) are indicated on a written agreement that further stipulates the scope of the collaboration and can be more or less personalized depending on the strategic significance of the collaboration.

A complete list of current research associates is provided below. Note that the status of research associate is restricted to R2-R4 researchers (i.e., PhD). PhD students and other people that actively collaborate with ICP research but lack an employment relationship with the institution may be considered 'collaborators', a figure that does not require a written agreement but further implies signing research outputs with ICP affiliation. Note that many agreements are dated to 2017; in most instances this is merely the date in which previous verbal agreements were formalized.

Only research associates active at the end of 2022 are reported in the table below, but the end date has been updated if they were expected to renew in early 2023. They include 21 research associates, mostly male (16) and with a different primary affiliation (18). 38% (8) ICP research associates are from Spain, whereas the rest are based in other countries (4 in Italy, 2 in the USA, 2 in the UK, 1 in Germany, 1 in The Netherlands, 1 in Japan, 1 in Brazil, and 1 in the Slovak Republic).

RESEARCH ASSOCIATES (2022)					
NAME	PRIMARY AFFILIATION	POSITION	R.G.	START DATE	END DATE
Dr. Sergio Almécija	American Museum of Natural History, New York, USA	Senior Researcher (R4)	PPPA	17/10/2017	17/10/2027
Prof. Eric Delson	Lehman College, City University of New York, USA	Senior Researcher (R4)	PPPA	24/10/2017	24/10/2025
Dr. Tomàs Marquès-Bonet	ICREA-Universitat Pompeu Fabra, Barcelona, Spain	Senior Researcher (R4)	PPPA	21/09/2018	21/09/2026
Dr. Massimo Delfino	Università degli Studi di Torino, Turin, Italy	Senior Researcher (R4)	PBDP	01/01/2011	01/01/2026
Dr. Chiara Angelone	Università di Roma Tre, Rome, Italy	Researcher (R3)	PEBC	01/01/2012	01/01/2024
Dr. Fabio M. Dalla Vecchia	ICP (independent researcher, Italy)	Researcher (R3)	DE	10/11/2017	10/11/2027
Dr. Israel M. Sánchez	ICP (independent researcher, Spain)	Researcher (R3)	PBDP	01/06/2016	01/06/2025
Dr. Jan vam Dam	Utretch University, The Netherlands	Researcher (R3)	PEBC	01/11/2017	01/11/2027
Dr. Daniel DeMiguel	ARAID-Universidad de Zaragoza, Spain	Researcher (R3)	PBDP	19/10/2017	19/10/2027
Dr. Raef Minwer-Barakat	Universidad de Granada, Spain	Researcher (R3)	PPPA	18/10/2017	18/10/2027
Dr. Jordi Marcé-Nogué	Universitat Rovira i Virgili, Spain	Researcher (R3)	CPB	22/12/2017	22/12/2023
Dr. Yuri Kimura	National Museum of Nature and Science, Japan	Researcher (R3)	PEBC	01/01/2020	01/01/2024
Dr. Amélie Beaudet	Cambridge University, UK	Researcher (R3)	PPPA	12/11/2020	28/02/2023
Dr. Antonio Sánchez-Marco	ICP (independent researcher, Spain)	Researcher (R3)	PBDP	28/7/2021	28/07/2025
Dr. Marta Pina	London South Bank University, UK	Researcher (R3)	PPPA	11/11/2019	11/11/2025
Dr. Eudald Mujal	Staatliches Museum für Naturkunde Stuttgart, Germany	Researcher (R3)	CPB	10/01/2017	10/01/2025
Dr. Juan Abella	Universitat de València, Spain	Researcher (R3)	PBDP	21/12/2021	21/12/2025
Dr. Borja Holgado	Museu Nacional/Universidade Federal do Rio de Janeiro, Brazil	Postdoc (R2)	CPB	22/09/2020	22/09/2024
Dr. Sílvia Jovells	Comenius University, Slovak Republic	Postdoc (R2)	PEBC	12/11/2020	12/11/2024
Dr. Alessandro Urciuoli	Universitat Autònoma de Barcelona, Spain	Postdoc (R2)	PPPA	26/5/2021	26/5/2025
Dr. Saverio Bartolini-Lucenti	Università degli Studi di Firenze, Italy	Postdoc (R2)	PBDP	01/06/2022	01/06/2025

Abbreviations of Research Groups (R.G.): DE = Dinosaur Ecosystems; PBDP = Paleobiodiversity & Phylogeny; PEBC = Paleoecology & Biochronology; PPPA = Paleoprimatology & Paleoanthropology; LHE = Life History Evolution; CPB = Computational Paleobiology.

TECHNICAL DEPARTMENTS

Outreach, managements, research support, and service provision

Departmental organization

The ICP has three technical departments (Outreach & Communication, Management & Human Resources, and Research Support & External Services), each one directed by a Head of Department. They are supervised by and formally depend upon the General Manager. However, the Steering Committee (which includes the Director and the three Heads of Department) further contributes significantly to the coordination among these departments as well as between them and the various research groups. Each department includes several areas, which may have a Head of Area when an intermediate hierarchical level is required to coordinate the personnel included within.

- Outreach & Communication Dept.: Pere Figuerola (Head of Dept.).
  - ✓ Communication and Scientific Dissemination: Pere Figuerola (Head of Area).
  - ✓ Museum Area: Teresa Esquirol (Head of Area).
  - ✓ Archive & Documentation Area: Teresa Requena (Archivist & Documentalist).

- Management & Human Resources: Enric Menéndez (Head of Dept.).
  - ✓ Maintenance Area: Manel Llenas (Maintenance Technician).
  - ✓ Administration Area: Mónica Vincent (Administrative Officer).

- Research Support & External Services: David Basanta (Head of Dept.).
  - ✓ Fieldwork & Collections Management Area: Jordi Galindo (Head of Area).
  - ✓ Preparation & Conservation Area: Xènia Aymerich (Head of Area).
  - ✓ Projects Area: David Basanta (Project Manager).
  - ✓ Information Technology Area: Josep Torres (Interim Head of Area & IT Technician).

Outreach & Communication

This department has the aim to improve internal communication as well as to better coordinate external communication, scientific dissemination and outreach activities. It includes the following areas:

- Communication & Scientific Dissemination.
- Museum.
- Archive & Documentation Area.

DEPARTMENT OF OUTREACH & COMMUNICATION			
NAME	POSITION	AREA	TYPE OF CONTRACT
Pere Figuerola	Head of Dept. & Area	Communication & Scientific Dissemination	Permanent (ICP)
Teresa Esquirol	Head of Area	Museum	Civil Servant (GC)
Mònica Cucurella	Receptionist	Museum	Permanent (ICP)
Pilar Argerich*†	Receptionist (Dinosfera)	Museum	Fixed-term (ICP)
Irina Fernández*	Receptionist (Dinosfera)	Museum	Fixed-term (ICP)
Laura Fàbrega*§	Receptionist (Dinosfera)	Museum	Fixed-term (ICP)
Roc Olivé*§	Scientific Illustrator	Communication & Scientific Dissemination	Fixed-term (ICP)
Teresa Requena	Archivist & Documentalist	Archive & Documentation Area	Civil Servant (GC)

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Management & Human Resources

This department has the aim to improve and give visibility to our human resources policies within the context of the implementation of HRS4R. It includes the following areas:

- Maintenance.
- Administration.

DEPARTMENT OF MANAGEMENT & HUMAN RESOURCES			
NAME	POSITION	AREA	TYPE OF CONTRACT
Enric Menéndez	Head of Dept.	—	Permanent (ICP)
Manel Llenas	Maintenance Technician	Maintenance	Civil Servant (GC)
Mónica Vincent	Administrative Officer	Administration	Permanent (ICP)

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Research Support & External Services

This department has the aim to boost remunerated external services provided to third parties, as well as to improve the coordination between the various areas involved in research support. It includes the following areas:

- Fieldwork & Collections Management.
- Preparation & Conservation.
- Projects.
- Information Technology.

DEPARTMENT OF RESEARCH SUPPORT & EXTERNAL SERVICES			
NAME	POSITION	AREA	TYPE OF CONTRACT
David Basanta	Head of Dept.	Projects	Permanent (ICP)
Jordi Galindo	Head of Area	Fieldwork & Collections Mgmt.	Permanent (ICP)
Dr. Josep M. Robles	Collection Manager	Fieldwork & Collections Mgmt.	Permanent (ICP)
Manel Llenas	Field Technician	Fieldwork & Collections Mgmt.	Civil Servant (GC)
Dr. Víctor Vinuesa	Field Technician	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Josep Manel Méndez	Field Assistant	Fieldwork & Collections Mgmt.	Permanent (ICP)
Sergio Crespo§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)

Itziar Llopart§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Alexandre Porcel Barceló§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Montserrat Grau-Camats§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Marc Riccetto§†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Xènia Aymerich	Head of Area	Preparation & Conservation	Permanent (ICP)
Marina Rull	Prep. Technician	Preparation & Conservation	Permanent (ICP)
Almudena S. Yagüe	Prep. Technician	Preparation & Conservation	Permanent (ICP)
Júlia Jiskoot§	Investigo Prep. Technician	Preparation & Conservation	Fixed-term (AGAUR)
Marina Vizcarro§	Investigo Prep. Technician	Preparation & Conservation	Fixed-term (AGAUR)
Ana Montemayor§†	Prep. Technician	Preparation & Conservation	Fixed-term (ICP)
Helena Fuster§†	Prep. Technician	Preparation & Conservation	Fixed-term (ICP)
Josep Torres*§	Interim Head of Area	Information Technology	Permanent (ICP)

Abbreviations: * = Part-time; § = The relationship with the ICP started or was resumed in 2022; † = The relationship with the ICP ended in 2022; ‡ = The relationship with the ICP changed in 2022.

PART 2

ICP ACTIVITIES 2022

In 2022, the ICP maintained high levels scientific production and productivity while persisting in the recovery, conservation and dissemination of the paleontological heritage from Catalonia. Outreach and communication activities have pivoted around the ICP Museum, webpage, and social networks; fundraising has maintained a good level thanks to the increase of competitive income; and managerial activities have focused on the implemetation of the new Strategic Plan, HRS4R policies, the recommendations by I-CERCA, and reaching a stragegic alliace with IBE.

RESEARCH OUTPUTS

High productivity and quality in scientific publications

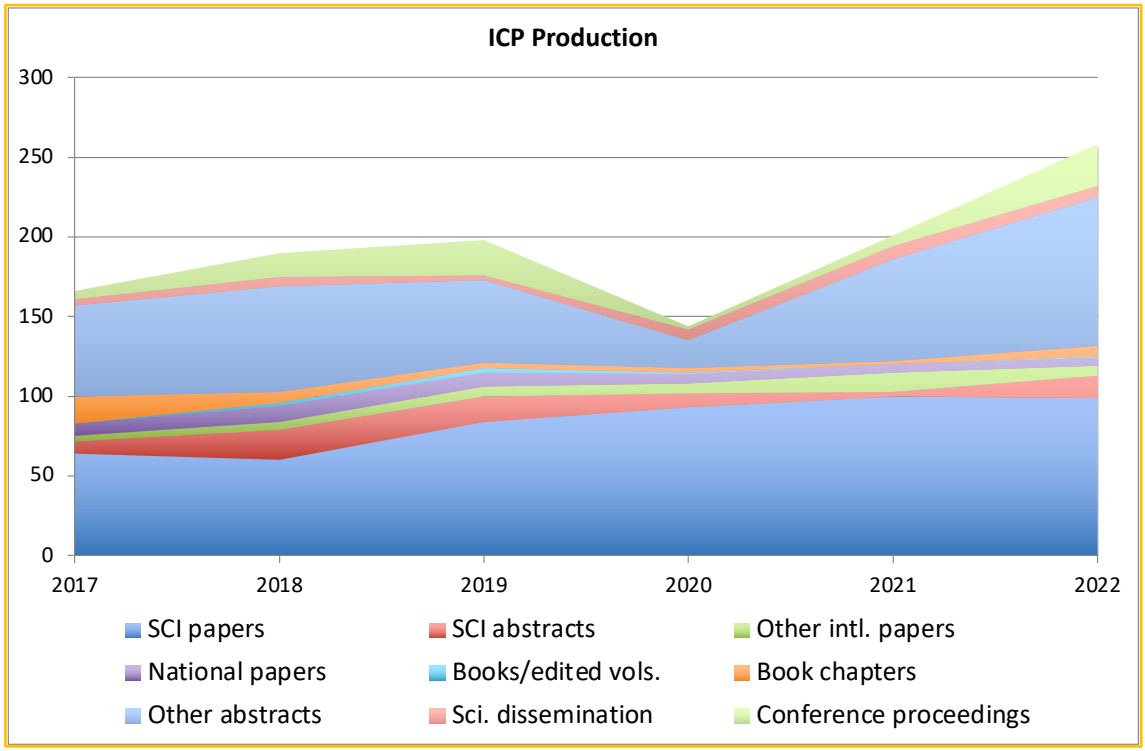
Publications

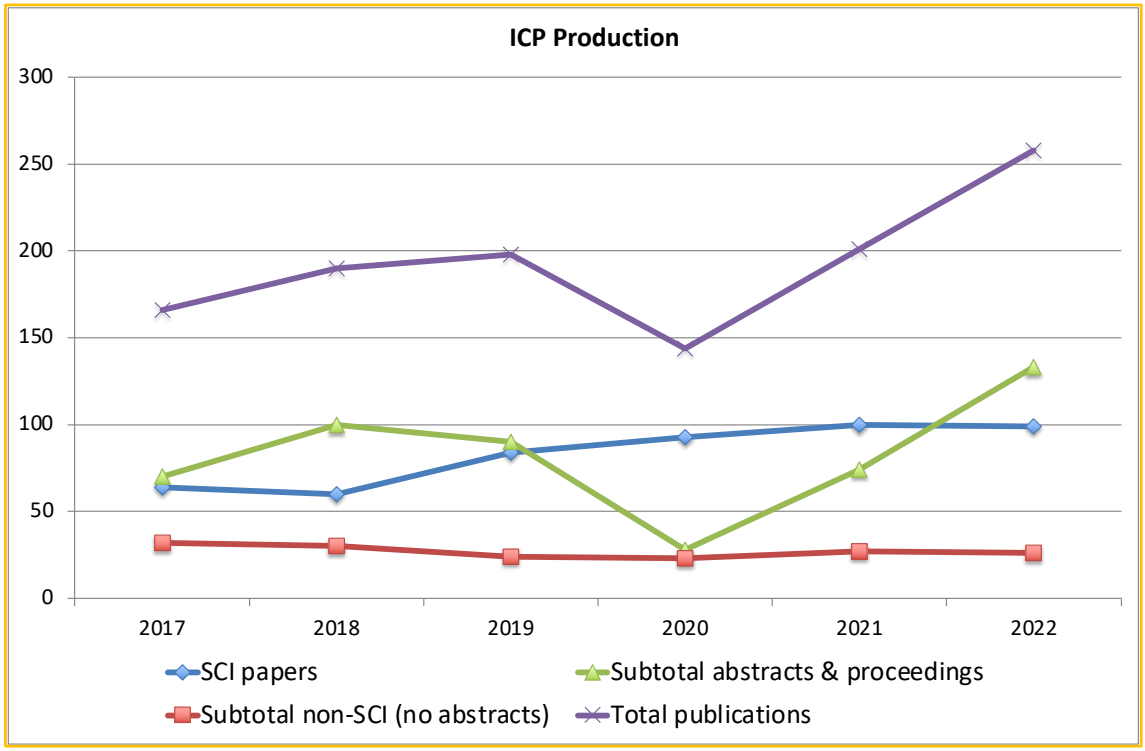
The publications of the ICP in 2022 are reported in the Appendix at the end of this document, being divided into the following categories (SCI refers to journals from the Science Citation Index, i.e., indexed by the Journal Citation Reports, JCR):

- SCI papers.
- SCI abstracts.
- Papers in other international journals.
- Papers in national journals.
- Books and edited volumes.
- Book chapters.
- Conference proceedings.
- Other abstracts.
- Scientific dissemination papers.

ICP PUBLICATIONS (2017–2021 vs. 2022)							
Publication Categories	2017	2018	2019	2020	2021	Average	2022
SCI papers	64	60	84	93	100	**80.2**	**99**
SCI abstracts	8	19	16	9	3	**11.0**	**14**
Papers in other international journals	3	5	6	6	12	**6.4**	**6**
Papers in national journals	8	10	9	6	5	**7.6**	**5**
Books and edited volumes	0	2	3	1	0	**1.2**	**1**
Book chapters	17	7	3	3	2	**6.4**	**7**
Conference proceedings	5	15	22	2	7	**10.2**	**26**
Other abstracts	57	66	52	17	64	**51.2**	**94**
Scientific dissemination papers	4	6	3	7	8	**5.6**	**7**
TOTAL	166	190	198	144	201	**179.8**	**258**

The number of total publications (258) is he highest ever in the history of the ICP. In turn, the number of SCI papers (99) consolidates the growing trend started in 2019, almost reaching the psychological threshold of 100 that was first attained i 2021, which is well above the average for the five preceding years (80). In other words, together with 2021, 2022 represents one of the two best years of ICP history in terms of SCI production.





Contributions to meetings

The number of published abstracts and conference proceedings (see above) is a good proxy for contributions to meetings (although there can be some delay in the publication of conference proceedings). The number of abstracts/conference proceedings published in 2022 (131) is much higher than the average of the five preceding years (72), and indeed higher than

ever. Attendance to meetings reached a minimum in 2020 during the peak of the pandemic, but rapidly recovered in 2021 (largely thanks to the proliferation of online meetings) and was fully normalized in 2022.

In particular, ICP researchers in 2022 coauthored 127 contributions to a total of 21 meetings, of which 15 international. Most remarkable are the 32 ICP contributions to the annual conference of the European Association of Vertebrate Palaeontologists. Also noteworthy are the 15 contributions to the Italian Giornate de Paleontologia (Paleodays 2022), the 10 contributions to the annual meeting of the American Association of Biological Anthropologists, and the 8 contributions to the NOW 25th Anniversary Meeting. The latter was organized by the ICP in Sabadell, with a remarkable international attendance.

Meeting	City (Country)	Comms.
19th European Association of Vertebrate Palaeontologists Conference	Benevento (Italy)	32
XXII Edizione delle Giornate di Paleontologia. Paleodays 2022	Asti (Italy)	15
91st Annual Meeting of the American Association of Biological Anthropologists	Denver (USA) & online	10
XXXVII Jornadas de la Sociedad Española de Paleontología	Cuenca (Spain)	9
NOW 25th Anniversary Meeting	Sabadell (Spain)	8
IX Jornadas Internacionales sobre Paleontología de Dinosaurios y Su Entorno	Salas de los Ifantes (Spain)	7
Oreopithecus150 International Conference	Firenze (Italy)	6
XIV Congresso Nazionale Societas Herpetologica Italica	Torino (Italy)	6
23rd Meeting of the Group of European Charophytologists	Riga (Latvia)	5
81nd Annual Meeting Society of Vertebrate Paleontology	Toronto (Canada)	4
The 6th International Palaeontological Congress	Khon Kaen (Thailand)	4
21st Palaeontological Society of Southern Africa Biennial Meeting	Golden Gate Highlands National Park (South Africa)	4
XX Encuentro de Jóvenes Investigadores en Paleontología	Cañaveral de León (Spain)	3
VIII Jornades de Medi Ambient de les Illes Balears	Palma (Spain)	3
12th Annual Meeting of the European Society for the Study of Human Evolution	Tübingen (Germany)	2
Setzenes Jornades d'Arqueologia de les Comarques de Girona	Castelló d'Empúries (Spain)	2
8th Biennial Conference Eastern African Association for Palaeoanthropology and Palaeontology	Arusha (Tanzania)	2
93. Jahrestagung der Paläontologischen Gesellschaft	Stuttgart (Germany)	2
European Geosciences Union General Assembly 2022	Vienna (Austria) & online	1
(Theoretical) Roman Archaeology Conference	Split (Croatia)	1
8th Symposium on Fossil Decapod Crustaceans	Zaragoza (Spain)	1
VI Jornades d'Arqueologia de la Catalunya Central	Berga (Spain)	1

Organization of meetings

In 2022, the ICP organized the "NOW Anniversary Meeting", which has held between the 16th and the 18th of November, 2022 in Sabadell. This meeting was conceived to celebrate the 25th anniversary of the NOW (New and Old Worlds) Database of fossil mammals

(https://nowdatabase.org/), which should have been commemorated in 2021 but had to be delayed one year because of the pandemic. Nevertheless, the meeting was not restricted to members of The NOW Community. The Organizing Committee was constituted by ICP researchers and technicians (I. Casanovas-Vilar, D.M. Alba, D. Basanta, and P. Figuerola) and the meeting was held at Espai Cultura Fundació 1859 Caixa Sabadell, further including a fieldtrip to the Vallès-Penedès Basin. The book of abstracts and fieldtrip guide were published in a special issue of the ICP in-house journal (*Paleontologia i Evolució*) edited by Casanovas-Vilar & Alba, which can be freely downloaded from the ICP website (http://www.icp.cat/now25/docs/P&E_NOW_25th_anniversary_abstract_book_and_fieldtrip_guide.pdf). The meeting was a success, being attended by ca. 50 people (all the available spots were filled) and representing a great opportunity for ICP students and early career researchers to meet in person several of the most renowned vertebrate paleontologists worldwide. A logo for the meeting was specifically devised by the paleoartist of the ICP (Roc Olivé).

In 2022, the ICP also co-organized, together with Transmitting Science and other entities (Mujeres con los Pies en la Tierra, Universidade de Vigo, Universidad Complutense de Madrid, PRISMA, University of Zurich, Universitat de Barcelona, Université de Montpellier, Centro de Investigación Mariña of the Universidade de Vigo, and MAPAS Lab), an international conference entitled "Bridges between disciplines: gender in stem and social sciences". The meeting was held in hybrid form (online and onsite) at Gandia (Spain) betweeen the 12th and 16th of September,

2022 and aimed to think about gender differences in Science(s) from an intersectional perspective, bridging the gap between what have been thought of as separate and decoupled fields of knowledge (STEM – Science, Technology, Engineering, and Mathematics – and Social Sciences). The conference included more than 120 contributions (oral presentations and posters), plus 7 keynote talks, 4 round tables, and 9 workshops. Further details can be found on the website of the conference (https://bridges2022.com/). ICP research collaborator Soledad De Esteban-Trivigno and ICP researcher Judit Marigó were members of the Organizing Committee, while ICP predoctoral researcher Oriol Monclús-Gonzalo participated in the Collaborator Committee of the meeting.

Scientific production, productivity, and impact

Methods. Whereas 'production' refers to the number of scientific outputs published in 2022, 'productivity' refers to the ratio between production and the total number of authors that have coauthored these publications with ICP affiliation. To compare the production, productivity, and quality/impact of ICP research outputs in 2022 with that of the five previous years, this report focuses on SCI 'papers', which include all publications (articles, technical notes, etc.) except abstracts in journals indexed by the JCR. Bibliometric indicators for these journals have been taken from the JCR of the year of definitive publication, except for 2022, which were taken from 2021 (since the 2022 edition of JCR has not been published yet). The following aspects and metrics were considered for each journal:

- Journal category (if several, the most favorable with respect to journal ranking).
- Journal impact factor (JIF).
- Journal quartile (Q1 = first quartile, Q2 = second quartile, etc.) based on JIF.
- Journal impact factor percentile (JIF%).
- Journal citation indicator (JCI). This metric was introduced recently in JCR and reflects if a journal is more (>1) or less (<1) cited than average for its category.
- Open access (excluding green open access).

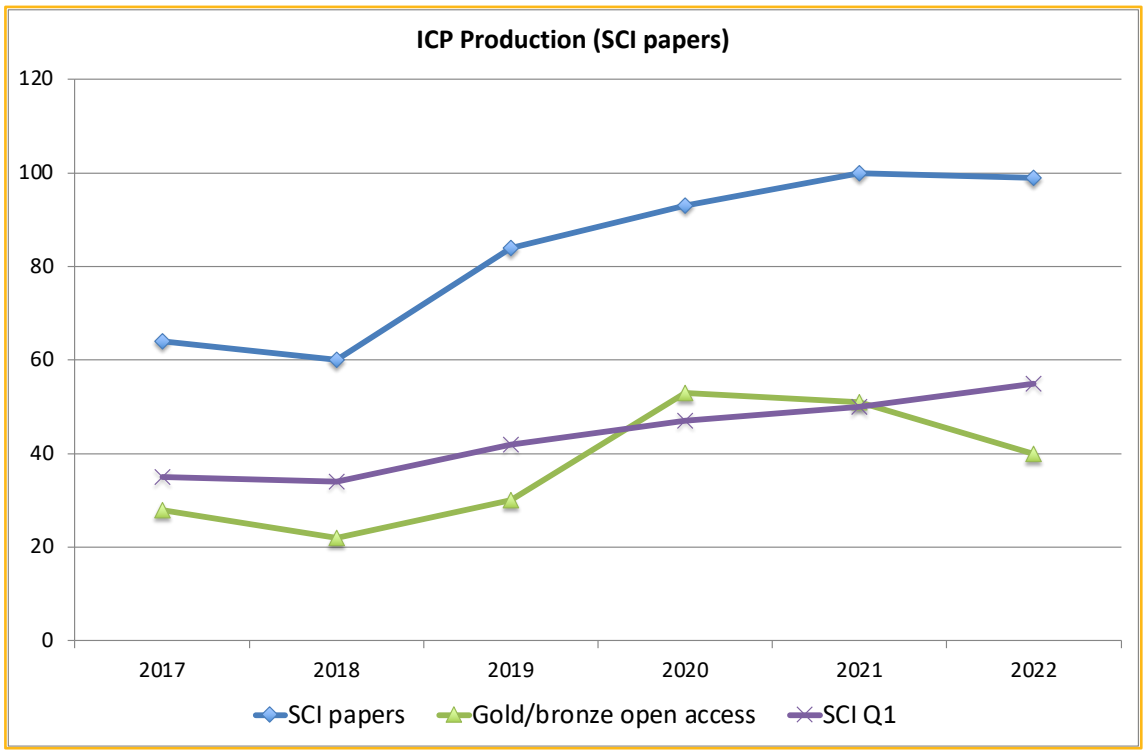
The following metrics of production, productivity and impact were computed for 2022:

- SCI = total number of SCI papers (excluding abstracts) coauthored by ICP authors.
- SCI productivity = SCI / number of ICP authors (those with ICP affiliation in SCI papers).
- Q1 = total number of Q1 papers coauthored by ICP authors.
- OA = total number of open access SCI papers coauthored by ICP authors.
- Q1 productivity = Q1 / number of ICP authors.
- Q1 ratio = Q1 / Production x 100 (in %).
- OA ratio = OA / Production x 100 (in %).
- Median JIF%.
- JIF geometric mean (JIFGM).
- JCI arithmetic mean (JCIAM).

Production. The production of the ICP in terms of total SCI and first quartile SCI papers during 2022 is well above the average value for the preceding five years, and indeed Q1 production is highest than ever. In contrast, the production in terms of gold/bronze open access SCI papers is slightly lower than in 2020 and 2021, albeit still higher than the average for the five preceding years.

SCI PRODUCTION (2017–2021 vs. 2022)							
METRICS	2017	2018	2019	2020	2021	AVERAGE	2022
SCI	64	60	84	93	100	**80.2**	**99**
Q1	35	34	42	47	50	**41.6**	**55**
OA*	28	22	30	53	51	**36.8**	**40**

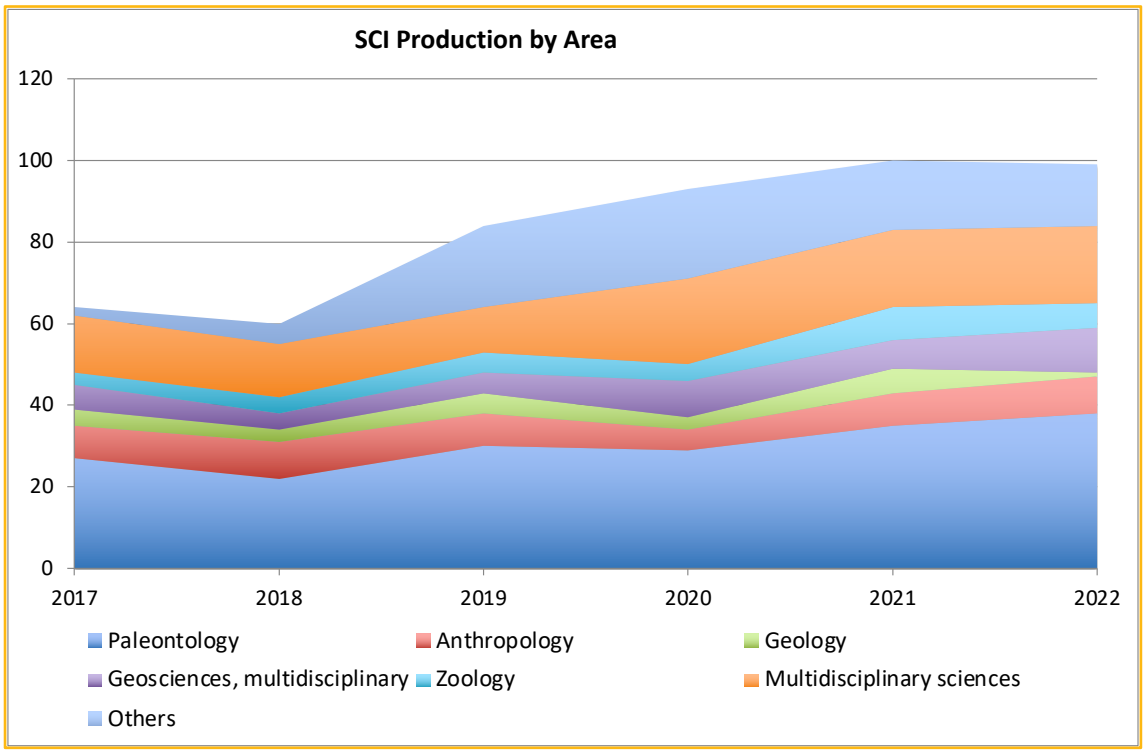
*Green open-access excluded.



When SCI production is broken down by research areas of the JCR, it can be seen that a large proportion of ICP production corresponds to journals from the area of Paleontology (38% in 2022), followed by Multidisciplinary sciences (19% in 2022), and smaller contributions from the areas of Anthropology, Zoology, Geology, Geosciences multidisciplinary, and others.

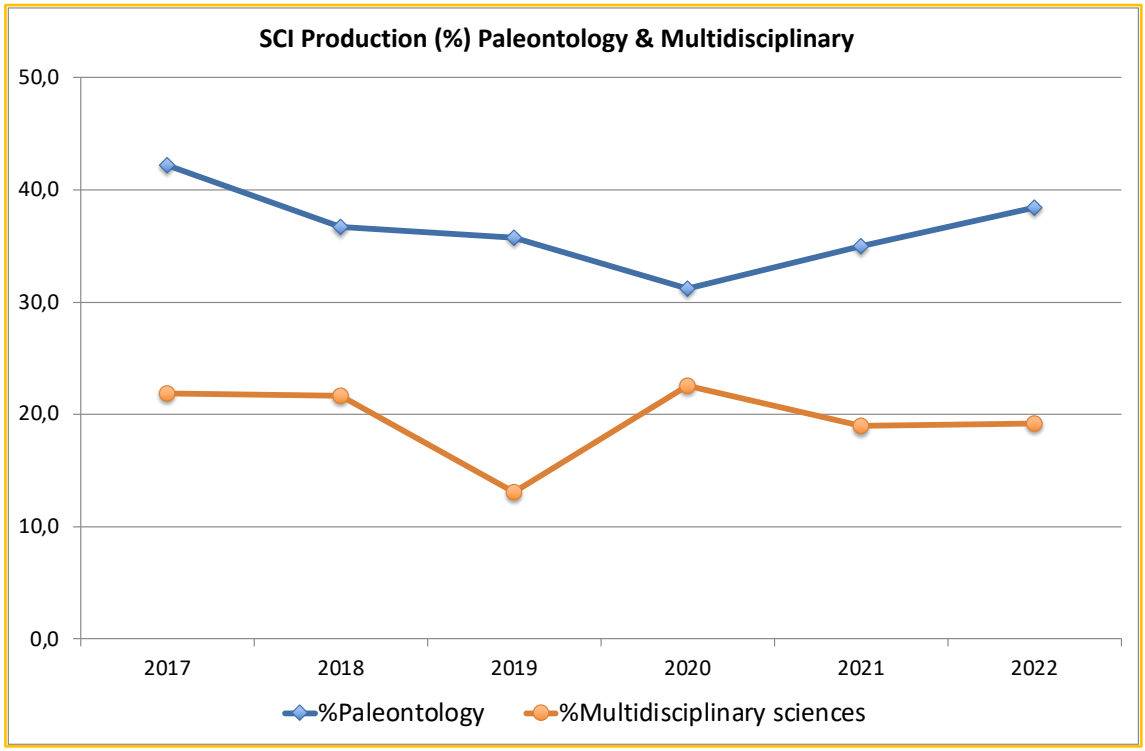
SCI PRODUCTION BY AREAS (2017–2021 vs. 2022)							
JCR AREAS	2017	2018	2019	2020	2022	AVERAGE	2022
Paleontology	27	22	30	29	35	**28.6**	**38**
Anthropology	8	9	8	5	8	**7.6**	**9**
Geology	4	3	5	3	6	**4.2**	**1**
Geosciences, multidisciplinary	6	4	5	9	7	**6.2**	**11**
Zoology	3	4	5	4	8	**4.8**	**6**

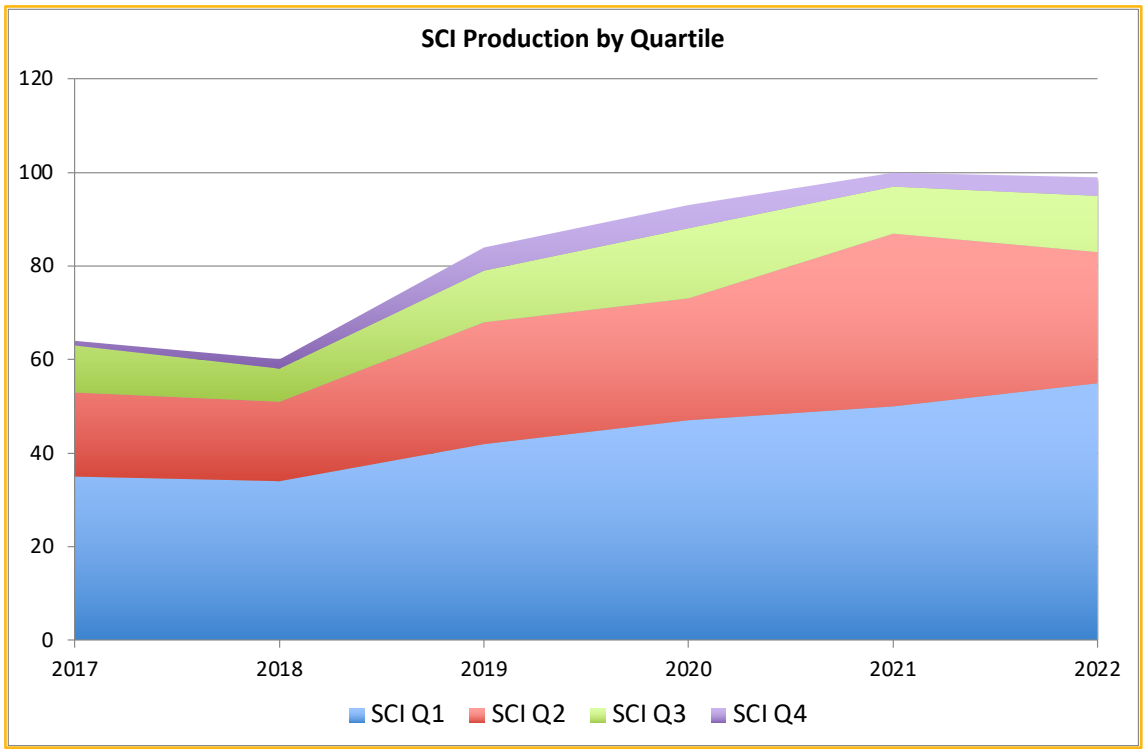
Multidisciplinary sciences	14	13	11	21	19	**15.6**	**19**
Others	2	5	20	22	17	**13.2**	**15**
%Paleontology	42.2	36.7	35.7	31.2	35.0	**35.7**	**38.4**
%Anthropology	12.5	15.0	9.6	5.4	8.0	**9.5**	**9.1**
%Geology	6.3	5.0	6.0	3.2	6.0	**5.2**	**1.0**
%Geosciences, multidisciplinary	9.4	6.7	6.0	9.7	7.0	**7.7**	**11.1**
%Zoology	4.7	6.7	6.0	4.3	8.0	**6.0**	**6.1**
%Multidisciplinary sciences	21.9	21.7	13.1	22.6	19.0	**19.5**	**19.2**
%Others	3.1	8.3	23.8	23.7	17.0	**16.5**	**15.2**



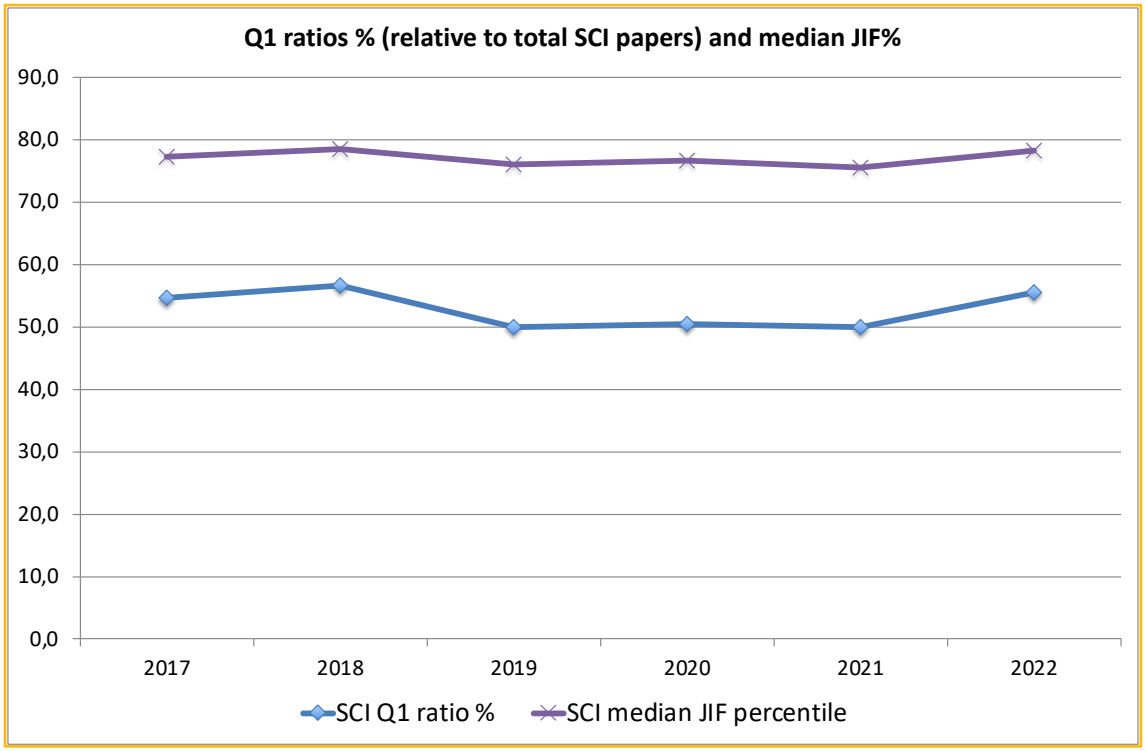
Quality and impact. If production is broken down by quartiles, it becomes obvious that most of the SCI production of the ICP is concentrated on the Q1. The first quartile SCI production during 2022 is the highest ever in the history of the ICP.

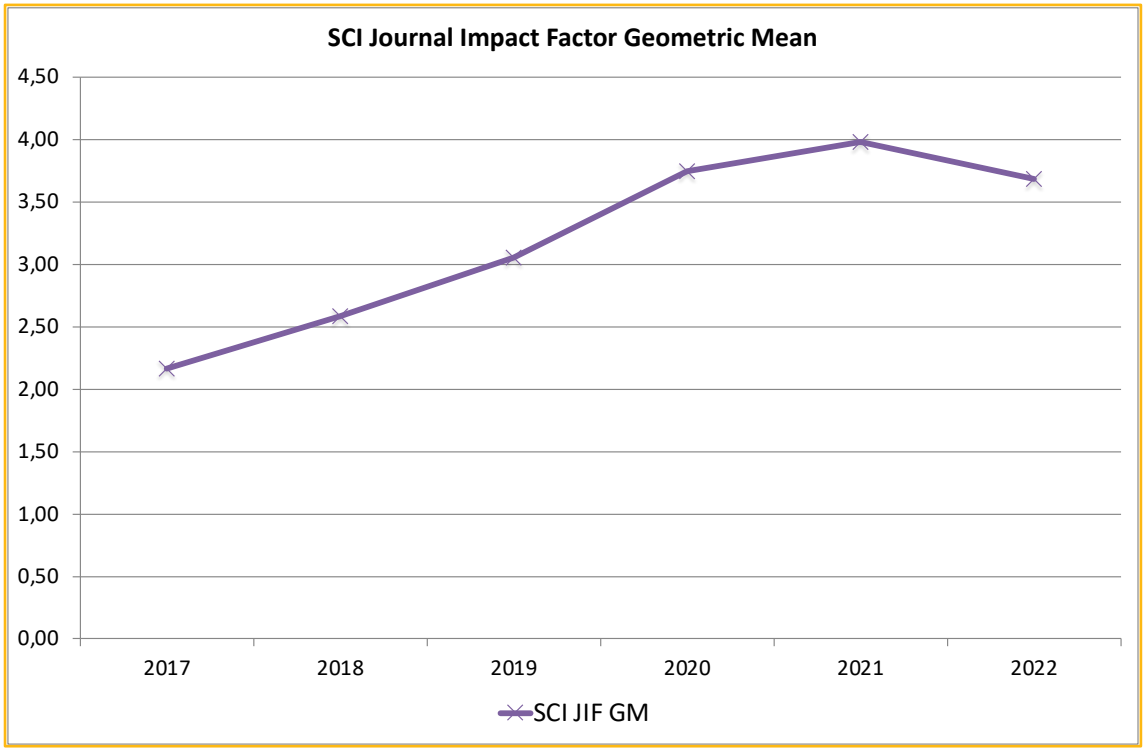
SCI PRODUCTION BY QUARTILES (2017–2021 vs. 2022)							
Quartile	2017	2018	2019	2020	2021	Average	2022
Q1	35	34	42	47	50	**41.6**	**55**
Q2	18	17	26	26	37	**24.8**	**28**
Q3	10	7	11	15	10	**10.6**	**12**
Q4	1	2	5	5	3	**3.2**	**4**

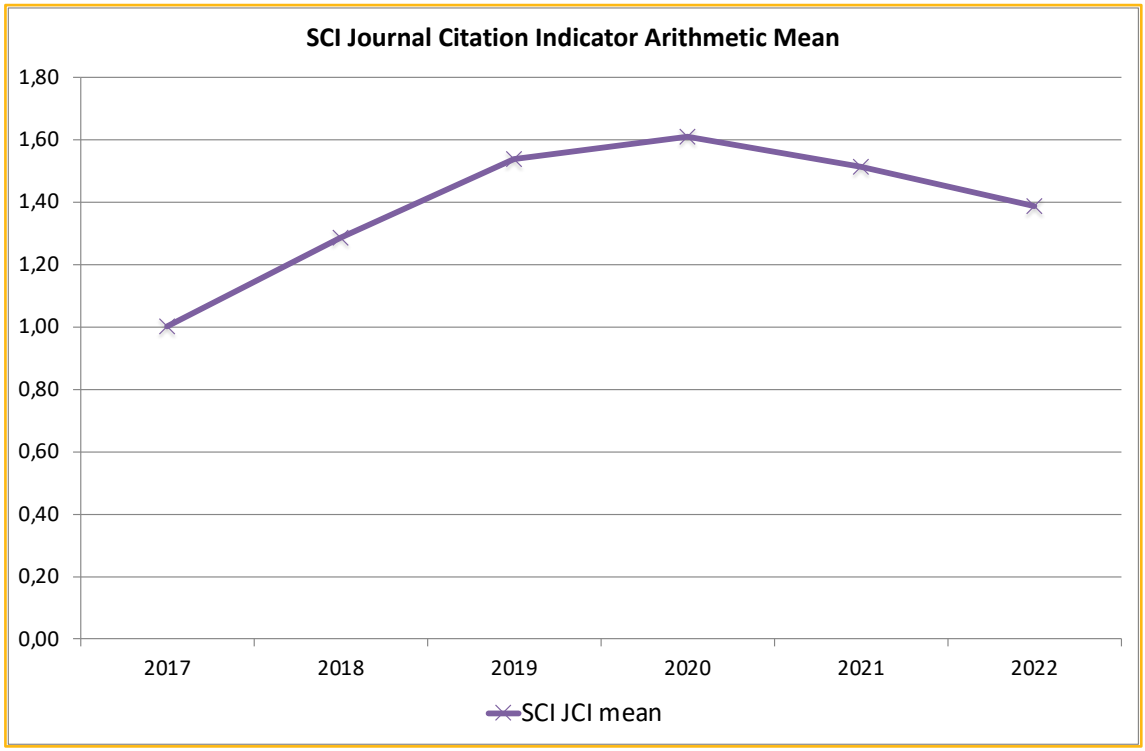




SCI PRODUCTION IMPACT & QUALITY (2017–2021 vs. 2022)							
Metrics	2017	2018	2019	2020	2021	Average	2022
Q1 ratio	54.7	56.7	50.0	50.5	50.0	**51.9**	**55.6**
Median JIF%	77.3	78.5	76.1	76.6	75.5	**76.4**	**78.3**
JIFGM	2.17	2.58	3.05	3.75	3.99	**3.16**	**3.69**
JCIAM	1.00	1.29	1.54	1.61	1.51	**1.43**	**1.39**


Q1 ratios % (relative to total SCI papers) and median JIF%
90,0
80,0
70,0
60,0
50,0
40,0
30,0
20,0
10,0
0,0
2017
2018
2019
2020
2021
2022
SCI Q1 ratio %
SCI median JIF percentile


SCI Journal Impact Factor Geometric Mean
4,50
4,00
3,50
3,00
2,50
2,00
1,50
1,00
0,50
0,00
2017
2018
2019
2020
2021
2022
SCI JIF GM

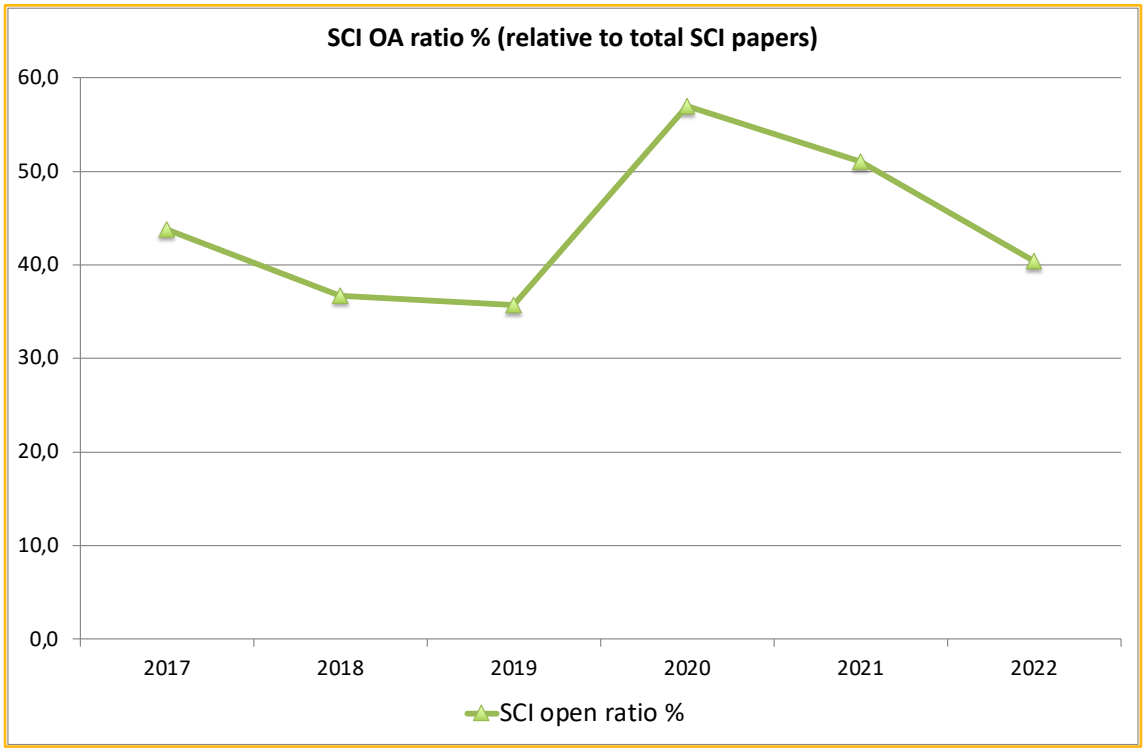


It is noteworthy that the percentage of papers published in Q1 has remained more or less stationary around 50%. Based on the JCR 2020, the numbers for 2021 appeared much higher (68%), but they went down to 50% based on the JCR 2021. This is due to the fact that paleontology is a small area and some of its journals fluctuate between Q1 and Q2. The percentage for 2022 (56%) appears somewhat higher, even if compared to the average of the last five years (52%), but it will be necessary to wait for the JCR 2022 results to confirm this mild increase. The new indicator introduced in this report for the first time (JCI arithmetic mean) shows a different trend, which more realistically depicts the impact of the journals in which the ICP publishes within their respective areas. This indicator reached a peak in 2020, slightly decreasing thereafter, with the 2022 figure (1.4) being the same as the average of the last five years. This roughly means that the ICP publishes in journals that have 40% more citations than average in their respective areas.

In turn, the JIF percentile median has remained around 75% during all these years, with the 2022 provisional figure (78%) being slightly higher than the average of the five preceding years (76%). The impact factor geometric mean for 2022 (3.7) is slightly lower than the figure for 2021 (4.0) but still higher than the average of the preceding five years (3.2). The increasing impact trend since 2017 (even if the peak was in 2021) is related to a proportional increase of publications from other areas with higher impact than paleontology. Nevertheless, it will be necessary to recalculate these numbers once the JCR 2022 edition is published later this year.

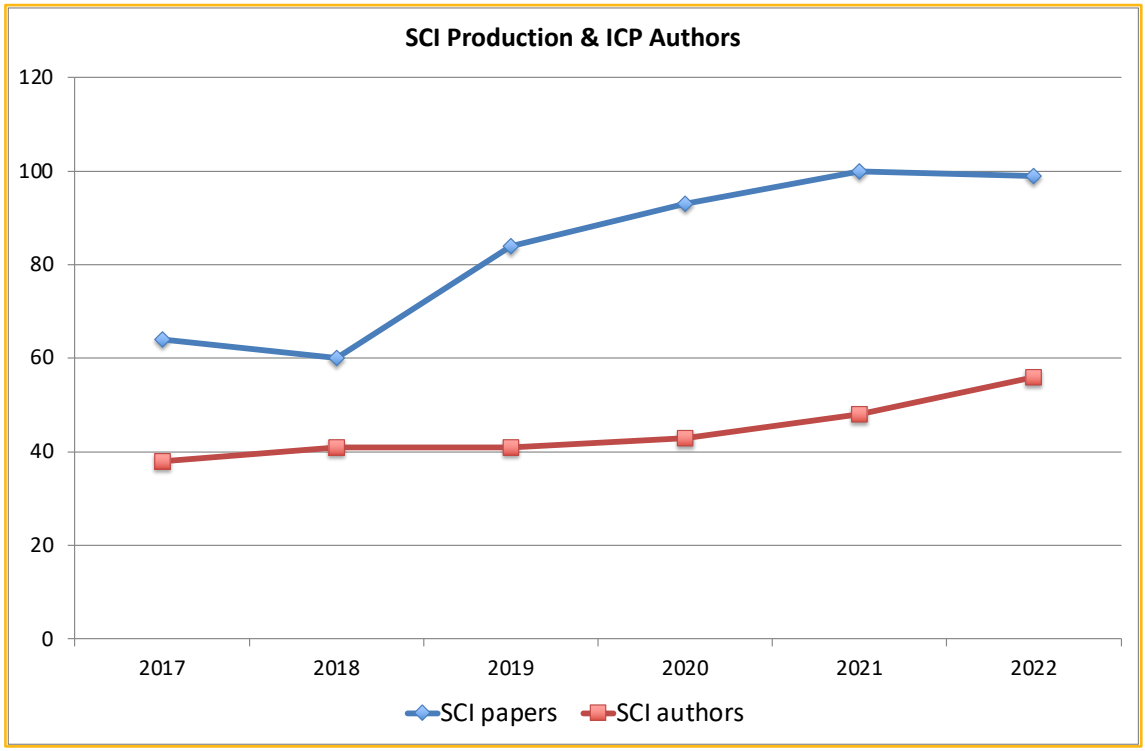
OPEN ACCESS (2017–2021 vs. 2022)							
METRICS	2017	2018	2019	2020	2021	AVERAGE	2021
OA ratio*	43.8	36.7	35.7	57.0	51.0	**45.9**	**40.4**

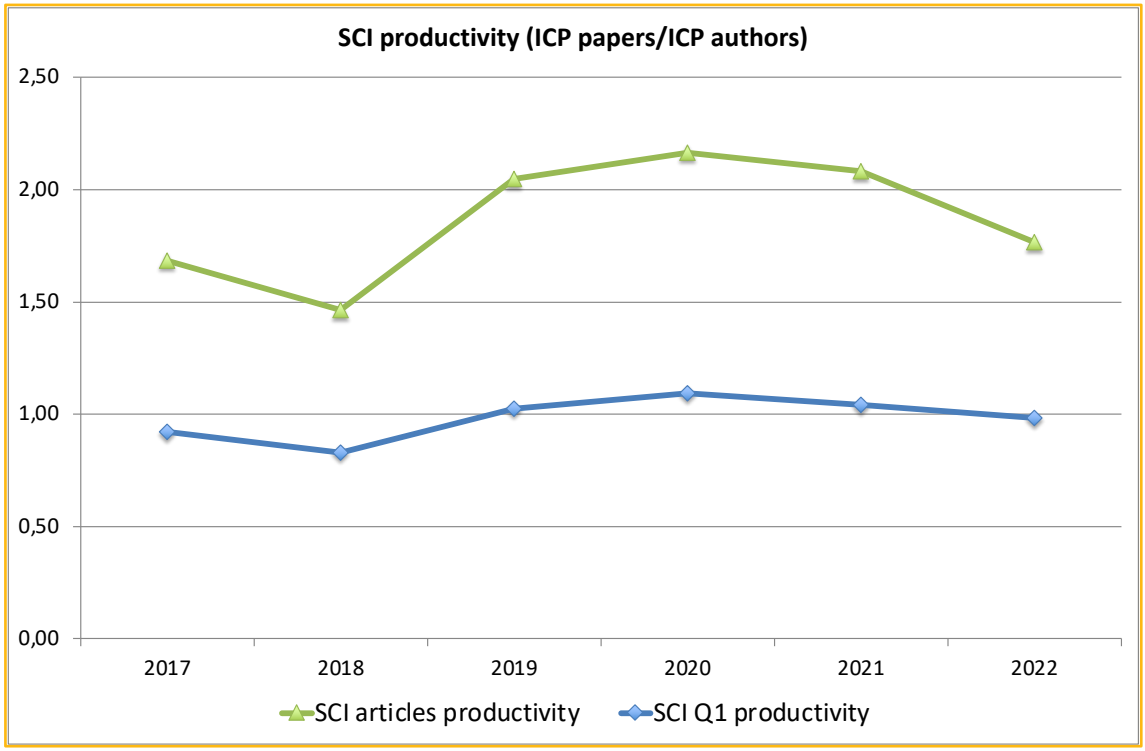
*Green open-access excluded.



With regard to the open access ratio (including only gold and bronze open access), the 2022 percentage (40%) is lower than that of 2021 (51%) and the average of the five preceding years (46%). It should be stressed that these figures do not take into account papers published using green open access (such as postprints subsequently posted in digital repositories). If these where included, the figures would be much higher. The decrease during the last couple years is probably attributable to multiple factors, one of them being the fact that in 2022 many ICP researchers contributed to a special volume in honor of Jorge Morales (members of the ICP Scietific Advisory Board), which was published in a hybrid subscription journal (*Historical Biology*). The fact that agreements between major publishers and Spanish universities do not apply to CERCA centers such as the ICP is a problem in this regard, as many of these papers could have been published in gold open access if such agreements applied.

SCI PRODUCTIVITY (2017–2021 vs. 2022)							
METRICS	2017	2018	2019	2020	2021	AVERAGE	2022
ICP SCI authors	38	41	41	43	48	**42.2**	**56**
SCI productivity	1.68	1.46	2.05	2.16	2.08	**1.90**	**1.77**
Q1 productivity	0.92	0.83	1.02	1.09	1.04	**0.99**	**0.98**





Productivity. The number of ICP authors (including researchers, research associates, collaborators, etc.) is lower than that of SCI papers published each year. However, the number of ICP authors has steadily increased since 2017, and particularly in 2021 and 2022. As a result, SCI productivity reached a peak and 2020 and has subsequently decreased, with the 2022 figure (1.8) being sligherly lower than the average of the five preceding years (1.9). The sample applies

to first quartile SCI productivity, except that the 2022 figure (1.0) is virtually identical to the average of the five preceding years. The increase in ICP authors is largely attributable to competitive postdoc projects, and there is normally a delay of 1-2 years until new researchers publish more contributions with ICP affiliations. So, it is likely that productivity will improve in the next couple years.

Leadership, collaborations, and internationalization

Methods. To measure leadership in publication, this report focuses on corresponding authors with ICP affiliation in SCI papers. The following metrics were computed:

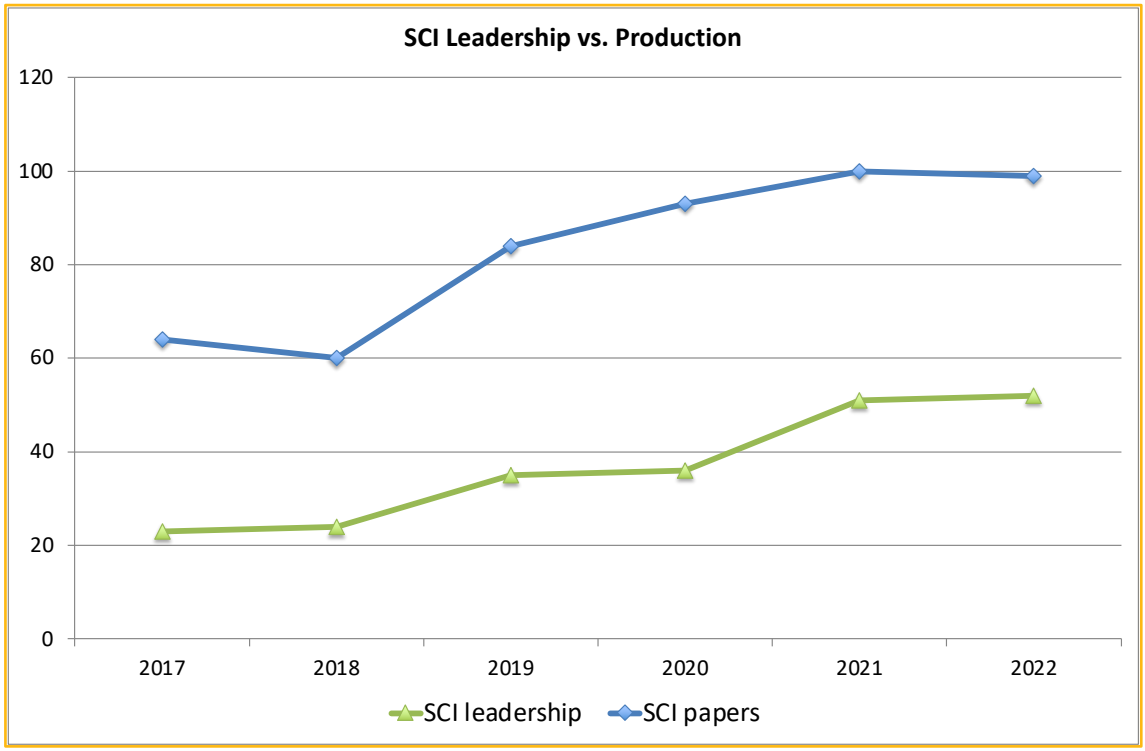
- SCI leadership = total number of SCI papers with ICP corresponding author.
- Q1 leadership = total number of Q1 papers with ICP corresponding author.
- SCI leadership ratio = SCI leadership / SCI x 100 (in %).
- Q1 leadership ratio = Q1 leadership / SCI x 100 (in %).

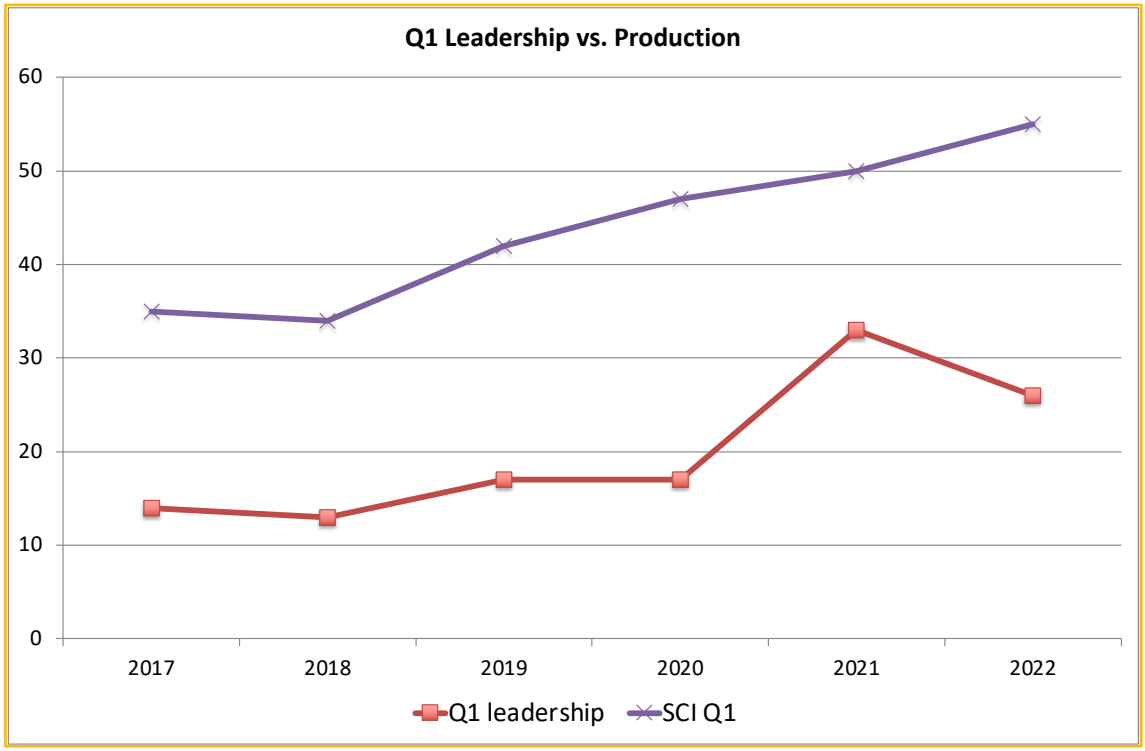
In turn, to measure collaborations (with emphasis on international ones), SCI papers are divided into three categories based on the affiliations of the coauthors from other institutions (i.e., excluding other affiliations of ICP researchers or research associates with more than a single affiliation):

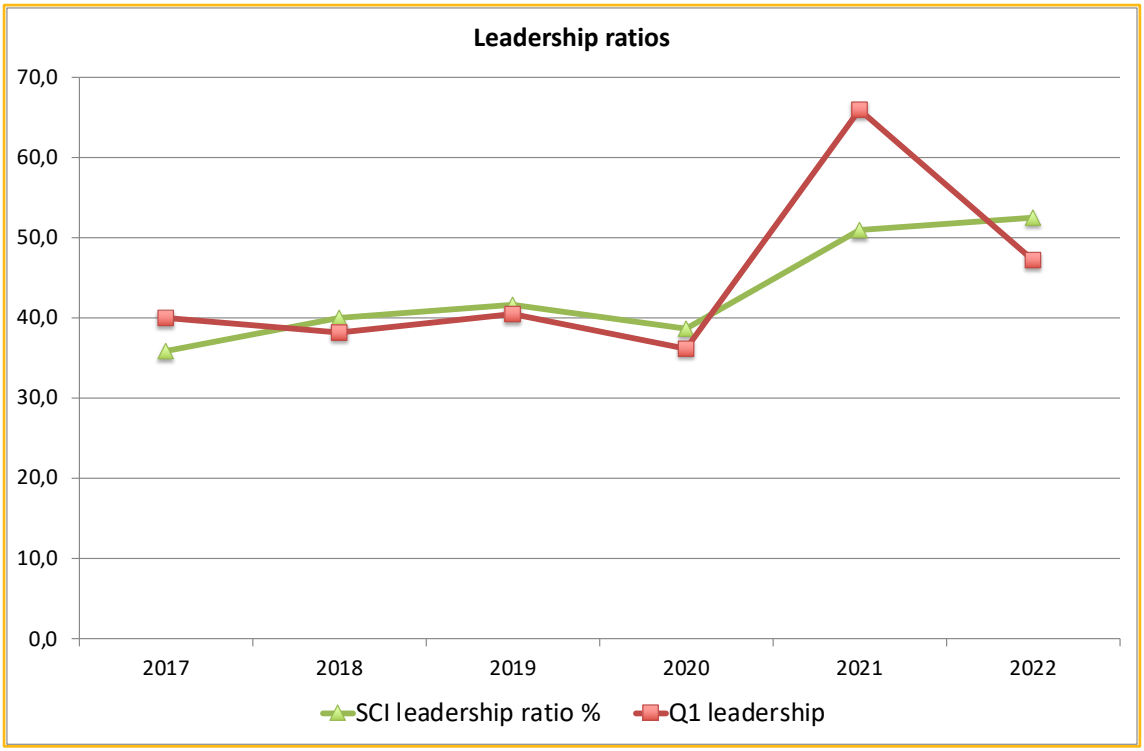
- ICP only: without other affiliations.
- Non-international collaborations: with other national affiliations.
- International collaborations: with foreign affiliations (irrespective of whether there are also other national affiliations or not).

Leadership. In terms of number of SCI and Q1 papers published with ICP leadership, the figures for 2022 are well above the average for the past five years (52 and 26 vs. 34 and 19, respectively). SCI leadership is indeed higher than ever in ICP history (albeit similar to the 2021 figure), whereas Q1 leadership was greater in 2021. In relative terms, the 2022 leadership ratios for both SCI and Q1 papers are also very satisfactory, being above the average of the five preceding years (53% and 47% vs. 42% and 44%, respectively). This confirms the leadership recovery initiated in 2020 after a significant drop in the previous years.

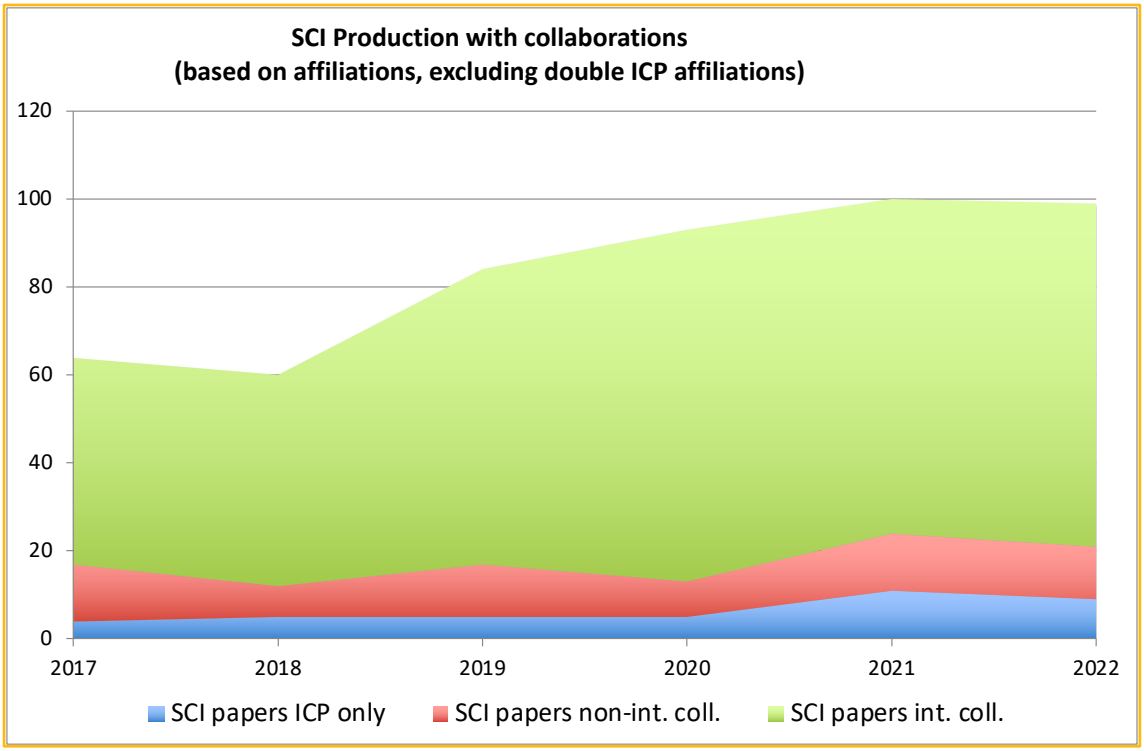
SCI LEADERSHIP (2017–2021 vs. 2022)							
Leadership	2017	2018	2019	2020	2021	Average	2022
SCI leadership	23	24	35	36	51	**33.8**	**52**
Q1 leadership	14	13	17	17	33	**18.8**	**26**
SCI leadership ratio (%)	35.9	40.0	41.7	38.7	51.0	**41.5**	**52.5**
Q1 leadership ratio (%)	40.0	38.2	40.5	36.2	66.0	**44.2**	**47.3**


SCI Leadership vs. Production
120
100
80
60
40
20
0
2017
2018
2019
2020
2021
2022
SCI leadership
SCI papers

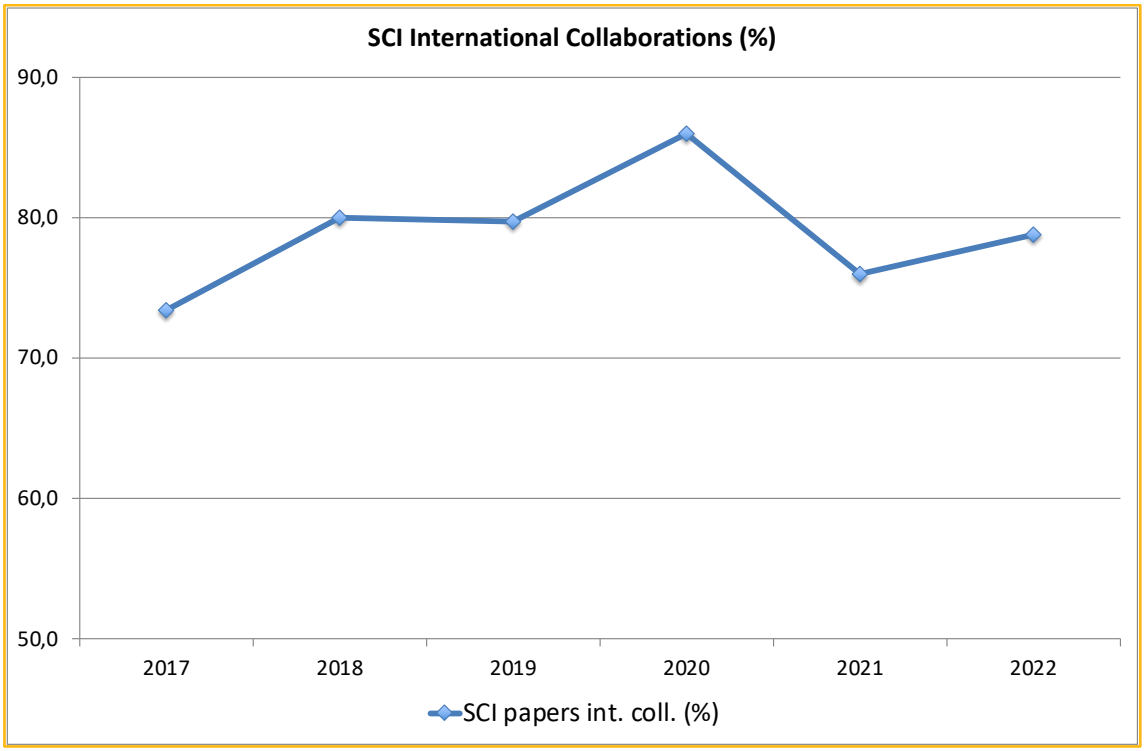

Q1 Leadership vs. Production
60
50
40
30
20
10
0
2017
2018
2019
2020
2021
2022
Q1 leadership
SCI Q1



Collaborations. During the last years there was a clear trend toward increasing international collaborations in SCI papers, which reached a peak in both absolute and relative terms in 2020. In 2021 and 2022, international collaborations somewhat decreased, with the 2022 percentage being virtually identical to that of the five preceding years (79%).



SCI PRODUCTION WITH COLLABORATIONS (2017–2021 vs. 2022)							
PRODUCTION ACCORDING TO COLLABORATIONS	2017	2018	2019	2020	2021	AVERAGE	2022
SCI papers – ICP only	4	5	5	5	11	**6.0**	**9**
SCI papers – non-international collaboration	13	7	12	8	13	**10.6**	**12**
SCI papers – international collaboration	47	48	67	80	76	**63.6**	**78**
SCI papers – ICP only (%)	6.3	8.3	6.0	5.4	11.0	**7.5**	**9.1**
SCI papers – non-international collaboration (%)	20.3	11.7	14.3	8.6	13.0	**13.2**	**12.1**
SCI papers – international collaboration (%)	73.4	80.0	79.8	86.0	76.0	**79.3**	**78.8**



PhD Dissertations

A single PhD dissertation of an ICP predoctoral researcher/PhD student was finished in 2022 at the ICP (this figure should not be mistaken with the number of completed theses supervised by ICP researchers, which further include four additional dissertations performed by PhD candidates from other institutions; see the relevant subsection on supervision later in this document). It is the following:

- **Teresa Calderón:** "Growth dynamics and life history inferences in extant deer from histological analysis of bone tissues" | Supervisor: M. Köhler (ICP).

Fieldwork

Paleontological fieldwork constitutes an essential component of the research performed by ICP researchers, given that fossils constitute the basic raw data for our research. Even if fieldwork results are not immediately reflected in ICP publications, this activity further results in

the corresponding field reports and memoirs that are supplied to the Archeological and Paleontological Survey of the Culture Department of the Generalitat de Catalunya.

The following programmed paleontological interventions were performed in 2022 by the ICP, in most cases being partially funded by the new fieldwork grants from the Culture Department of the Generalitat de Catalunya for the quadrennium 2022–2025:

- **Alt Berguedà** [Expedient ARQ003INVE-537-2022 (437 CU00050 N857, 281, 223, 640 2022-1-38056)]: Prospection | Municipality: Vallcebre, Fígols, Cercs, and Saldes | Age: Late Cretaceous | Directors: R. Gaete.
- **Berguedà** [Expedient ARQ003INVE-553-2022 (437 CU00050 N196 2022-1-38058)]: Prospection | Municipality: Castellar de n'Hug and Guardiola de Berguedà | Age: Permo-Triassic | Directors: J. Fortuny & C. de Jaime-Soguero.
- **Coll de Creus-la Trava** [Expedient ARQ003INVE-517-2022 (437 CU00050 N874 2022-1-38006)]: Excavation, prospection, and sampling | Municipality: la Vansa i Fórnols | Age: Early Permian | Directors: J. Fortuny, A. Bolet & E. Mujal.
- **Cova d'Anes** [Expedient ARQ003INVE-524-2022 (437 CU00050 N107 2022-1-38042)]: Excavation, prospection, and sampling | Municipality: Bellver de Cerdanya | Age: Quaternary | Directors: M. Prat-Vericat & C. Tura-Poch.
- **Creu de Conill** [Expedient CLT_2022_EXP_ARQ002PREV_00003174 (R/N 470 K121 N-810 2022-1-37542)]: Surveillance, excavation, documentation, and sampling | Municipality: Terrassa | Age: Late Miocene | Directors: M. Pina, J. Abella & À.H. Luján.
- **Els Casots** [Expedient ARQ003INVE-486-2022 (437 CU00050 N790 2022-1-37528)]: Excavation, sampling, and documentation | Municipality: Subirats | Age: Middle Miocene | Directors: I. Casanovas-Vilar, À.H. Luján & J. Abella.
- **Els Nerets** [Expedient ARQ003INVE-439-2022 (437 CU00050 N845 2022-1-37990)]: Excavation | Municipality: Tremp | Age: Late Cretaceous | Directors: B.J. Vázquez López & A.G. Sellés.
- **Espinau** [Expediet ARQ003INVE-542-2022 (437 CU00050 N073 2022-1-38084)]: Excavation | Municipality: Les Avellanes i Santa Linya | Age: Late Cretaceous | Directors: A. Prieto-Márquez.
- **Figuerola 3** [Expedient ARQ003INVE-549-2022 (437 CU00050 N164 2022-1-38088)]: Excavation | Municipality: Camarasa | Age: Late Cretaceous | Directors: A.G. Sellés & B. Vila.
- **Les Gavarres** [Expedient ARQ003INVE-501-2022 (437 CU00050 N845 2022-1-37994]: Excavation | Municipality: Tremp | Age: Late Cretaceous | Directors: B. Vila & Ó. Castillo-Visa.
- **Mirador del Cretaci** [Expedient ARQ003INVE-602-2022 (437 CU00050 N236 2022-1-38529)]: Surveillance and conservation-restoration | Municipality: Coll de Nargó | Age: Miocene | Directors: I. Fernández & A. Vallès-Oltra.

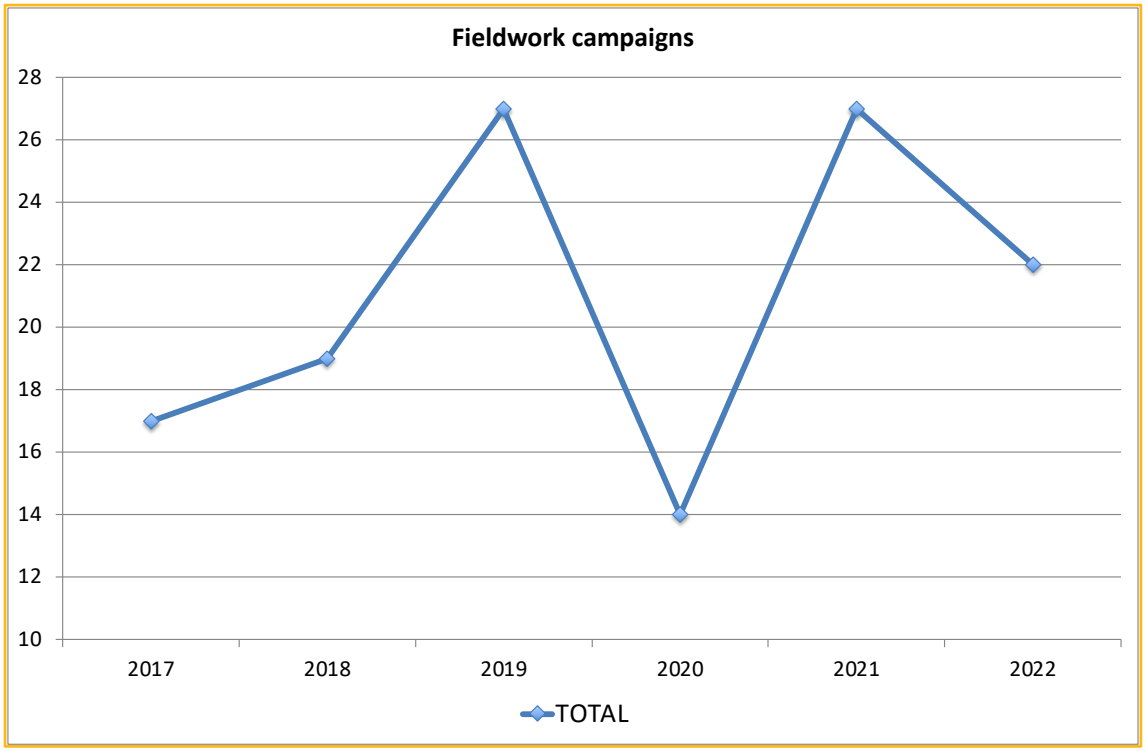
- **Montseny** [Expedient CLT_2022_EXP_ARQ002Prev_3304 (R/N 470 K121 NB 2022/1-37662)]: Prospection | Municipality: Montseny, Tagamanent, Aiguafreda, el Brull, Centelles, Figaró-Montmany | Age: Permo-Triassic | Directors: J. Fortuny & A. Bolet.
- **Palanca de Noves-Tost** [Expedient ARQ003INVE-582-2022 (437 CU00050 N610 2022-1-38403))]: Prospection | Municipality: Ribera d'Urgellet | Age: Permo-Triassic | Directors: E. Mujal, C. de Jaime-Soguero, & A. Bolet.
- **Pallars Jussà** [Expedient ARQ003INVE-552-2022 (437 CU00050 N355, 845, 319 i 001 2022-1-38104)]: Prospection | Municipality: Isona i Conca Dellà, Tremp, Gavet de la Conca, i Abella de la Conca | Age: Late Cretaceous | Directors: R. Gaete.
- **Pedrera de Meià** [ARQ003INVE-535-2022 (437 CU00050 N914 2022-1-38055)]: Excavation, prospection, and sampling | Municipality: Vilanova de Meià | Age: Early Cretaceous | Directors: A. Gil-Delgado & À. Galobart.
- **Pobla de Segur** [Expedient ARQ003INVE-526-2022 (437 CU00050 N557 2022-1-38045)]: Prospection | Municipality: Pobla de Segur | Age: late Eocene | Directors: J. Marigó & R. Minwer-Barakat.
- **Roc de Santa-1** [Expedient ARQ003INVE-528-2022 (437 CU00050 N946 2022-1-38046)]: Sampling | Municipality: Conca de Dalt | Age: late Eocene | Directors: J. Marigó & R. Minwer-Barakat.

Additionally, the following preventive paleontological interventions was also performed (see later in the report for additional preventive fieldwork campaigns performed in the framework of service provision):

- **Mina Santa Eulàlia** [ARQ002PREV_00003439 (R/N 494/K121 N-236-2022/1-37816)]: Excavation, documentation, and consolidation-restoration-conditioning | Municipality: Coll de Nargó | Age: Late Cretaceous | Director: B. Vila & I. Fernández.
- **Llau de la Costa** [ARQ002PREV_00003465 (494/K0121-N-355-2022/1-37903)]: Consolidation | Municipality: Isona i Conca Dellà | Age: Late Cretaceous | Directors: E. Nieto & A. Vallès Oltra.

The number of paleontological interventions performed by the ICP during the last years is summarized in a table and figure below. Both the number of programmed fieldwork campaigns (17) and the total number of interventions (24; i.e., including preventive ones) are slightly above the average of the five preceding years (16 and 21, respectively).

ICP FIELDWORK (2017–2021 vs. 2022)							
PALEONTOLOGICAL INTERVENTIONS	2017	2018	2019	2020	2021	AVERAGE	2022
Programmed – ICP	13	16	21	8	22	**16.0**	**17**
Preventive – ICP	0	0	1	2	1	**0.8**	**2**
Preventive – Service provision	4	3	5	4	4	**4.0**	**5**
TOTAL	17	19	27	14	27	**20.8**	**24**


Fieldwork campaigns
28
26
24
22
20
18
16
14
12
10
2017
2018
2019
2020
2021
2022
TOTAL

FUNDRAISING

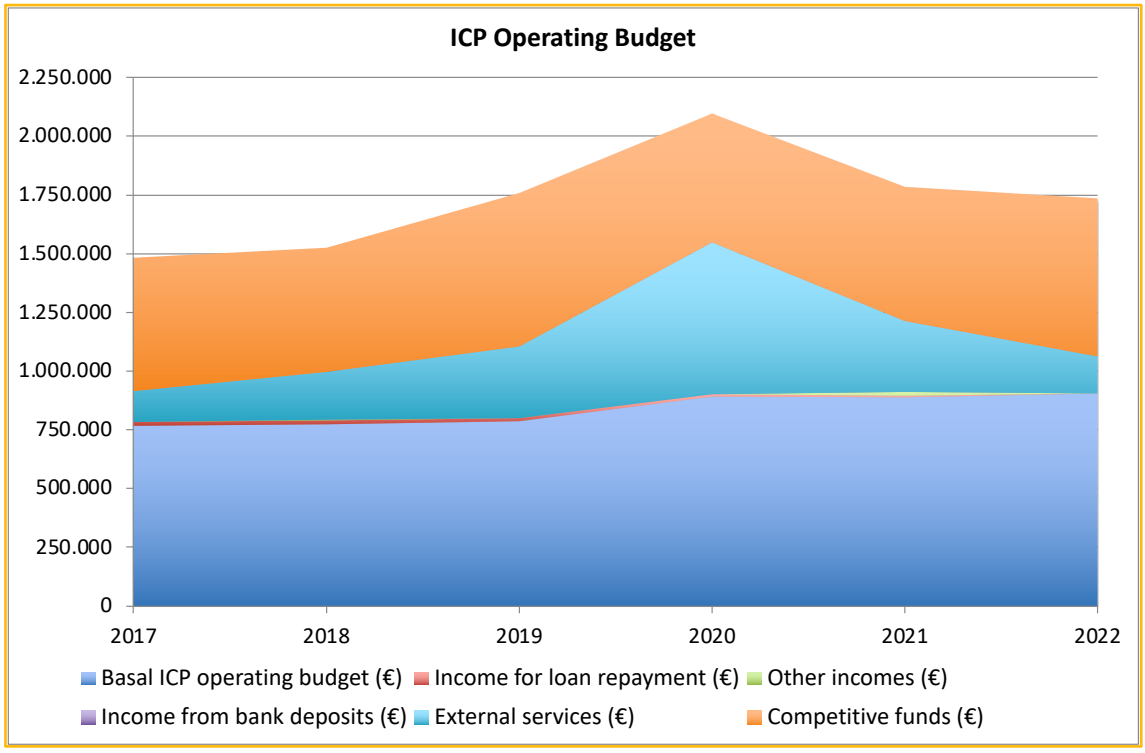
Inspiration and innovation when seeking financial support

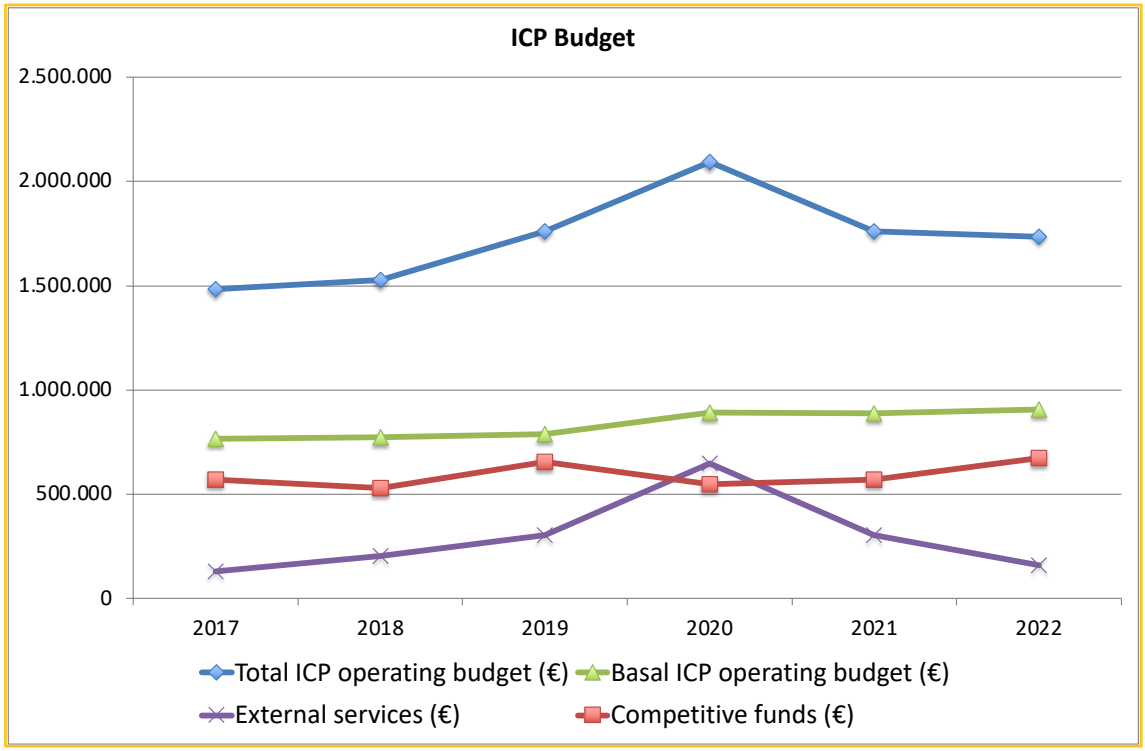
Competitive funds and provision of services

The ICP operating budget (i.e., excluding investments) includes the basal budget endowed by the Generalitat de Catalunya (mostly from the Research & Universities Department, except for 75,000 € transferred by the Culture Departament) as well as the monetary income obtained by the ICP from other sources. The latter can be divided into several categories, such as competitive funds, revenues generated by the provision of external services, or income from bank deposits (although the latter is negligible). As in the last years, the two main sources of income for the ICP in 2022 (other than its basal budget) consisted of competitive funds and the provision of external services. Competitive funds refer to projects and grant applications that are evaluated on a competitive basis by external funding agencies, either public or private. A vast majority of competitive funds are associated with research activity, although sometimes they are associated to other activities performed at the ICP, such as research support or scientific dissemination and outreach. Revenues provided by the provision of external services to third parties (either public or private) are not competitive in this sense, although they imply competition with other institutions as well as private companies in the framework of market rules. These activities are mostly related to knowledge transfer, and therefore will be discussed in further detail later in this document. Taken together, competitive funds and external services ultimately reflect the fundraising capacity of the ICP, and are worth being reported here together before going into their particulars.

Total operating budget. Since the last significant decrease of the basal operating budget from 2012 to 2013, the total operating budget of the ICP had remained quite stationary until 2017-2018, when it started to increase slightly, reaching a peak in 2020 that was largely attributable to service provision. The total operating budget of 2022 (1.74 M€) is only minimally higher than the average of the five preceding years (1.73 M€).

OPERATING BUDGET (2017–2021 vs. 2022)							
Budgetary Incomes	2017	2018	2019	2020	2021	Average	2022
Total operating budget (€)	1,482,826	1,526,060	1,759,511	2,095,010	1,762,531	**1,725,188**	**1,735,089**
Basal operating budget (€)	765,500	774,070	787,470	890,206	889,332	**821,316**	**906,355**
Income for loan repayment (€)	19,467	15,091	12,576	10,309	5,176	**12,524**	**0**
Other incomes (€)	0	4,676	111	878	17,716	**4,672**	**0**
Income from bank deposits (€)	0	0	0	7	75	**17**	**0**
Provision of external services (€)	128,416	202,317	303,574	645,465	302,086	**316,372**	**157,088**
Competitive funds (€)	569,443	529,905	655,780	548,146	569,062	**560,321**	**671,646**

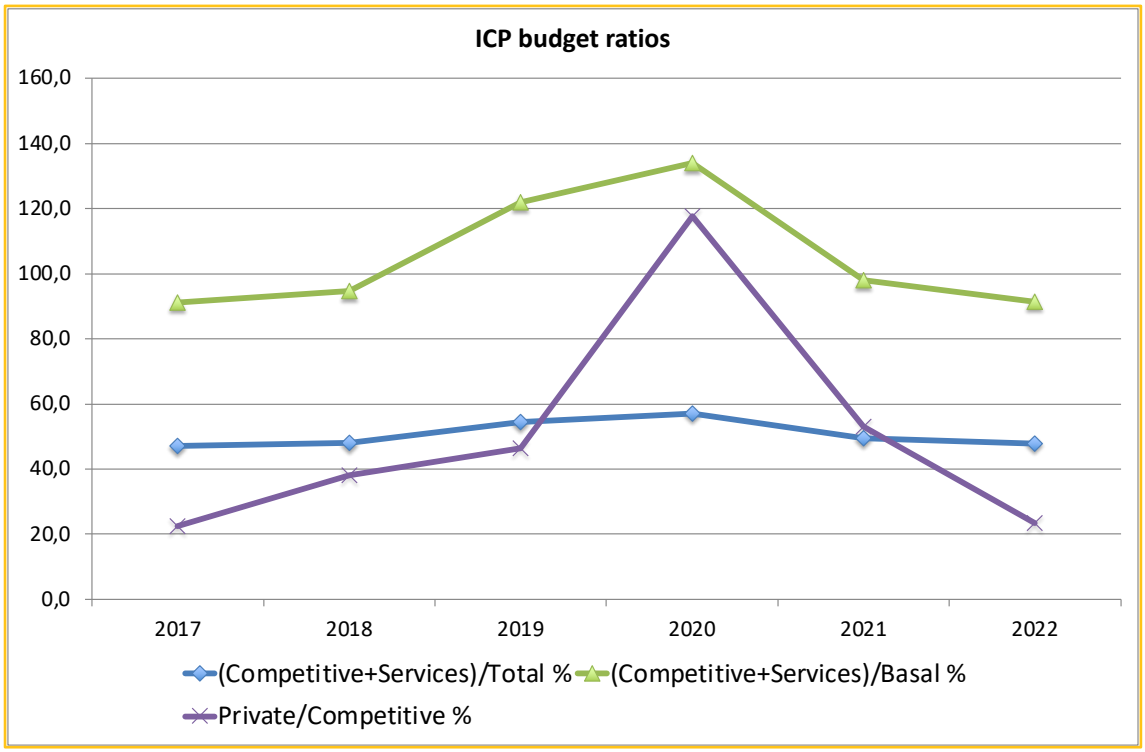




Budget ratios. Competitive funds and external services can be considered together relative to the total and basal budgets by means of percentual ratios. In 2019, competitive funds + service provision represented for the first time more than 50% of the total budget (i.e., taken together they were higher than the basal budget). These figures improved further in 2020 but decreased slightly in 2021 and 2022, owing to the decrease in service provision relative to

competitive funds (which is not surprising, given that the 2020 figure of service provision was extraordinary, the best ever in ICP history). All in all, the 2022 figures fall a bit short of being satisfactory, with competitive+external funds representing slightly less than half of the total operating budget (48%) or about 91% of the basal budget. Note that this is attributable to a decrease of service provision relative to competitive funds (reaching levels comparable only to 2017 among the previous five years), so the aforementioned ratios could easily improve with a slight increase in service provision in the future. In any case, the average of the five preceding years for the aforementioned ratios is slightly more satisfactory (51% and 108%, respectively).

BUDGET RATIOS (2017–2021 vs. 2022)							
Ratios	2017	2018	2019	2020	2021	Average	2022
(Competitive+External services)/Total %	47.1	48.0	54.5	57.0	49.4	**51.2**	**47.8**
(Competitive+External services)/Basal %	91.2	94.6	121.8	134.1	98.0	**107.9**	**91.4**
Private/Competitive %	22.6	38.2	46.3	117.8	53.1	**55.6**	**23.4**



Competitive funding sources

Spanish Government. Most of the competitive funds for research at the ICP come from the Spanish Agencia Estatal de Investigación (AEI)—currently within the Ministerio de Ciencia e Innovación (MCIN)—by means of multiannual R+D+I projects. The following projects were active in 2022:

- "How to build a giant? Life history and optimality theory are central to unravel the evolution towards ever larger insular endemics" (PID2020-117118GB-I00) | P.I.: M. Köhler, J. Fortuny | Duration: 2021–2025 (4 years).
- "Paleobiodiversity and paleoecology of Miocene vertebrate faunas during high resolution intervals in the Vallès-Penedès Basin" (PID2020-117289GB-I00) | P.I.: D.M. Alba, I. Casanovas-Vilar | Duration: 2021–2025 (4 years).
- "The Cenozoic primates from the Iberian Peninsula and their contribution to the reconstruction of the evolutionary history of the group" (PID2020-116908GB-I00) | P.I.: S. Moyà-Solà, J. Marigó | Duration: 2021–2025 (4 years).
- "Vertebrate evolution, biogeography, and paleoecology in an ancient insular ecosystem" (PID2020-119811GB-I00) | P.I.: B. Vila, A. Prieto-Márquez | Duration: 2021–2024 (3 years).
- "A natural open museum in the Pyrenees: virtual reality experience for dissemination and conservation of the geological and cultural heritage (VIGEOCULT)" (PLEC2021-007903) | P.I.: À. Galobart | Duration: 2021–2024 (3 years).

Besides research projects, the ICP currently has a dissemination project funded by MCIN's Fundación Española para la Ciencia y la Tecnología (FECYT):

- "Paleoarte: una herramienta clave para divulgar la paleontología" (FCT-21-17552) | P.I.: P. Figuerola | Duration: 2022–2023 (1 year).

Research at the ICP is also funded by the Spanish Government by means of MCIN's cofunded contracts for postdoc ('Ramón y Cajal' and 'Juan de la Cierva') and predoc researchers and technicians. Two main types of predoctoral contracts are available, for the training of doctors (formerly Formación de Personal Investigador, FPI, depending from MCIN) and for the training of university personnel (Formación de Personal Universitario, FPU, depending from the Ministerio de Universidades). Contracts for technicians are aimed at the training of technical support personnel (Personal Técnico de Apoyo, PTA). The following grants/contracts were active in 2022 (also listed is a new RyC that started in late 2023):

- Albert Prieto-Márquez (RYC-2015-17388) | Modality: RyC researcher | Duration: 2017-2023 (5 years + 5 months of COVID extension).
- Josep Fortuny (RYC2021-032857-I) | Modality: RyC researcher | Duration: 2022-2027 (5 years).
- Arnau Bolet (IJC2018-037685-I) | Modality: JdC Incorporación researcher | Duration: 2020-2023 (3 years, terminated one month before ending on December 31, 2022).
- Andrea Villa (FJC2019-039443-I) | Modality: JdC Formación researcher | Duration: 2021-2023 (2 years, will have to resign in March 31, 2022, to take a BP).
- Saverio Bartolini Lucenti (FJC2020-045882-I) | Modality: JdC Formación researcher | Duration: 2022-2024 (2 years, terminated after two months on May 31, 2022).
- Florian Bouchet (PRE2018-083299) | Modality: FPI predoc | Duration: 2019–2023 (4 years).

- Georgina Raventós-Izard (PRE2021-099116) | Modality: FPI predoc | Duration: 2022–2026 (4 years).
- Bernat-Josep Vázquez López (PRE2021-097744) | Modality: FPI predoc | Duration: 2022–2026 (4 years).

Generalitat de Catalunya. A large proportion of the competitive funding provided by the Generalitat de Catalunya in 2022 comes from various fieldwork grants from the Department of Culture, active from January 1, 2022 until the end of 2025 (although they were not resolved until November 2022). They are the following:

- "La transició Aragonià/Vallesià a la conca del Vallès-Penedès" (CLT0009_22_000018) | P.I.: D.M. Alba | Duration: 2022–2025.
- "El final d'una Era i el sorgiment dels ecosistemes moderns" (CLT0009_22_000020) | P.I.: J. Fortuny | Duration: 2022–2025.
- "Evolució dels ecosistemes dels Pirineus Orientals i àrees adjacents durant el Pleistocè" (CLT0009_22_000023) | P.I.: J. Madurell-Malapeira | Duration: 2022–2025.
- "El jaciment paleontològic dels Casots, un ecosistema de fa 16 milions d'anys II" (CLT0009_22_000019) | P.I.: I. Casanovas-Vilar | Duration: 2022–2025.
- "El Paleogen català i l'origen dels primats" (CLT0009_22_000022) | P.I.: J. Marigó | Duration: 2022–2025.
- "El Cretaci continental del pirineu meridional català: ecosistemes i evolució faunística" (CLT0009_22_000021) | P.I.: À. Galobart | Duration: 2022–2025.

Also remarkable are the grants provided by the Catalan Government to the ICP, generally in relation to the management the ICP Museum and collections.

- "Actualització del registre, inventari, documentació, catalogació i digitalització de la Col·lecció de l'Institut Català de Paleontologia Miquel Crusafont, any 2022" (CLT052/22/000013) | OSIC, Departament de Cultura, Generalitat de Catalunya | Duration: 2022.

Research at the ICP is also funded by the Agència de Gestió d'Ajuts Universitaris i de Recerca (AGAUR) of the Department of Business and Knowledge (Generalitat de Catalunya) by means of a series of predoctoral and postdoctoral ('Beatriu de Pinós') grants (three new BP grants that will start in 2023 are also included below) as well as Investigo technician contracts (which started in late 2022):

- Leonardo Sorbelli (2019 FI_B 00579) | Modality: FI predoc | Duration: 2019–2022 (3 years + 5 months of COVID extension).
- Chabier De Jaime-Soguero (2020 FI_B 00472) | Modality: FI predoc | Duration: 2020–2023 (3 years).

- Oriol Monclús Gonzalo (2021 FI_B 00524) | Modality: FI predoc | Duration: 2021–2024 (3 years).
- Kelly Ann Vega Pagán (2022 FI_B 00362) | Modality: FI predoc | Duration: 2022–2025 (3 years).
- Júlia Arias-Martorell (2018 BP 00058) | Modality: BP postdoc | Duration: 2020–2023 (3 years + 5 months of COVID extension).
- Àngel H. Luján (2019 BP 00154) | Modality: BP postdoc | Duration: 2021–2023 (3 years).
- Carmen Nacarino-Meneses (2021 BP 00078) | Modality: BP postdoc | Duration: 2023–2025 (3 years).
- Ornella Bertrand (2021 BP 00042) | Modality: BP postdoc | Duration: 2023–2026 (3 years).
- Andrea Villa (2021 BP 00038) | Modality: BP postdoc | Duration: 2023–2026 (3 years).
- Laia Garcia Escolà (2022 INV-1 00027 // 100027TC5) | Modality: Investigo technician | Duration: 2022–2024 (2 years).
- Marc Misas-Alcántara (2022 INV-1 00027 // 100027TC2) | Modality: Investigo technician | Duration: 2022–2024 (2 years).
- Sara G. Arranz (2022 INV-1 00027 // 100027TC1) | Modality: Investigo technician | Duration: 2022–2024 (2 years).
- Júlia Jiskoot (2022 INV-1 00027 // 100027TC3) | Modality: Investigo technician | Duration: 2022–2024 (2 years).
- Marina Vizcarro (2022 INV-1 00027 // 100027TC4) | Modality: Investigo technician | Duration: 2022–2024 (2 years).

It is also noteworthy that four research groups of the ICP are currently recognized as Consolidated Research Group by AGAUR (although only one has associated funding). These groups are valid since January 1, 2022, although they the call's resolution was not issued until January 2023:

- “Neogene and Quaternary Vertebrate Paleobiodiversity (NQVP)” (2022 SGR 00620) | P.I.: D.M: Alba | Duration: 2022–2024. With funding.
- “Evolutionary Paleobiology (EPB)” (2022 SGR 01184) | P.I.: J. Fortuny | Duration: 2022–2024.
- “Paleoprimatologia i paleontologia humana (PIPH)” (2022 SGR 01188) | P.I.: J. Marigó | Duration: 2022–2024.
- “Reptilian Ecosystems” (2022 SGR 01192) | P.I.: À. Galobart | Duration: 2022–2024.

Finally, the ICP also has a research project funded by the Departament de la Presidència of the Generalitat de Catalunya:

- “Un milió d'anys de canvis climàtics als Pirineus” (PRE124/21/000011) | P.I.: J. Madurell-Malapeira | Duration: 2021–2022.

Other public funds. In 2022 the ICP also received a small nominative grant from the city council of Subirats in relation to the management and excavation of the els Casots fossil site:

- "Els Casots" (Expedient 2022_1624) | P.I.: I. Casanovas-Vilar | Duration: 2022.

Furthermore, during 2022 the ICP received several grants from the Consell Insular de Mallorca:

- "Mallorca abans dels dinosaures: estudi dels ecosistemes continentals del Permià i Triàsic, amb especial èmfasi en les restes de vertebrats" (Sub 15_20-R25384) | P.I.: J. Fortuny | Duration: 2020-2022.
- "Restauració d'un esquelet d'un rèptil captorínid juvenil del Permià inferior (270 milions d'anys) del jaciment del torrent de na Nadala (Mallorca) recuperat l'any 2019" (Exp. 288/2022) | P.I.: J. Fortuny | Duration: 2022.
- "Restauració de les restes de macrovertebrats de l'Eocè superior (35,7 milions d'anys) provinents de la mina de "San Cayetano" (Selva, Mallorca) de la col·lecció Joan Bauzá (Museu Balear de Ciències Naturals)" (Exp. 289/2022) | P.I.: J. Marigó | Duration: 2022.

European funds. In 2022 the ICP was awarded its first project from the EU in the form of an MSCA Postoctoral Fellowship; it was expected to start in October 2022, but finally (due to bureaucratic issues) it was delayed until January 2023:

- David Groenewald (Proposal ID 101060666, entitled " ExtinctRecov - From paradise to mass extinction: correlating and comparing low and high latitude basins during the greatest Permian extinction events and subsequent faunal recoveries") | Modality: HORIZON-MSCA-2021-PF-01 | Duration: 2023–2024 (2 years).

Furthermore, it is noteworthy that an Innovative Training Network in which the ICP participates as partner organization was awarded started in 2020 (see https://cordis.europa.eu/project/id/861389):

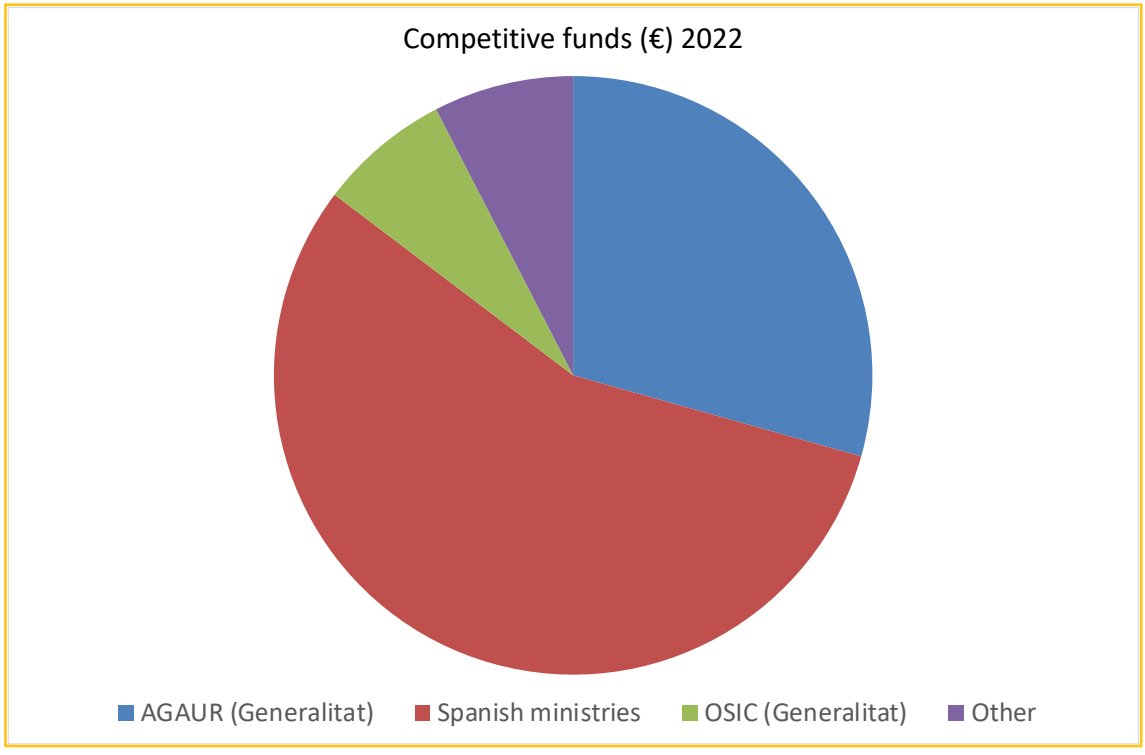
- "Palaeoproteomics to Unleash Studies on Human History (PUSHH)" (H2020-MSCA-ITN-2019; grant agreement ID: 861389) | P.I.: Enrico Cappellini (Kobenhavns Universiteit) | Duration: 2020–2024.

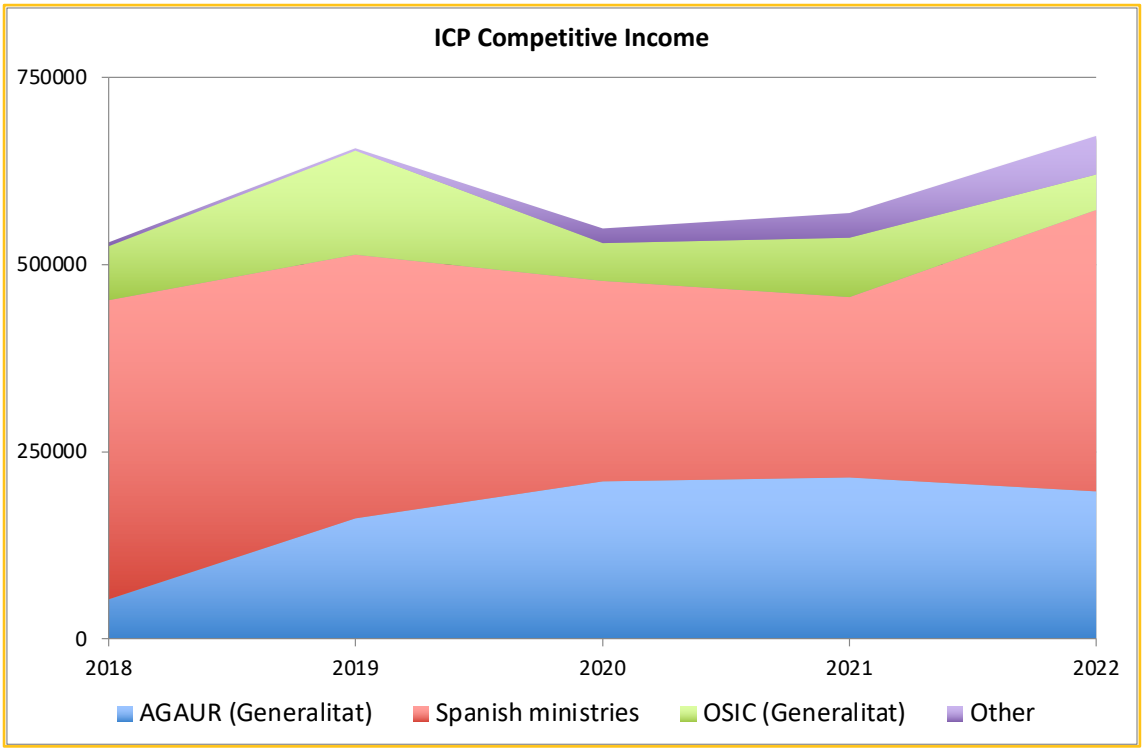
Other European funds. During 2022, the ICP managed a couple of projects from The Royal Society-Newton International Fellowship Alumni follow-on funding:

- "Hide and seek in the Triassic of the UK: in search of the earliest squamate of the fossil record" (AL\201034) | P.I.: Arnau Bolet | Duration: 2020–2022.
- "A comparison of new microvertebrate assemblages around the Jurassic-Cretaceous boundary in Spain and contemporaneous faunas from the UK" (AL\211017) | P.I.: Arnau Bolet | Duration: 2021–2022.

Comparisons. When all types of grants (research projects and contracts) are considered together, it can be seen that funding from the Spanish government in 2022 (376 k€), as expected, recovered after the decrease experienced in 2020 and 2021, representing more than 50% of the ICP competitive funds. This temporary decrease was attributable to the fact that MCIN projects terminated in 2019 or 2020, while the four new projects granted in 2021 did not start until September. In contrast, the funds from the Generalitat de Catalunya in 2022 (295 k€ when AGAUR and OSIC are considered together) were virtually the same as in 2021. It is noteworthy, in this regard, that the funds from the Culture Department for the Dinosaurs of the Pyrenees project (e.g., managemet of the Conca dellà Museum) management and outreach activities of the ICP Museum in Sabadell, formerly granted through OSIC, are since 2020 integrated in the basal funds.

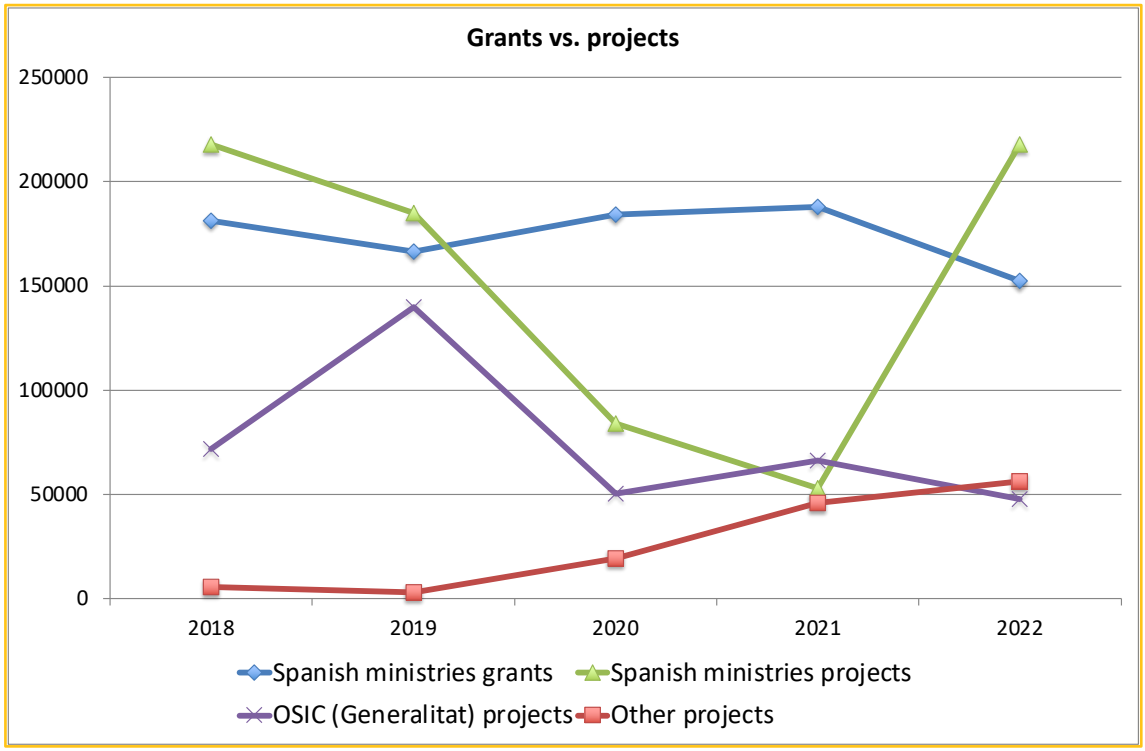
COMPETITIVE FUNDS (2018-2022)						
FUNDING AGENCIES	2018 (€)	2019 (€)	2020 (€)	2021 (€)	AVERAGE	2022 (€)
AGAUR (Generalitat)	53,292	161,442	210,600	216,010	**160,336**	**197,238**
Spanish ministries	399,307	351,642	268,061	240,900	**314,977**	**375,760**
OSIC (Generalitat)	71,720	139,697	50,285	78,811	**85,128**	**47,776**
Other	5586	3,000	19,200	33,341	**15,282**	**50,872**
TOTAL	529,905	655,780	548,146	569,062	**575,723**	**671,646**
AGAUR (Generalitat) %	10.1	24.6	38.4	38.0	**27.8**	**29.4**
Spanish ministries %	75.4	53.6	48.9	42.3	**54.7**	**55.9**
OSIC (Generalitat) %	13.5	21.3	9.2	13.8	**14.8**	**7.1**
Other %	1.1	0.5	3.5	5.9	**2.7**	**7.6**





GRANTS AND PROJECTS (2018-2022)						
FUNDING AGENCIES	2018 (€)	2019 (€)	2020 (€)	2021 (€)	AVERAGE	2022 (€)
AGAUR (Generalitat) grants	53,292	161,442	210,600	216,010	**160,336**	**197,238**
Spanish ministries grants	181,388	166,584	184,178	188,105	**180,064**	**152,593**
Spanish ministries projects	217,919	185,058	83,883	52,795	**134,914**	**217,917**
OSIC (Generalitat) projects	71,720	139,697	50,285	66,240	**81,986**	**47,776**
Other projects	5,586	3,000	19,200	45,912	**18,424**	**56,122**
SUBTOTAL grants	234,680	328,025	394,778	404,115	**340,400**	**349,832**
SUBTOTAL projects	295,225	327,755	153,367	164,947	**235,324**	**321,814**
% grants	44.3%	50.0%	72.0%	71.0%	**59.1**	**52.1%**
% projects	55.7%	50.0%	28.0%	29.0%	**40.9**	**47.9%**
TOTAL	529,905	655,780	548,146	569,062	**575,723**	**671,646**

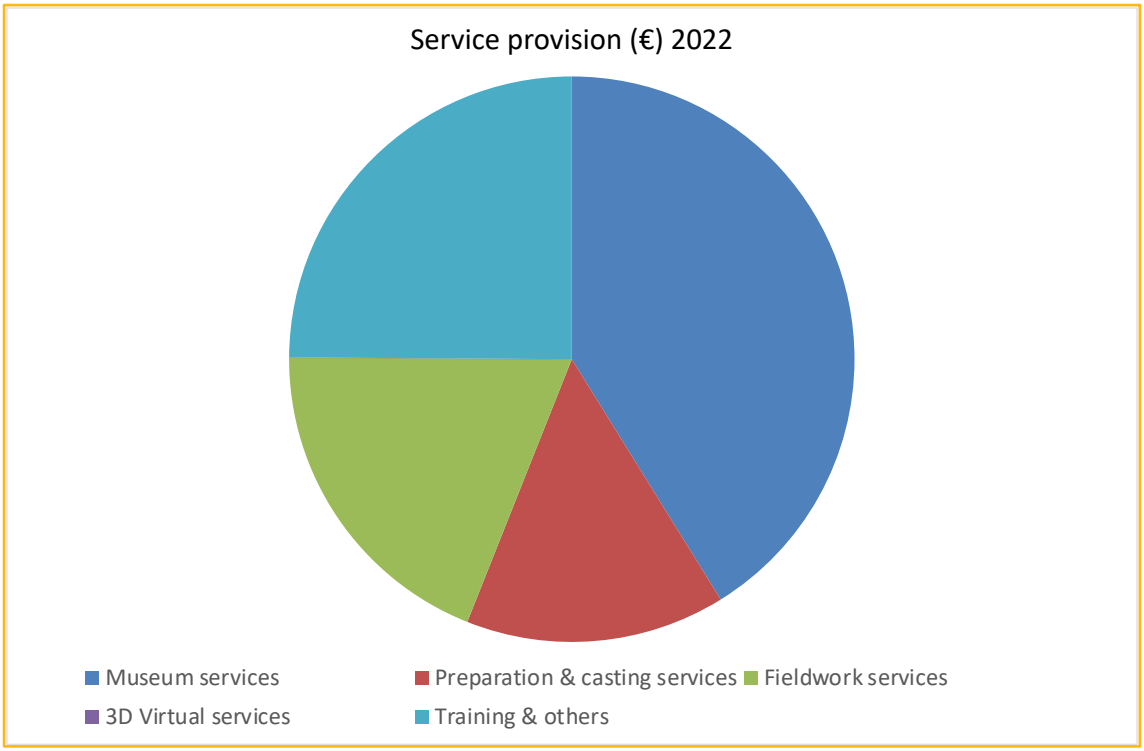
Most of the competitive income from AGAUR in 2022 corresponded to research grants (Beatriu de Pinós postdocs, FI predoctoral contracts and, to a lesser extent, Investigo technicians), except for a small proportion corresponding to support to consolidated research groups, while that from OSIC corresponded exclusively to projects. In contrast, the competitive income from the Spanish government was more devoted to both, i.e., FPI and FPU predoctoral grants, Juan de la Cierva and Ramón y Cajal contracts, together with MICIN projects. For the reasons explained above, funding from Spanish ministries considerably increased in 2022 as compared with the average of the last four years, reaching levels comparable to those in 2018.

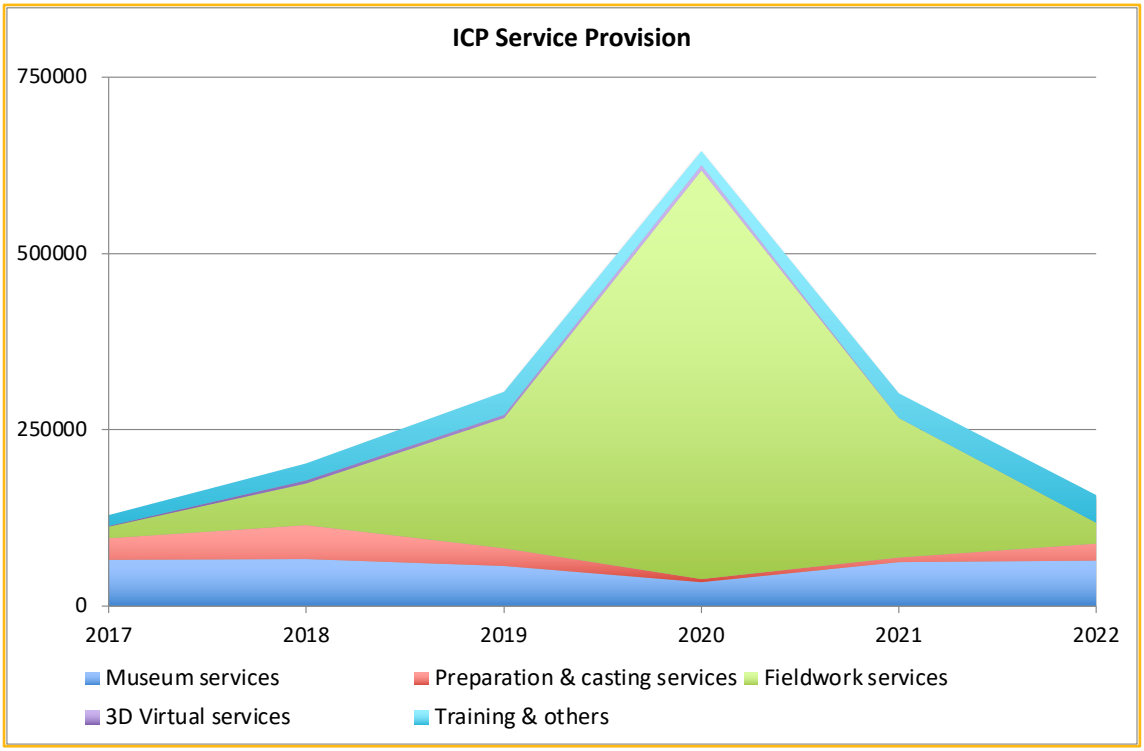


Service provision

SERVICE PROVISION (2017-2022)							
SERVICES	2017 (€)	2018 (€)	2019 (€)	2020 (€)	2021 (€)	AVERAGE	2021 (€)
Museum services	65,665	66,209	56,614	33,163	62,427	**55,413**	**64,668**
Preparation & casting services	30,067	47,794	25,529	5,002	6,061	**27,098**	**23,345**
Fieldwork services	16,586	59,808	184,726	579,462	197,681	**210,145**	**29,963**
3D virtual services	1,240	4,000	4,037	7,837	0	**4,278**	**0**
Training and others	14,858	24,506	32,669	20,000	35,917	**23,008**	**39,112**
TOTAL	128,416	202,317	303,574	645,464	302,086	**319,943**	**157,088**
Museum services %	51.1	32.7	18.6	5.1	20.7	**17.3**	**41.2**
Preparation & casting services %	23.4	23.6	8.4	0.8	2.0	**8.5**	**14.9**
Fieldwork services %	12.9	29.6	60.9	89.8	65.4	**65.7**	**19.1**
3D virtual services %	1.0	2.0	1.3	1.2	0.0	**1.3**	**0.0**
Training and others %	11.6	12.1	10.8	3.1	11.9	**7.2**	**24.9**

The decrease in service provision below half the average of the previous five years (down to levels similar to those in 2017) is attributable to the drastic decrease in fieldwork services, which experienced a marked peak in 2020. In turn, this stems from the internal dynamics of the Can Mata landfill, where paleontological surveillance activity was very restricted in 2022. It is to be expected that activity will resume again in the near future (probably 2023), thereby enabling to recover levels of service provision more similar to those in 2019 or 2021.





Among the remaining types of services provided, they all contributed significantly except for 3D virtual services, give that the CT is still broken. Museum services (which include tickets, museum shop, guided visits/workshops, etc.) performed similarly to all previous years except 2020, when they temporarily decreased owing to the lockdown and subsequent restrictions associated with the pandemic. It is noteworthy the recovery of preparation and casting services

after two years of restricted activity in 2020 and 2021. The category of 'training and others' performed well because it includes 18,000 € provided by the agreement with CERCAGINYS, but the income from the Master in Paleobiology & Fossil Record was almost null because there was no teaching during the academic year 2021-2022. The income in this regard would thus increase next year because the master resumed its normal activity in the academic year 2022-2023.

Donors and sponsors

Patronage. The ICP benefits from the patronage provided by the trustees, either in monetary form (the funds for the basal operating budget provided by the Generalitat de Catalunya) or the form of in-kind incomes received by public institutions (including the two patrons, the Generalitat de Catalunya and Universitat Autònoma de Barcelona, as well as other institutions and individuals; see below).

However, the ICP currently benefits from no philanthropical or relevant sponsorship monetary donations to perform its mission. Given the limited success of patronage and sponsorship initiatives of the ICP in previous years, the Strategic Plan emphasized the need to boost service provision as the most promising way increase the total operating budget of the ICP. Therefore, renewed efforts were devoted to fundraising from donors and sponsors in 2020, following the recruitment of a new project manager. In 2022, the latter negotiated several sponsorships (both monetary and in kind) for the NOW 25th Anniversary Meeting that was organized by the ICP at Sabadell in October 2022. The sponsors included the Ajuntament de Sabadell, the Ajuntament de Subirats, La MicroCerveseria from Sabadell, Cafès Pont, and CERCAGINYS. Although some of the costs were also covered by funds of a R+D+I project, the meeting would have incurred in deficit without those sponsors. Other sponsorship actions, which have yet to be implemented, should focus on the following three aspects: (1) to support part of the fieldwork activities performed by ICP researchers; (2) to defray part of the costs of ICP temporary exhibits that could subsequently itinerate; and (3) to renew the permanent exhibit of the ICP Museum. During 2021-2022, thanks to funding from the Culture Department of the Generalitat de Catalunya, a museological plan to remodel the ICP exhibit in the following years was elaborated. Later in 2022, after a tendering process, the elaboration of the museographical plan for the new exhibit (scheduled for 2023) was awarded to the company Intervento. Once the museographical plan is finished in 2023, it will be the time to contact potential sponsors to secure the necessary funds to accomplish the remodeling, as those that will be provided by the Culture Department might not be enough.

In-kind income. The in-kind income received by the ICP during 2022 includes the following:

- Two ICREA research professors are seconded to the ICP: Prof. Salvador Moyà-Solà, Leader of the Paleoprimatology & Paleoanthropology Research Group; and Prof. Meike Köhler, Head of the Evolutionary Paleobiology Ara and Leader of the Life History Evolution Research Group.

- Four civil servants of the Generalitat de Catalunya are ascribed to the ICP: Dr. Àngel Galobart, Head of the Mesozoic Research Area and Leader of the Dinosaurs Ecosystems Research Group; Teresa Esquirol, Head of the Museum Area; Teresa Requena, archivist and documentalist; and Manel Llenas, maintenance and field technician.
- The ICP researchers also access to the Scientificotechnical Services of the UAB at reduced fees. The UAB also used to grant to the ICP personnel access to the UAB digital library through the UAB network to which the ICP is connected. Nevertheless, such an access was unilaterally interrupted in 2022 (except for PhD students and predoctoral researchers that are registered to an UAB doctoral program). According to the university, access to its digital library can only be reinstated to ICP researchers that are teaching collaborators (either on an individual basis or by virtue of an institutional agreement between the UAB and the ICP, which applies to many of them), or else that suscribe an agreement to become linked to the UAB (which applies to no one at the moment).
- The Universitat Autònoma de Barcelona, by means of its Library Services, allows the ICP to use its digital repository ('Dipòsit Digital de Documents de la UAB', DDD) to host its open access research outputs in a distinctive collection (https://ddd.uab.cat/collection/icp) that highlights the singularity of the ICP.
- The Universitat Autònoma de Barcelona defrays part of the direct costs generated by the ICTA-ICP building (maintenance, cleaning, surveillance, concierge service, electricity, water, conditioning, etc.) that are attributable to the ICP (30.44%), by virtue of a five-year agreement that regulates the use of premises and which was signed in December 2016 with retroactive effects back to June 2014. In particular, the ICP assumes up to 80,000 €/yr, and the UAB pays the rest, for a period of five years that can be extended by mutual agreement of the parties. At the end of 2021, an agreement was reached by the UAB to extend this agreement five additional years until the end of 2026, with the same conditions.
- The Generalitat de Catalunya lends the ICP the use of the building in Sabadell where the ICP Museum and several premises for researchers and technicians are located, as well as of the Can Llobateres parcel (where the homonymous site and screen-washing facilities are located). This real estate was formerly owned by the Diputació de Barcelona and was transferred to the Generalitat de Catalunya in 2008, to be operated by the ICP indefinitely.
- The Ajuntament de Sabadell lends to the ICP the use of municipal premises to be used as a storehouse for unprepared fossil material.
- Multiple individual volunteers help the ICP personnel with several administrative, communication and technical tasks.

RESEARCH SUPPORT AND KNOWLEDGE TRANSFER

Multiple areas with vocation of service

Research support

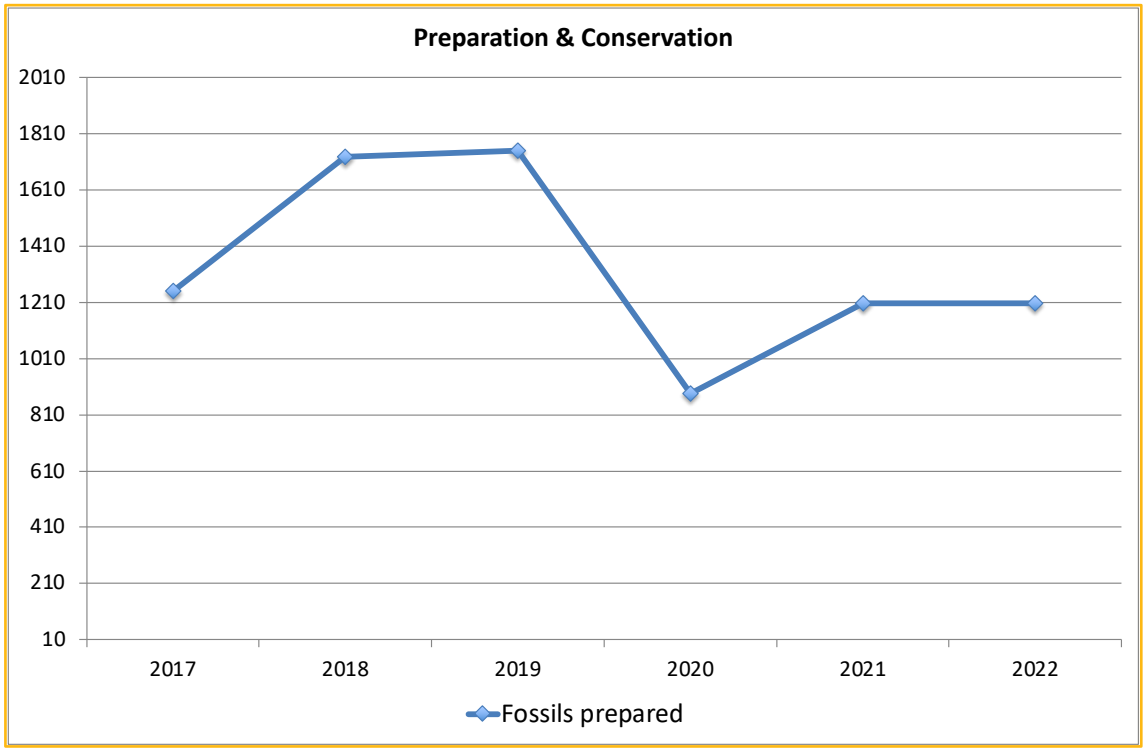
The paleontological services provided by various areas of the Research Support & External Services Department are fundamental for accomplishment of the research aims of the research groups of the ICP. Furthermore, as evidenced in the previous section, the Preparation & Conservation Area and the Fieldwork & Collections Management Area are very important from the viewpoint of knowledge transfer as well, by means of the provision of external services. Knowledge transfer activities, however, are not restricted to external services that result in monetary revenues, since they further include a series of other activities that are mostly related to training as well as outreach activities performed at the ICP Museum and beyond. Below, the activities restricted to research support and reported first, and subsequently we focus on knowledge transfer activities divided into two main categories: training and paleontological services.

Preparation and conservation. During 2022, in the framework of the support provided to ICP researchers and service provision to companies and other entities, the preparator technicians of the Preparation & Conservation Area prepared 1,208 fossil remains, which is entirely compared to the 2021 figure and slightly lower than the average of the five preceding years (1,364). The prepared fossils mostly (but not exclusively) come from the following sites:

- Els Casots.
- Torrent de Na Nadala (Mallorca).
- San Cayetano (Selva, Mallorca).
- Can Llobateres.
- La Mora.
- Les Cases de la Valenciana.
- Castell de Barberà.
- Masquerol (Morella).
- Abocador de Can Mata.
- Eix Diagonal.
- Vallparadís.
- Coll de Creus (Alt Urgell).
- Creu de Conill.
- Masquefa (prospections).
- Mancha de la Laja (Bajamar, Tenerife).

- La Carrière (France)
- Gruta da Oliveira (Torres Novas, Portugal).
- El Catllar (Tarragona).

RESEARCH SUPPORT (2017-2021)							
PREPARATION & CONSERVATION	2017 (€)	2018 (€)	2019 (€)	2020 (€)	2021 (€)	AVERAGE	2022 (€)
Prepared fossil remains	1,250	1,727	1,749	885	1,207	**1,364**	**1,208**
Molds	55	40	12	58	24	**38**	**6**
Casts	178	14	29	76	54	**70**	**122**
Packages	84	408	451	384	128	**291**	**233**

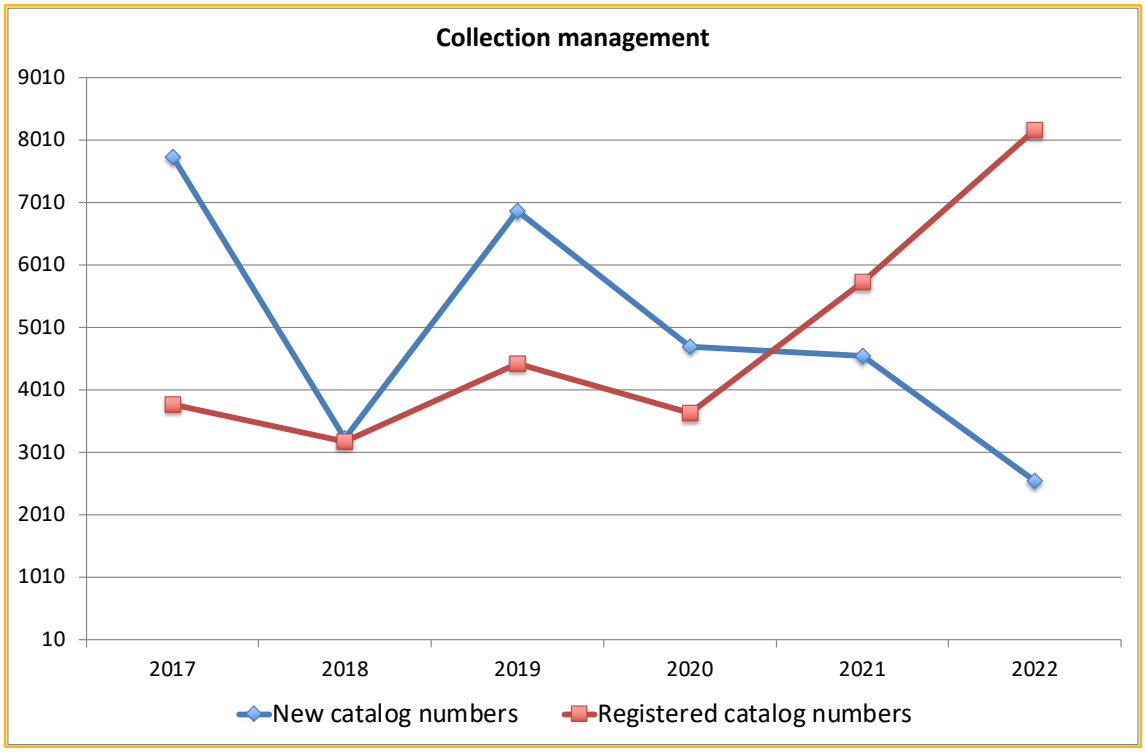


Other research support activities performed by ICP preparators include molding, casting, rigid packaging and special packaging for transport/shipping, repair of didactic casts, preventive conservation of fossil remains, elaboration of conservation reports, and museological activities. During 2022, ICP preparators devoted large efforts to conditioning 613 pallets with giant tortoise remains (*Titanochelon*) from Abocador de Can Mata that were deposited at the Dipòsit de Patrimoni Cultural-Cervera (Agència Catalana de Patrimoni Cultural, Generalitat de Catalunya).

Collection management. The number of new catalog numbers registered into the inventory of the ICP collections in 2022 (2,553) is below the average of the five preceding years (5,423). In contrast, the number of records registered or modified in the collection management software MuseumPlus during 2022 (>8,000 in both instances) is about twice the average of the five preceding years for these figures. In total, 78,797 records of the ICP were digitized in

Museumplus at the end of 2022, out of a total of 128,958 records (IPS catalog numbers); this means that only 61% of the cataloged collection was digitized at the end of the year (compared to 56% at the end of 2021). Finally, the number of petitions to study materials from the ICP collections attended to by the Fieldwork & Collections Management Area of the ICP was higher than in previous years (probably due to attendants to the NOW 25th Anniversary Meeting organized by the ICP in Sabadell), whereas the number of definitive deposits was similar to the average for the four preceding years.

RESEARCH SUPPORT (2017-2021)							
COLLECTION MANAGEMENT	2017 (€)	2018 (€)	2019 (€)	2020 (€)	2021 (€)	AVERAGE	2022 (€)
New catalog numbers	7,739	3,240	6,880	4,708	4,550	**5,423**	**2,553**
Registered catalog numbers	3,776	3,181	4,429	3,641	5,742	**4,154**	**8,172**
Modified catalog numbers	—	501	496	2,528	11,153	**3,670**	**8,648**
Petitions to study material	83	64	74	28	76	**65**	**95**
Definitive deposits	—	21	13	1	10	**11**	**12**



Fieldwork. The programmed paleontological excavations directed by ICP researchers in the framework of research projects have been already reported in a previous section and need not be repeated here. However, it is noteworthy that several of these interventions have been performed with the aid of the human resources of the Fieldwork and Collections Management Area.

Virtual paleontology. In 2022, ICP researchers from all the research areas of the ICP benefited from the assistance of a specialized technician from the 3D Virtual Lab of the Computational Paleobiology Research Group concerning digital imaging and processing of 3D virtual reconstructions based on CT, laser and photogrammetry data. Most of the time devoted by the 3D Virtual Lab to research support was related to the CT segmentation of craniodental remains of both extant and fossil vertebrates (amphibians, reptiles and mammals), although part of the time was also devoted to photogrammetry and laser scanning (e.g., for 3D modeling of fossil primate craniodental remains and mammals or fossil tetrapod ichnites), and also to performing CT scans, repositioning 3D models for reconstructing fossil specimens, and preparing material for publications (e.g., videos of 3D reconstructions). Several scans were performed at the µCT scanner from Burgos (Spain) overall ranging from the Permian to the Pleistocene. Last but not least, important efforts were devoted to data curation, including the organization of the database of the institution but also to the reorganization of the datasets stewarded by the ICP. One of the novelties in this regard is that the ICP reached an agreement with the digital repository Morphosource to manage and curate there the organizational data of the ICP (https://www.morphosource.org/teams/000472978) coming from different digitalization techniques: mostly from CT scans but also from photogrammetry and laser scanning, including raw and derived data (3D models).

Most noteworthy is the fact that Dr. Fortuny, the Leader of the Computational Paleobiology Research Group of the ICP, elaborated a viability plan for the industrial X-ray CT scan of the ICP, which has been broken since 2016. This document was finished in November 2022 and subsequently presented to the ICP Scientific Advisory Board in the meeting that took place in December 2022. It will be presented to the Board of Trustees in the next meeting (scheduled for the spring of 2023), but its main conclusions can be summarized as follows:

- Resuming the activity of the ICP CT equipment would imply an annual cost (taking into account an amortization period of 10 years of the repair, as well as the annual exploitation costs and discounting the income for external and internal service provision) of ca. 50,000 €/yr.
- The expenditure in CT scanning services by ICP researchers (costs defrayed by competitive research projects) has been of ca. 15,000 € during the last 3 years (i.e., ca. 5,000 €/yr on average), including not only CT scanning hours but also travel, accommodation, and per diem expenses. This is an order of magnitude lower than the investment that should be done by the ICP to resume CT scanning activity by its own means.
- The industrial CT scan of the ICP has a very restricted demand from both academia and industry, and indeed most of the research demands of the ICP in this regard can be covered by a microCT.
- It is thus concluded that it is not recommendable to repair the ICP industrial CT scan with basal funds from the ICP. For such an investment to make sense it should be conceptualized not merely as research equipment, but also as diffusion tool to digitize

an important part of the ICP collection and make it accessible online. For such a possibility to be viable, an important portion of the associated expenses should be covered by a competitive research and diffusion project (co)funded by the EU and/or the Generalitat de Catalunya.

- Even if it was possible to access competitive funds, it should be carefully considered whether repairing the current CT is the best possible option or whether it would be preferable to acquire a new microCT scanner. The cost of such equipment is much less expensive now than a decade ago and it would provide a better resolution for small and medium-sized fossils, which constitute the major bulk of the ICP collection.

The CT viability plan therefore concludes that neither the current financial situation nor the research requirements of the ICP make it recommendable to repair the ICP industrial CT and resume its activity, given the very high associated costs. In contrast, the document evinces the need to explore competitive options to make this happen, or else acquire a new microCT scanner, not only for research but also with the aim to making a digital museum openly accessible. Until this is not possible, paying CT scanning hours with funds from competitive R+D+I projects seems the best possible alternative. SAB members agreed that it is not recommendable to make the investment required to fix the ICP industrial CT scan, and recommend instead to seek partners to eventually acquire a microCT. This possibility should ideally be discussed with other CERCA institutions as well as I-CERCA in the framework of the CERCAGINYS platform.

Paleontological services

The paleontological services provided by the ICP are based on the know-how of its technicians and researchers (including their knowledge, expertise, and skills), which are offered to external parties in exchange of monetary revenues that contribute to the total operating budget of the ICP. These 'customers' include individual persons or groups of people, public entities, and private companies alike. Even though these paleontological services appear quite varied, in general they resemble the internal research support services that are regularly provided to the ICP research groups by the various areas of the Research Support & External Services Department. In a broad sense, the museum exhibits and outreach activities organized by the ICP may also be considered paleontological services, as they also originate revenues for the institution.

Museum services. The ICP Museum in Sabadell is an indispensable requirement for the research performed at the ICP, which needs a museum officially recognized as such by the Generalitat de Catalunya to be the depositary of its fossil collections. Having a museum is also a very powerful tool from the viewpoint of scientific dissemination and outreach, to transmit paleontological knowledge to the general public. Although these activities are performed in compliance with one of the missions of the ICP (promoting the dissemination of the

paleontological heritage from Catalonia), it is also noteworthy that these activities (including guided visits, workshops, and products sold at the museum shop) generate some revenues, which at least in part serve to alleviate the costs of the required personnel to maintain the museum open to the public. These activities were repeatedly disrupted throughout 2020 due to the restrictions associated with the COVID-19 pandemic, but rapidly recovered during in 2021 and were fully back to normal in 2022.

Similarly, the ICP further manages the Conca Dellà Museum in Isona and the associated museographic space Dinosfera from Coll de Nargó, in the framework of the 'Dinosaurs from the Pyrenees' project and thanks to the funds transferred by the Culture Department of the Generalitat de Catalunya tothe ICP. The leading role is performed by the Head of the Mesozoic Area of the ICP (Dr. Àngel Galobart), who by virtue of an agreement with the Conca Dellà city council in 2015 became the Director of the Conca Dellà Museum. The income received in exchange of these services is beneficial for the research performed by the above-mentioned research group and further enables hiring the required personnel.

The various outreach activities performed by the ICP at the Museum in Sabadell, at Isona i Conca Dellà and Coll de Nargó, and in other places will be detailed later in this document.

Preparation and casting services. These services are provided by the Preparation & Conservation Area of the ICP, where a team of well-trained and experienced preparation technicians with the required academic background regularly also perform these tasks for ICP researchers. Casting services are generally provided per request, either for individual amateurs or researchers, or for museums and research institutions; several qualities (and corresponding different prices) are available depending on the aim. Preparation services, in turn, are provided to both research institutions, local administrations and private companies, most often relating to fossils recovered from emergency excavations. Both casting and preparation activities are performed at the well-equipped preparation labs of the Preparation & Conservation Area of the ICP at the ICTA-ICP building within the UAB campus and at the ICP Museum in Sabadell. These services are invoiced on the basis of closed quotes, and the revenues generated contribute to defray the personnel costs of the Conservation & Preparation Area of the ICP, which regularly assist ICP researchers in these tasks. Furthermore, the fossils prepared often remain at the ICP collections, thereby providing new research opportunities for the researchers of the center.

Almost all of the fossils prepared by the Preparation & Conservation Area of the ICP in 2022 were prepared in the framework of research support, although preparation services were realized regarding the remains of Gallotia goliath from Tenerife. Otherwise, service provision was focused on making casts of fossil primate remains from the Vallès-Penedès Basin.

Paleontological fieldwork services. Fieldwork services provided by the ICP include all of the aspects related to the planning and execution of paleontological interventions, although most frequently they are restricted to rescue (emergency) paleontological interventions that must be defrayed by private companies or the local administration in the framework of construction

works in fossiliferous areas, in order to comply with the requirements of current laws about the protection of paleontological heritage. These services include different types of interventions, such as paleontological prospections, samplings, surveillance and excavations, and even conditioning, consolidation and restoration. Some of these services (direction of the intervention, work by technicians, elaboration of the fieldwork memoir, etc.) are invoiced on the basis of hourly rates, whereas other activities (such as screen-washing sediment samples for microvertebrate remains) have associated prices per unit.

The following rescue paleontological interventions were performed in 2022 under the direction of the ICP in the framework of the specialized remunerated services provided by the ICP to both private companies and administrations:

- **Carretera C-15 (Eix Diagonal)** [CLT_2022_EXP_ARQ00002_3238_(R/N 470 K121 N-740, 746,832-2022/2-37608); CLT_2022_EXP_ARQ00002_3328_(R/N 470 K121 N-740, 746, 832-2022/6-37712); CLT_2022_EXP_ARQ00002_3468_(R/N 470 K121 N-740, 746, 832-2022/7-37835); CLT_2022_EXP_ARQ00002_3776_(R/N 470 K121 N-740, 746, 832-2022/8-38207)]: Surveillance and excavation | Municipality: Sant Quintí de Mediona, Sant Pere de Riudebitlles, and Torrelavit | Age: Middle and Late Miocene | Directors: Á. García Pérez, M. Grau-Camats, and J.M. Robles | Company: ATICS, S.L.
- **Dipòsit Controlat de Can Mata** [Expedient Arq002-2648-2021 (R/N 747 K121 N-160 2022/1-36124)]: Prospection, surveillance, excavation, sampling, and documentation | Municipality: els Hostalets de Pierola | Age: Middle to Late Miocene | Directors: V. Vinuesa & Jordi Galindo | Company: Cespa Gestión de Residuos S.A.U. (Ferrovial).
- **Illeta 5 de Can Gambús** [Expedient CLT_2022_EXP_ARQ002_PREV_00004059 (R/N 470 K121 N-163 2022-1-38509) and CLT_2022_EXP_ARQ002_PREV_00004284 (R/N 470 K121 N-163 2022-2-38762)]: Surveillance and excavation | Municipality: Sabadell | Age: Late Miocene | Directors: S. Crespo Ávila | Company: Propiedades Agrupadas, S.L.
- **Pla de Palau** [Expedient reference not available]: Prospection | Municipality: Caldes de Montbui | Age: Late Miocene & Quaternary | Directors: À.H. Luján | Company: ATICS, S.L.
- **Riera de la Guinovarda** [Expedients Arq002-2817-2022 (R/N 747 K121 N-538 2022/1-36193) and Arq002-2817-2022 (R/N 747 K121 N-538 2022/2-36322)]: Prospection, surveillance, sampling, and documentation | Municipality: Piera | Age: Late Miocene | Directors: I. Llopart | Company: EPTISA, Enginyeria i Serveis S.A.U.

Virtual paleontology services. Computed three-dimensional techniques have become a generalized tool for the study of fossil remains, being also used in the industry. The 3D Virtual Lab of the Computational Paleobiology Research Group of the ICP has the required 3D digitalization tools and facilities to provide 3D imaging and other virtual services, including an industrial computed tomography (CT) scan specifically devised for paleontological research, several laser surface-scanners for obtaining surface 3D models of the fossil specimens, and photogrammetry equipment. Coupled with competent ICP staff in all the required techniques

and software, the above-mentioned equipment is positive for the provision of external services to other research institutions as well as the industry (e.g., as related to mechanical pieces). Unfortunately, the CT scan of the ICP is currently damaged and requires a considerable amount to be fixed (see above for a summary of the conclusions of the CT viability plan). During the last years significantly hindered the great potential of this area for the provision of external services. The pandemic also impacted negatively on the provision of digital services.

Paleontological and geological consultation services. The technicians from the Fieldwork Management Area of the ICP, in collaboration with ICP researchers, also offer services related to the knowledge on fossil sites and/or paleontological heritage, particularly from Catalonia, as well as to the geology of particular areas. These services generally imply writing some kind of report to convey the required information. Potential clients range from local administrations, to both public entities and private companies, being generally related to the elaboration of environmental impact assessments for the construction industry, the dating of sediments by means of fossils (biostratigraphy), or the elaboration of heritage management plans for city councils. Some of these studies require performing paleontological and/or geological fieldwork, whereas others are exclusively based on the review of the published literature and the archives of the ICP. The fees that apply are based on hourly rates (plus associated costs of maintenance and travel when necessary). No services of this kind were provided in 2022. In compliance with one of the missions of the ICP, related to the conservation of the paleontological heritage of Catalonia, minor consultation services are also regularly provided for free by the staff of the Fieldwork & Collections Management Area as well as ICP researchers to the Archeological and Paleontological Heritage Service of the Generalitat de Catalunya (in relation to fossil sites from Catalonia).

Training

Knowledge transfer activities at the ICP are also related to academic teaching and supervision, to a large extent (but not exclusively) within the framework of the university.

Scientific courses. From the viewpoint of training, it is noteworthy the ongoing collaboration agreement of the ICP with the private company Transmitting Science (TS), by which scientific courses in the framework of life sciences (with a largely international attendance) are performed at the ICP Museum or in other venues with additional partners. The ICP generally contributes with its facilities, and gets an in-kind return in the form of free courses for ICP researchers and research associates. The current agreement further enables to co-organize other types of courses with a higher involvement of ICP researchers as instructors (e.g., paleontological fieldwork courses in the framework of ICP excavations), but the pandemic truncated the plans in this regard. Indeed, in 2020 the number or co-organized curses was drastically reduced as a result of the pandemic and has not recovered ever since, due to the fact that many courses are only taught online. In total, in 2022 the ICP participated as coorganizer of three courses

instructed by TS, with a total attendance of 61 alumni. In 2022, the ICP signed a new agreement with TS to become an ambassador institution. This means that ICP personnel benefits from a 20% discount on the fees of all courses organized by TS without the involvement of the ICP. In return, the Outreach & Communication Department of the ICP undertakes to disseminate the forthcoming courses.

COURSES COORGANIZED WITH TRANSMITTING SCIENCE (2022)			
COURSE TITLE	VENUE	DATE	ORGANIZERS
Care and Management of Natural History Collections, 5th ed.	Online	21/3-1/4/2022 (40 h)	TS, ICP
Care and Management of Natural History Collections, 6th ed.	Online	26/9-7/10/2022 (40 h)	TS, ICP
Finite Element Analysis Applied to Life Sciences - 7th ed.	Online	21/11-2/12/2022 (48 h)	TS, ICP

University teaching. The ICP is a university research institute of the UAB by virtue of an agreement signed in 2013 and subsequently ratified by the Generalitat de Catalunya in 2014. This agreement was renewed in 2018 and was valid until 2021. A new agreement was signed in May 2022 with a validity of four years. It contemplates the possibility that ICP researchers that are involved in master teaching automatically become teaching collaborators. Punctual agreements have been also established with regard to master teaching with the UB.

In 2022, ICP researchers and technicians participated in the following two official master degrees:

- **Master in Paleobiology and Fossil Record (UAB/UB):** academic course 2022–2023.
- **Master in Biological Anthropology (UB/UAB):** academic courses 2021–2022 and 2022–2023.

It is noteworthy that the Master in Paleobiology and Fossil Record (coorganized by the ICP, the UAB and UB), resumed in 2017–2018 as a successor of the former Master in Paleontology in which the ICP participated annually between 2007-2015, was temporarily transformed into a biannual format in 2021. As a result, this master was not taught during academic year 2021-2022. Nevertheless, it was resumed in academic year 2022-2023 with normality. Furthermore, followig cosersations between the UAB, the UB and the ICP in 2021, a new teaching program was elaborated early 2022 and presented to AQU for review and approval, with the aim to attract and higher proportion of international students to reach the required number of students each academic year to make the master sustainable on the long term from the UAB's perspective. The new program was validated in 2022, and will be implemented in academic year 2023-2023. In the meantime, during academic year 2021-2022, the contribution of the ICP to the master represented 35% (21/60) of the total ECTS credits. A new agreement was signed with the UAB and the UB in 2022 for the future participation of the ICP in the teaching of the master, which will represent 33.3%. By virtue of this agreement, the ICP will receive the proportional revenues of the fees paid by the students (minus the portion that corresponds to the UAB for organizing the master). The master has 12 students in 2022-2023, as compared 7 in 2017-2018,

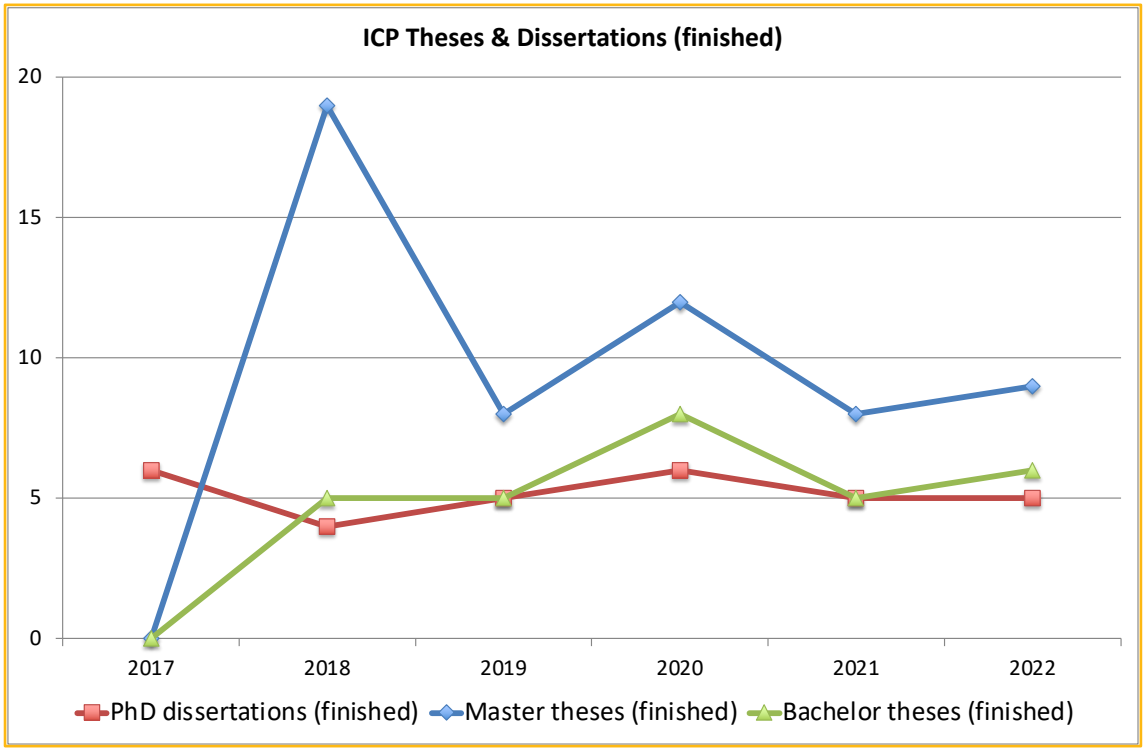
5 in 2018-2019, 13 in 2019-2020, 6 in 2020-2021, and none in 2021-2022 (because there was no teaching).

Supervision. As in previous years, in 2022 the experienced researchers from the ICP were regularly involved in the training of early career researchers and undergraduate students. In the case of young researchers, training takes the form of supervision of the research performed by either dependent postdoctoral students (e.g., 'Juan de la Cierva'), PhD candidates, master students, and Erasmus interns or trainees. In turn, the training of undergraduate students is usually accomplished by means of practicums performed by the students at the ICP under the guidance of an ICP researcher/technicians or by through the supervision of bachelor theses. It is noteworthy that practicums are not restricted to research in a strict sense, but are also performed by research support technicians (especially preparators).

During 2022, 12 international students from different European countries such as Italy and Greece, among others, performed a traineeships/internship at the ICP, in 9 cases through the Erasmus+ program, and in the remaining ones by means of similar programs from their respective countries (UK's Turing scheme) or institutions. Furthermore, 14 practicum agreements were formalized with the UAB (representing a total of 2620 working hours), plus 4 agreements with the UB (implying 1170 hours and another one with Sapienza Università di Roma in Italy. Finally, the Volunteering Program of the ICP is also relevant with regard to training, in the sense that it allows not only university students, but also people outside academia to collaborate not only in research, but also research support and outreach activities performed at the ICP. During 2022, 9 volunteers collaborated with different areas of the ICP, as compared with 10 volunteers in 2021.

The supervisory efforts by ICP researchers and technicians can also be measured on the basis of the number of finished master theses and PhD dissertations that have been (co)supervised by them. In 2022, the number of PhD Dissertations, master's theses, and bachelor's theses (co)supervised by ICP personnel (respectively, 5, 9, and 6) was similar to the averages of the five preceding years. It is also noteworthy that, during 2022, up to 34 ongoing PhD dissertations were also (co)supervised by ICP researchers (S. Moyà-Solà, À. Galobart, D.M. Alba, J. Fortuny, À.H. Luján, I. Casanovas-Vilar, J. Marigó, A.G. Sellés, J. Arias-Martorell, M. Furió, B. Vila, and A. Prieto-Márquez) and research associates (E. Delson, M. Delfino, D. DeMiguel, E. Mujal, A. Sánchez-Marco, T. Marquès-Bonet). Twelve of these dissertations were performed by current ICP predoc researchers/PhD students (T. Calderón, S. McKenzie, R. Matamales-Andreu, F. Bouchet, L. Sorbelli, M. Prat-Vericat, M. Grau, G. Pons-Monjo, C. De Jaime-Soguero, O. Monclús-Gonzalo, Kelly A. Vega Pagán, and G. Raventós-Izard).

SUPERVISED MASTER THESES & PHD DISSERTATIONS (2016–2020 VS. 2021)							
CATEGORY	2017	2018	2019	2020	2021	AVERAGE	2022
PhD dissertations (finished)	6	4	5	6	5	**5.2**	**5**
Master's theses (finished)	0	19	8	12	8	**9.4**	**9**
Bachelor's theses (finished)	0	5	5	8	5	**4.2**	**6**



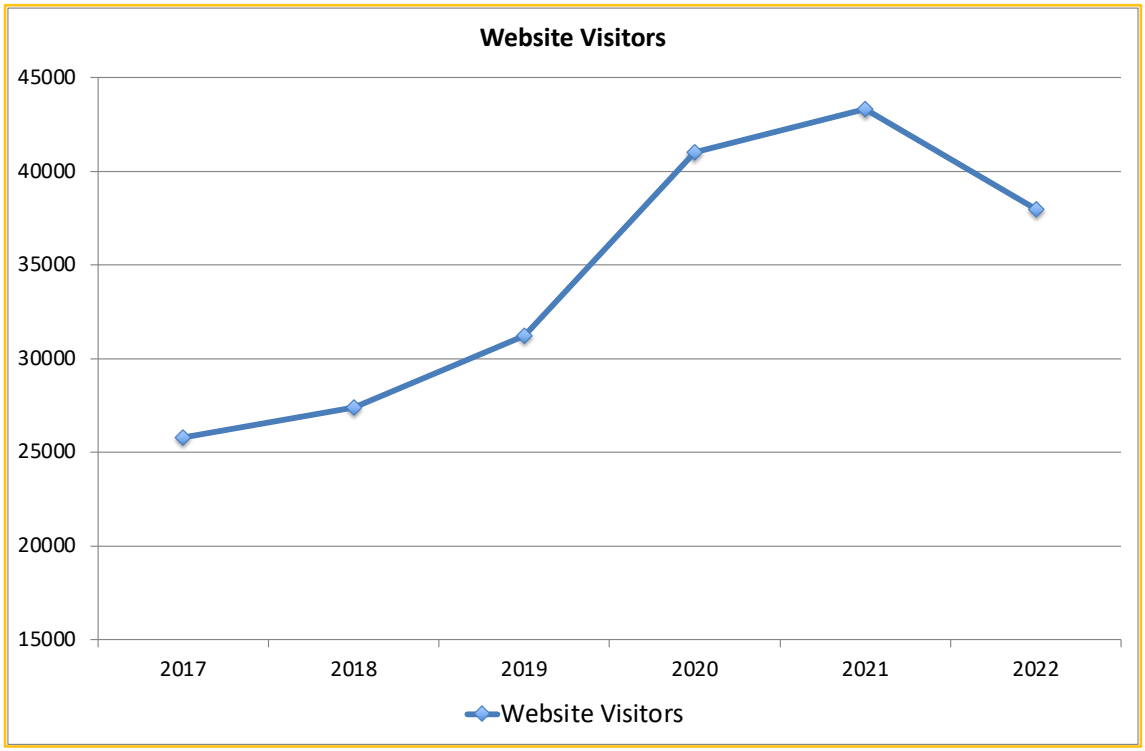
OUTREACH AND COMMUNICATION

Disseminating to the general public the knowledge hidden in fossils

Website

The ICP website (http://www.icp.cat) constitutes an essential tool to disseminate the work performed at the ICP to the general public, with particular emphasis on transmitting the knowledge that derives from the research performed by ICP researchers and research associates, but further including the most significant actions of knowledge transfer as well as scientific dissemination and outreach, among other relevant news.

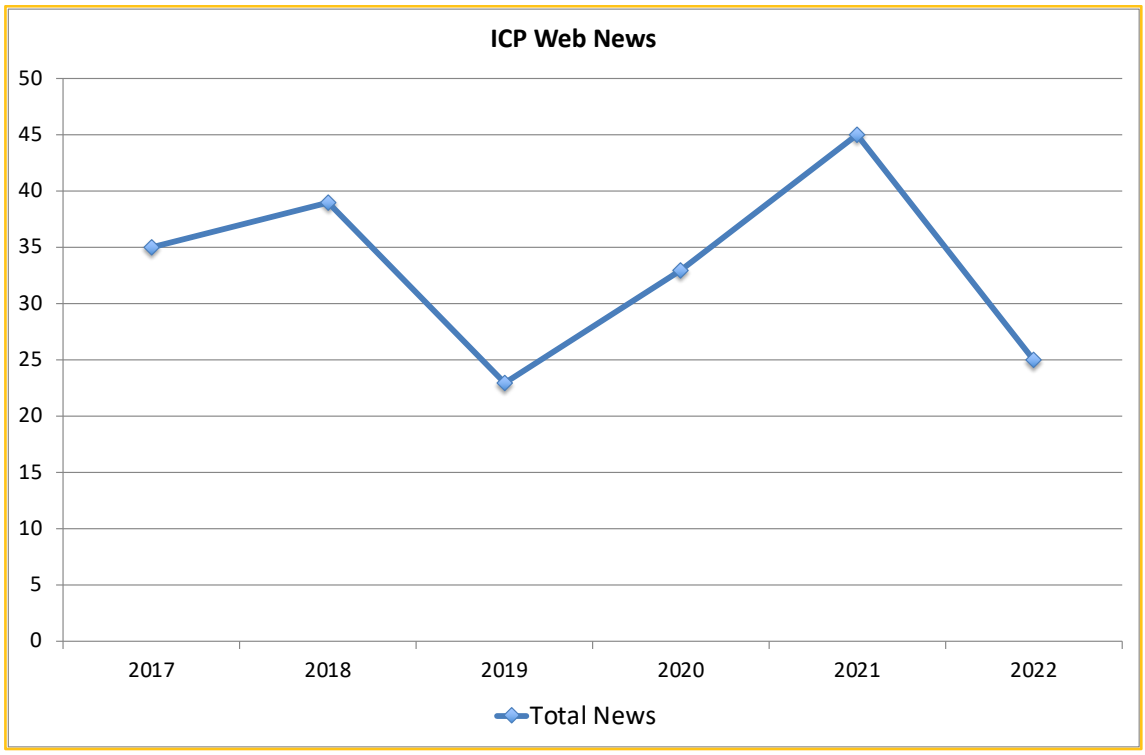
Website visitors. The annual number of visitors of the ICP website are monitored based on the data recorded by Google Analytics (available since September 2015). These data indicate that the number of visitors to the ICP webpage in 2022 (37,984) shows a slight decrease as compared with the previous year but is higher than the average of the five previous years (33,753). The decrease is probably related to the lower number of ICP web news issued in 2022 (see below), such that the increasing trend will likely be reverted as soon as more news are posted on the ICP webpage.



ICP WEBSITE VISITORS (2017–2021 vs. 2022)							
Data Source	2017	2018	2019	2020	2021	Average	2022
Website Visitors (Google Analytics)	25,777	27,376	31,243	41,029	43,340	**33,753**	**37,984**

Web news. The ICP website has a section devoted to paleontological news, which are regularly posted and subsequently disseminated through the ICP social networks. The news posted by the ICP can be divided into four main categories depending on their content:

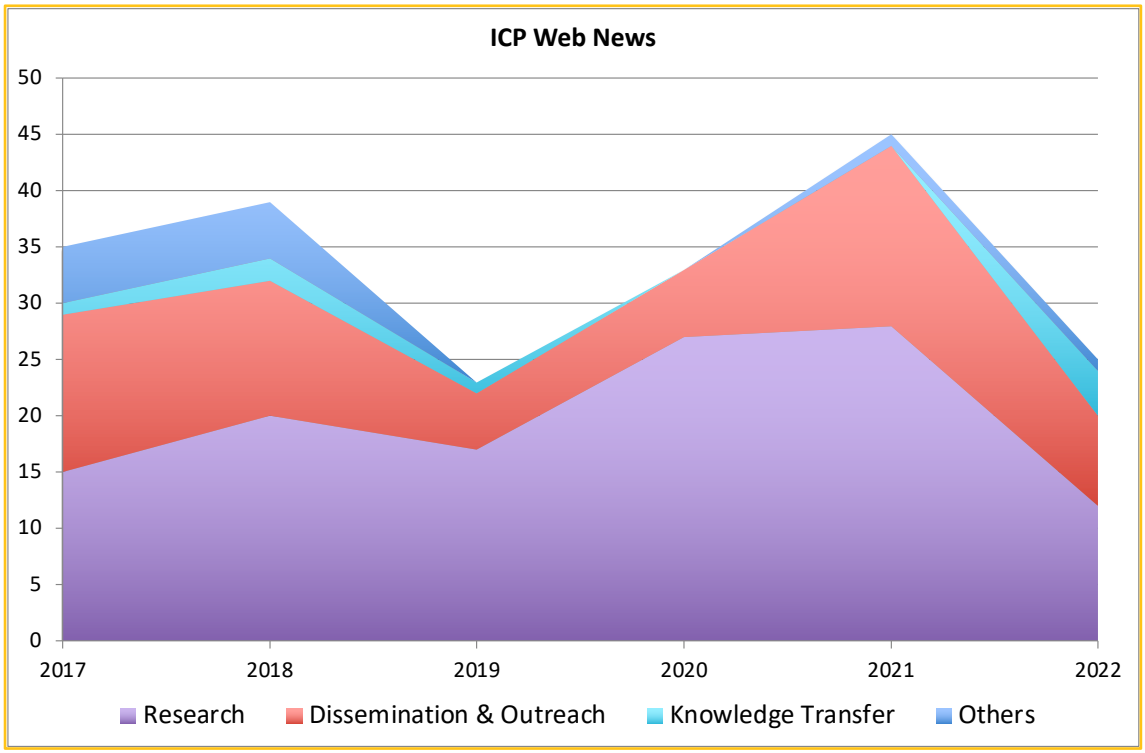
- **Research:** devoted to ICP publications, fieldwork, stays abroad and visiting researchers.
- **Dissemination and outreach:** related to scientific dissemination, outreach activities, museum exhibits, and other issues related to the ICP Museum.
- **Knowledge transfer:** mostly related to scientific courses and master teaching.
- **Others:** any other news related to the ICP.



WEB NEWS (2017–2021 vs. 2022)							
Category	2017	2018	2019	2020	2021	Average	2022
Research	15	20	17	27	28	**21.4**	**12**
Dissemination & Outreach	14	12	5	6	16	**10.6**	**8**
Knowledge Transfer	1	2	1	0	0	**0.8**	**4**
Others	5	5	0	0	1	**2.2**	**1**
Total News	35	39	23	33	45	**35.0**	**25**

The total number of news posted in 2022 (25) is much lower than in 2021 as well as the average of the five preceding years (35). This is attributable to the limited human resources of the Communication & Scientific Dissemination Area and the need to devote parts its efforts to

other more urgent actions (such as the elaboration of a new museological plan). As in previous years, the most frequent news were about research.

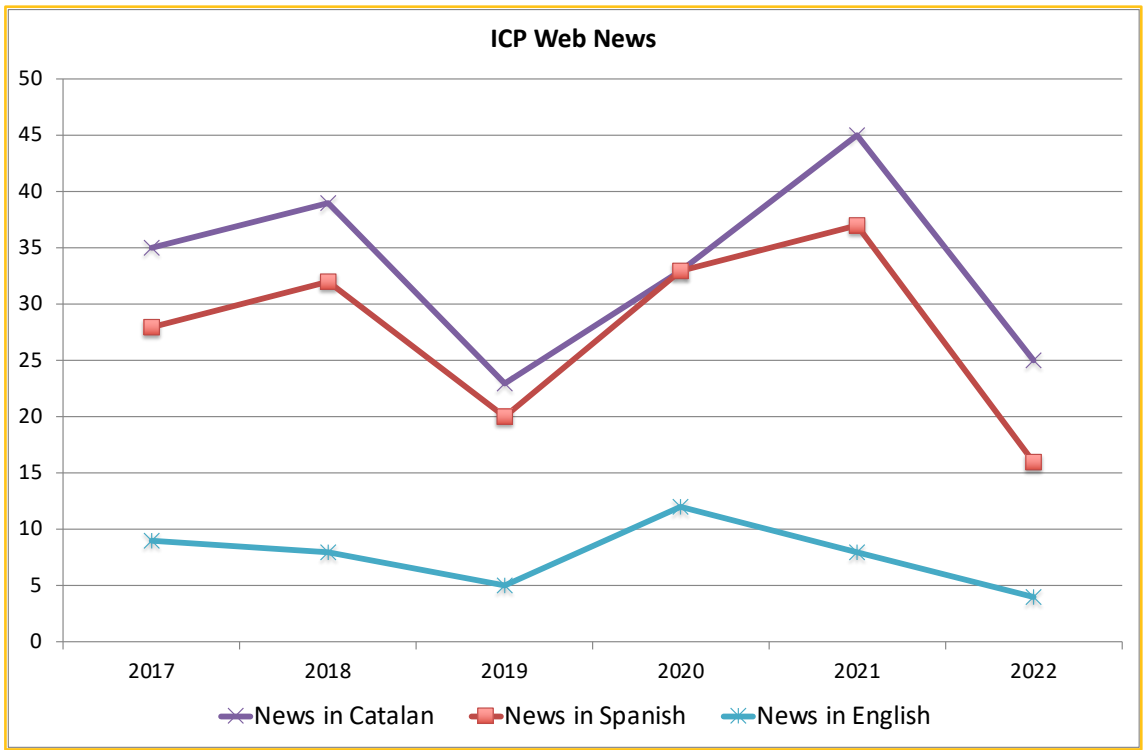


ICP WEB NEWS (2022)			
DATE	TITLE (CATALAN VERSION)	LANGUAGE	CATEGORY
25/1/22	Un nou fòssil de mamífer resol un problema taxonòmic de més de 150 anys	CAT ES	Research
4/2/22	Ambre de fa 110 milions d'anys revela un inesperat llangardaix	CAT ES EN	Research
7/2/22	Descrita una nova espècie de dinosaure que va viure als Pirineus fa 70 milions d'anys	CAT ES EN	Research
14/2/22	Arriba una nova edició de 'Cafès Científics' a Sabadell	CAT	Dissemination & Outreach
17/2/22	Un portal web reagrupa la col·lecció de fòssils de la Pedrera de Meià	CAT ES	Dissemination & Outreach
22/2/22	"Els gegants del Mesozoic", un llibre infantil per conèixer els dinosaures de Catalunya	CAT	Dissemination & Outreach
15/3/22	Descrites noves i gegantines petjades de dinosaure a Terol	CAT ES	Research
15/3/22	El Museu de l'ICP se suma a la celebració dels 175 anys del Liceu	CAT	Dissemination & Outreach
16/3/22	L'ICP i l'Ajuntament de Masquefa signen un conveni de col·laboració per a la protecció del patrimoni paleontològic	CAT	Knowledge transfer
3/5/22	Un Parc Juràssic de llangardaixos passat per alt	CAT ES EN	Research
4/5/22	VI Setmana dels Geoparcs Europeus 2022	CAT	Knowledge transfer
11/5/22	Onzena edició del Dia Internacional dels Museus i la Nit dels Museus a Sabadell	CAT	Dissemination & Outreach
16/5/22	Els cocodrils que van conviure amb els dinosaures caminaven més drets que els actuals	CAT ES EN	Research
19/5/22	Més de 2.600 persones participen en el Dia Internacional i la Nit dels Museus a Sabadell	CAT ES EN	Dissemination & Outreach
19/5/22	Grans rius plens de vida recorrien Mallorca abans de la major extinció en massa de la Terra	CAT ES EN	Research

24/5/22	Donació a l'ICP d'una col·lecció de més de 1.600 fòssils miocens de Viladecavalls	CAT ES EN	Knowledge transfer
26/5/22	15a Festa de la Ciència a Barcelona	CAT	Dissemination & Outreach
3/6/22	Una nova espècie posa llum a l'origen evolutiu dels dragons	CAT ES	Research
13/6/22	A la gola d'un tità: les mandíbules dels llangardaixos gegants canaris a estudi	CAT ES	Research
5/7/22	L'os de la mà de Calderón de la Barca que va resultar ser del peu	CAT ES	Research
13/9/22	BRIDGES 2022: un congrés per fomentar un sistema científic més just y una Acadèmia més diversa	CAT ES EN	Knowledge transfer
23/9/22	L'Ajuntament de Sabadell aprova la incorporació al Patronat de l'Institut Català de Paleontologia Miquel Crusafont	CAT ES	Other
29/9/22	(In)Visibles i (O)Cultes, una exposició temporal que rescata de l'oblit dones científiques de tots els temps	CAT	Dissemination & Outreach
17/11/22	Descobertes al Pirineu les restes de la tortuga marina més gran d'Europa	CAT ES	Research
20/11/22	Nous estudis a l'Abocador de Can Mata permeten datar una dent de primat trobada fa cinquanta anys	CAT	Research

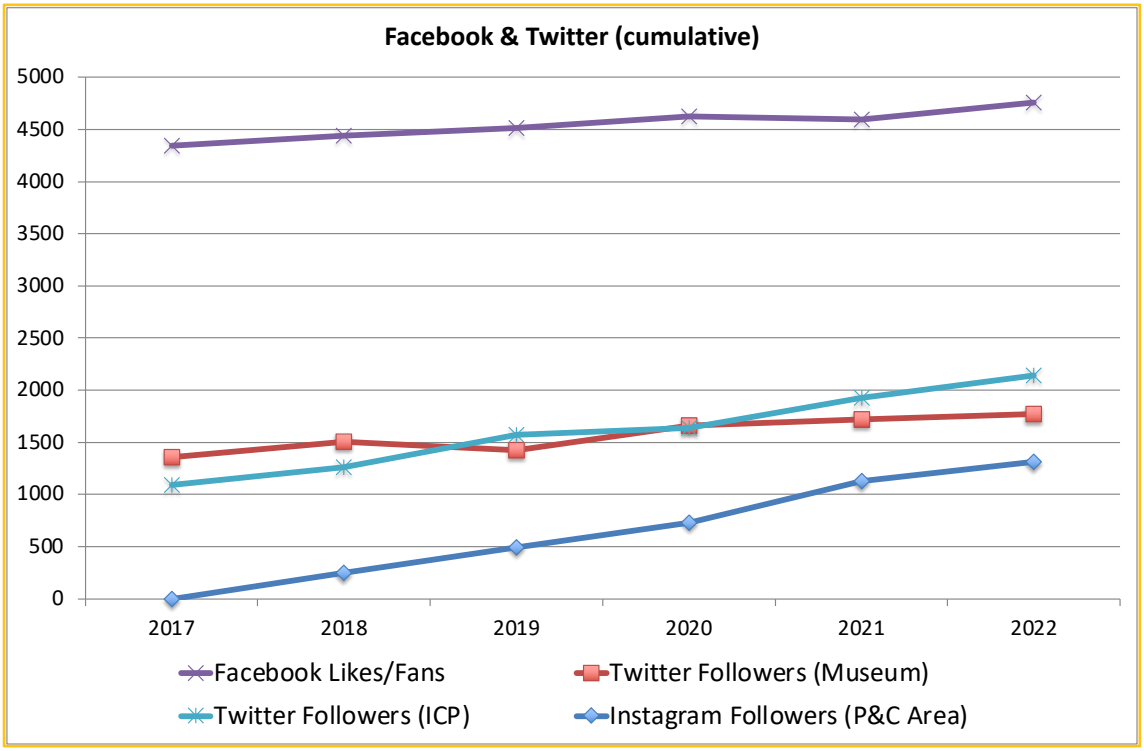
As for the language, all the news posted to the ICP webpage were published in Catalan and most also in Spanish, but English translations are still a much lower proportion, similar to preceding years.

WEB NEWS (2017–2021 vs. 2022)							
Category	2017	2018	2019	2020	2021	Average	2022
News in Catalan (CAT)	35	39	23	33	45	**35.0**	**25**
News in Spanish (ES)	28	32	20	33	37	**30.0**	**16**
News in English (EN)	9	8	5	12	8	**8.4**	**4**
News in Catalan (CAT) %	100.0	100.0	100.0	100.0	100.0	**100.0**	**100.0**
News in Spanish (ES) %	80.0	13.5	87.0	100.0	82.2	**85.7**	**64.0**
News in English (EN) %	25.7	2.7	21.7	36.4	17.8	**24.0**	**16.0**



Social networks

The ICP has a Facebook fan page, two Twitter accounts (one for the ICP as a whole, and the other for the ICP Museum), and an Instagram account (for the Preparation & Conservation Area). These social networks can be monitored on the basis of 'fans' (formerly 'likes') in the case of Facebook, and based on the number of followers for Twitter and Instagram. In 2022, the three social network displayed a growing trend, albeit at a different pace, withe the number of Instagram followers progressively approaching the number of Twitter followers.



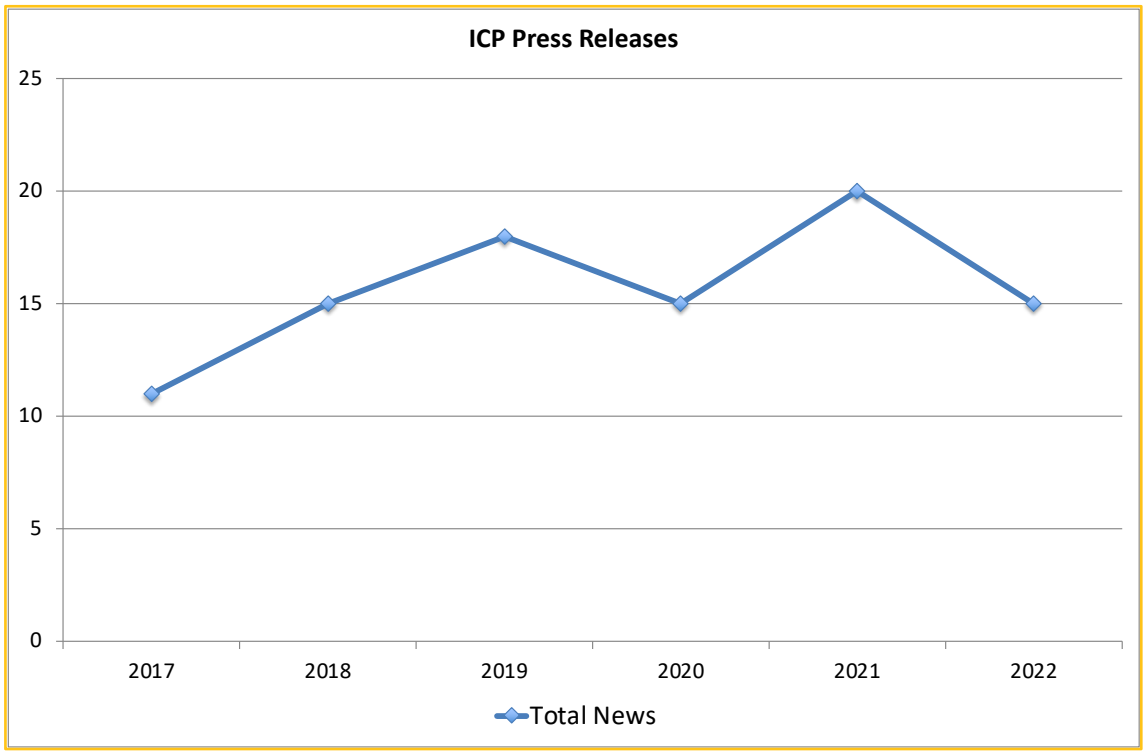
ICP SOCIAL NETWORKS (2017–2021 vs. 2022)							
Likes or Followers	2017	2018	2019	2020	2021	Average	2022
Facebook Likes/Fans (new)	175	99	74	109	-32	**154.2**	**167**
Twitter Followers – Museum (new)	170	144	-78	233	63	**131.6**	**50**
Twitter Followers – ICP (new)	179	175	306	71	286	**164.6**	**211**
Instagram Followers – P&C Area (new)	—	248	244	238	402	**243.3**	**178**
Facebook Likes/Fans (cumulative)	4343	4442	4516	4625	4593	—	**4760**
Twitter Followers – Museum (cumulative)	1360	1504	1426	1659	1722	—	**1772**
Twitter Followers – ICP (cumulative)	1089	1264	1570	1641	1927	—	**2138**
Instagram Followers – P&C Area (cumulative)	—	248	492	730	1132	—	**1310**

Press releases

The Scientific Dissemination and Communication Area of the ICP regularly issues press releases to highlight the most important news related to the ICP, with emphasis on new research outputs, but further including dissemination activities and other noticeable events. A total of 15 press releases were issued by the ICP in 2022, which closely approaches the average of the five

preceding years. It is noteworthy the attention received from mass media worldwide by several publications, such as the descriptions of a new titanosaurian dinosaur (*Abditosaurus kuehnei*) in Nature Ecology & Evolution on February and a new Cretaceous marine turtle (*Leviathanochelys aenigmatica*) in Scientific Reports on November—the latter being posted by some leading media such as the CNN, New Scientist, or the Daily Mail. Other news, such as an investigation on the jaws of the giant lizards from the Canary Islands or the Permian ecosystems of Mallorca, attracted the attention of the local media.

PRESS RELEASES & CONFERENCES (2017–2021 vs. 2022)							
Press Actions	2017	2018	2019	2020	2021	Average	2022
Press releases	11	15	18	15	20	**15.8**	**15**
Press conferences	1	1	1	0	2	**1.0**	**2**



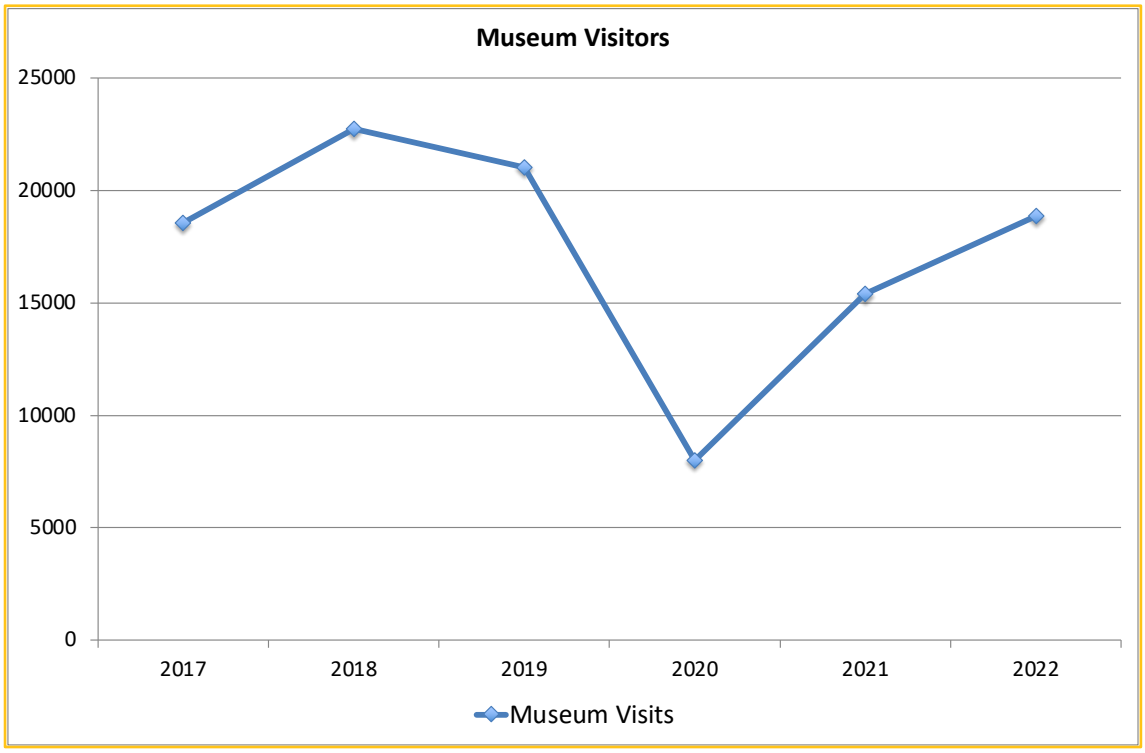
PRESS RELEASES (2022)	
Title	Date
Ambre de fa 110 milions d'anys revela un inesperat llangardaix	4/2/22
Descrita una nova espècie de dinosaure que va viure als Pirineus fa 70 milions d'anys	7/2/22
Arriba una nova edició de 'Cafès Científics' a Sabadell	14/2/22
Descritas nuevas y gigantescas pisadas de dinosaurio en Teruel	15/3/22
Un Parque Jurásico de lagartos pasado por alto	3/5/22
Los cocodrilos que convivieron con los dinosaurios caminaban más erguidos que los actuales	16/5/22
Grans rius plens de vida recorrien Mallorca abans de la major extinció en massa de la Terra	19/5/22
Donació a l'ICP d'una col·lecció de més de 1.600 fòssils miocens de Viladecavalls	25/5/22
Una nova espècie posa llum a l'origen evolutiu dels dragons	3/6/22
En las fauces de un titán: las mandíbulas de los lagartos gigantes canarios a estudio	13/6/22

L'os de la mà de Calderón de la Barca que va resultar ser del peu	5/7/22
L'Ajuntament de Sabadell aprova la incorporació al Patronat de l'Institut Català de Paleontologia Miquel Crusafont	23/9/22
(In)Visibles i (O)Cultes, una exposició temporal que rescata de l'oblit dones científiques de tots els temps	28/9/22
20 anys de la troballa d'en Pau, el primat que ho va canviar tot	11/11/22
Descobertes al Pirineu les restes de la tortuga marina més gran d'Europa	17/11/22

Museum visits and activities

Museum visits. The ICP Museum in Sabadell, besides being an indispensable requirement for the research performed at the ICP, is also a very powerful tool from the viewpoint of scientific dissemination and outreach when transmitting paleontological knowledge to a general public. The activity of the ICP Museum can be monitored by means of the number of annual visitors, which include individual visitors and, to a greater extent, organized groups (including schools and families) that attend guided visits and/or various workshops that are organized regularly throughout the year with the aid of external monitors. The museum also offers a wide range of workshops related to paleontology for schoolchildren.

The number of visitors in 2022 was higher than in 2020 and slightly exceeded the average of the five previous years (which is biased by the low number of visitors in 2020, due to the restrictions related to the COVID-19 pandemic).

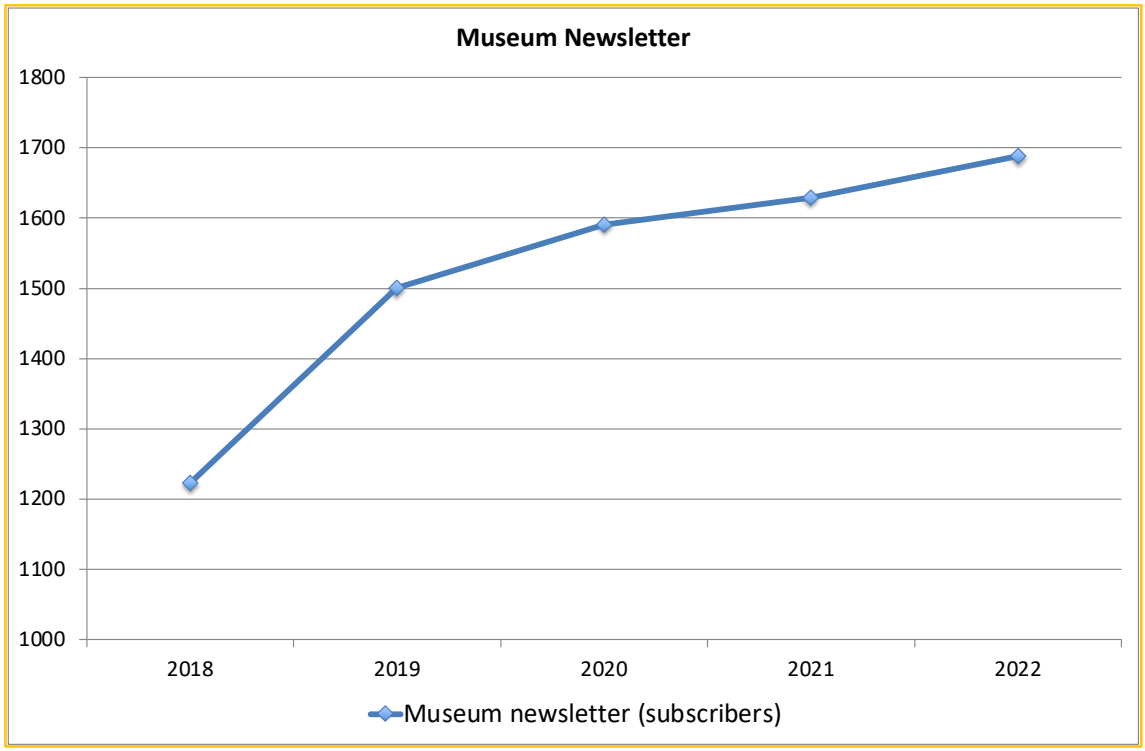


MUSEUM (2017–2021 vs. 2022)							
Museum Visitors	2017	2018	2019	2020	2021	Average	2022
Visitors	18,560	22,739	21,042	7,988	15,391	**17,144.0**	**18,880**

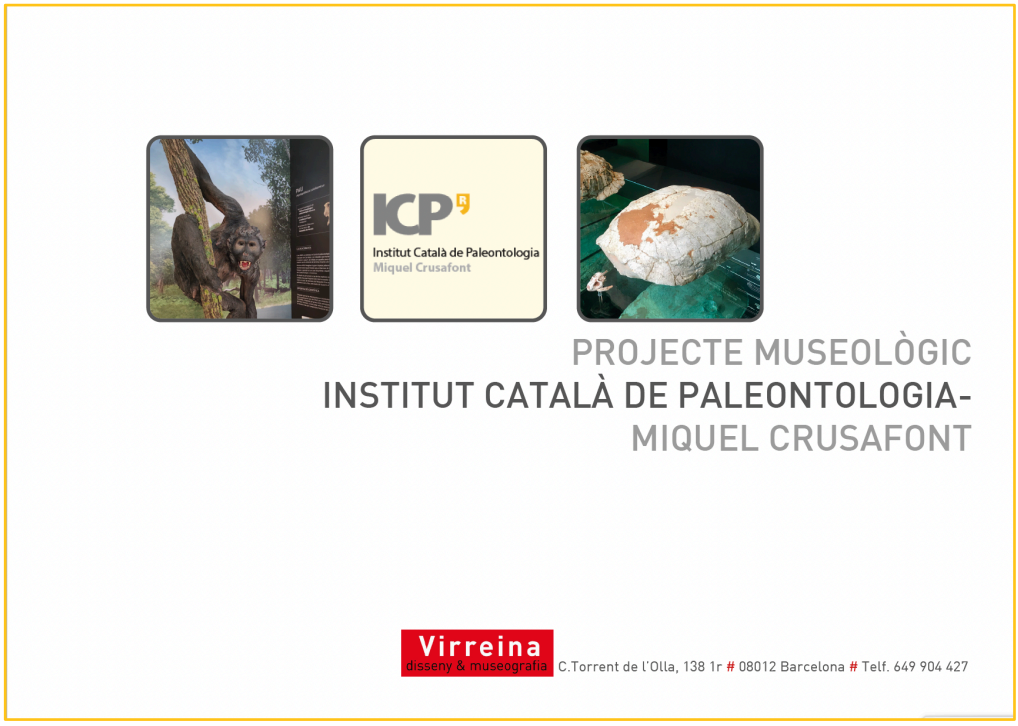
The most significant outreach activities of the ICP Museum during 2021 are summarized below.

Museum newsletter. The ICP distributes (without a regular periodicity) an electronic newsletter with ICP Museum activities, which at the end of 2022 had 1,688 subscribers, which is slightly higher than in the previous year and the average of the four precedings years.

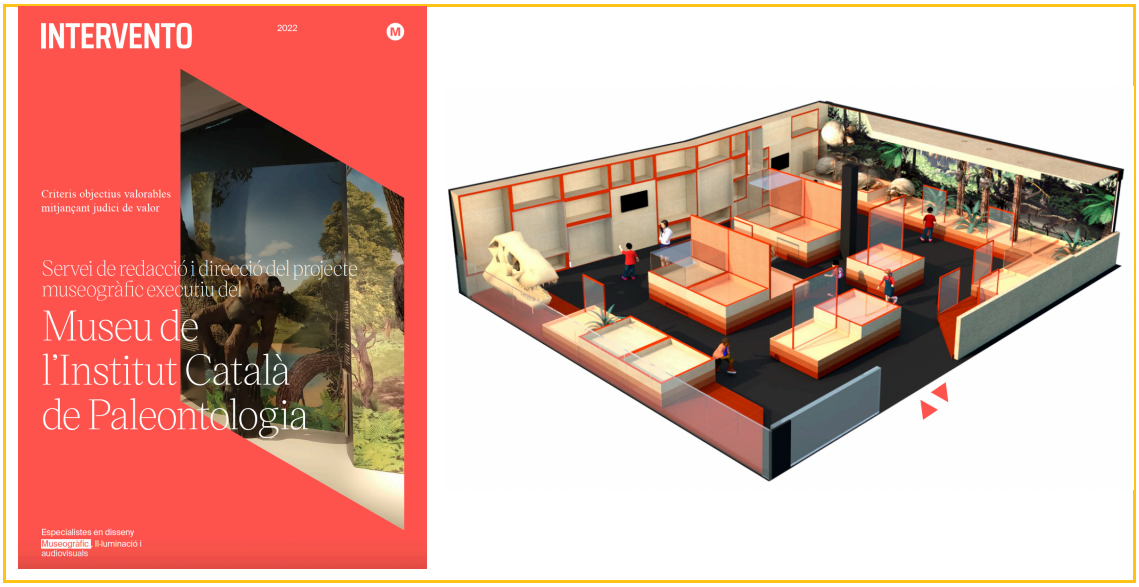
MUSEUM NEWSLETTER (2017–2021 vs. 2022)						
Newsletter Subscribers	2018	2019	2020	2021	Average	2022
Subscribers	1,123	1,501	1,591	1,629	**1,486**	**1,688**



Permanent exhibit. The permanent exhibit ('Today you investigate') explains to the general public how the ICP groups perform their research. The exhibit has not been remodeled (except for minor changes and additions) since 2010. In 2022, following conversations with the Culture Department of the Generalitat de Catalunya during the previous year, a new museological project for the ICP Museum was elaborated by the company Virreina during 2021 and early 2022. This museological plan set the main basis for the future remodeling of the exhibit and quantified the approximate cost of the next steps, i.e., the museographic project (25,000 €) and museographic production (estimated in 240,000 €).



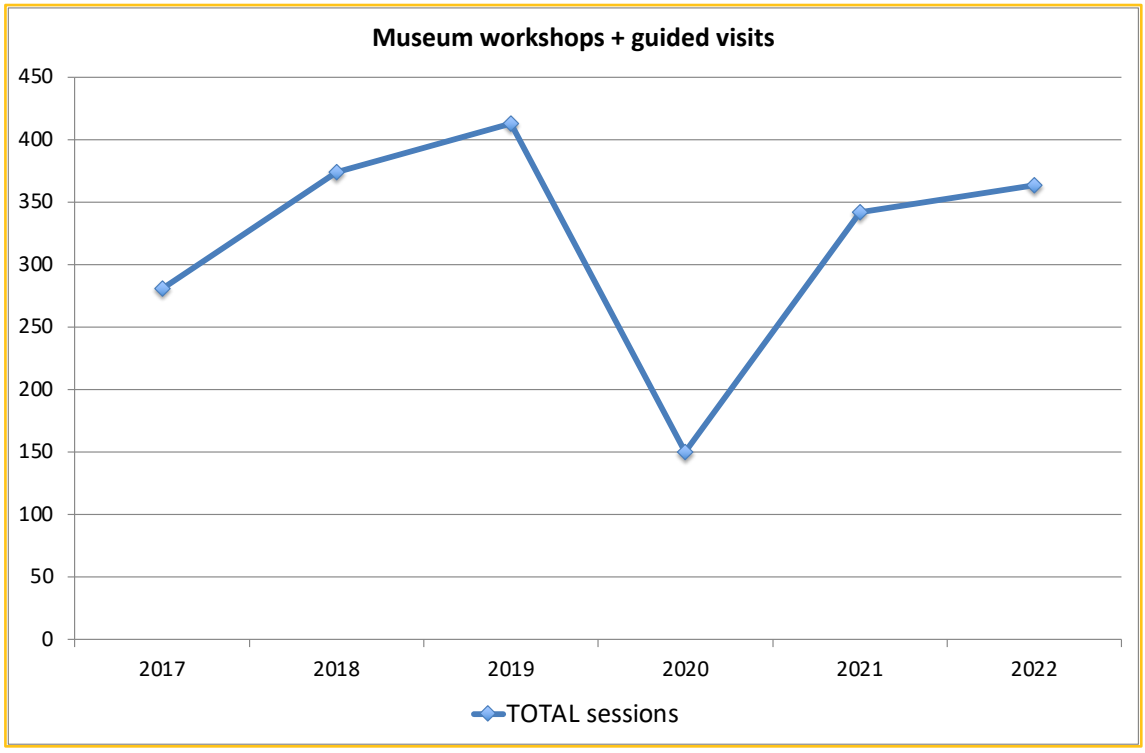
After a tendering process in 2022, the elaboration of the museographical project (and the direction of the future executive project) was granted to the company Intervento. Since then, members of the company and the ICP have been collaborating in the elaboration of this project, expected for 2023. The remodeling of the new exhibit should ideally be finished in early 2024 to the latest, subject to sufficient funding. Following the recommendations of the museological plan, along with the opinions of the visitors collected on recent years, the new exhibit should include a greater amount of fossils than the current one. The ground floor will be devoted to the Cenozoic era (with emphasis on the Miocene), while the first floor will focus on the Paleozoic and Mesozoic eras.

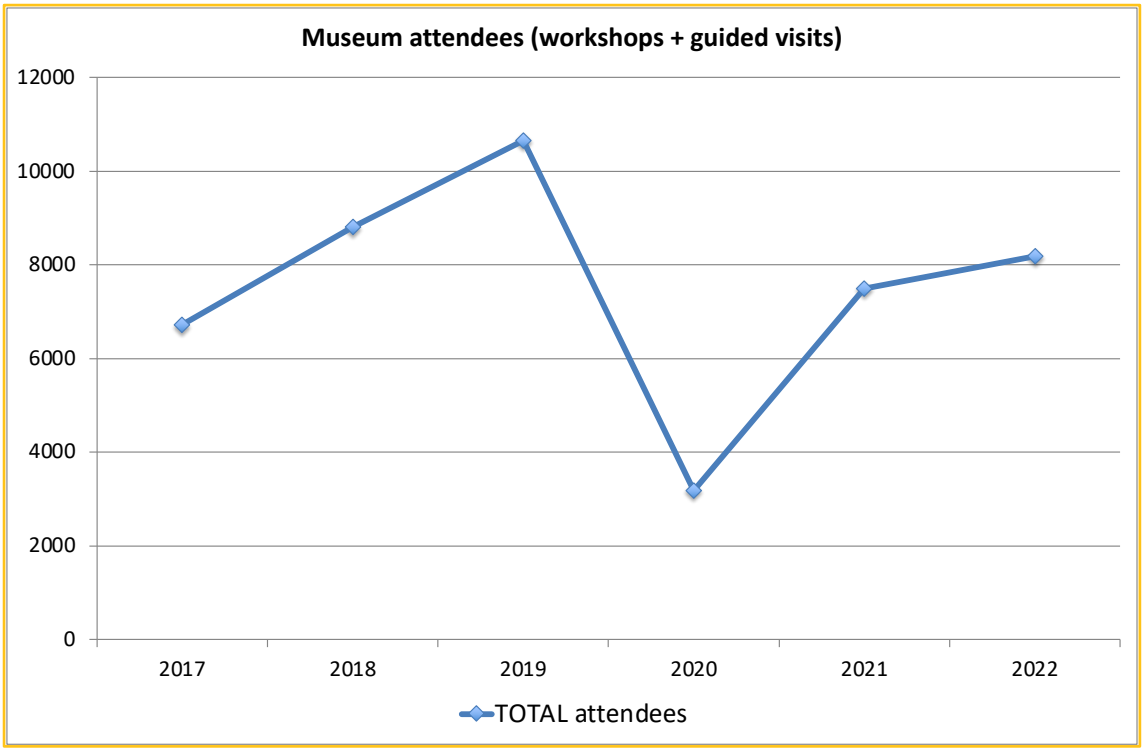


Temporary exhibits. Through 2022, the temporary exhibit "El Triceratops torna a Sabadell", inaugurated in 2015, has been maintained at the first floor of the exhibit at the ICP Museum. This exhibit pivots around the cast of a *Triceratops* skeleton that was exhibited at the former Institut de Paleontologia M. Crusafont since 1986 until 2009, when the permanent exhibit of the ICP was remodeled. The need to exhibit again this skeleton responded to the requests by many ICP visitors, for which the *Triceratops* had become an icon of paleontology in Sabadell. However, it will no longer be available once the exhibit is remodeled, although a solution should be ideally be agreed with the City Council of Sabadell so that it can remain available to citizens.

From 29 September to 31 December, the ICP Museum also hosted "(In)visibles i (O)cultes", a traveling exhibit produced by the Museu de Ciències Naturals de Barcelona and adapted by the Xarxa de Museus de Ciències Naturals de Catalunya, focusing on female scientists from different times who have been silenced from the history of science because of their gender. On its way through the Museum, a panel on paleontologist Lourdes Casanovas, from the former Institut de Paleontologia M. Crusafont in Sabadell (the predecessor of the ICP), was included in the exhibit.

Guided visits and workshops. Ten different activities (workshops and guided visits) were offered to the school community in 2022. A total of 325 sessions of these activities, with 7,303 participant schoolchildren, were performed in 2022. This represents a slight increase compared with the average of the five preceding years (262 sessions with 6,467 attendees), consolidating the recovery since the drop in 2020 because of the pandemic, but not reaching yet the prepandemic levels of 2019.





ICP MUSEUM OUTREACH ACTIVITIES (2017–2021 vs. 2022)							
Museum Activities	2017	2018	2019	2020	2021	Average	2022
School sessions (workshops/guided visits)	245	326	354	109	274	**261.6**	**315**
Family workshops	25	37	46	34	56	**39.6**	**38**
Guided visits	11	11	13	7	12	**10.8**	**11**
TOTAL sessions	281	374	413	150	342	**312.0**	**364**
School attendees	5,863	7,761	9,489	2,564	6,659	**6,467.2**	**7,303**
Family attendees	633	786	909	505	626	**691.8**	**649**
Guided visit attendees	217	257	264	264	204	**209.4**	**227**
TOTAL attendees	6,713	8,804	10,662	3,174	7,489	**7,368.4**	**8,179**

Free outreach activities. Beyond the paid workshops and guided visits offered regularly to scholars and families, as in preceding years, several free outreach activities were planned at the ICP Museum in 2022.

- Literary contest: 11th edition of contest "Històries Fòssils" | 29/04/22 | 86 contestants.
- Open days: Sant Jordi, Dia Internacional dels Museus, Nit dels Museus, La Salut, Science Week, Festa Major, and every first Sunday of the month | 5,421 attendees.
- Anniversary of the Museum: Drawing contest "Dibuixem el passat" focused on the paleontologist Lourdes Casanovas | 01/10/22 | 34 contestants.
- Science Week: Visit to the ICTA-ICP building and family workshop on paleoart by Roc Olivé | 15/11/22 to 20/11/22 | 54 attendees.
- Workshop of Christmas Paleocards: 12/12/22 | 50 attendees.
- Scholar workshop: "I què en fem d'un fossil?" within the Escolab project | November 2022 | 50 attendees.

Outreach activities outside the Museum

Presence in the mass media. The presence of ICP researchers and technicians in traditional mass media (radio, press and TV) and Internet during 2022 can be summarized as follows (the list is not exhaustive and only the most significant participations are listed):

- TV: CCMA (TV3 and C33), 07/02/2022 | Coverage on the new of the description of the new dinosaur species *Abditosaurus kuehnei* with interview of Bernat Vila.
- TV: EITB, 09/02/2022 | Coverage for the newscast on the description of *A. kuehnei* with interview of Bernat Vila.
- Press: El Periódico, 07/02/2022 | Article "*Abditosaurus kuehnei*, una nueva especie de dinosaurio que vivió en los Pirineos hace 70 millones de años"
- Press: El País, 07/02/2022 | Article "Identificado en el Pirineo catalán un nuevo dinosaurio excepcionalmente grande para su época"
- Press: La Vanguardia, 08/02/2022 | Articles "El 'dino' catalán que descubrió el Pirineo" and "El dinosaure català amagat al Pirineu" in the Spanish and Catalan edition of the newspaper.
- Internet: Muy Interesante, 07/02/2022 | Article "Descubren una nueva especie de dinosaurio en los Pirineos"
- Internet: Agencia SINC, 07/02/2022 | Article "Descrito un nuevo titanosaurio que vivió en los Pirineos hace 70 millones de años"
- Internet: Sci-News, 08/02/2022 | Article "New Species of Titanosaur Unearthed in Spain"
- Radio: Radio Sabadell, 06/07/2022 | Interview of Teresa Esquirol on the summer family workshops at the Museum.
- Press: El País, 18/11/2022 | Contribution of Albert G. Sellés to the article "Descubierta en el Pirineo catalán una tortuga marina prehistórica del tamaño de un coche" on the description of the new marine giant turtle of the Pyrenees *Leviathanochelys aenigmatica*.
- Press: El Mundo, 18/11/2022 | Contribution of Albert G. Sellés to the article "Descubierta en el Pirineo catalán una tortuga marina prehistórica del tamaño de un coche" on the description of the new marine giant turtle of the Pyrenees *Leviathanochelys aenigmatica*.
- Press: ABC, 18/11/2022 | Article "Hallan en los Pirineos los restos de 'Leviatán', una de las tortugas más grandes del mundo, del tamaño de un monovolumen".
- Press: New Scientist, 18/11/2022 | Contribution of Àngel H. Luján to the article "Gigantic turtle from the dinosaur era was almost 4 metres long".
- Press: Daily Mail, 18/11/2022 | Contribution of Àngel H. Luján to the article "What the shell? Huge turtle measuring up to 12 feet long roamed Spain 83 million years ago, fossil analysis reveals".
- Internet: Agencia SINC, 17/11/2022 | Contribution of Oscar Castillo to the article "Descubiertos los restos de la gigantesca y enigmática 'tortuga leviatán' en los Pirineos.

International Day and Night of Museums. As in previous years, the ICP planned, together with the city council of Sabadell and other museums from the city, the "International Day and Night of Museums in Sabadell", respectively in May 18 and May 14. Due to the pandemic situation, special restrictions applied. The activities organized by the ICP Museum included the exhibit of a recently restored emblematic skeleton of *Myotragus balearicus* that, by the mid 20th century, used to be at the Paleontology Section of the Museu de la Ciutat de Sabadell. On the occasion of the European Night of the Museums, the chorus from Sabadell "Els Notes" performed some pop and jazz songs at the ICP Museum. On 15 May, all the city museums organized family workshops at the Plaça del Gas.

Science Cafés. As in previous years, in 2022 the ICP coorganized with other entities from Sabadell the series of talks entitled "Cafès Científics". These scientific dissemination talks are intended to promote an informal contact between the scientific community and the general public, with the ultimate aim to boost the debate about scientific topics among the society. After the pandemic restrictions of previous years, in 2022 the talks returned to the face-to-face original format at the bar of the Unió Excursionista de Sabadell. The ICP participated on 15 November with the talk "20 anys de la troballa d'en Pau, el primat que ho va canviar tot" by I. Casanovas-Vilar, with 25 attendees.

FECYT's Red UCC+I. On 2015, the Outreach and Communication Department was included as an accredited member to the 'Red de Unidades de Cultura Científica y de la Innovación (Red UCC+i)' from FECYT (Fundación Española para la Ciencia y la Tecnología). In the annual call "Ayudas para el fomento de la cultura científica, tecnológica y de la innovación", FECYT granted the ICP a project entitled "Paleoarte: una herramienta clave para divulgar la paleontología" (FCT-20-17552) to hire part-time the paleoartist Roc Olivé to elaborate artwork of extinct fauna and paleoenvironments to support dissemination actions as well as to organize paleoart workshops for schoolchildren and families at the ICP Museum.

Other outreach activities. Other relevant outreach activities performed by the Communication & Outreach Department and/or by researchers/technicians of the ICP include the following:

- Els ecosistemes dels dinosaures": Talk by Albert Prieto-Márquez at the Museu Torre Balldovina of the Centre d'Estudis de la Natura del Barcelonès Nord | 12/01/22.
- "Conservació del patrimoni paleontològic": Talk by Xènia Aymerich at the Museu Torre Balldovina of the Centre d'Estudis de la Natura del Barcelonès Nord | 16/02/22.
- "La tortuga marina gegant del Cretaci Superior del jaciment fòssil de Cal Torrades (Alt Urgell)": Talk by Oscar Castillo, moderator Àngel Galobart (ICP), within the framework of conference cycle "Tribuna d'Arqueologia 2022" | 23/03/22.

- "Pau": Short video production with the participation of Júlia Arias-Martorell within the framework of the "Ciutat Augmentada" science dissemination project of the Barcelona city council and Mandarina de Newton | 04/4/22.
- "550 milions d'anys d'evolució en les roques de Lleida. El jaciment paleontològic del Talladell": Talk by Àngel Galobart at the Museu Comarcal Urgell-Tàrrega | 07/04/22.
- "Què en sabem dels dinosaures que van viure a Catalunya?": Talk by Bernat Vila, Biblioteca Pública de Girona Carles Rahola | 23/05/22.
- "Fem de paleontòlegs i paleontòlogues" and "El món dels fòssils": Family workshops at the Festa de la Ciència (Barcelona) | 28/05/22 and 29/05/22 | 63 attendees.
- "El Talladell: un viatge paleontològic de millions d'anys": Talk by Àngel Galobart at the XII Feta de l'EMD El Talladell | 11/06/22.
- "Després de tot": Talk by Marc Furió on extinctions within the framework of the International Symposium on Electronic Art (ISEA 2022) | 19/06/22.
- "El último gran dinosaurio": Film forum with the participation of Bernat Vila at the Museo de Ciencias Naturales of the Universidad de Zaragoza within the framework of the activity "Encuentros en el Museo" | 20/06/22.
- Open day at the fossil site of els Casots: Organized by the ICP and the Ajuntament de Subirats | 03/07/22.
- "Ossos fòssils al Permià de la península Ibèrica: una finestra única als ecosistemes de vertebrats més antics de Catalunya": Talk by Josep Fortuny and Eudald Mujal within the framework of conference cycle "Tribuna d'Arqueologia 2022" | 5/10/22.
- "Experiències d'un paleontòleg a meitat del doctorat": Talk by Oriol Monclús at the IES Montserrat Roig (Sant Andreu de la Barca) | 10/11/22.

Outreach activities throughout Catalonia

Outreach activities of the ICP are considerably further extended in territorial scope by means of agreements with other museums and interpretation centers. The most significant ones during 2022 are summarized below.

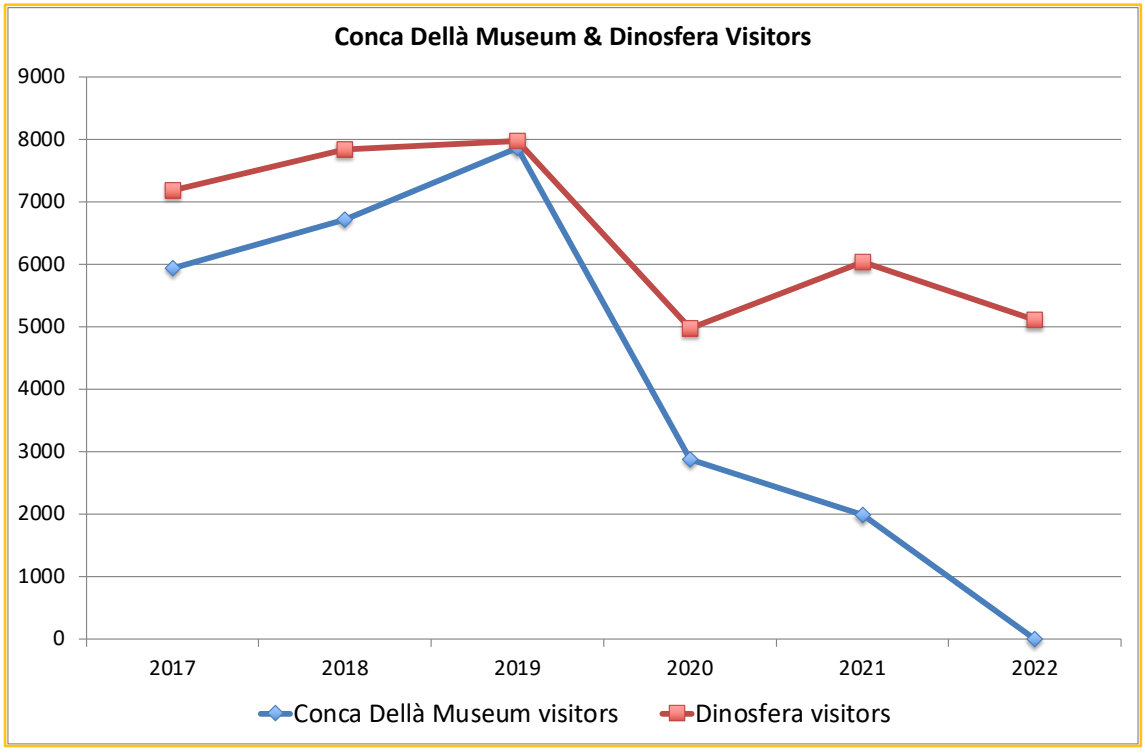
Dinosaurs from the Pyrenees. Since 2015, there is a collaboration agreement between the ICP and the city councils of Isona i Conca Dellà and Coll de Nargó, by virtue of which the ICP assumed a leading role in the management of the Conca Dellà Museum and the associated exhibit Dinosfera in Coll de Nargó. This activity has been developed since then within the framework of 'Dinosaurs of the Pyrenees' project led by the ICP and thanks to the financial support of the Culture Department of the Generalitat de Catalunya. This project focuses on the research, conservation, study and dissemination of dinosaur fossil remains from the Catalan Pre-Pyrenees (el Berguedà, l'Alt Urgell, el Pallars Jussà and la Noguera), and is directed by Dr. Àngel Galobart, head of the Dinosaur Ecosystems Research Group of the ICP and also the Director of the Conca Dellà Museum. Other researchers of this research group are also involved in the

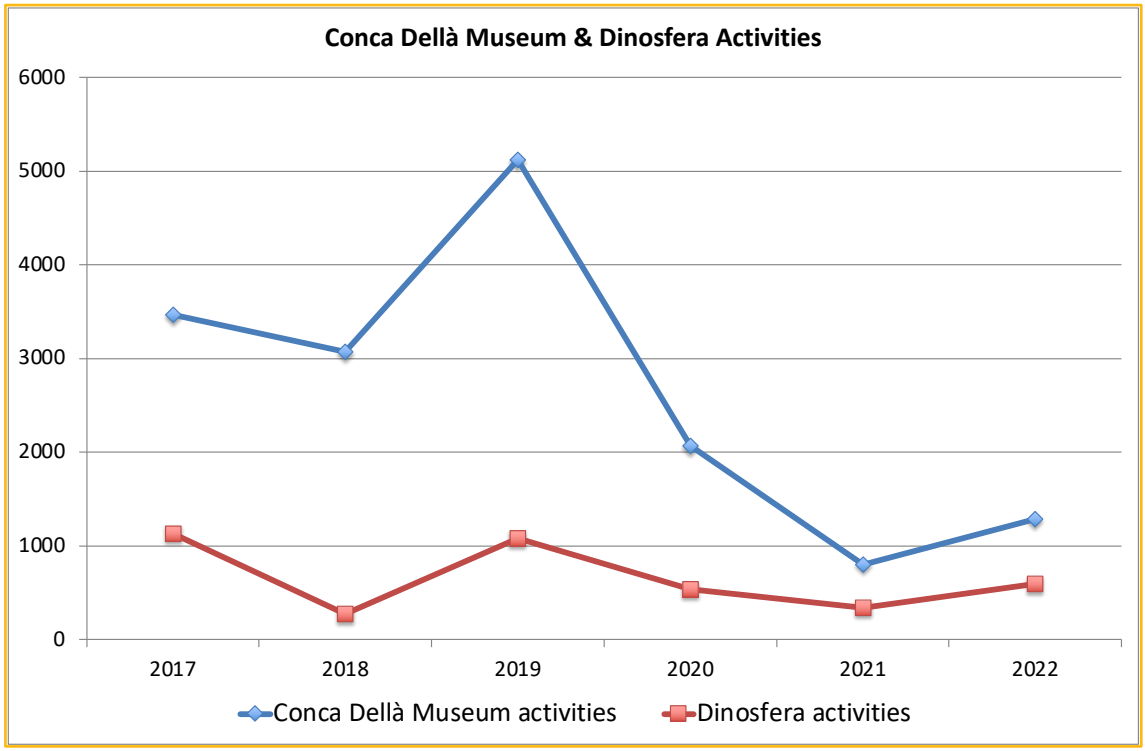
project, and the head of the Outreach & Communication Department of ICP is the responsible to coordinate the communication of the 'Dinosaurs of the Pyrenees' project (including the website and social networks).

The results of the above-mentioned collaboration, in the framework of the 'Dinosaurs of the Pyrenees' project, are very satisfactory from the viewpoint of increasing the territorial scope of outreach activities performed by the ICP. Such activities are directed to a school and family public, and performed with the participation of local companies and monitors. There were no visitors to the Conca Dellà Museum in 2022 because of the integral remodeling of the main building, which started in November 2020, was not finished yet (delayed until early 2023). The number of visitors to Dinosfera in 2022 (5,119) was slightly below the average of the last five years (6,807), while the number of participants in other activities organized by the Conca Dellà (1,286) or Dinosfera (597) increased relative to 2021 but was lower than the averages of the five preceding years (2,906 and 673, respectively). The main paleontological outreach activities performed in 2022 in the framework of the Dinosaurs of the Pyrenees project are the following:

- Guided visits to the Covet church and Castell de Lordà.
- Guided visits to the dinosaur fossil tracks from Orcau and Basturs.
- Guided visits to excavation sites near Coll de Nargó.

It is noteworthy that along 2022 ICP researchers have assessed the contents and design of a new website on the collection of fossils from the Pedrera de Meià (linked to the Centre d'Interpretació de Vilanova de Meià, included in the Dinosaurs of the Pyrenees network), promoted by Geoparc Orígens, UNESCO Geoparc Mundial, and Museu de la Conca Dellà.



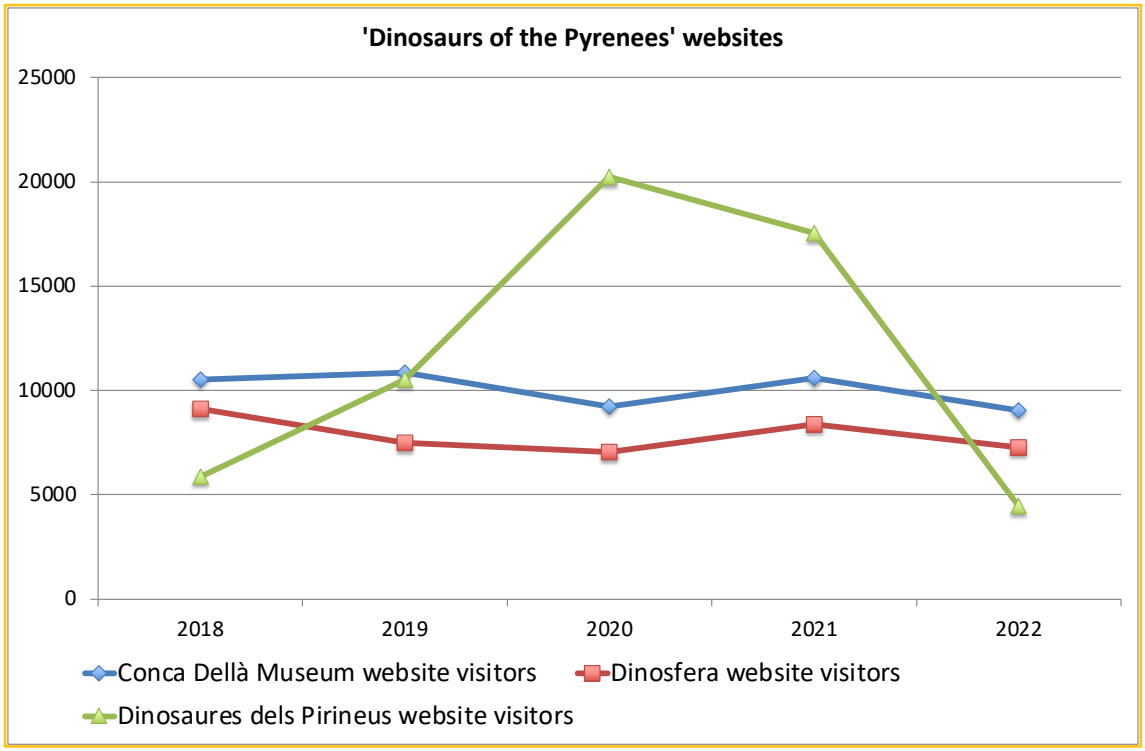


'DINOSAURS OF THE PYRENEES' (2017–2021 vs. 2022)							
Museum Activities	2017	2018	2019	2020	2021	Average	2022
Conca Dellà Museum visitors	5,937	6,724	7,871	2,882	1,993	**5,081,4**	**0**
Dinosafera visitors	7,194	7,846	7,974	4,975	6,046	**6,807,0**	**5,119**
Conca Dellà Museum activitites	3,469	3,073	5,123	2,066	801	**2,906,4**	**1,286**
Dinosfera activities	1,132	273	1,079	538	343	**673,0**	**597**

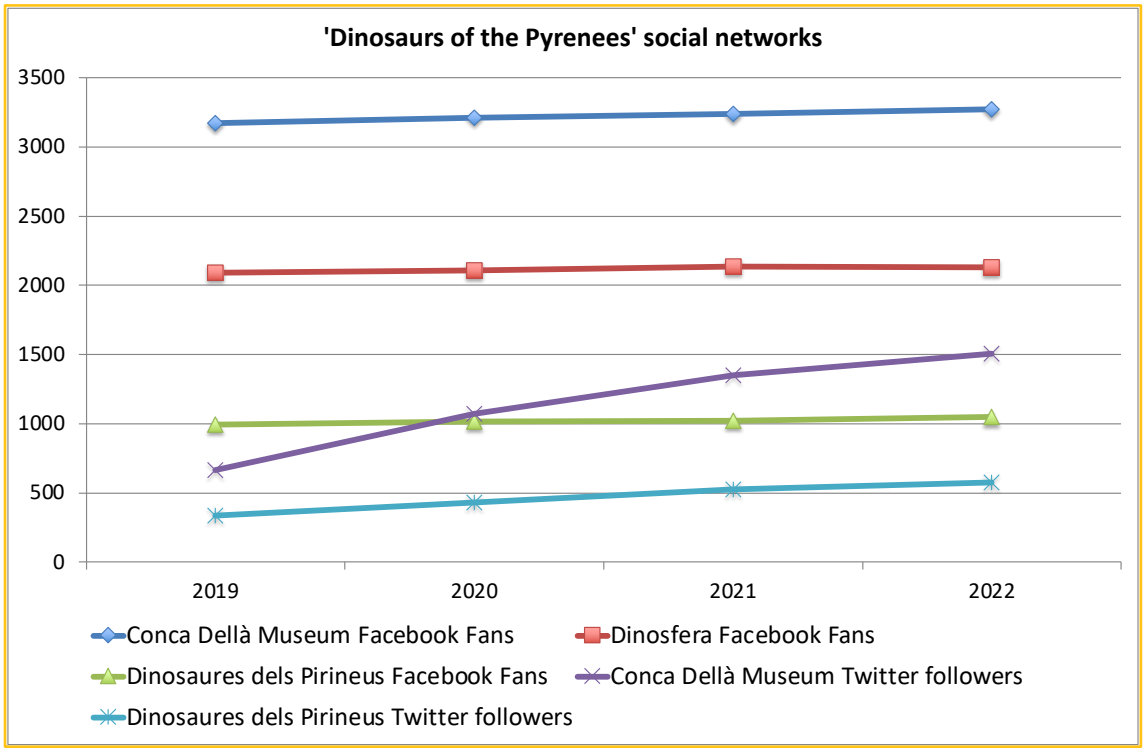
With regard to visitors of the websites of the Conca Dellà Museum, Dinosfera, and Dinosaures dels Pirineus (data since 2018), in 2022 they had 9,032, 7,251, and 4,454 visitors, respectively, which represents a descrease compared with the figures of the previous year as well as the averages of the five preceding years. The decrease is particularly marked in the website of Dinosaures dels Pirineus probably, due to a low rate of news posting and an outdated agenda that has been not possible to keep up to date because of insufficient human resources.

'DINOSAURS OF THE PYRENEES' WEBSITE VISITORS (2017–2021 vs. 2022)						
Data Source	2018	2019	2020	2021	Average	2022
Conca Dellà Museum website visitors	10,530	10,847	9,243	10,579	**9,925.3**	**9,032**
Dinosfera website visitors	9,133	7,491	7,051	8,380	**7,543.3**	**7,251**
Dinosaures dels Pirineus website visitors	5,847	10,537	20,239	17,530	**13,190.0**	**4,454**

Regarding social networks (Facebook and Twitter; data only since 2019), they appear quite stagnant or show only very slight increases, except for the Twitter account of the Conca Dellà Museum, which displays a steady and marked increase since 2019.

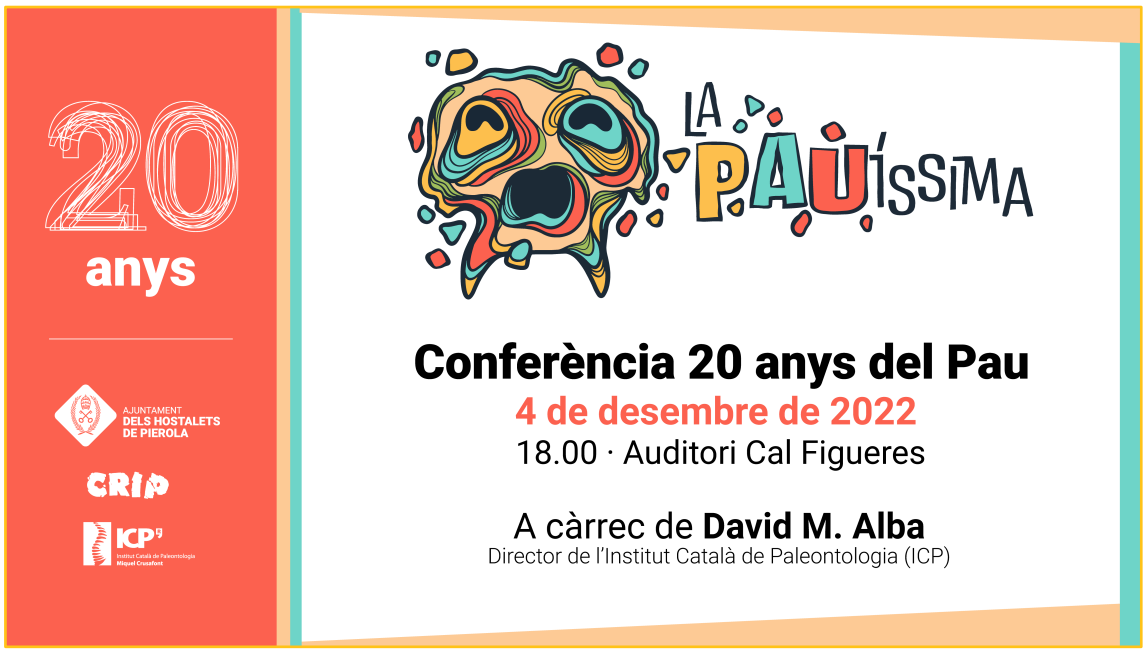


'DINOSAURS OF THE PYRENEES' SOCIAL NETWORKS (2017–2021 VS. 2022)					
LIKES OR FOLLOWERS	2019	2020	2021	AVERAGE	2022
Conca Dellà Museum Facebook Fans	3,173	3,214	3,242	**3,226.0**	3,275
Dinosfera Facebook Fans	2,094	2,108	2,138	**2,117.8**	2,131
Dinosaures dels Pirineus Facebook Fans	993	1,014	1,021	**1,020.0**	1,052
Conca Dellà Museum Twitter followers	666	1,073	1,351	**1,149.3**	1,507
Dinosaures dels Pirineus Twitter followers	336	433	524	**467.5**	577



CosmoCaixa (Barcelona). CosmoCaixa from Obra Social "la Caixa" in Barcelona has a number of visitors several orders of magnitude higher than the ICP Museum in Sabadell. Therefore, collaborative agreements with CosmoCaixa not only extend the territorial scope of the ICP, but further amplify to a great extent the outreach capacity that the ICP would have on its own. Since 2019, the ICP collaborates with CosmoCaixa in the exhibition of three partial skeletons of apes (*Pierolapithecus*, *Pliobates*, and *Hispanopithecus*), a partial skeleton of a deinothere, and two shells of giant tortoises, in the framework of the "Univers" exhibit. These fossils have been on exhibit throughout 2020–2022.

CRIP (els Hostalets de Pierola). In October 2018, the ICP signed a collaboration agreement with the Culture Department of the Generalitat de Catalunya and the Centre d'Interpretació i Restauració Paleontològica (CRIP) in els Hostalets de Pierola, which aims to promote the recuperation, research and dissemination of the paleontological heritage from this area. On behalf of this agreement, throughout 2021 the ICP assessed the company Group Transversal in charge of the design and contents of the CRIP new exhibition and provided indications to ICRA Art for the artworks on fauna recreations. In 2022, the ICP continued collaborating with technicians from the CRIP by providing advice whenever requested as well as by facilitating photographs and other materials for the temporary exhibit organized by CRIP commemorating the 20th anniversary of the discovery of Pau (the *Pierolapithecus* sekeleton described in 2004 in *Science*). In the framework of such celebration, the Director of the ICP and codiscoverer of *Pierolapithecus* gave a talk entitled "El dia que en Pau va veure la llum" in December 2022 at els Hostalets de Pierola and further published a popularizing article in the local journal *L'Hostal*.

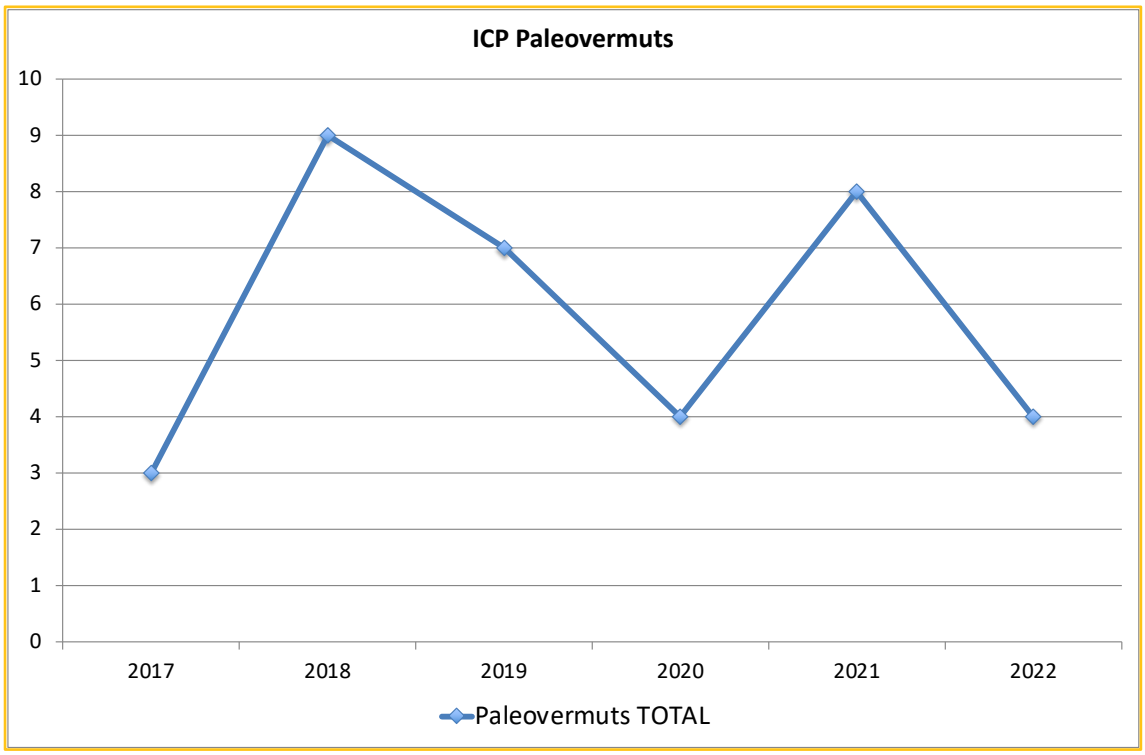


Internal communication

Paleovermuts. In 2022 the Communication & Outreach Department of the ICP organized four 'paleovermut' internal talks (see the table below for further details). Half of them were given by external researchers and the others by the ICP Director.

PALEOVERMUTS (2022)	
Speaker & Title	Date
Miquel Carandell Baruzzi (External Researcher) – "L'Home d'Orce: Controvèrsia, mitjans i política en la recerca dels orígens de la humanitat"	21/04/2022
Ghislain Thiery (External Researcher) – "Exploring the mammalian tooth like a landscape: an introduction to dental topography"	24/05/2022
David M. Alba (ICP Director) – "Paleovermut del Director"	27/05/2022
David M. Alba (ICP Director) – "El dia que en Pau va veure la llum, ara fa vint anys"	15/12/2022

PALEOVERMUTS (2017–2021 vs. 2022)							
Talks	2017	2018	2019	2020	2021	Average	2022
ICP director	1	1	1	0	1	**0.8**	**1**
ICP non-academic staff	0	0	0	1	4	**1.0**	**0**
ICP researchers	2	6	4	2	3	**3.4**	**1**
Guest or visiting researchers	0	2	2	0	0	**0.8**	**2**
Other	0	0	0	1	0	**0.2**	**0**
TOTAL	3	9	7	4	8	**6.2**	**4**



Internal bulletin. In 2022, the Communication & Outreach Department sent a single internal bulletin to ICP personnel (June 9), which included links to news on ICP research outputs and Museum posted on the website as well as relevant documents, such as the new Strategic Plan 2022-2025 or the 2021 Annual Report. Due to the low production of website news, relevant information was sent to personne by other means, such as emails.

Non-discrimination. The main actions undertaken by the Non-Discrimination Committee in terms of internal communication during 2022 are summarized below.

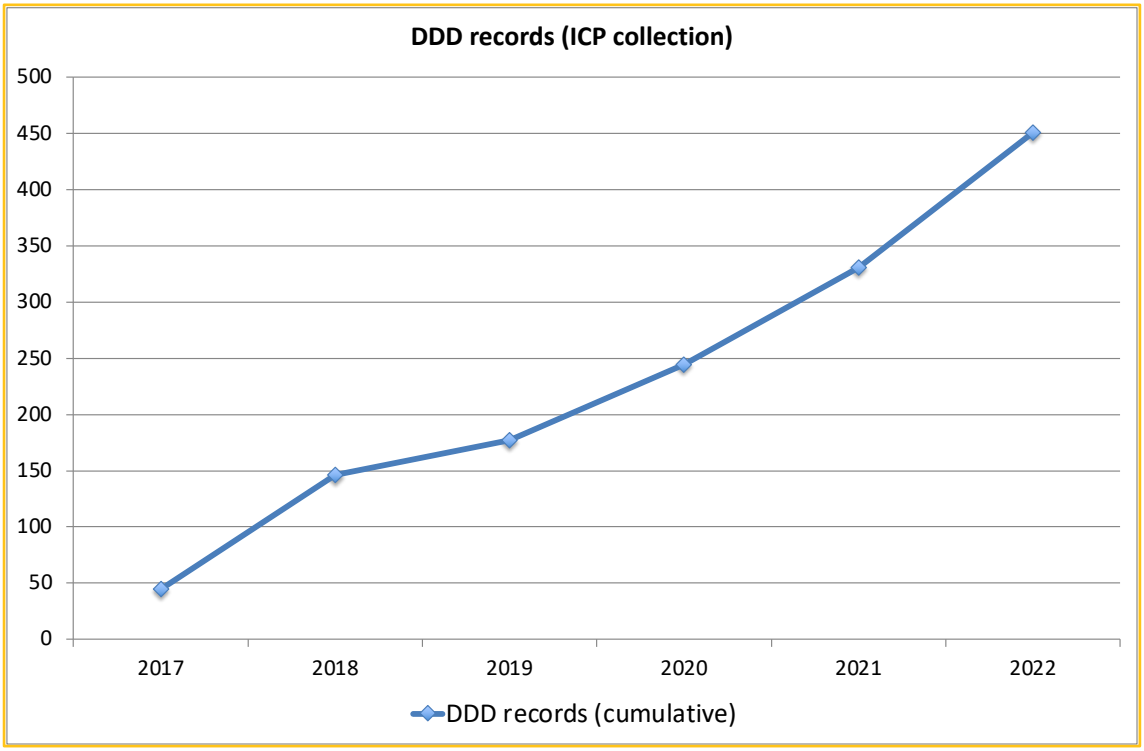
- Dissemination of the "Viquimarató al PRBB": Dissemination of a PRBB edit-a-thon action to try to increase the visibility of women in scince, owing to the International Day of Women and Girls in Science | 03/02/22.
- Dissemination of the social networks action "En ciència també passa": Dissemination of a CREAF and Javier Royo campaign to highlight gender inequality in science, owing to the International Day of Women and Girls in Science | 11/02/22.
- Dissemination of different activities at the UAB Campus: Dissemination of talks, poetry readings, and cineforum organized by different UAB faculties, owing to the International Women's Day | 08/03/22.
- "1a Trobada per a dones i persones de gènere no conforme de l'ICP": Organization of the first ICP meeting of women and gender nonconforming people, a safe space to share the concerns and daily challenges thar come with living in a patriarchal and heteronormative society | 29/04/22.
- Dissemination of survey "Mujeres y Ciencia": Dissemination of a survey of the Ministerio de Ciencia e Innovación about mentoring program for young researchers | 22/06/22.
- Dissemination of talk "ConversesNat. Intersexualitats: història, tensions i aliances amb els discursos científics": Dissemination of a talk organized by the Museu de Ciències Naturals de Barcelona about intersex and science | 28/10/22.
- Dissemination of video "Sí al consentiment": Dissemination of a video made by the Departament d'Igualtat i Feminismes (Generalitat de Catalunya) about a new culture of consent, owing to the International Day for the Elimination of Violence against Women | 25/11/22.

Digital repositories and platforms for research outputs

ICP webpage. The scientific production of the ICP is periodically updated at the ICP website. In particular, the references of SCI papers with the corresponding DOI (digital object identifier, which enables to access the paper on the journal's website) are listed here: http://www.icp.cat/index.php/ca/publicacions1/publicacions-sci. In turn, the whole scientific production for the ICP can be downloaded in PDF format from the following link: http://www.icp.cat/attachments/publicacions/ICP_Publications.pdf.

UAB DDD. Accessing the full version of the papers depends on the subscription to the various journals from the network of origin, except for papers published in open access (OA). Publishing in OA is not a measure of research quality per se, but provides higher visibility to the research output and rapidly becoming a common requirement from funding agencies such as the ERC. The ratio of gold/bronze open access SCI papers relative to total SCI papers of the ICP during the last five years has been above one-third (and even surpassed 50% in 2020 and 2021). This represents an important budgetary effort because many open access journals (particularly the most prestigious ones) have expensive publication fees and the agreements between Spanish universities (including the UAB) and major publishers do not apply to research centers such as the ICP. As a result, although the Strategic Plan of the ICP aims to increase the proportion of papers published in OA, this is hindered by the lack of sufficient research funds that can be devoted to defraying publication fees. An alternative for papers published in subscription journals is to take advantage of the 'green open access' options allowed by the copyright transfer agreements of most journals—by virtue of which postprints of the articles can be made freely accessible in open access repositories, frequently after an embargo period of several months.

UAB DDD RECORDS – ICP COLLECTION (2017–2021 VS. 2022)							
DDD RECORDS	2017	2018	2019	2020	2021	AVERAGE	2022
ICP collection records (new)	3	101	31	67	87	**57.8**	**120**
ICP collection records (cumulative)	45	146	177	244	331	—	**451**



With the aim to make use of green OA possibilities in mind, the Steering Committee of the ICP decided in early 2018 to use the digital repository of the Universitat Autònoma de Barcelona

(the Dipòsit Digital de Documents de la UAB, DDD: https://ddd.uab.cat) to post the open-access production of the institution, either the original papers (in the case of gold open access) or preprints/postprints (in the case of green open access). In particular, the ICP has a section of its own within the DDD repository (https://ddd.uab.cat/collection/icp, and the Outreach & Communication Department of the ICP is in charge of implementing the upload of additional documents. Following an initial peak in 2018, the implementation of this measure has proceeded during the last fives years at a steady pace and indeed accelerated to some extent in 2022.

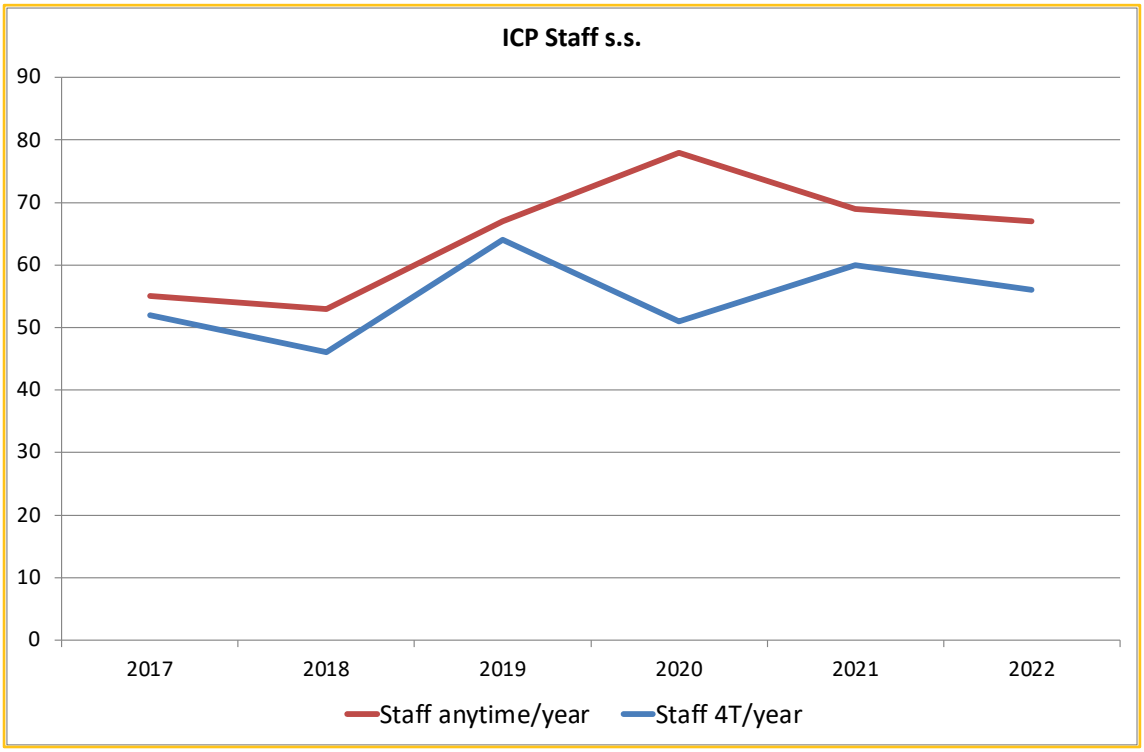
CSUC PRC. In 2018, the ICP also signed an agreement with the Consorci de Serveis Universitaris de Catalunya (CSUC), which shares academic, scientific, library, knowledge transfer and management services, and is integrated by the Generalitat de Catalunya and ten Catalan universities, including the UAB. Such an agreement regulates the participation of the ICP in the Portal de la Recerca de Catalunya (PRC, https://portalrecerca.csuc.cat/), which currently hosts the data on the scientific production of Catalan universities and research centers. By virtue of this agreement, since September 2018 the ICP regularly provides the CSUC with data about its researchers, projects, and scientific outputs. On November 27, 2020 the ICP had updated 606 records to the PRC, whereas on October 25, 2021 the number of records added to 2,204 records, and in the last update of 2022 the amount was 2,472 (2,435 articles, books or book chapters and 37 PhD dissertations).

HUMAN RESOURCES

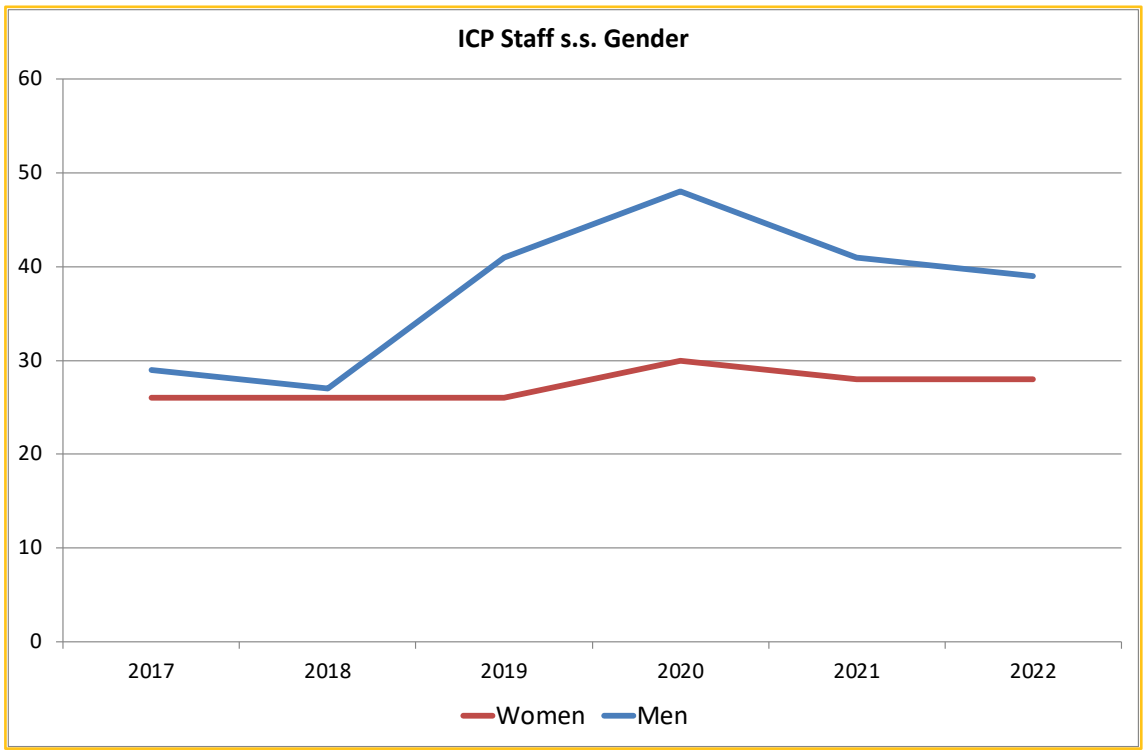
Aiming for excellence in the human resources policies for researchers

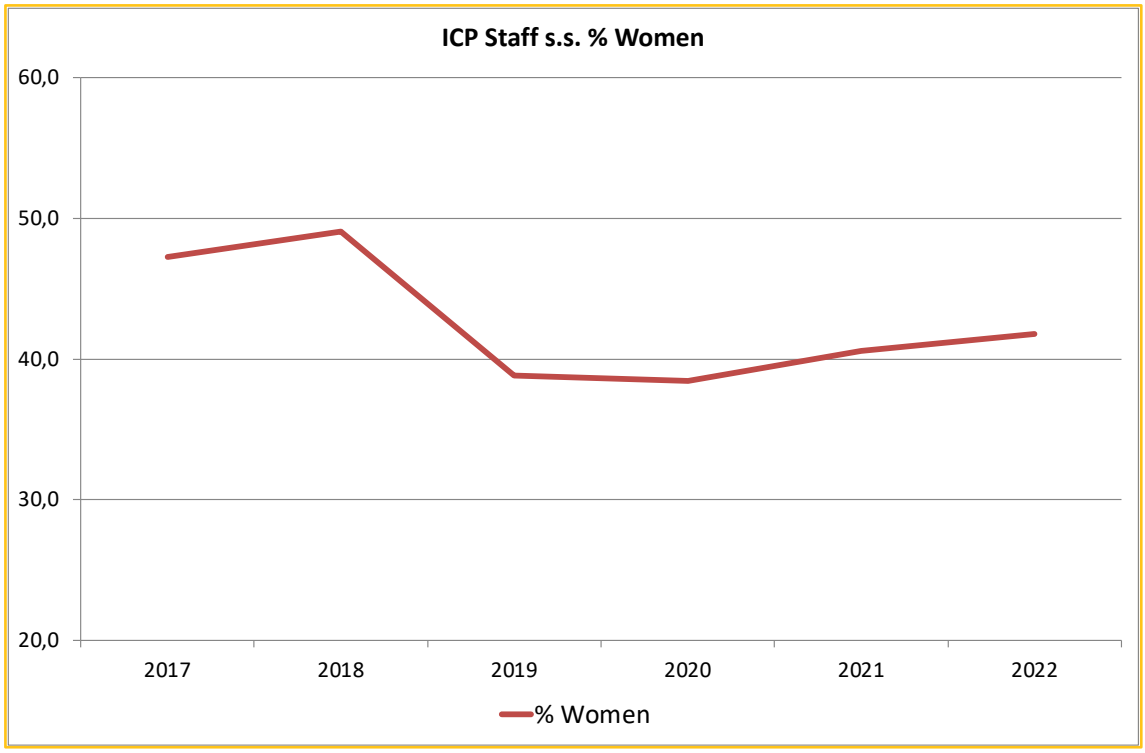
Staff personnel

Staff composition. The composition of the staff personnel of the ICP (i.e., people with a contractual relationship with or formally ascribed to the ICP, thereby excluding research associates, PhD students without a predoctoral grant, collaborators, and people hired occasionally as freelance) is variable through time. In order to compare the ICP staff composition in 2022 with that of previous years, it is possible to rely on total counts per year (irrespective of whether a given person worked the whole year or only a fraction of it) or on a particular year period (such as the four quarter, 4T), which arguably provides a more realistic snapshot of the staff composition at any time. As a result of an increase in work and service personnel for the provision fieldwork services in late 2019 and especially early 2020, the staff counts for 2020 were higher than in the preceding five years. This trend was maintained in 2021, although the figures were lower than in 2020, and decreased further in 2022 due to the concomitant diminution of service provision. As in previous years, the count at the end of 2022 was lower than when the whole year is considered.



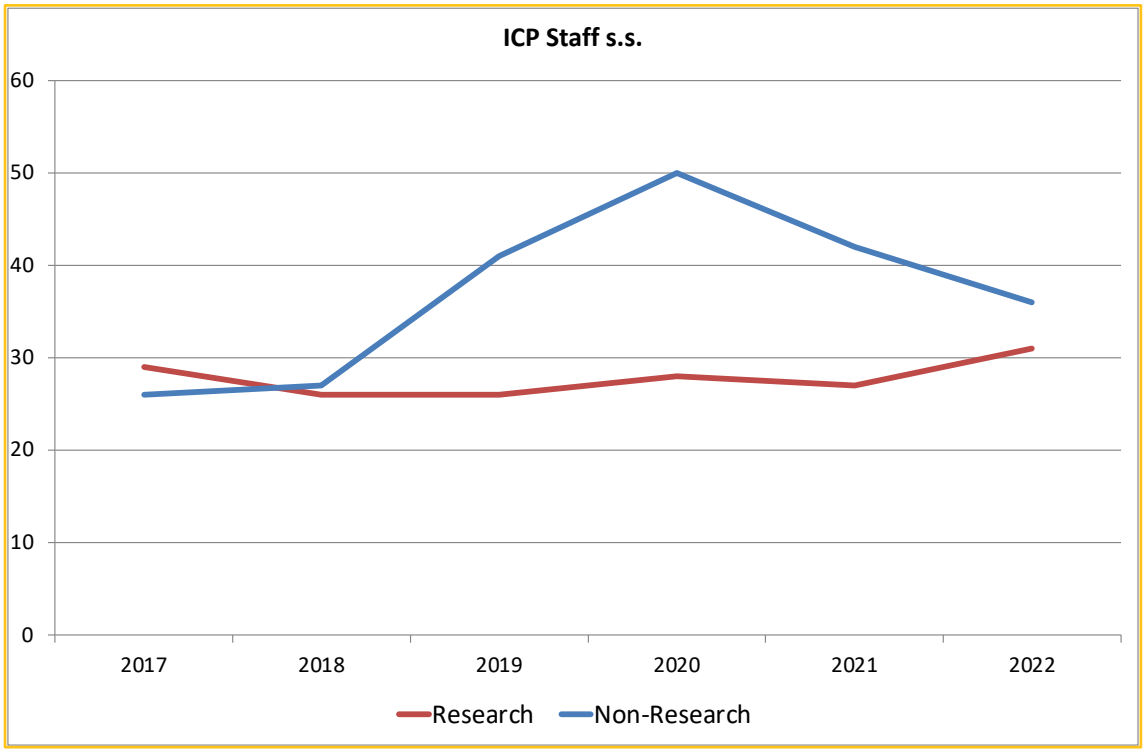
STAFF (2017–2021 vs. 2022)							
Staff Composition	2017	2018	2019	2020	2021	Average	2022
Total staff members (total year)	55	53	67	78	69	**64.4**	**67**
Total staff members (4T)	52	46	64	51	60	**54.6**	**56**
Female staff (total year)	26	26	26	30	28	**27.2**	**28**
Male staff (total year)	29	27	41	48	41	**37.2**	**39**
% female staff (gender ratio)	47.3	49.1	38.8	38.5	40.5	**42.8**	**41.8**

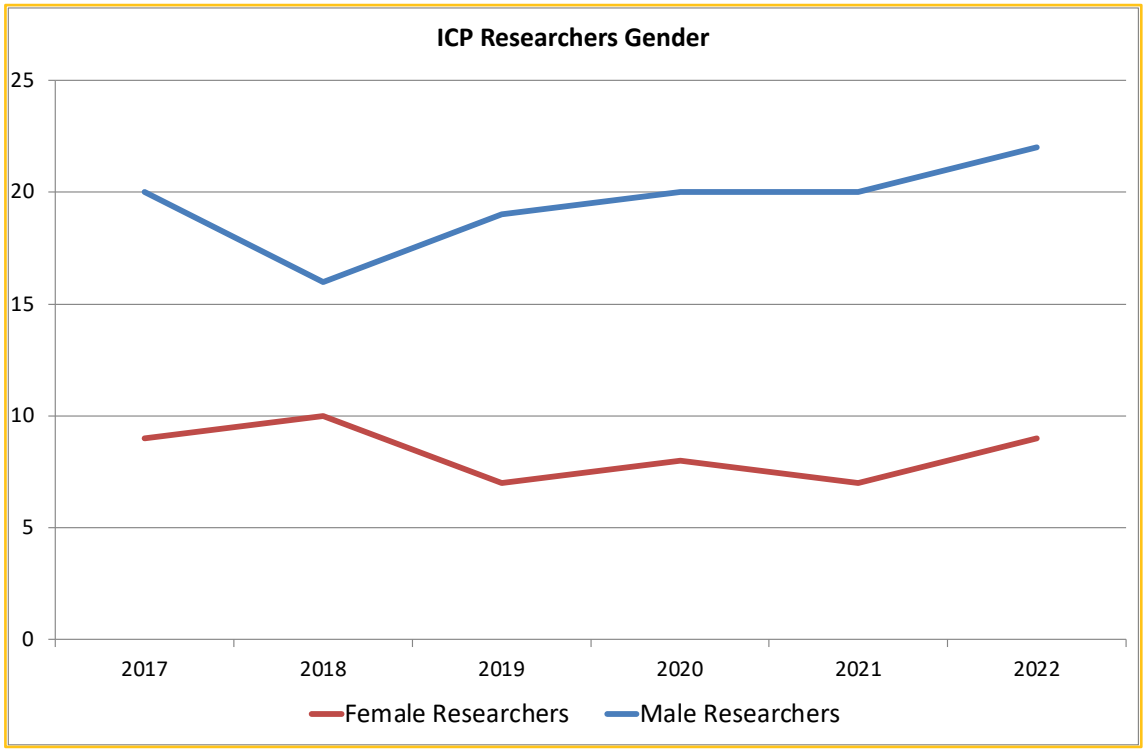


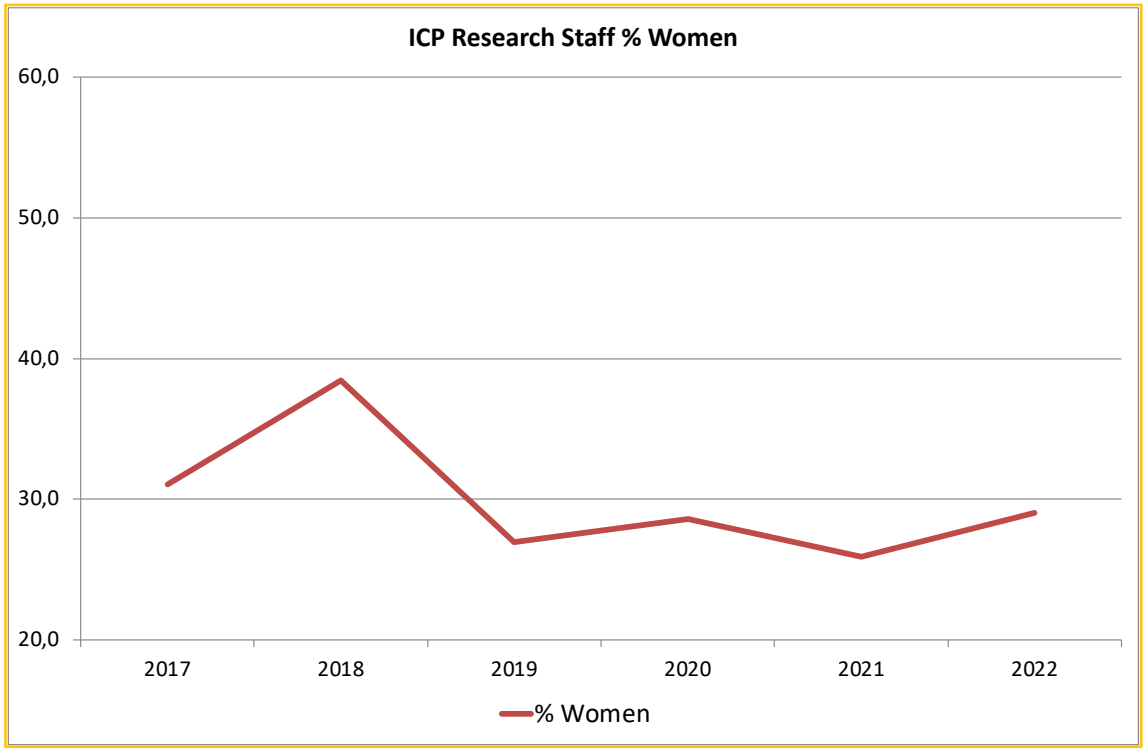


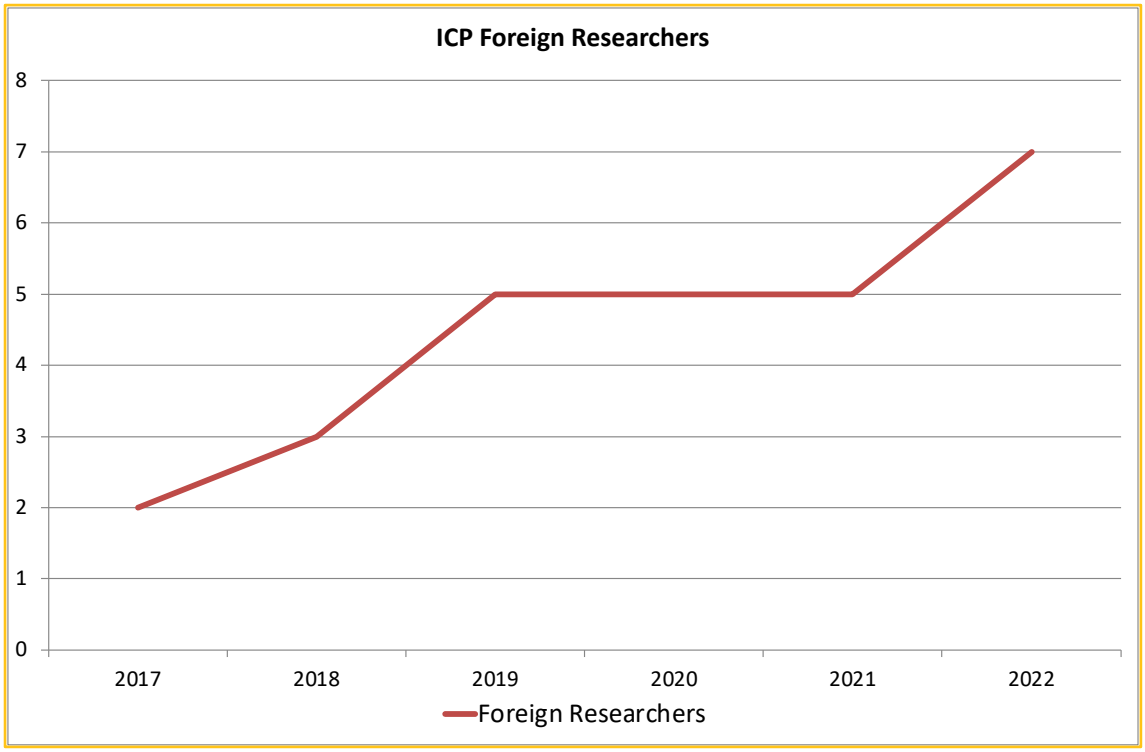
One of the main concerns of the ICP regarding staff composition is its unbalanced gender ratio. Based on total counts per year, staff composition closely approached gender parity in 2017 and 2018, but progressively became more unbalanced toward men until reaching a peak in 2020. During the last couple years, the absolute number of men has decreased while that of women has remained quite stable, resulting in an improved gender ratio of 42% that approaches the average for the preceding five years but is nevertheless still far from the 49% figure of 2018.

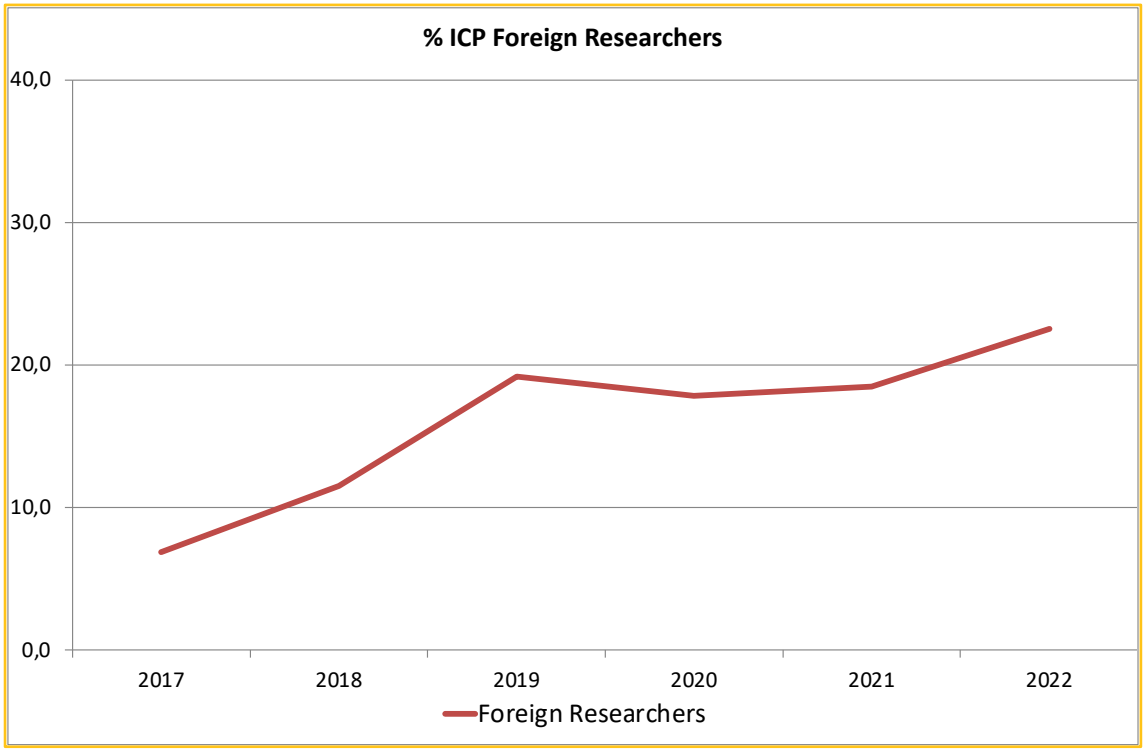
Research staff. With some fluctuations, the proportion between research and non-academic staff remained stable around 50% until 2018, but during subsequent years it decreased due to the increase in work and service personnel for the provision fieldwork services. Given the decrease in service provision in 2022, this proportion increased to some extent (46%), being slightly higher than the average of the five preceding years (43%). In any case, it is noteworthy that the absolute number of researchers, which remained quite stable throughout this period, reached a maximum value of 31 in 2022, being the highest in ICP history. The gender balance for research staff is more biased toward males than for ICP staff as a whole, and has not improved during the last years, with the 2022 figure (29% females) being slightly lower than the average of the five preceding years (30%). In terms of geographic origin, the number of foreign researchers has steadily increased since 2017, unlike that of local researchers, resulting in an overall increase until reaching the figure of 23% in 2022.




ICP Researchers Gender
25
20
15
10
5
0
2017
2018
2019
2020
2021
2022
Female Researchers
Male Researchers

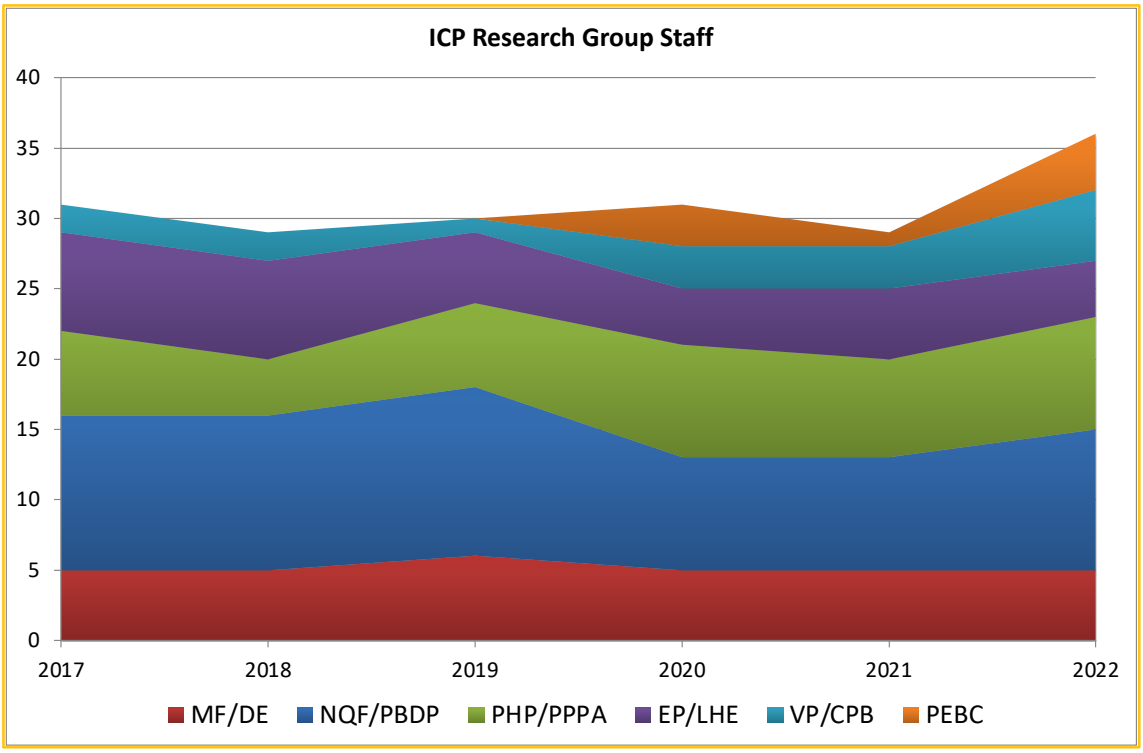

ICP Research Staff % Women
60,0
50,0
40,0
30,0
20,0
2017
2018
2019
2020
2021
2022
% Women


ICP Foreign Researchers
8
7
6
5
4
3
2
1
0
2017
2018
2019
2020
2021
2022
Foreign Researchers


% ICP Foreign Researchers
40,0
30,0
20,0
10,0
0,0
2017
2018
2019
2020
2021
2022
Foreign Researchers

RESEARCH STAFF (2017–2021 vs. 2022)							
Staff Composition	2017	2018	2019	2020	2021	Average	2022
Research staff members	29	26	26	28	27	**27.2**	**31**
Non-Research staff members	26	27	41	50	42	**37.2**	**36**
% Research/Total	52.7	49.1	38.8	35.9	39.1	**43.1**	**46.3**
Female researchers (total year)	9	10	7	8	7	**8.2**	**9**
Male researchers (total year)	20	16	19	20	20	**19.0**	**22**
% female reserchers	31.0	38.5	26.9	28.6	25.9	**30.2**	**29.0**
Foreign researchers (total year)	2	3	5	5	5	**4.0**	**7**
Local researchers (total year)	27	23	21	23	22	**23.2**	**24**
% foreign researchers	6.9	11.5	19.2	17.9	18.5	**14.8**	**22.6**

Research groups. When the composition of research staff is broken down into research groups (associate researchers and PhD students without predoctoral contract not included), using the subdivision implemented in late 2019, it can be seen that the Dinosaur Ecosystems group (formerly Mesozoic Faunas) is the one that has remained more stable. The Paleoprimatology and Paleoanthropology group has experienced some fluctuations but overall has lately increased, whereas the Life History Evolution (formerly Evolutionary Paleobiology) has shrunk. The Paleobiodiversity & Phylogeny group (formerly Neogene & Quaternary Faunas) experienced a marked decrease in 2020 because of the scission of the Paleoecology & Biochronology group, but nevertheless started to recover in 2022 and remains the largest of the ICP research groups. The Computational Paleobiology (formerly Virtual Paleontology) group, in turn, has increased since it was formally established as a research group (formerly it was a technical area), and the same applies to the aforementioned Paleoecology & Biochronology group.



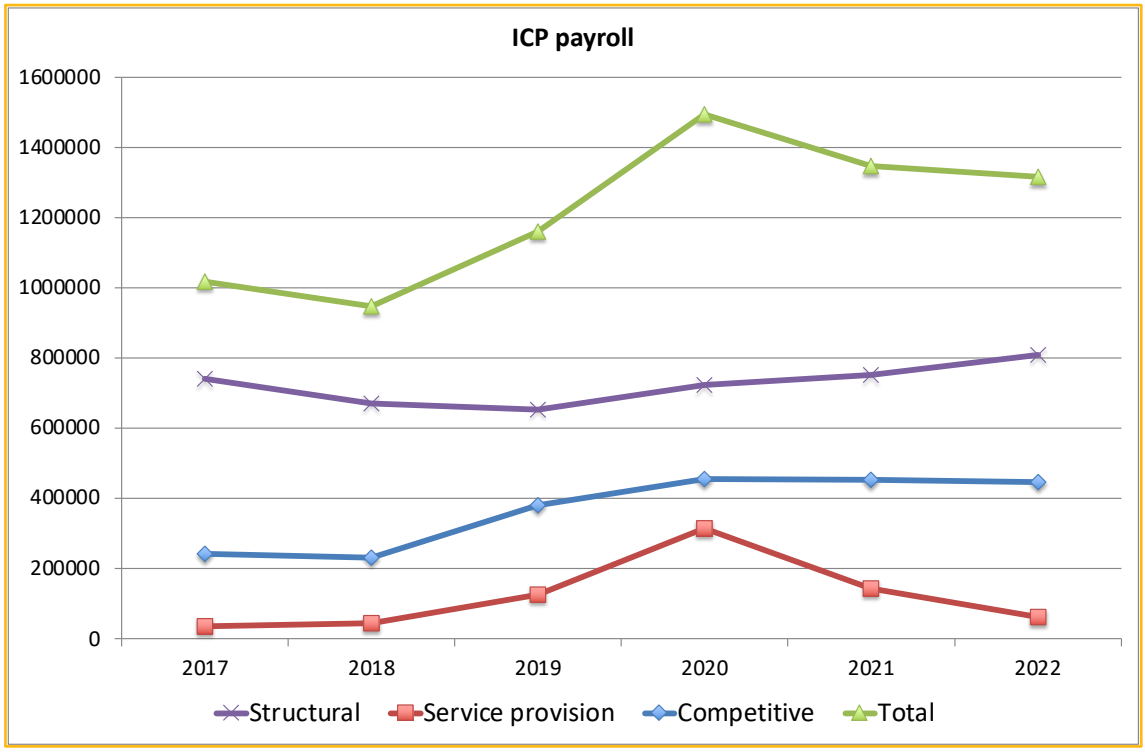
RESEARCH GROUPS STAFF (2016–2020 vs. 2021)							
Staff Composition	2017	2018	2019	2020	2021	Average	2022
Dinosaur Ecosystems	5	5	6	5	5	**5.2**	**5**
Paleobiodiversity & Phylogeny	11	11	12	8	8	**10.0**	**10**
Paleoecology & Biochronology	—	—	—	3	1	—	**4**
Paleoprimatology & Paleoanthropology	6	4	6	8	7	**6.2**	**8**
Life History Evolution	7	7	5	4	5	**5.6**	**4**
Computational Paleobiology	2	2	1	3	3	**2.2**	**5**

Abbreviations: DE = Dinosaur Ecosystems (formerly Mesozoic Faunas); PBDP = Paleobiodiversity & Phylogeny (formerly Neogene & Quaternary Faunas); PEBC = Paleoecology & Biochronology; PPPA = Paleoprimatology & Paleoanthropology (formerly Paleoprimatology & Human Paleontology); LHE = Life History Evolution (formerly Evolutionary Paleobiology); CPB = Computational Paleobiology (formerly Virtual Paleontology).

Total payroll. To better understand the evolution of ICP staff through time, the total payroll of the ICP can be divided into three distinct categories: structural, service provision and competitive. The structural portion of the payroll corresponds to the salaries and taxes associated to research and non-academic personnel that performs the regular (research, research support, and administrative) tasks of the ICP defrayed by basal funds, without prejudice that they might also perform some service provision tasks. The service provision payroll corresponds to work and service contracts that are defrayed with funds obtained from service provision. Finally, competitive payroll refers to researchers and technicians hired by means of competitive funds obtained from external funding agencies.

Until a few years ago, the service provision payroll was very small, and structural payroll represented almost three-quarters of the total payroll, with the rest being covered by competitive funds. This situation drastically changed in 2019-2021 (with a peak in 2020, when the service provision payroll represented more than 20% of the total and structural payroll decreased below 50%). The figures for 2022 show a further decrease in the service provision payroll and a milder increase in structural payroll. In absolute terms, despite the decrease in service provision payroll, the total payroll for 2022 is the highest ever for the ICP due to the increase of structural as well as competitive payrolls.

ICP PAYROLL (2017–2021 vs. 2022)							
Payroll (k€)	2017	2018	2019	2020	2021	Average	2022
Structural	742.2	670.5	653.5	723.1	752.3	**708.3**	**810.2**
Service provision	35.5	45.6	125.3	315.9	143.1	**133.1**	**61.5**
Competitive	241.7	232.1	381.8	456.0	453.0	**352.9**	**446.1**
TOTAL	1,019.3	948.2	1,160.7	1,495.0	1,348.4	**1,194.3**	**1,317.8**
Structural (%)	72.8	70.7	56.3	48.4	55.8	**63.0**	**61.5**
Service provision (%)	3.5	4.8	10.8	21.1	10.6	**9.8**	**4.7**
Competitive (%)	23.7	24.5	32.9	30.5	33.6	**27.2**	**33.9**



Continuous training

The ICP has an internal policy of continuous training for its personnel, including not only hired and ascribed staff but also research associates, PhD students without predoctoral contract, and collaborators. Besides the scientific training provided to early stage researchers (R1 and R2) by their corresponding supervisors in the framework of the normal development of their research activities, the ICP provides all of its employees with the opportunity to perform free courses each year, in order to foster their continuous training and learning. Some of these courses are intended to all the ICP personnel, whereas other are specifically targeted to researchers (with emphasis on early stage researchers, but extensible to established and even more senior researchers as well).

As in previous years, two main opportunities of continuous training were offered for free to ICP personnel in 2022: courses for employees defrayed with funds available from the Spanish Social Security; and scientificotechnical courses for researchers and research associates, thanks to an agreement with the company Transmitting Science (TS).

Courses defrayed with Social Security Funds. Unlike in 2019-2021, some funds from the Social Security were devoted to languare courses, albeit not exclusively. Taken together, these courses were attended by 15 staff members (both researchers and technicians):

- "English": 07/11/22 to 21/12/22 | 5 attendees (this number was constrained by available funds).

- "How to make research more open and inclusive to increase our impact?": 15/11/22 to 22/11/22, instructed by Pitagora Advanced, S.L.U. | 10 attendees (this number was constrained by available funds).

Scientificotechnical courses. Regarding the courses instructed by TS, they consist of advanced courses in life sciences (including varied topics, such as statistics and geometric morphometrics, phylogenetic reconstruction, scientific drawing, etc.), being generally held at the ICP premises in Sabadell or else in other nearby locations within the province of Barcelona. Further details about the courses attended by ICP personnel are provided below. The researchers, research associates and technicians of the ICP have the opportunity to attend for free the scientific courses coorganized with TS when there are available spots. In 2022, an ICP employee attended the following course for free (and two more attended it with various discounts):

- "Finite Element Analysis Applied to Life Sciences - 7th Edition": 21/11/22 to 02/12/22, Online | 3 attendees.

A scientific workshop organized by the ICP was also offered to its researchers for free:

- "Workshop on Dental Topomography": 25/05/22 to 26/05/22, instructed by Dr. Ghislain Thiery | 14 attendees.

Courses offered by CERCA. In 2022, the ICP personnel had the opportunity to perform the following course offered by I-CERCA:

- "Introducció als Sistemes de gestió de la qualitat en plataformes científiques": 19/12/2022 to 28/02/2022 (80 h), instructed by INGECAL SL and I-CERCA | 1 attendee.

Non-discrimination training. Multiple courses related to the prevention of gender discrimination and violence against women were performed by ICP staff, and particularly by members of the Non-Discrimination Committee (NDC) of the ICP:

- "Prevenció I detecció de situacions de violències sexuals, assetjament sexual, per raó de sexe, gènere i orientació sexual": 07/01/2022 to 14/01/2022 (8 hours), organized online by Observatori per a la Igualtat de la UAB | 1 attendee (Vicepresident of the NDC).
- "Seminari de gestió d'agressions masclistes": 09/03/2022 to 06/04/2022 (9 hours), organized online by Fil a l'Agulla | 4 attendees (all members of the NDC).
- "Women Library of CSIC's International Scholars": 29/09/2022 (4 hours), organized by Institut Milà I Fontanals (IMF-CSIC) | 1 attendee (member of the NDC).
- "Influencia de la nueva legislación en el Protocolo de Acoso en las empresas": 20/10/22 (2 hours), organized online by Grup Pitàgora | 2 attendee (President and Vicepresident of the NDC).

- "Formació en feminismes i perspectiva de gènere": It included two different sessions for each gender, on 19/01/2022 "Espai per dones i persones de gènere no conforme" (4 hours) and on 16/02/2022 "Feminisme per a homes-cis" (5 hours, plus a joint session on 25/02/2022 "Formació mixta" (3 hours); organized by Fil a l'Agulla | 30 attendees.

Training on occupational risk prevention. Also noteworthy at the various courses on occupational risk prevention performed by several ICP staff members and defrayed entirely by the ICP:

- "Curso formación seguridad en el trabajo": During 2022 (2 h), instructed by Quirón Prevención, S.L.U. | 33 attendees.

Other courses. Other noteworthy courses performed by ICP personnel, defrayed using basal funds of the ICP or other funding sources, are the following:

- "Ciència Oberta: promoció, suport i avaluació": February-October 2022 (7 ECTS), instructed by the Facultat d'Informació i Mitjans Audiovisuals, Universitat de Barcelona | 1 attendee.
- "Forklift licence": During 2022 (6 h), instructed by ZonaF | 2 attendees.
- "Jornada per a nous usuaris del Registre Electrònic de Licitadors (RELI), codi 10282/2022-1": 06/04/2022 (3 h), instructed by the Escola d'Administració Pública de Catalunya | 1 attendee.

Salary scale

As a first step toward the implementation of transparent recruitment, a Salary Scale was developed by the Director and the General Manager of the ICP, being approved by the Steering Committee in May 2018 and subsequently by the Board of Trustees in June 2018. This salary scale, which is updated on an annual basis and presente to the Board of Trustees for review and approval, is based on four professional categories for researchers (R1–R4, corresponding to the four researcher profiles recognized by the European Framework of Research Careers) and three different profiles (T1–T3) for technicians (sensu lato, i.e., further including personnel of administration and services). Each position corresponds to one of these professional categories, although certain positions can be occupied by multiple categories (e.g., senior vs. junior). In turn, each professional category entails a given range in the ICP Salary Scale, although certain positions of higher responsibility further imply a wage supplement (S1–S4). An update of the Salary Scale of the ICP was approved in December 2019, including a 2.5% pay increase in compliance with the Decree-Law 3/2019. A further update with a 2% increase took place in 2020, in accordance with the Decree-Law 3/2020 regarding the remuneration increase for public sector personnel of the Generalitat de Catalunya. In 2021, the increase in the salary scale was of 0.9%, in agreement with Decree-Law 18/2021. Finally, in 2022 the increase in the salary scale was of 3.5%, taking into account the 2% increase established in the Law 1/2021 of the Generalitat de Catalunya as well as the additional 1.5% determined by the Royal Decree Law

18/2022 of the Spanish Government. It should be noted that the salaries for R1 researchers with competitive contracts are updated yearly in agreement not only with the provisos of each call, but also those of the Research Personnel in Training Estatute (Decree Law 103/2019). During 2022, there were ongoing negotiations of the Collective Bargaining Agreement of public research centers in Catalonia. When an agreement is finally reached, the ICP Salary Scale will have to be adapted to the categories and minimum salaries stipulated in such an agreement.

HRS4R

HR Excellence Award. With the aim to implement the Human Resources Strategy for Researchers (HRS4R) of the European Union, the ICP endorsed the 'European Charter for Researchers' and the 'Code of Conduct for the Recruitment of Researchers' on December 2016. Soon thereafter, in February 2017, the HRS4R Implementation Committee and Working Group was formally established. This committee was further recognized in the new Organization Chart of the ICP devised by the new Director and approved by the Steering Committee in late 2017 (subsequently ratified by the Board of Patrons in June 2018). This committee has the aim to implement the Human Resources Strategy for Researchers (HRS4R) of the EU at the ICP, and it is mainly composed of non-research staff, since the Researchers Commission further provides advice to the committee from the researchers' viewpoint. Since 2017, the Organization Chart further formally recognizes a Management & Human Resources Department, led by the General Manager, with the aim to improve and give internal visibility to the ICP human resources policies within the context of the implementation of HRS4R.

Throughout 2017, the HRS4R Implementation Committee and Working Group, with the aid of the ICP Researchers Commission, performed an internal 'Gap Analysis' to evaluate the current degree of implementation of the forty principles included in the Charter and Code and, on this basis, elaborate an Action Plan to implement HRS4R at the ICP. These documents were submitted to the European Commission on November 2017, who formally granted the 'HR Excellence in Research' to the ICP on March 2018. In the meantime, the implementation of the Action Plan had already started, being supervised by the above-mentioned organs of the ICP. Throughout 2019 and 2020, multiple documents were elaborated in the framework of the HRS4R Action Plan implementation. On April 2020, an interim assessment report was submitted to EURAXESS to evaluate the level of ambition and the quality of progress in HRS4R implementation at the ICP. The document provided a detailed review of the whole implementation process of the various principles included in the Charter & Code, as well as the degree of compliance of the different actions stated in the Action Plan and the OTM-R policy.

The results of this evaluation were received on July 2020. The CE Consensus Report concluded that the ICP was performing well, that the HRS4R was embedded, and that no corrective actions were required. The report highlighted the success of the ICP in the aim of having formal documents on recruitment, professional development, and organizational structure. A detailed review of the whole process of the implementation of the several principles

included in the Charter & Code and the degree of compliance of the different actions stated in the Action Plan as well as the OTM-R policy was provided on September 2020 and made available through the ICP website (https://www.icp.cat/attachments/transparencia/HRS4R_Report_on_the_Interim_Assessment.pdf). To face the renewal phase of the HR Excellence in Research Award (scheduled for July 2023), the evaluators recommended to perform focus interviews or surveys among ICP staff to assess the perceived effects of the actions developed under the Action Plan. The EC Consensus report included an additional recommendation to publicize the degree of compliance of the Action Plan. With these recommendations in mind, in 2021 the ICP HRS4R Implementation Committee and Working Group devised 5 new actions, to which yet another new action was added in 2022. The latter is detailed below, together with the actions that were implemented during that year and a summary of the degree of fulfillment of the HRS4R Action Plan as a whole at the end of 2022.

HRS4R Action Plan. The Action Plan devised by the HRS4R Implementation Committee & Working Group (available online from the following URL: http://www.icp.cat/attachments/transparencia/HRS4R_ICP_Action_Plan.pdf) originally included 25 specific actions intended to attain a complete implementation of the forty principles included in the Charter & Code. Seven additional actions were subsequently devised, one in 2020, five in 2021, and another one in 2022. Although the implementation of the HRS4R Action Plan already began in late 2017 with the approval of the new Organization Chart, most of the Action Plan original initiatives were planned for 2018–2019. The implementation process is overseen by the HRS4R Implementation Committee & Working Group, and further supervised by the Steering Committee, with the aid of other committees and commissions of the ICP (particularly, the Researchers Commission). The implementation of the HRS4R Action Plan at the end of 2021 is summarized in the table below.

HRS4R ACTION PLAN IMPLEMENTATION			
ACTION NO.	DESCRIPTION	EXPECTED	IMPLEMENTATION
Action 1	Upload UAB & CERCA documents to the ICP website	1Q 2018	Fully implemented 2019
Action 2	Update the Strategic Plan	4Q 2018	Fully implemented 2018
Action 3	Manual of Best Practices in Research, Intellectual Property and Scientific Authorship	4Q 2019	Fully implemented 2020
Action 4	Protocol for Invasive and Destructive Analyses of Fossils	1Q 2019	Fully implemented 2020
Action 5	Welcome Handbook	2Q 2019	Delayed, under implementation
Action 6	Protocol for Funding Request	4Q 2018	Fully implemented 2022
Action 7	Transparency webpage and internal communication	1Q 2018	Fully implemented 2021
Action 8	Protocol for Fund Expenditure Accountability	2Q 2018	Delayed, under implementation
Action 9	Safety & prevention training	4Q 2019	Fully implemented 2021
Action 10	Update the internal Information Systems Security Document	3Q 2019	Delayed, under implementation
Action 11	Improve and translate the Plan of Equal Opportunities and Diversity Management	2Q 2020	Almost fully implemented 2020

Action 12	Establish a Non-discrimination Committee	1Q 2018	Fully implemented 2018
Action 13	Improve and translate the Guide of Prevention and Action in Case of Gender Violence	4Q 2020	Almost fully implemented 2021
Action 14	Protocol for the Evaluation, Internal Promotion and Recruitment of Researchers and Technicians	2Q 2018	Fully implemented 2019
Action 15	Definition of professional categories	3Q 2018	Fully implemented 2018
Action 16	Strategy for the Professional Development of Researchers	4Q 2019	Fully implemented 2020
Action 17	Publicize positions at an international level	4Q 2018	Fully implemented 2019
Action 18	Implementation of new organigram with Management & Human Resources Department	2Q 2018	Fully implemented 2018
Action 19	Basic instructions for traveling abroad	3Q 2018	Fully implemented 2022
Action 20	Complaints protocol	2Q 2018	Fully implemented 2020
Action 21	Steering Committee	2Q 2018	Fully implemented 2018
Action 22	Coordination Meetings	1Q 2018	Fully implemented 2018
Action 23	Researchers Commission	1Q 2018	Fully implemented 2018
Action 24	Organization of talks ('Paleovermut's initiative')	1Q 2018	Fully implemented 2018
Action 25	Free language courses and other types of training	1Q 2018	Fully implemented 2018
Action 26	Internal regulation of working time	4Q 2020	New and fully implemented 2020
Action 27	Assess the degree of knowledge of the HRS4R Action Plan	2Q 2021	New and fully implemented 2021
Action 28	Salary Register	3Q 2022	New 2021, almost fully implemented
Action 29	Staff delegates	4Q 2021	New and fully implemented 2021
Action 30	RRI Commission	4Q 2021	New and fully implemented 2021
Action 31	Strategic Plan Working Group	2Q 2021	New and fully implemented 2021
Action 32	Psychosocial risk assessment	3Q 2023	New 2022, under implementation

Out of the 25 actions originally planned for 2018-2020, 20 are fully implemented and 2 almost fully implemented, while 3 are delayed but already under implementation. A new action regarding working conditions (Action 26) was included in 2020 and became fully implemented on 3Q 2020. In turn, 5 new actions (27 to 31) were included in 2021, of which 4 were already fully implemented at the end of the year, while the remaining one was almost fully implemented at the end of 2022 (pending the definitive approval by the Steering Committee). The new action devised in 2022 (32) about psychosocial risk assessment is under implementation and expected to be completed during 3Q 2023.

The HRS4R actions that became fully implemented in 2022 are explained in greater detail below:

- **Action 6: Protocol for Funding Request.** Description: To write an "ICP Protocol for Funding Request", detailing the funding mechanisms available to ICP researchers and the approvals required by them before application. Indicator (s)/Target(s): Internal document available and emailed to researchers. Implementation: Originally planned for 4Q 2018, the elaboration of this protocol was delayed for various reasons. Finally entitled "Funding Opportunities", it was finished and sent to ICP personnel on 2Q 2022.
- **Action 19: Basic instructions for traveling abroad.** Description: Develop and make known to all ICP staff all the basic instructions on the various issues that have to be taken into

account before traveling abroad. Indicator(s)/Target(s): Internal document approved by the Steering Committee and emailed to personnel. Implementation: Originally planned for 3Q 2018, this document was also delayed for several reasons. Finally entitled "Protocol de Viatges", it was finally approved during 2Q 2022 and emailed to ICP personnel before the end of that year.

Other HRS4R actions that were almost fully implemented in 2022 are the following:

- **Action 28: Salary register.** Description: Elaborate the 2020-2021 salary register of ICP employees including hours worked, gross salary, complements, seniority, etc. Indicator(s)/Target(s): A table of data in Excel format and minute of the Steering Committee in which the definitive version of the salary register is approved. Implementation: Originally planned for 3Q 2022, the document is already done, only pending the approval by the Steering Committee.

Finally, other HRS4R new actions that are pending are the following:

- **Action 32: Psychosocial risk assessment.** Description: To perform a psychosocial risk assessment at the ICP, in order to analyze the factors that impact the occupational health of employees in their workplace, as well as to identify ways to improve their psychosocial work environment. Indicator(s)/Target(s): Quantitative and qualitative report elaborated by the occupational risk prevention company of the ICP (Quirón Prevención). Implementation: The survey to elaborate the quantitative analysis has been scheduled for 1Q 2023 and the action is planned to be fully implemented in 3Q 2023.

Internal evaluation of researchers

Evaluation metrics. The ICP "Protocol for the Evaluation, Internal Promotion and Recruitment of Researchers and Technicians" approved by the Steering Committee in February 2019 and approved by the Board of Trustees in May 2019, not only includes the rules for recruitment, but also the instructions for performing an internal evaluation of researchers. Three different ad hoc metrics are distinguished based on the SCI production of each ICP author (thereby including researchers, research associates, and some technicians that also coauthor papers):

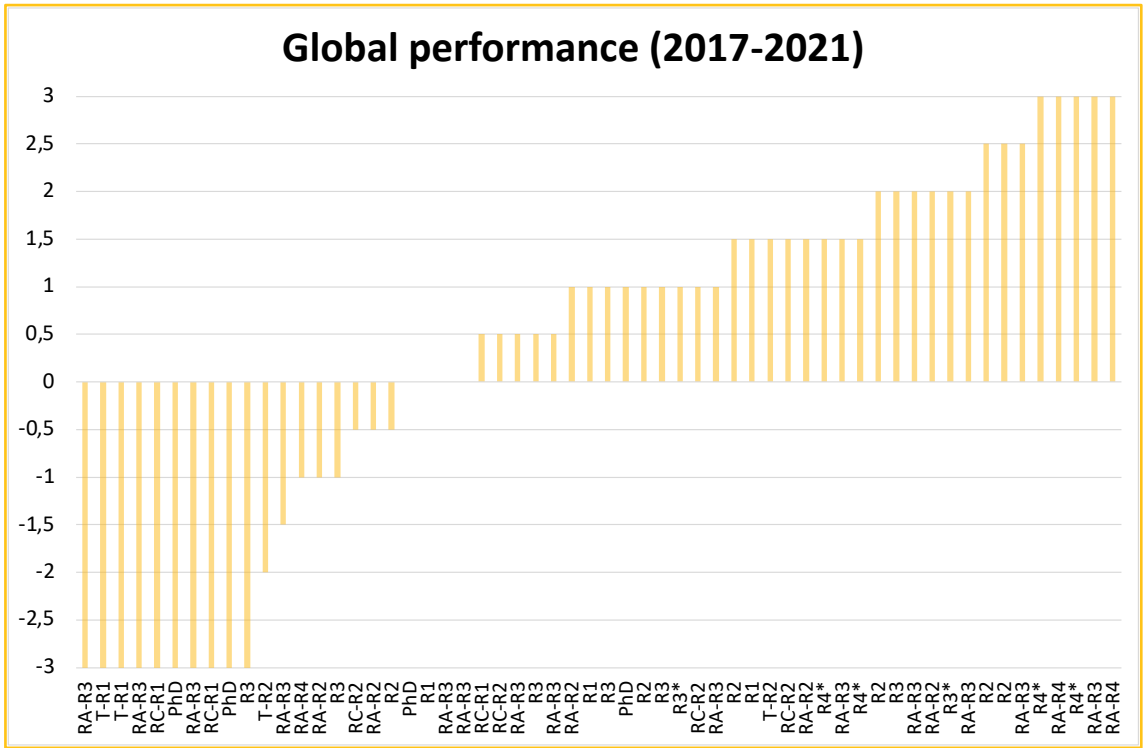
- Global impact: it is based on the SCI production of a given researcher, by simultaneously reflecting quality, impact, visibility and leadership; although it is mostly based on JIF, other variables (quartile, category, open access, and number, position and role of authors) are considered.
- Relative contribution: also based on SCI production, it measures the relative contribution of each researcher to the overall ICP production in terms of publications (particularly from the first quartile, in open-access and multidisciplinary journals, and led by ICP authors).

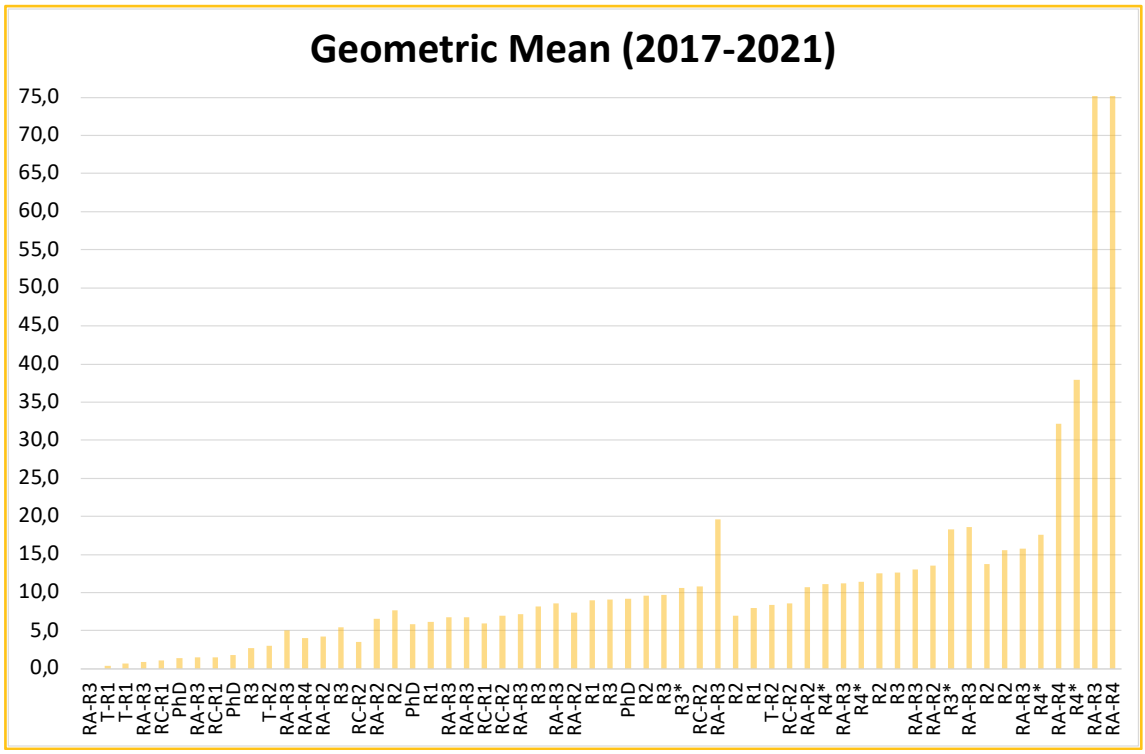
- Relative impact: measures the relative quality/impact of a researcher's output as compared to that of the ICP irrespective of production volume.

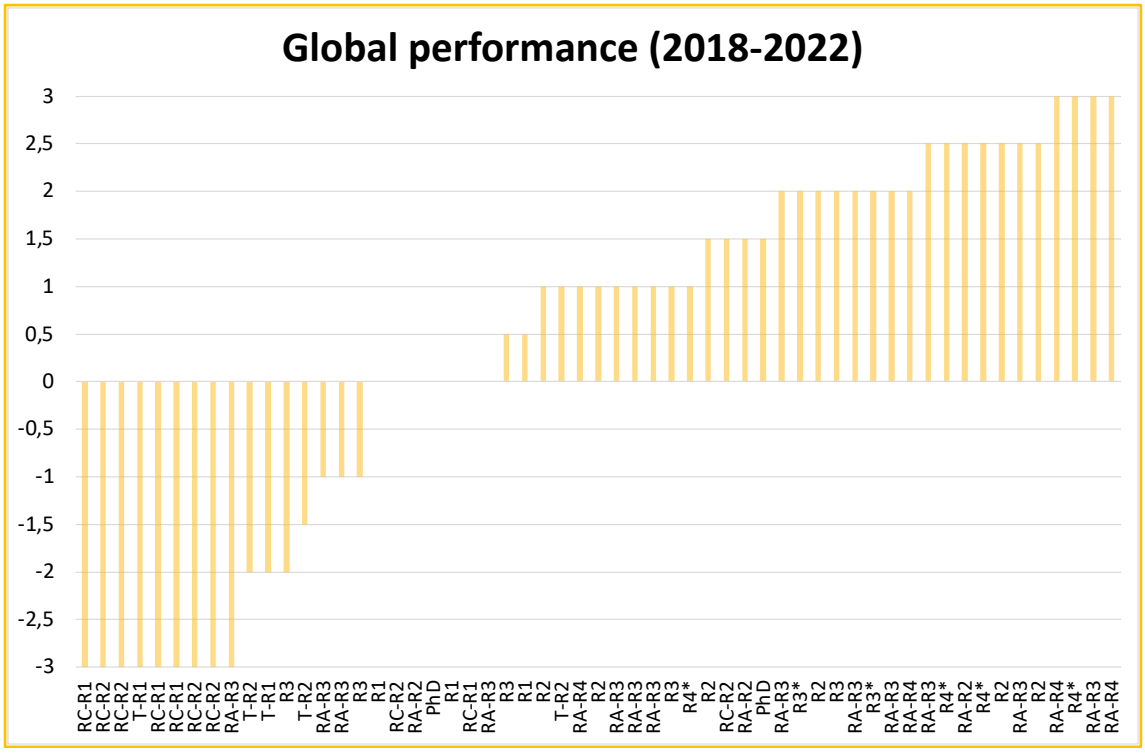
Computations are restricted to the last five years (that of the evaluation and the four previous ones), and the two first variables are standardized by career duration (which also takes into account career breaks) as specified in the recruitment protocol. For each variable, a rating is assigned to each researcher depending on the relative ranking as compared to ICP authors as a whole, based on the median and interquartile range (worse than average = -1; slightly below average = 0; slightly above average = +0.5; and better than average = +1). The overall performance metric of an individual researcher is computed as the sum of the three ratings (from -3 to +3) and determines result of the evaluation: negative (lower than -1.5), neutral (between -1.5 and 0), positive (between +0.5 and +1.5), very good (between +2 and +2.5), and excellent (+3.0).

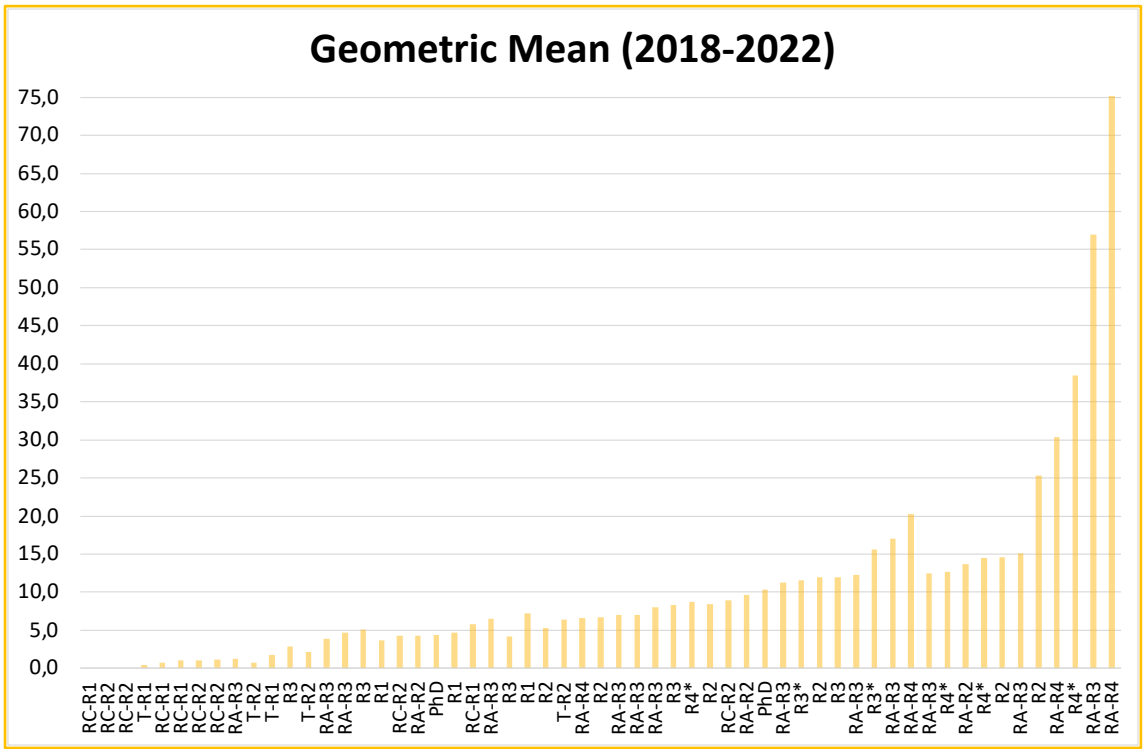
Evaluation results. The definitive evaluation of ICP researchers and technicians with SCI publications during the 2017-2021 period (based on the JCR 2021 results) and the provisional evaluation for 2018-2022 (pending refinement when the JCR of 2022 is published) are summarized in the plots below, based on global performance (negative: -3 to -1.5; neutral -1 to 0; positive +0.5 to +1.5; very good +2 to +2.5; excellent +3) and the geometric mean of the three indicators (global impact, relative impact, and relative contribution) stipulated by the ICP recruitment protocol.

The definitive results for the previous evaluation (2017-2021; n=58) yielded 10 negative (17%), 11 neutral (19%), 22 positive (38%), 9 very good (16%), and 5 excellent (9%) evaluations, plus 10 people not evaluated—the latter correspond researchers and technicians with an ICP career duration <1 year (mostly PhD students and predoctoral researchers that had yet to publish their first SCI paper in 2022). In turn, for 2018-2022 (n = 57) there are 12 negative (21%), 11 neutral (19%), 15 positive (26%), 15 very good (26%), and 4 excellent (7%) evaluations, plus 6 people not evaluated. The results are similar from one year to another for several reasons. First, they have four years in common; and second, the metrics compare the performance among researchers based on the median and interquartile range. In other words, the metrics are devised to compare ICP authors (including researchers, technicians, research associates and collaborators that have published with ICP affiliation during the selected period) among themselves, so that the number of negative, neutral, positive, and very good plus excellent evaluations is expected to be roughly one-quarter each (with some deviations depending on the rating of particular researchers for each of the three metrics employed).


Global performance (2017-2021)
3
2,5
2
1,5
1
0,5
0
-0,5
-1
-1,5
-2
-2,5
-3
RA-R3 T-R1 T-R1 RA-R3 RC-R1 PhD RA-R3 RC-R1 PhD R3 T-R2 RA-R3 RA-R4 RA-R2 R3 RC-R2 RA-R2 R2 PhD R1 RA-R3 RA-R3 RC-R1 RC-R2 RA-R3 R3 RA-R3 RA-R2 R1 R3 PhD R2 R3 R3* RC-R2 RA-R3 R2 R1 T-R2 RC-R2 RA-R2 R4* RA-R3 R4* R2 R3 RA-R3 RA-R2 R3* RA-R3 R2 R2 RA-R3 R4* RA-R4 R4* RA-R3 RA-R4


Geometric Mean (2017-2021)
75,0
70,0
65,0
60,0
55,0
50,0
45,0
40,0
35,0
30,0
25,0
20,0
15,0
10,0
5,0
0,0
RA-R3 T-R1 T-R1 RA-R3 RC-R1 PhD RA-R3 RC-R1 PhD R3 T-R2 RA-R3 RA-R4 RA-R2 R3 RC-R2 RA-R2 R2 PhD R1 RA-R3 RA-R3 RC-R1 RC-R2 RA-R3 R3 RA-R3 RA-R2 R1 R3 PhD R2 R3 R3* RC-R2 RA-R3 R2 R1 T-R2 RC-R2 RA-R2 R4* RA-R3 R4* R2 R3 RA-R3 RA-R2 R3* RA-R3 R2 R2 RA-R3 R4* RA-R4 R4* RA-R3 RA-R4





In summary, the values of the metrics are not important in themselves, but only useful to compare among various categories within a given evaluation period, or to monitor particular ICP authors through time. For example, it is expected that, on the plots, R3 and especially R4 researchers are located toward the right (more positive values), whereas R2 and R1 are located toward the left (more negative values), although it can be seen that there are many exceptions. Nevertheless, it is noteworthy that in 2022 the percentage of very good evaluations significantly

increased in detriment of positive evaluations. The four researchers with an excellent evaluation for 2018-2022 include a senior research group leader of the ICP (the same that obtained excellent results in the previous evaluation periods, 2016-2020 and 2017-2021) as well as three research associates (of which two R4 and an R3). While the individual results are not publicized, they are most useful to monitor the performance of individual researchers and discuss with them possible routes for improvement.

GM three metrics	Global performance	Evaluation	Category
0.00	-3	Negative	RC-R1
0.00	-3	Negative	RC-R2
0.00	-3	Negative	RC-R2
0.40	-3	Negative	T-R1
0.70	-3	Negative	RC-R1
1.04	-3	Negative	RC-R1
1.08	-3	Negative	RC-R2
1.18	-3	Negative	RC-R2
1.23	-3	Negative	RA-R3
0.77	-2	Negative	T-R2
1.75	-2	Negative	T-R1
2.90	-2	Negative	R3
2.11	-1.5	Neutral	T-R2
3.92	-1	Neutral	RA-R3
4.66	-1	Neutral	RA-R3
5.09	-1	Neutral	R3
3.65	0	Neutral	R1
4.23	0	Neutral	RC-R2
4.25	0	Neutral	RA-R2
4.39	0	Neutral	PhD
4.71	0	Neutral	R1
5.81	0	Neutral	RC-R1
6.52	0	Neutral	RA-R3
4.20	0.5	Positive	R3
7.16	0.5	Positive	R1
5.26	1	Positive	R2
6.45	1	Positive	T-R2
6.56	1	Positive	RA-R4
6.66	1	Positive	R2
6.99	1	Positive	RA-R3
7.01	1	Positive	RA-R3
8.06	1	Positive	RA-R3
8.28	1	Positive	R3
8.72	1	Positive	R4*
8.44	1.5	Positive	R2
8.91	1.5	Positive	RC-R2
9.68	1.5	Positive	RA-R2
10.30	1.5	Positive	PhD
11.30	2	Very good	RA-R3
11.52	2	Very good	R3*
11.92	2	Very good	R2
11.94	2	Very good	R3
12.27	2	Very good	RA-R3

15.57	2	Very good	R3*
16.97	2	Very good	RA-R3
20.21	2	Very good	RA-R4
12.46	2.5	Very good	RA-R3
12.71	2.5	Very good	R4*
13.72	2.5	Very good	RA-R2
14.44	2.5	Very good	R4*
14.60	2.5	Very good	R2
15.08	2.5	Very good	RA-R3
25.35	2.5	Very good	R2
30.39	3	Excellent	RA-R4
38.43	3	Excellent	R4*
57.01	3	Excellent	RA-R3
77.09	3	Excellent	RA-R4

R1 = Predoctoral Researcher; R2 = Postdoctoral Researcher; R3 = Researcher; R4 = Senior Researcher; RA = Research Associate; RC = Research Collaborator; T = Technician; PhD = PhD Student; * Research Group Leader.

Publication metrics. To help retrieving the publications of current (2022) ICP researchers, research associates, and technicians with a publication record, the following table provides their Scopus and/or ORCID IDs, as well as the number of published items, citations and h-index in Scopus (updated as for January 19th, 2023).

Name	Scopus ID	ORCID	Publications	Citations	h-index	Category
Abella, J.	16686180200	0000-0002-3433-6093	43	576	15	RA-R2
Alba, D.M.	56248806600	0000-0002-8886-5580	149	3251	32	R4*
Almécija, S.	24366054500	0000-0003-1373-1497	60	1380	19	RA-R4
Angelone, C.	16633426200	0000-0002-7140-9431	54	919	17	RA-R3
Arias-Martorell, J.	55249683600	0000-0001-8110-2946	20	148	8	R2
Aurell-Garrido, J.	35279378500	0000-0001-6954-2033	10	346	8	RC-R1
Balaguer, J.	55616355200	0000-0001-7316-7774	3	33	3	RC-R1
Bartolini-Lucenti, S.	56500180800	0000-0003-1280-5378	35	250	9	RA-R2
Beaudet, A.	57002560700	0000-0002-9363-5966	43	375	13	RA-R2
Bolet, A.	15046423500	0000-0003-4416-4560	39	526	15	R2
Bouchet, F.	57220196999	0000-0003-1226-5201	2	1	1	R1
Cartanyà, J.	42360910000	0000-0001-6785-8886	6	81	4	RC-R1
Casanovas-Vilar, I.	24485251200	0000-0001-7092-9622	67	1397	19	R3*
Dalla Vecchia, F.M.	55665437500	0000-0003-3914-3896	77	1337	21	RA-R3
De Esteban-Trivigno, S.	25225282600	0000-0002-2049-0890	16	406	12	RC-R2
De Jaime-Soguero, C.	57221459863	0000-0001-9665-6378	2	3	1	R1
Delfino, M.	7103371480	0000-0001-7836-7265	156	2828	31	RA-R4
Delson, E.	57201830259	0000-0002-4062-7567	70	2389	27	RA-R4
DeMiguel, D.	16686393400	0000-0001-6138-7227	57	847	18	RA-R3
Femenias-Gual, J.	56624424200	0000-0003-0574-9021	7	36	4	RC-R2
Fondevilla, V.	55842651200	0000-0001-9355-2389	16	315	12	RC-R2
Fortuny, J.	16177500700	0000-0003-4282-1619	80	1121	19	R3*
Furió, M.	16686168400	0000-0002-4582-3268	51	943	19	R3
Galindo, J.	24485260200	0000-0002-8796-3584	18	570	11	T-R1
Galobart, À.	55964223000	0000-0003-1508-4561	75	1757	26	R4*
García-Paredes, I.	16686479900	0000-0003-4390-2349	27	565	14	RC-R2
Grau-Camats, M.	57491819600	—	2	1	1	PhD
Groenewald, D.P.	57208576559	0000-0001-6570-0436	3	13	2	RC-R2

Holgado, B.	57201085235	0000-0001-8968-0775	15	123	6	RA-R2
Jovells-Vaqué, S.	57194058140	0000-0003-0358-0840	11	44	4	RA-R2
Kimura, Y.	36637561000	0000-0002-7621-9901	20	261	9	RA-R3
Köhler, M.	35430989100	0000-0001-9228-3164	76	2724	28	R4*
Llácer, S.	56584535700	0000-0003-0192-7943	8	74	6	RC-R1
Llenas, M.	56721340800	0000-0002-0890-363X	4	24	3	T-R1
Luján, À.H.	55017368500	0000-0003-1844-0453	31	220	8	R2
Malchus, N.	6602976736	0000-0002-7514-8670	18	400	11	RC-R2
Marcé-Nogué, J.	35766845300	0000-0001-9852-7027	43	500	15	RA-R3
Marigó, J.	35756539500	0000-0002-0547-3662	25	297	12	R3
Marques-Bonet, T.	11140868400	0000-0002-5597-3075	218	16792	60	RA-R4
Matamales-Andreu, R.	57193729945	0000-0001-9914-0510	13	29	4	PhD
McKenzie, S.	57656311000	0000-0002-8259-3756	2	1	1	PhD
Méndez, J.M.	54930427700	0000-0003-0525-968X	4	63	4	T-R1
Minwer-Barakat, R.	6504521390	0000-0001-9441-3612	58	1141	21	RA-R3
Monclús-Gonzalo, O.	—	—	—	—	0	R1
Moya-Costa, R.	57190494890	0000-0002-2405-341X	6	36	4	R2
Moyà-Solà, S.	6603807578	0000-0001-8506-1061	153	4252	36	R4*
Mujal, E.	56898963700	0000-0002-6310-323X	28	296	10	RA-R2
Nacarino-Meneses, C.	55214012300	0000-0003-2123-8758	17	187	10	R2
Pal, S.	—	—	—	—	0	PhD
Pérez-Cano, J.	57195197474	0000-0002-1782-5346	12	68	5	R2
Pina, M.	55080353300	0000-0001-9762-6402	16	216	7	RA-R3
Prat-Vericat, M.	57216636012	0000-0002-0771-7122	5	4	1	PhD
Prieto-Márquez, A.	12544776900	0000-0002-4836-4052	49	1330	22	R3
Quintana Cardona, J.	22235800700	0000-0003-0146-2154	28	351	11	R3
Raventós-Izard, G.	—	—	—	—	0	R1
Robles, J.M.	24485708000	0000-0002-5410-3529	39	924	17	T-R2
Sánchez Marco, A.	6508189110	0000-0003-0654-1935	45	1450	18	RA-R3
Sánchez, I.M.	7103004592	0000-0003-2151-7693	34	537	14	RA-R3
Sellés, A.G.	36459128600	0000-0002-4637-6084	31	526	14	R2
Serrano-Martínez, A.	56516908900	0000-0003-1178-6064	8	88	7	T-R2
Sorbelli, L.	57202914897	0000-0002-3246-5887	11	42	4	R1
Tura-Pohc, C.	—	—	—	—	0	R1
Urciuoli, A.	57191286102	0000-0002-6265-8962	10	56	5	RA-R2
Van Dam, J.A.	7101784403	0000-0002-2748-3722	34	1949	19	RA-R3
Vázquez López, B.	—	—	1	—	0	R1
Vega Pagán, K.A.	—	—	—	—	0	R1
Vila, B.	22636101700	0000-0002-5935-1732	49	1118	22	R3
Villa, A.	56927660800	0000-0001-6544-5201	48	482	14	R2
Vinuesa, V.	57193483737	0000-0001-7334-9105	9	86	6	T-R2

Abbreviations: R1 = Predoctoral Researcher; R2 = Postdoctoral Researcher; R3 = Researcher; R4 = Senior Researcher; RA = Research Associate; RC = Research Collaborator; T = Technician; PhD = PhD Student; * Research Group Leader.

STRATEGIC MANAGEMENT

Implementing the Strategic Plan for 2012–2025

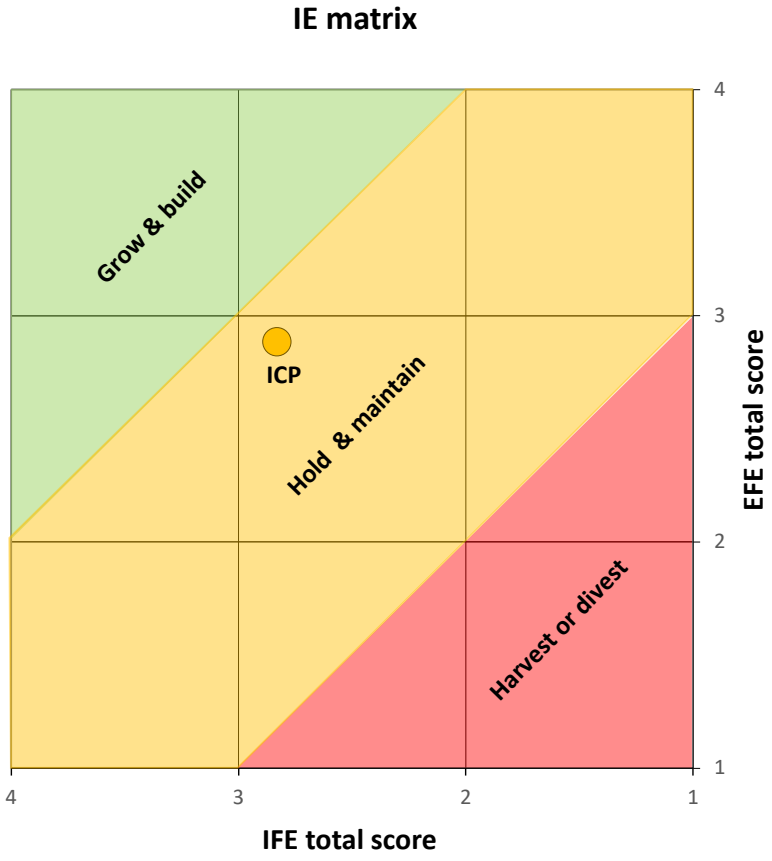
Results of the financial year

Thanks to the levels of funding and especially service provision attained in 2020, the ICP was able to completely overcome the accumulated deficit, resulting in a surplus for the financial year of ca. 148 k€ and a cumulative surplus of ca. 125 k€. The Board of Trustees approved to allocate 30 k€ to investment (to buy a new van) and to keep the remaining 95 k€ as a carryover to face potential budgetary problems in 2021 (due to the expected decrease in service provision as well as other unexpected financial difficulties). Keeping such a carryover proved to be a wise decision, because the ICP had to return to MICIN a large amount of money (higher than expected) from an unfinished research project from many years ago. On the other hand, the ICP also had unexpected income as a result of an agreement with the UAB, by which both institutions agreed to split the debt pending from the justification of the FEDER funds defrayed in construction of the ICTA-ICP building. When everything is taken together, the financial year 2021 finished with a deficit of -52 k€, diminishing the accumulated surplus down to 43 k€. Due to a further decrease in service provision and the increase in energy expenditure at the ICP Museum (which increased from 21 k€ in 2021 up to 36 k€ in 2022), the results for the 2022 financial year would have implied a similar deficit of -49 k€, but most of it was absorved by a transference of 42 k€ from the investment budget excess, resulting in a final negative result for the 2022 financial year of -7 k€. As a result, the ICP still has an accumulated surpluss (operating reserve) of 36 k€ for future financial years.

Strategic Plan 2022-2025

SWOT analysis. A SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of the ICP was performed in 2021 by the ICP Director with the help of ICP personnel from all areas, the advice of the Scientific Advisory Board, and the participation of all ICP staff. Such an analysis was performed in the framework of the elaboration of a new Strategic Plan (2022-2025), which was approved in April 2022 and subsequently ratified by the Board of Trustees in May 2022 (https://www.icp.cat/attachments/transparencia/ICP_Strategic_Plan_2022_2025.pdf). A summary of the SWOT analysis was already provided in the Annual Report 2021, while the full version is included in the Strategic Plan. Essentially, this SWOT analysis enabled the identification of 146 factors, of which 65 are internal (35 strengths and 30 weaknesses) and 81 external (47 opportunities and 34 threats), leading to a total number of 82 positive vs. 64 negative factors.

	POSITIVE (HELPFUL)	NEGATIVE (HARMFUL)
INTERNAL	**Strengths:**	**Weaknesses:**
	Internal Organization: 10 (S1–S10)	Internal Organization: 5 (W1–W5)
	Human Resources: 13 (S11–S23)	Human Resources: 12 (W6–W18)
	Physical Resources: 10 (S24–S33)	Physical Resources: 11 (W19–W29)
	Scientific Outputs: 2 (S34–S35)	Scientific Outputs: 1 (W30)
EXTERNAL	**Opportunities:**	**Threats:**
	Scientific and Societal Impact: 5 (O1–O5)	Scientific and Societal Impact: 5 (T1–T5)
	Funding Sources: 7 (O6–O12)	Funding Sources: 6 (T6–T11)
	Reputation: 2 (O13–O14)	Reputation: 2 (T12–T13)
	Collaborations: 10 (O15–O24)	Collaborations: 3 (T14–T16)
	Physical Environment: 4 (O25–O28)	Physical Environment: 0 (—)
	Economy: 3 (O29–O31)	Economy: 3 (T17–T19)
	Legislation: 1 (O32)	Legislation: 3 (T20–T22)
	Politics of Science: 10 (O33–O47)	Politics of Science: 10 (T23–T34)



Based on these factors, the best possible strategy for the ICP was determined with the aid of an IE (internal-external) matrix, by taking into account both internal and external factors simultaneously. The internal factors and external factors were subjected to internal factor evaluation (IFE) and external factor evaluation (EFE) analyses, respectively, to confect an internal-external (IE) matrix with the help of the Scientific Advisory Board and the Strategic Plan Working Group of the ICP—for further details, see the Annual Report 2021 or the Strategic Plan.

The IE matrix is divided into three different regions, with different strategical implications in terms of a research center's performance. The results for the IE matrix analysis of the ICP performed in 2021 are reported in the plot below.

The IFE and EFE values calculated for the ICP (2.8 and 2.9, respectively) are very similar to those computed four years ago (2.8 and 2.7, respectively), albeit they denote that slight increase, particularly regarding EFE. This suggests that the ICP is now responding (or expected to respond) better to both opportunities and threats than four years ago. However, in all instances the values were higher than 2.5, indicating that the center is relatively strong relative to its competitors, as well as ready to take advantage of at least some opportunities and to defend against threats, respectively). These figures combined indicate that the suitable overall strategy is 'hold and maintain', even if quite close to the 'grow & build' strategy. In other words, the results support that the ICP is a solid institution that is generally performing well, albeit not exempt of some weaknesses and threats. According to this, the ICP could take advantage of some opportunities (particularly to focus its most important current assets) but is not powerful enough so as to plan growing further on the midterm (i.e., some opportunities must be left unexplored due to excessive risk or lack of resources).

Strategic goals, actions and indicators. The Strategic Plan for 2022–2025, elaborated on the basis of the SWOT analysis summarized above, was conceived as a management tool that seeked to identify the current situation of the institution, including its risks and opportunities, as well as to define its main strategic aims, in order to guarantee the successful accomplishment of its mission on the midterm with regard to paleontological research, knowledge transfer, and conservation of the paleontological heritage of Catalonia. With these aims in mind, the Strategic Plan defined 22 strategic goals within four strategic areas: Scientific Policy & Research (7 goals), Management & Human Resources (9 goals), Fundraising & Knowledge Transfer (3 goals), and Outreach & Communication (3 goals).

Strategic Areas	Goals	Actions					Indicators
		SO	WO	ST	WT	Total	
Scientific Policy & Research	7	7	6	9	1	23	46
Management & Human Resources	9	13	7	3	9	32	76
Fundraising & Knowledge Transfer	3	6	3	4	3	16	39
Outreach & Communication	3	9	5	0	1	15	40
Totals	22	35	21	16	14	86	201

Each strategic goal included multiple strategic actions, making a total of 86: Scientific Policy & Research (23 actions), Management & Human Resources (32 actions), Fundraising & Knowledge Transfer (16 actions), and Outreach & Communication (15 actions). Each strategic action is based on one of the following four strategies: Strength-Opportunity (SO, 35 actions), Weakness-Opportunity (WO, 21 actions), Strength-Threat (ST, 16 actions), and Weakness-Threat

(WT, 14 actions). The 22 strategic goals (SG) and 86 strategic actions (SA) defined by the Strategic Plan are listed below, along with their percentage weighted score within brackets (see the Strategic Plan for details about the internal and external factors, as well as indicators, considered in each action):

SCIENTIFIC POLICY & RESEARCH [29.5%]:

- **SG1.** Consolidate the high scientific production and productivity of the ICP [3.41%].
  - ✓ **SA1.** Encourage ICP researchers to publish more papers in SCI journals [0.635%].
  - ✓ **SA2.** Maintain the current network of research associates with emphasis on R3-R4 categories [1.151%].
  - ✓ **SA3.** Increase the number of publications with international coauthors [1.627%].
- **SG2.** Consolidate and increase further the high quality and impact of the ICP scientific production [3.29%].
  - ✓ **SA4.** Encourage ICP researchers to prioritize publication in SCI journals from the first quartile [0.906%].
  - ✓ **SA5.** Encourage ICP researchers to select journals with high impact factors and/or impact factor percentiles [1.121%].
  - ✓ **SA6.** Encourage ICP researchers to target more often SCI journals from the multidisciplinary sciences category [0.557%].
  - ✓ **SA7.** Increase ICP leadership in publications coauthored with researchers from other institutions [0.710%].
- **SG3.** Increase the visibility of the scientific production of the ICP by promoting open-access publication and open data sharing [3.35%].
  - ✓ **SA8.** Encourage ICP researchers to publish in gold/bronze open-access SCI journals [1.707%].
  - ✓ **SA9.** Help ICP researchers to make use of green open-access options for subscription journals [1.125%].
  - ✓ **SA10.** Promote and facilitate data sharing (open data) by ICP researchers [0.521%].
- **SG4.** Promote further the visibility of the ICP in scientific meetings and workshops, particularly at the international level [4.73%].
  - ✓ **SA11.** Increase the attendance to scientific meetings and workshops, with emphasis on international ones [1.590%].
  - ✓ **SA12.** (Co)organize scientific meetings [0.743%].
  - ✓ **SA13.** Consolidate and expand the network of international collaborators [2.396%].
- **SG5.** Consolidate the ICP as a benchmark institution at the international level regarding paleobiological research [7.62%].
  - ✓ **SA14.** Improve the competitiveness of the ICP relative to other benchmark paleontological institutions (based on the publication metrics used in the ICP annual report) [2.990%].
  - ✓ **SA15.** Preserve the current main lines of research at the ICP [0.500%].

- ✓ **SA16.** Maintain the current number of research groups at the ICP [2.636%].
- ✓ **SA17.** Promote further a paleoproteomics and paleogenomics research line [1.496%].

- **SG6.** Increase and improve the technical support provided to ICP researchers [5.06%].
  - ✓ **SA18.** Maintain or increase the number of research support staff [2.048%].
  - ✓ **SA19.** Take a decision about the viability to repair the CT [1.238%].
  - ✓ **SA20.** Improve fieldwork infrastructure [0.656%].
  - ✓ **SA21.** Agreement with CERCA to improve scientific equipment [1.115%].
- **SG7.** Promote publishing ethics and raise awareness about intellectual property among ICP researchers [2.05%].
  - ✓ **SA22.** Disseminate the content of the ICP manual of best practices in research, intellectual property and authorship among ICP researchers [1.209%].
  - ✓ **SA23.** Oversee that ICP researchers adhere to the highest ethical standards in publishing and research [0.843%].

MANAGEMENT & HUMAN RESOURCES [33.6%]:

- **SG8.** Increase the number of ICP academic staff with emphasis on the recruitment of foreign researchers and ascribed (seconded) personnel [4.96%].
  - ✓ **SA24.** Increase the critical mass of ICP researchers [1.298%].
  - ✓ **SA25.** Increase the number of foreign ICP staff researchers [1.241%].
  - ✓ **SA26.** Increase the ratio of academic vs. non-academic staff [1.456%].
  - ✓ **SA27.** Increase the number of ascribed (seconded) personnel from the Generalitat de Catalunya and ICREA [0.325%].
  - ✓ **SA28.** Ascribe UAB professors to the ICP (at 50%) [0.635%].
- **SG9.** Foster talent attraction and retention when recruiting researchers and specialized technicians [5.96%].
  - ✓ **SA29.** Use the OTM-R mechanisms specified in the ICP recruitment protocol and internationally publicize new positions for researchers and specialized technicians (excluding work and service contracts as well as competitive contracts) [1.873%].
  - ✓ **SA30.** Increase the number of researchers and technicians recruited by means of competitive calls [1.360%].
  - ✓ **SA31.** Promote talent attraction at early research career stages [1.439%].
  - ✓ **SA32.** Recruit back former talented ICP researchers by means of competitive contracts funded by external agencies [0.286%].
  - ✓ **SA33.** Stabilize talented ICP researchers and technicians with permanent contracts defrayed by basal funds after an international call using OTM-R protocols [0.999%].
- **SG10.** Improve internal coordination and promote the involvement of ICP personnel in decision-making [5.75%].
  - ✓ **SA34.** Organize coordination meetings on a quarterly basis [0.719%].
  - ✓ **SA35.** Organize committee meetings regularly [3.107%].
  - ✓ **SA36.** Maintain the main ICP committees and commissions [1.540%].

- ✓ **SA37.** Regularly update the list of professional categories and job positions at the ICP [0.379%].

- **SG11.** Make full use of the advisory functions of the SAB based on the expertise and experience of its members [1.52%].
  - ✓ **SA38.** Organize regular meetings with the SAB [0.333%].
  - ✓ **SA39.** Regularly involve SAB members in ICP internal tasks [1.187%].
- **SG12.** Improve the working conditions and training of ICP staff [3.32%].
  - ✓ **SA40.** Improve the salaries of ICP staff [0.486%].
  - ✓ **SA41.** Progressively implement HRS4R policies and renew the EU HR Excellence Award [1.600%].
  - ✓ **SA42.** Provide free training opportunities to ICP personnel [1.236%].
- **SG13.** Align ICP strategic goals with those of CERCA and the Catalan Research System [1.39%].
  - ✓ **SA43.** Obtain an excellent qualification in the next evaluation by CERCA [0.499%].
  - ✓ **SA44.** Comply with CERCA recommendations [0.888%].
- **SG14.** Comply with the obligations of the Generalitat de Catalunya public sector [0.69%].
  - ✓ **SA45.** Update the ICP transparency webpage [0.376%].
  - ✓ **SA46.** Regularize (and thereafter regularly update) the information in UNEIX platform [0.310%].
- **SG15.** Promote non-discrimination policies [4.87%].
  - ✓ **SA47.** Adhere to a zero tolerance policy regarding any type of discrimination, with emphasis on violence against women [0.593%].
  - ✓ **SA48.** Raise awareness about ICP non-discrimination policies [0.766%].
  - ✓ **SA49.** Progressively improve gender balance among ICP personnel [0.958%].
  - ✓ **SA50.** Prevent any gender bias during recruitment [1.686%].
  - ✓ **SA51.** Maintain balanced gender ratios in SAB, committees and commissions [0.871%].
- **SG16.** Manage more efficiently the museum fossil collection [5.14%].
  - ✓ **SA52.** Increase the ICP collection of fossils by means of permanent deposits [2.659%].
  - ✓ **SA53.** Increase the number of fossils catalogued into the ICP collection [1.207%].
  - ✓ **SA54.** Determine if the ICP needs to change collection management software [0.669%].
  - ✓ **SA55.** Be an active and relevant member of the Natural Sciences Museums of Catalonia network [0.607%].

FUNDRAISING & KNOWLEDGE TRANSFER [24.9%]:

- **SG17.** Avoid budgetary problems by means of promoting service provision and competitive projects [16.42%].
  - ✓ **SA56.** Increase the operating budget of the ICP beyond that determined by salary increases required by law [4.473%].
  - ✓ **SA57.** Maintain the ratio between competitive + service provision budget and total operating budget above 50% [2.229%].

- ✓ **SA58.** Prevent budgetary deficit [2.083%].
- ✓ **SA59.** Promote further the provision of external services by the Research Support & External Services Department [3.930%].
- ✓ **SA60.** Increase fundraising by means of national competitive projects and individual grants [1.652%].
- ✓ **SA61.** Increase fundraising by means of transnational and European funding [1.311%].
- ✓ **SA62.** Increase fundraising my means of donors and sponsors [0.742%].

- **SG18.** Promote paleontological vocations and orient them toward research by means of training and supervision [4.70%].
  - ✓ **SA63.** Increase the number of young students supervised by ICP researchers [0.693%].
  - ✓ **SA64.** More actively promote the volunteering program of the ICP [0.925%].
  - ✓ **SA65.** Increase the number of national students that perform practicums at the ICP [0.471%].
  - ✓ **SA66.** Increase the number of international students that perform traineeships or internships at the ICP [0.838%].
  - ✓ **SA67.** Actively participate in university teaching [0.710%].
  - ✓ **SA68.** Actively participate in the (co)organization of specialized scientific courses and workshops [1.060%].
- **SG19.** Continue promoting the recovery, conservation and study of paleontological heritage [3.75%].
  - ✓ **SA69.** Increase the number of fieldwork campaigns [0.834%].
  - ✓ **SA70.** Increase the number of fossils prepared [2.203%].
  - ✓ **SA71.** Increase the number of queries about ICP fossils [0.709%].

OUTREACH & COMMUNICATION [12.0%]:

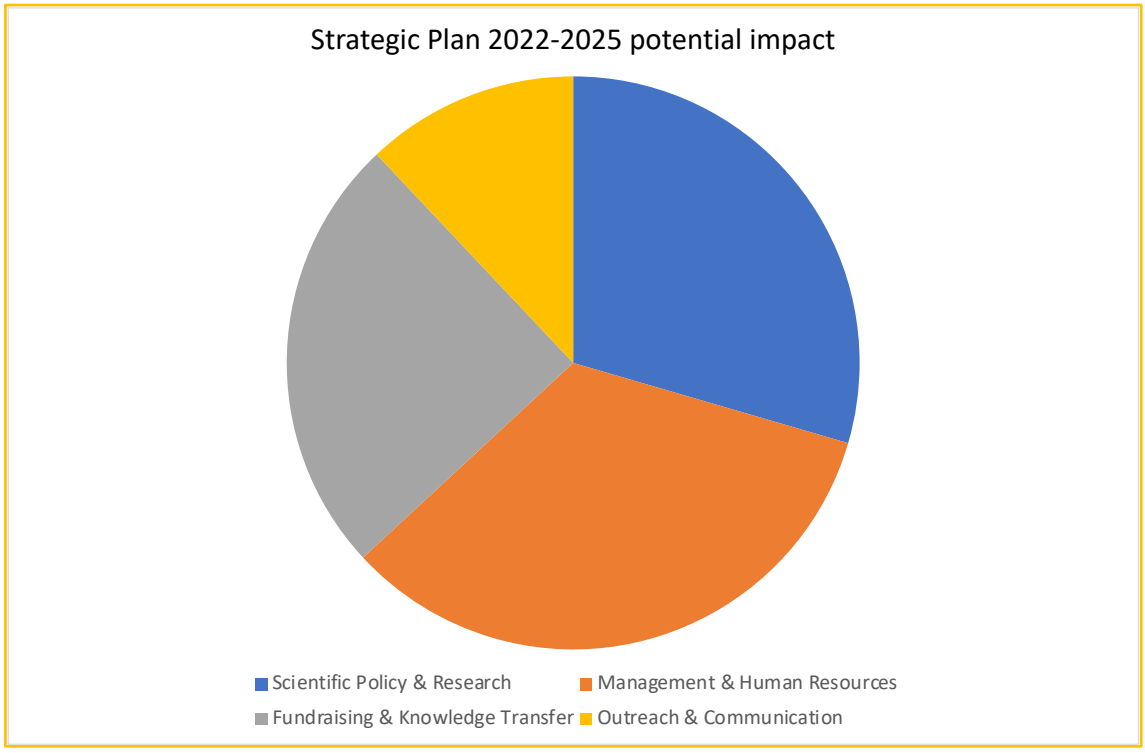
- **SG20.** Disseminate further the research outputs and activities of the ICP by means of digital and mass media [2.80%].
  - ✓ **SA72.** Increase the visibility of the ICP website [0.453%].
  - ✓ **SA73.** Increase the number of news published on the ICP webpage [0.134%].
  - ✓ **SA74.** Increase the visibility of the ICP and ICP Museum on social networks [0.847%].
  - ✓ **SA75.** Increase the visibility of the ICP on mass media [0.208%].
  - ✓ **SA76.** Increase the visibility of the Dinosaurs from the Pyrenees project on social networks [1.157%].
- **SG21.** Promote further the outreach activities performed by the ICP [7.11%].
  - ✓ **SA77.** Attract a higher number of visitors to the ICP Museum in Sabadell [1.310%].
  - ✓ **SA78.** Attract a higher number of visitors to other museums or interpretation centers managed by the ICP [0.649%].
  - ✓ **SA79.** Remodel the exhibits of the ICP Museum in Sabadell [1.276%].
  - ✓ **SA80.** Design and implement new temporary exhibits based on the fossils housed at the ICP with possibility to itinerate [2.008%].

- ✓ **SA81.** Collaborate with other museums and interpretation centers throughout Catalonia [0.624%].
- ✓ **SA82.** Increase competitive fundraising for outreach actions aimed to the general public [1.242%].

- **SG22.** Improve internal communication [2.12%].
  - ✓ **SA83.** Regularly organize internal talks (paleovermuts) [0.317%].
  - ✓ **SA84.** Ask for feedback to ICP personnel by means of surveys [0.486%].
  - ✓ **SA85.** Maintain existing telematic mechanisms and implement new ones of internal communication [0.707%].
  - ✓ **SA86.** Continue using an app to register working time of ICP staff [0.614%].

The fulfillment of each strategic goal is measured by one of more binary indicators, which may be fulfilled (1) or not (0). The summatory of the percentages corresponding to the fulfilled inicators will yield the degree of achievement of the Strategic Plan (from 0% to 100%). It is possible to tentatively compute the degree of fulfillmet of the plan on a yearly basis, although numerical indicators implying averages or values for the 2022-2025 interval can only be definitively assessed at the completion of the plan. The current degree of fulfillment of the plan is computed based on the following table.

In terms of potential impact of the various strategic areas, the plan gives highest importace to Management & Human Resources (34.5%), followed by Scientific Policy & Research (29.5%), Fundarising & Knowledge Transfer (24.9%), and finally Outreach & Communication (12.0%).



ICP Strategic Plan 2022-2025 Fulfillment (Goals, Actions, and Indicators)	Potential Impact %	Fulfilled? (Yes/No)
SCIENTIFIC POLICY & RESEARCH:		
SG1. Consolidate the high scientific production and productivity of the ICP:		
SA1 [ST]. Encourage ICP researchers to publish more papers in SCI journals.		
I1. SCI papers average production: 2022-2025 ≥ 2018-2021 [84.3].	0.317	Yes
I2. SCI papers average productivity: 2022-2025 ≥ 2018-2021 [1.94].	0.317	No
SA2 [WO]. Maintain the current network of research associates with emphasis on R3-R4 categories.		
I3. Research associates average: 2022-2025 ≥ 2018-2021 [20.8].	0.575	Yes
I4. R3+R4 research associates average: 2022-2025 > 2018-2021 [14.0].	0.575	Yes
SA3 [SO]. Increase the number of publications with international coauthors.		
I5. SCI papers with international collaborations average: 2022-2025 ≥ 2018-2021 [67.8].	0.813	Yes
I6. % of SCI papers with international collaborations average: 2022-2025 ≥ 2018-2021 [80.4].	0.813	No
SG2. Consolidate and increase further the high quality and impact of the ICP scientific production:		
SA4 [ST]. Encourage ICP researchers to prioritize publication in SCI journals from the first quartile.		
I7. Q1 SCI papers average production: 2022-2025 ≥ 2018-2021 [47.8].	0.302	Yes
I8. Q1 SCI papers average productivity: 2022-2025 ≥ 2018-2021 [1.09].	0.302	No
I9. % of Q1 SCI papers average: 2022-2025 ≥ 2018-2021 [56.3].	0.302	No
SA5 [SO]. Encourage ICP researchers to select journals with high impact factors and/or impact factor percentiles.		
I10. SCI papers JIF geometric mean: 2022-2025 ≥ 2018-2021 [3.26].	0.561	Yes
I11. SCI papers JIF percentile median: 2022-2025 ≥ 2018-2021 [77.4].	0.561	Yes
SA6 [ST]. Encourage ICP researchers to target more often SCI journals from the multidisciplinary sciences category.		
I12. Multidisciplinary SCI papers average production: 2022-2025 ≥ 2018-2021 [16.0].	0.279	Yes
I13. % of Multidisciplinary SCI papers average: 2022-2025 ≥ 2018-2021 [19.1].	0.279	Yes
SA7 [ST]. Increase ICP leadership in publications coauthored with researchers from other institutions.		
I14. SCI papers with ICP corresponding author average: 2022-2025 > 2018-2021 [36.5].	0.355	Yes
I15. % of SCI papers with ICP corresponding author average: 2022-2025 > 2018-2021 [42.8].	0.355	Yes
SG3. Increase the visibility of the scientific production of the ICP by promoting open-access publication and open data sharing:		
SA8 [ST]. Encourage ICP researchers to publish in gold/bronze open-access SCI journals.		
I16. Gold/bronze OA SCI papers average production: 2022-2025 ≥ 2018-2021 [39.0].	0.854	Yes
I17. % of gold/bronze OA SCI papers average: 2022-2025 ≥ 2018-2021 [45.1].	0.854	No
SA9 [WO]. Help ICP researchers to make use of green open-access options for subscription journals.		
I18. Continue using the UAB DDD digital repository to post ICP scientific production.	0.563	Yes

I19. % of published journal papers posted on DDD average: 2022-2025 ≥ 2018-2021 [71.5].	0.563	Yes
SA10 [WT]. Promote and facilitate data sharing (open data) by ICP researchers.		
I20. Reach a collaboration agreement with an open data repository (e.g., MorphoSource).	0.174	Yes
I21. Elaborate a generic data sharing plan of the ICP or adhere to the CERCA equivalent.	0.174	No
I22. Implement the necessary internal mechanisms to monitor the number of datasets published by ICP researchers in data repositories (i.e., excluding supplementary material published on the journal's website).	0.174	No
SG4. Promote further the visibility of the ICP in scientific meetings and workshops, particularly at the international level:		
SA11 [SO]. Increase the attendance to scientific meetings and workshops, with emphasis on international ones.		
I23. Number of meetings attended by ICP researchers average: 2022-2025 ≥ 2018-2021 [16.8].	0.530	Yes
I24. Communications to meetings attended by ICP researchers average: 2022-2025 ≥ 2018-2021 [67.8].	0.530	Yes
I25. % of international meetings attended by ICP researchers average: 2022-2025 ≥ 2018-2021 [13.3].	0.530	Yes
SA12 [SO]. (Co)organize scientific meetings.		
I26. Number of meetings (co)organized by the ICP average: 2022-2025 ≥ 2018-2021 [0].	0.743	Yes
SA13 [ST]. Consolidate and expand the network of international collaborators.		
I27. Number of foreign researchers visiting the ICP average: 2022-2025 ≥ 2018-2021 [3.8].	1.198	Yes
I28. Number of short stays abroad by ICP researchers: 2022-2025 ≥ 2018-2021 [2.3].	1.198	Yes
SG5. Consolidate the ICP as a benchmark institution at the international level regarding paleobiological research:		
SA14 [ST]. Improve the competitiveness of the ICP relative to other benchmark paleontological institutions (based on the publication metrics used in the ICP annual report).		
I29. Ranking in standardized (%) geometric mean absolute indicators average: 2022-2025 ≥ 2018-2021 [56.9].	1.495	Yes
I30. Ranking in standardized (%) geometric mean relative indicators average: 2022-2025 ≥ 2018-2021 [99.8].	1.495	Yes
SA15 [WO]. Preserve the current main lines of research at the ICP.		
I31. Number of research groups in each research area in 2025 ≥ 1.	0.500	Yes
SA16 [SO]. Maintain the current number of research groups at the ICP.		
I32. Number of research groups in 2025 ≥ 2021 [6].	2.636	Yes
SA17 [SO]. Promote further a paleoproteomics and paleogenomics research line.		
I33. SCI papers on paleoproteomics average: 2022-2025 > 2018-2021 [0.5].	0.748	No
I34. SCI papers on ancient DNA average: 2022-2025 > 2018-2021 [3.0].	0.748	No
SG6. Increase and improve the technical support provided to ICP researchers:		
SA18 [SO]. Maintain or increase the number of research support staff.		
I35. Number of technicians in the Preparation & Conservation Area average: 2022-2025 ≥ 2018-2021 [5.3].	1.024	Yes
I36. Number of technicians in the Fieldwork & Collection Management Area average: 2022-2025 ≥ 2018-2021 [19.8].	1.024	No
SA19 [WO]. Take a decision about the viability to repair the CT.		

I37. CT viability plan approved not later than 2023.	0.619	Yes
I38. CT viability plan executed not later than 2025.	0.619	No
SA20 [WO]. Improve fieldwork infrastructure.		
I39. New four-wheel off-road vehicle bought not later than 2024.	0.328	No
I40. Ongoing agreement with EDAR Riu Sec to screen-wash sediments.	0.328	Yes
SA21 [WO]. Agreement with CERCA to improve scientific equipment.		
I41. Ongoing agreement with CERCA about scientific equipment.	0.558	Yes
I42. Funding from CERCA to improve scientific equipment average: 2022-2025 > 2018-2021 [0].	0.558	Yes
SG7. Promote publishing ethics and raise awareness about intellectual property among ICP researchers:		
SA22 [ST]. Disseminate the content of the ICP manual of best practices in research, intellectual property and authorship among ICP researchers.		
I43. Manual available from the ICP website.	0.604	Yes
I44. Training session about ethics in publishing not later 2023.	0.604	No
SA23 [ST]. Oversee that ICP researchers adhere to the highest ethical standards in publishing and research.		
I45. No external or internal complains or accusations about unethical behavior or scientific misconduct by ICP researchers in 2022-2025.	0.422	Yes
I46. No retractions/expressions of concerns regarding ICP publications in 2022-2025.	0.422	Yes
MANAGEMENT & HUMAN RESOURCES:		
SG8. Increase the number of ICP academic staff with emphasis on the recruitment of foreign researchers and ascribed (seconded) personnel:		
SA24 [SO]. Increase the critical mass of ICP researchers.		
I47. Staff researchers average: 2022-2025 ≥ 2018-2021 [26.8].	1.298	Yes
SA25 [WO]. Increase the number of foreign ICP staff researchers.		
I48. Foreign staff researchers average: 2022-2025 > 2018-2021 [4.5].	0.621	Yes
I49. % of foreign staff researchers average: 2022-2025 > 2018-2021 [16.8].	0.621	Yes
SA26 [WT]. Increase the ratio of academic vs. non-academic staff.		
I50. % of staff researchers relative to total structural staff (excluding work and service contracts for service provision) average: 2022-2025 ≥ 2018-2021 [45.8].	1.456	Yes
SA27 [WT]. Increase the number of ascribed (seconded) personnel from the Generalitat de Catalunya and ICREA.		
I51. ICREA professors ascribed to the ICP average: 2022-2025 ≥ 2018-2021 [2].	0.163	Yes
I52. Civil servants of the Generalitat ascribed to the ICP average: 2022-2025 ≥ 2018-2021 [4].	0.163	Yes
SA28 [SO]. Ascribe UAB professors to the ICP (at 50%).		
I53. UAB professors ascribed to the ICP average: 2022-2025 > 2018-2021 [0].	0.635	Yes
SG9. Foster talent attraction and retention when recruiting researchers and specialized technicians:		
SA29 [SO]. Use the OTM-R mechanisms specified in the ICP recruitment protocol and internationally publicize new positions for researchers and specialized technicians (excluding work and service contracts as well as competitive contracts).		

I54. Recruited researchers after an OTM-R selection process average: 2022-2025 ≥ 2018-2021 [1.0].	0.624	Yes
I55. Recruited technicians after an OTM-R selection process average: 2022-2025 ≥ 2018-2021 [1.5].	0.624	No
I56. New positions (excluding work and service contracts as well as competitive contracts) posted in Euraxess average: 2022-2025 ≥ 2018-2021 [1.0].	0.624	Yes
SA30 [WO]. Increase the number of researchers and technicians recruited by means of competitive calls.		
I57. New R1 (predoctoral) researchers recruited with competitive contracts (e.g., FI, FPI, FPU) during 2022-2025 ≥ 2018-2021 [1.5].	0.340	Yes
I58. New R2 (postdoctoral) researchers recruited with competitive contracts (e.g., Juan de la Cierva and Beatriu de Pinós) during 2022-2025 ≥ 2018-2021 [1.8].	0.340	Yes
I59. New R3 (tenure-track) researchers recruited with competitive contracts (e.g., Ramón y Cajal) during 2022-2025 ≥ 2018-2021 [0].	0.340	Yes
I60. New technicians recruited with competitive contracts (e.g., PTA) during 2022-2025 ≥ 2018-2021 [0].	0.340	Yes
SA31 [SO]. Promote talent attraction at early research career stages.		
I61. Staff R1+R2 researchers (or PhD students recognized in Organization Chart) average: 2022-2025 ≥ 2018-2021 [17].	0.719	Yes
I62. R1-R2 positions opened at the ICP and defrayed with basal funds average: 2022-2025 ≥ 2018-2021 [0.3].	0.719	Yes
SA32 [WT]. Recruit back former talented ICP researchers by means of competitive contracts funded by external agencies.		
I63. Former staff researchers recruited with competitive postdoctoral (JdC, BP, etc.) contracts: average 2022-2025 ≥ 2018-2021 [1].	0.143	No
I64. Former staff researchers recruited with competitive tenure-track or permanent (RyC, ICREA, etc.) contracts: average 2022-2025 ≥ 2018-2021 [0].	0.143	Yes
SA33 [WO]. Stabilize talented ICP researchers and technicians with permanent contracts defrayed by basal funds after an international call using OTM-R protocols.		
I65. Stabilized researchers after an OTM-R selection process average: 2022-2025 ≥ 2018-2021 [0.3].	0.500	Yes
I66. Stabilized technicians after an OTM-R international selection process average: 2022-2025 ≥ 2018-2021 [1].	0.500	Yes
SG10. Improve internal coordination and promote the involvement of ICP personnel in decision-making:		
SA34 [SO]. Organize coordination meetings on a quarterly basis.		
I67. Coordination meetings average: 2022-2025 ≥ 4/yr.	0.719	No
SA35 [SO]. Organize committee meetings regularly.		
I68. Steering Committee meetings average: 2022-2025 ≥ 10/yr.	0.777	Yes
I69. HRS4R Implementation Committee meetings average: 2022-2025 ≥ 3/yr.	0.777	Yes
I70. Information Systems Security Committee meetings average: 2022-2025 ≥ 1/yr.	0.777	No
I71. Non-Discrimination Committee meetings average: 2022-2025 ≥ 4/yr.	0.777	Yes
SA36 [WO]. Maintain the main ICP committees and commissions.		
I72. Researchers Commission still active in 2025.	0.308	Yes
I73. Fieldwork Commission still active in 2025.	0.308	Yes
I74. HRS4R Committee still active in 2025.	0.308	Yes
I75. Information Systems Security Committee still active in 2025.	0.308	Yes
I76. Non-Discrimination Committee still active in 2025.	0.308	Yes

SA37 [ST]. Regularly update the list of professional categories and job positions at the ICP.		
I77. Organization Chart updated on a yearly basis.	0.189	Yes
I78. Salary Scale updated on a yearly basis.	0.189	No
SG11. Make full use of the advisory functions of the SAB based on the expertise and experience of its members:		
SA38 [SO]. Organize regular meetings with the SAB.		
I79. At least one annual SAB meeting.	0.166	Yes
I80. Presentations by ICP director and some researchers to the SAB during annual meeting.	0.166	Yes
SA39 [SO]. Regularly involve SAB members in ICP internal tasks.		
I81. SAB members involved in ≥50% ICP selection processes.	0.594	Yes
I82. SAB members asked for feedback when elaborating the next Strategic Plan.	0.594	No
SG12. Improve the working conditions and training of ICP staff:		
SA40 [WT]. Improve the salaries of ICP staff.		
I83. Salaries updated yearly based on the increases determined by law for public sector employees.	0.243	Yes
I84. Per capita salary of ICP structural staff (i.e., excluding ascribed and competitive staff, as well as those hired with work and service contracts) 2025 > 2021 [29,453].	0.243	Yes
SA41 [WO]. Progressively implement HRS4R policies and renew the EU HR Excellence Award.		
I85. Meetings of the HRS4R Implementation Committee average: 2022-2025 ≥ 3/yr.	0.320	Yes
I86. New actions included in the HRS4R Action Plan during 2022-2025 ≥ 2.	0.320	No
I87. Positive external evaluation by the EU of the HRS4R implementation at the ICP and maintenance of the award during 2022-2025.	0.320	No
I88. Complete the ICP Welcome Handbook.	0.320	No
I89. Complete the ICP Protocol for Funding Request and the ICP Protocol for Fund Expenditure Accountability.	0.320	No
SA42 [SO]. Provide free training opportunities to ICP personnel.		
I90. Offer training courses to ICP personnel on a yearly basis.	0.618	Yes
I91. Number of different courses offered to personnel average: 2022-2025 ≥ 2018-2021 [11.8].	0.618	No
SG13. Align ICP strategic goals with those of CERCA and the Catalan Research System:		
SA43 [WT]. Obtain an excellent qualification in the next evaluation by CERCA.		
I92. 'A' qualification provided by the CERCA evaluation committee in next evaluation (expected for 2022).	0.499	No
SA44 [WT]. Comply with CERCA recommendations.		
I93. Elaborate an action plan to implement CERCA recommendations.	0.296	No
I94. Elaborate research impact assessments with the periodicity requested by CERCA.	0.296	No
I95. Regularly update ICP scientific production to PRC.	0.296	Yes
SG14. Comply with the obligations of the Generalitat de Catalunya public sector:		
SA45 [ST]. Update the ICP transparency webpage.		

I96. ICP transparency webpage updated at least once a year.	0.376	Yes
SA46 [WT]. Regularize (and thereafter regularly update) the information in UNEIX platform.		
I97. UNEIX data 2016-2020 regularized not later than 2022.	0.155	No
I98. UNEIX data from 2022 onward uploaded without delay.	0.155	No
SG15. Promote non-discrimination policies:		
SA47 [SO]. Adhere to a zero tolerance policy regarding any type of discrimination, with emphasis on violence against women.		
I99. All allegations about sexual harassment or any kind of violence against women resolved in due time following the ICP relevant protocols.	0.119	Yes
I100. All complaints about other types of discrimination or abusive behaviors resolved in due time following the ICP relevant protocols.	0.119	Yes
I101. Adapt the ICP Protocol to Prevent Violence against Women to new regulations not later than 2023.	0.119	No
I102. Perform and regularly update a pay audit for ICP staff.	0.119	No
I103. Maintain two ombudspersons (of whom at least one woman) throughout 2022-2025.	0.119	Yes
SA48 [WO]. Raise awareness about ICP non-discrimination policies.		
I104. Approve and register the new ICP Equality Plan according to the new regulations not later than 2022.	0.255	No
I105. Translate the ICP Equality Plan into English not later than 2023.	0.255	No
I106. Training sessions for ICP personnel on non-discrimination policies and the prevention of sexual harassment average: 2022-2025 > 2018-2021 [1.75]	0.255	Yes
SA49 [WO]. Progressively improve gender balance among ICP personnel.		
I107. Number of women staff researchers average: 2022-2025 > 2018-2021 [8.0].	0.160	Yes
I108. % of women among staff researchers average: 2022-2025 > 2018-2021 [30.0].	0.160	No
I109. Number of women among total staff average: 2022-2025 > 2018-2021 [27.5].	0.160	Yes
I110. % of women among total staff average: 2022-2025 > 2018-2021 [41.6].	0.160	Yes
I111. Number of women among research associates average: 2022-2025 > 2018-2021 [4.5].	0.160	Yes
I112. % of women among research associates average: 2022-2025 > 2018-2021 [21.5].	0.160	Yes
SA50 [SO]. Prevent any gender bias during recruitment.		
I113. % of women shortlisted during ICP selection processes using the OTM-R protocols average: 2022-2025 > 2018-2021 [65.8].	0.843	No
I114. % of women recruited during ICP selection processes using the OTM-R protocols average: 2022-2025 > 2018-2021 [58.3].	0.843	No
SA51 [ST]. Maintain balanced gender ratios in SAB, committees and commissions.		
I115. SAB composition (7 members) including at least 3 women throughout 2022-2025.	0.290	Yes
I116. Composition of stable internal committees (Steering, HRS4R, Non-Discrimination) and commissions (Researchers) as a whole including ≥40% women.	0.290	Yes
I117. Ad hoc selection committees as a whole during 2022-2025 including ≥40% women.	0.290	No
SG16. Manage more efficiently the museum fossil collection:		
SA52 [SO]. Increase the ICP collection of fossils by means of permanent deposits.		
I118. Permanent deposits of fossils given to the ICP by the Culture Department average: 2022-2025 ≥ 2018-2021 [11.3].	2.659	Yes
SA53 [WT]. Increase the number of fossils catalogued into the ICP collection.		

I119. Record numbers given to catalogued fossils average: 2022-2025 ≥ 2018-2021 [4845].	1.207	No
SA54 [WT]. Determine if the ICP needs to change collection management software.		
I120. Decision about collection management software to be used taken not later than 2025.	0.669	No
SA55 [SO]. Be an active and relevant member of the Natural Sciences Museums of Catalonia network.		
I121. Ongoing agreement with the Museu de Ciències Naturals de Barcelona and the Generalitat de Catalunya to be a member of the network.	0.304	Yes
I122. ICP representatives involved in all active commissions and/or working groups of the network.	0.304	Yes
FUNDRAISING & KNOWLEDGE TRANSFER:		
SG17. Avoid budgetary problems by means of promoting service provision and competitive projects:		
SA56 [SO]. Increase the operating budget of the ICP beyond that determined by salary increases required by law.		
I123. Basal budget provided by the Generalitat de Catalunya and other patrons average: 2022-2025 > 2018-2021 [835,270].	2.237	Yes
I124. Total operating budget average: 2022-2025 > 2018-2021 [1,785,778].	2.237	No
SA57 [ST]. Maintain the ratio between competitive + service provision budget and total operating budget above 50%.		
I125. Competitive + service provision / total operating budget average 2022-2025 > 2018-2021 [52.2].	1.115	No
I126. Competitive + service provision / total operating budget average 2022-2025 ≥ 50%.	1.115	No
SA58 [WT]. Prevent budgetary deficit.		
I127. Positive overall result of the 2022-2025 financial years.	1.041	No
I128. Obtain a budgetary surplus and transfer part of it to investment budget.	1.041	No
SA59 [SO]. Promote further the provision of external services by the Research Support & External Services Department.		
I129. Paleontological fieldwork at ACM still ongoing in 2025.	0.786	Yes
I130. Fieldwork service provision income average 2022-2025 ≥ 2018-2021 [255,419].	0.786	No
I131. Preparation and casting service provision income average 2022-2025 ≥ 2018-2021 [21,096].	0.786	Yes
I132. Museum service provision income average 2022-2025 ≥ 2018-2021 [54,603].	0.786	Yes
I133. Virtual paleontology service provision income average 2022-2025 ≥ 2018-2021 [3,968].	0.786	No
SA60 [WO]. Increase fundraising by means of national competitive projects and individual grants.		
I134. Spanish ministries competitive income average 2022-2025 ≥ 2018-2021 [314,977].	0.275	Yes
I135. AGAUR competitive income average 2022-2025 ≥ 2018-2021 [160,336].	0.275	Yes
I136. OSIC competitive income average 2022-2025 ≥ 2018-2021 [85,128].	0.275	No
I137. Number of active national R+D projects in 2025 ≥ 2021 [4].	0.275	Yes
I138. Number of ICP consolidated research groups in 2025 ≥ 2021 [3].	0.275	Yes
I139. Number of active OSIC fieldwork projects in 2025 ≥ 2021 [6].	0.275	Yes
SA61 [WT]. Increase fundraising by means of transnational and European funding.		
I140. European and transnational funding average 2022-2025 > 2018-2021 [0].	0.328	No
I141. Applications to ERC projects average 2022-2025 ≥ 1/yr.	0.328	Yes

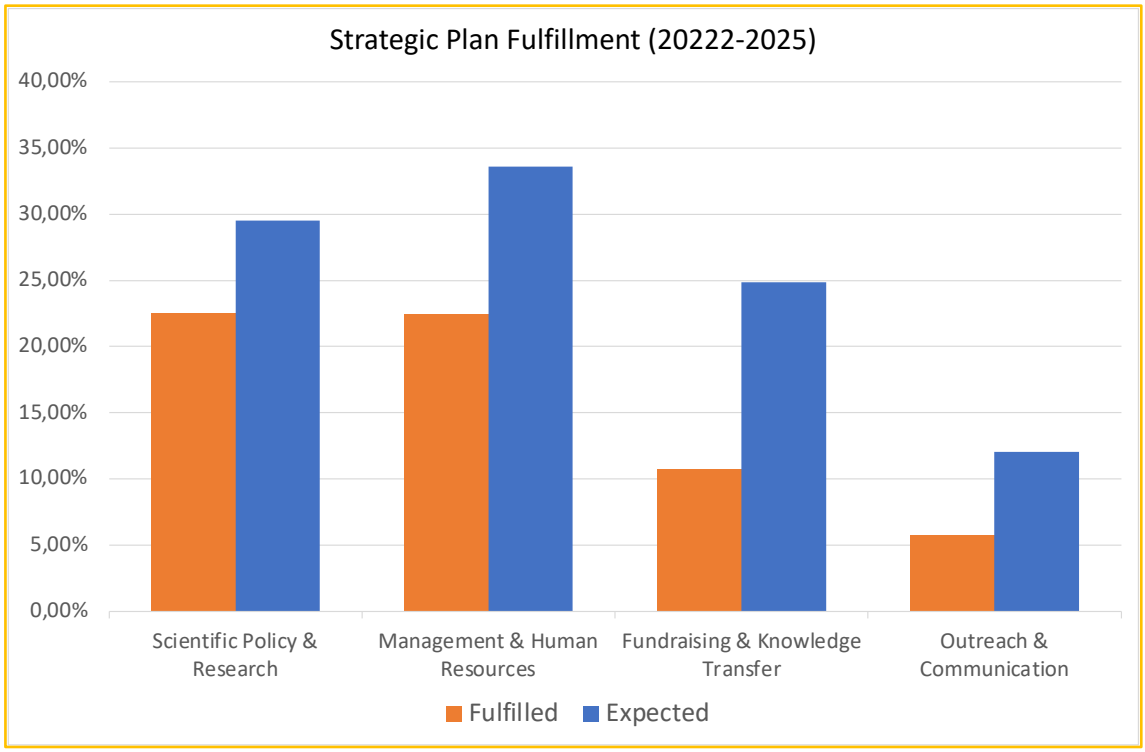
I142. At least one big European or transnational project (as coordinator or partner with overheads) above 1 M€ total budget (e.g., ERC, Interreg) in 2022-2025.	0.328	No
I143. Participate as beneficiary organization in a MSC-ITN during 2022-2025.	0.328	No
SA62 [ST]. Increase fundraising my means of donors and sponsors.		
I144. Income from donors average 2022-2025 > 2018-2021 [0].	0.371	No
I145. Income from sponsors average 2022-2025 > 2018-2021 [0].	0.371	Yes
SG18. Promote paleontological vocations and orient them toward research by means of training and supervision:		
SA63 [WO]. Increase the number of young students supervised by ICP researchers.		
I146. Finished bachelor and master's theses supervised by ICP researchers or research associates average: 2022-2025 ≥ 2018-2021 [16.3].	0.231	No
I147. Finished PhD dissertations supervised by ICP researchers or research associates average: 2022-2025 ≥ 2018-2021 [5.3].	0.231	No
I148. Ongoing PhD dissertations supervised by ICP researchers or research associates 2025 ≥ 2021 [32].	0.231	Yes
SA64 [WT]. More actively promote the volunteering program of the ICP.		
I149. Publicize and offer volunteering opportunities through the ICP webpage.	0.462	No
I150. Publicize and offer volunteering opportunities through relevant volunteering portals and entities (e.g., the Oficina d'Entitats i Voluntariat of the City Council of Sabadell).	0.462	No
SA65 [SO]. Increase the number of national students that perform practicums at the ICP.		
I151. University practicum students at the ICP average: 2022-2025 ≥ 2018-2021 [6].	0.471	Yes
SA66 [SO]. Increase the number of international students that perform traineeships or internships at the ICP.		
I152. Erasmus traineeships at the ICP average: 2022-2025 ≥ 2018-2021 [0.8].	0.838	Yes
SA67 [WO]. Actively participate in university teaching.		
I153. Participation in the UAB/UB Paleobiology & Fossil Record master (or equivalent) still active in 2025.	0.237	Yes
I154. Participation in the UB/UAB Biolocial Anthropology master (or equivalent) still active in 2025.	0.237	Yes
I155. Number of students in (and revenues generated by) the paleobiology master (or equivalent) average 2022-2025 ≥ 2018-2021 [6 / 4,520].	0.237	No
SA68 [SO]. Actively participate in the (co)organization of specialized scientific courses and workshops.		
I156. Coorganization of specialized courses with Transmitting Science still active in 2025.	0.530	Yes
I157. Number of scientific courses and workshops (co)organized average 2022-2025 ≥ 2018-2021 [8.0]	0.530	No
SG19. Continue promoting the recovery, conservation and study of paleontological heritage:		
SA69 [ST]. Increase the number of fieldwork campaigns.		
I158. Research paleontological campaigns average 2022-2025 ≥ 2018-2021 [16.8].	0.417	Yes
I159. Rescue paleontological campaigns average 2022-2025 ≥ 2018-2021 [5].	0.417	Yes
SA70 [SO]. Increase the number of fossils prepared.		
I160. Number of prepared fossils average 2022-2025 ≥ 2018-2021 [1392].	2.203	No
SA71 [ST]. Increase the number of queries about ICP fossils.		

I161. Total number of queries 2022-2025 ≥ 2018-2021 [60.5].	0.709	Yes
OUTREACH & COMMUNICATION:		
SG20. Disseminate further the research outputs and activities of the ICP by means of digital and mass media:		
SA72 [SO]. Increase the visibility of the ICP website.		
I162. ICP website visitors average 2022-2025 ≥ 2018-2021[35,747].	0.227	Yes
I163. Website redesigned not later than 2025.	0.227	No
SA73 [WO]. Increase the number of news published on the ICP webpage.		
I164. ICP website news average 2022-2025 ≥ 2018-2021 [35.0].	0.134	No
SA74 [SO]. Increase the visibility of the ICP on social networks.		
I165. ICP Facebook fans average 2022-2025 ≥ 2018-2021 [4,544].	0.169	Yes
I166. ICP Twitter followers average 2022-2025 ≥ 2018-2021 [1,605].	0.169	Yes
I167. ICP Museum Twitter followers average 2022-2025 ≥ 2018-2021 [1,578].	0.169	Yes
I168. ICP Museum bulletin subscribers 2022-2025 ≥ 2018-2021 [1,486].	0.169	Yes
I169. Fossil Preparation Instagram followers average 2022-2025 ≥ 2018-2021 [651].	0.169	Yes
SA75 [WT]. Increase the visibility of the ICP on mass media.		
I170. ICP press releases average 2022-2025 ≥ 2018-2021 [17.0].	0.104	No
I171. ICP press conferences average 2022-2025 ≥ 2018-2021 [1].	0.104	Yes
SA76 [SO]. Increase the visibility of the Dinosaurs from the Pyrenees project on social networks.		
I172. Conca Dellà Museum + Dinosfera + Dinosaurs of the Pyrenees websites visitors average 2022-2025 ≥ 2018-2021 [31,852].	0.386	No
I173. Conca Dellà Museum + Dinosfera + Dinosaurs of the Pyrenees Facebook fans average 2022-2025 ≥ 2019-2021 [6,332].	0.386	Yes
I174. Conca Dellà + Dinosaurs of the Pyrenees Twitter followers average 2022-2025 ≥ 2019-2021 [1,461].	0.386	Yes
SG21. Promote further the outreach activities performed by the ICP:		
SA77 [SO]. Attract a higher number of visitors to the ICP Museum in Sabadell.		
I175. Museum visits average 2022-2025 ≥ 2018-2021 [16,790].	0.655	Yes
I176. School + family workshops and guided visits average 2022-2025 ≥ 2018-2021 [309].	0.655	Yes
SA78 [SO]. Attract a higher number of visitors to other museums or interpretation centers managed by the ICP.		
I177. Conca Dellà Museum + Dinosfera visits average 2022-2025 ≥ 2018-2021 [11,578].	0.325	No
I178. Conca Dellà Museum + Dinosfera activities average 2022-2025 ≥ 2018-2021 [3,324].	0.325	No
SA79 [WO]. Remodel the exhibits of the ICP Museum in Sabadell.		
I179. Receive funding from the Culture Department to plan and execute the exhibit remodeling.	0.319	Yes
I180. Museological and museographical plans ready not later than 2023.	0.319	No
I181. Remodeled permanent exhibit not later than 2025.	0.319	No
I182. New temporary exhibit not later than 2025.	0.319	Yes

SA80 [SO]. Design and implement new temporary exhibits based on the fossils housed at the ICP with possibility to itinerate.		
I183. New temporary exhibits during 2022-2025 ≥ 2.	1.004	No
I184. New itinerant temporary exhibits during 2022-2025 ≥ 1.	1.004	No
SA81 [SO]. Collaborate with other museums and interpretation centers throughout Catalonia.		
I185. Collaborate with the Ajuntament de Subirats in dissemination and outreach activities related to els Casots site.	0.156	Yes
I186. Active collaboration agreement with the Ajuntament dels Hostalets de Pierola in relation to the CRIP.	0.156	Yes
I187. Collaboration with CosmoCaixa to exhibit fossils loaned by the ICP.	0.156	Yes
I188. Ongoing agreements with other city councils related to the Dinosaurs of the Pyrenees Project.	0.156	Yes
SA82 [SO]. Increase competitive fundraising for outreach actions aimed to the general public.		
I189. Applications to FECYT projects average 2022-2025 ≥ 2018-2021 [0.3].	0.414	No
I190. Applications to outreach OSIC projects average 2022-2025 ≥ 2018-2021 [2].	0.414	No
I191. OSIC competitive income for outreach activities average 2022-2025 ≥ 2018-2021 [2223].	0.414	No
SG22. Improve internal communication:		
SA83 [WO]. Regularly organize internal talks (paleovermuts).		
I192. ICP Director's paleovermut average 2022-2025 ≥ 1 per yr.	0.079	Yes
I193. ICP non-academic staff paleovermut average 2022-2025 ≥ 2 per yr.	0.079	No
I194. ICP researchers paleovermut average 2022-2025 ≥ 3 per yr.	0.079	No
I195. Guest or visiting researcher average 2022-2025 ≥ 1 per yr.	0.079	Yes
SA84 [WO]. Ask for feedback to ICP personnel by means of surveys.		
I196. Surveys about courses offered to employees average 2022-2025 ≥ 1 per yr.	0.243	Yes
I197. Surveys about strategic issues ≥ 1 per yr.	0.243	Yes
SA85 [WO]. Maintain existing telematic mechanisms and implement new ones of internal communication.		
I198. Internal bulletin sent to personnel on average 2022-2025 ≥ 2 per yr.	0.353	No
I199. Create a digital space for ICP personnel that merges current electronic mechanisms for the reservation of infrastructures and equipment with an internal calendar, and access to relevant documents and services (e.g., TimeNet).	0.353	No
SA86 [SO]. Continue using an app to register working time of ICP staff.		
I200. Continue using an app to register working time.	0.614	Yes
TOTAL (Potential impact to the left, in %; the impact of each indicator is summed when fulfilled)	100	**61.5**

Relevant summaries by strategic goals and strategic areas are provided below, including not only the potential impact of each but also that fulfilled in 2022.

Fulfillment of Strategic Plan 2022-2025 by Strategic Goals	Fulfillment 2022	Potential
SCIENTIFIC POLICY & RESEARCH:		
SG1. Consolidate the high scientific production and productivity of the ICP	2.28%	3.41%
SG2. Consolidate and increase further the high quality and impact of the ICP scientific production	2.69%	3.29%
SG3. Increase the visibility of the scientific production of the ICP by promoting open-access publication and open data sharing	2.15%	3.35%
SG4. Promote further the visibility of the ICP in scientific meetings and workshops, particularly at the international level	4.73%	4.73%
SG5. Consolidate the ICP as a benchmark institution at the international level regarding paleobiological research	6.13%	7.62%
SG6. Increase and improve the technical support provided to ICP researchers	3.09%	5.06%
SG7. Promote publishing ethics and raise awareness about intellectual property among ICP researchers	1.45%	2.05%
MANAGEMENT & HUMAN RESOURCES:		
SG8. Increase the number of ICP academic staff with emphasis on the recruitment of foreign researchers and ascribed (seconded) personnel	4.96%	4.96%
SG9. Foster talent attraction and retention when recruiting researchers and specialized technicians	5.19%	5.96%
SG10. Improve internal coordination and promote the involvement of ICP personnel in decision-making	4.06%	5.74%
SG11. Make full use of the advisory functions of the SAB based on the expertise and experience of its members	0.93%	1.52%
SG12. Improve the working conditions and training of ICP staff	1.42%	3.32%
SG13. Align ICP strategic goals with those of CERCA and the Catalan Research System	0.30%	1.39%
SG14. Comply with the obligations of the Generalitat de Catalunya public sector	0.38%	0.69%
SG15. Promote non-discrimination policies	1.99%	4.87%
SG16. Manage more efficiently the museum fossil collection	3.27%	5.14%
FUNDRAISING & KNOWLEDGE TRANSFER:		
SG17. Avoid budgetary problems by means of promoting service provision and competitive projects	6.67%	16.42%
SG18. Promote paleontological vocations and orient them toward research by means of training and supervision	2.54%	4.70%
SG19. Continue promoting the recovery, conservation and study of paleontological heritage	1.54%	3.75%
OUTREACH & COMMUNICATION:		
SG20. Disseminate further the research outputs and activities of the ICP by means of digital and mass media	1.95%	2.80%
SG21. Promote further the outreach activities performed by the ICP	2.57%	7.11%
SG22. Improve internal communication	1.26%	2.12%
TOTAL	**61.53%**	**100%**



Fulfillment of Strategic Plan 2022-2025 by Strategic Areas	Fulfillment 2022	Potential
Scientific Policy & Research (SPR)	22.51%	29.52%
Management & Human Resources (MHR)	22.48%	33.59%
Fundraising & Knowledge Transfer (FKT)	10.76%	24.86%
Outreach & Communication (OC)	5.78%	12.03%
TOTAL	**61.53%**	100%

The strategic area with a greater degree of goal fulfillment is SPR (76.3%), followed by MHR (66.9%), OC (48.0%), and FKT (43.3%), respectively representing 29.5%, 33.6%, 12.0%, and 24.9% of the plan and resulting in an averall fulfillment of 61.%. Taking into account that 2022 is the first year of application of the new Strategic Plan, it is to be expected that the overall degree of fulfillment will increased in the next few years—although there is no guarantee that numerical indicators ¡ based on the comparison of averages for the period 2022-2025 (as compared to the four previous years) that are presently fulfilled in 2022 will remain as such at the completion of the plan. The present results indicate that the degree of fulfillment is very satisfactory for SPR and quite so for MHR, while there is still much room for improvement regarding OC and FKT. Therefore, particular efforts should be devoted to the latter two strategic areas in years to come.

Comparison with other paleontological institutions

In the framework of the CERCA evaluation of the ICP in 2018, the Director elaborated a report for the Evaluation Committee based on the "Evaluation Questionnaire" provided by CERCA. This report included the comparison with three top worldwide paleontological institutions in terms of scientific production and productivity. The three institutions selected by the ICP Steering Committee were the following:

- Palaeobiology Research Group (PRG), School of Earth Sciences, University of Bristol (UK).
- University of California – Museum of Paleontology (UCMP), Berkeley, USA.
- Centre de Recherche en Paléontologie (CR2P), CNRS-MNHN-Sorbonne Université, France (formerly Centre de Recherche sur la Paléobiodiversité et les Paléoenvironments).

In the CERCA Evaluation Questionnaire elaborated in 2018, the comparison of the ICP with the above-mentioned institutions was circumscribed to the five preceding years (2013–2017). However, in the 2018, 2019, 2020, and 2021 Annual Reports, updated versions of these results based on the scientific production and productivity for five-year periods. However, in 2021 a slightly simplified methodology that removes some indicators that were a bit redundant and others that were not stable through time (open access) was introduced. In the upcoming CERCA evaluation scheduled for October 2023, the same benchmarking institutions have been selected but the comparisons will be performed by CERCA. Nevertheless, the direction of the ICP considers it suitable to continue using the same methodology as in 2021 to be able to monitor the progress of the ICP throughout the years.

Methods. Most of the comparisons have been performed on the basis of production in SCI (Science Citation Index) journals (i.e., those indexed by the Journal Citation Reports), in part because they constitute the major bulk of peer-reviewed articles published by all these institutions (including the ICP), and also because bibliometric indicators of impact and quality are restricted to those journals indexed by the JCR.

To compare the ICP with the three institutions mentioned above, we relied on several metrics based on SCI publications compiled for the last five years with the aid of the respective websites, Scopus, and WOS. The various metrics employed are summarized in the tables below. They were intended to measure production, authors, productivity, quality and impact, leadership, field of research, multidisciplinarity, and international collaborations. Some of these metrics are considered absolute indicators, in the sense that they are not scaled relative to the size of each institution; others, in contrast, are considered relative indicators (ratios, percentages, mean values, etc.), because they are independent from the size of each institution. The geometric means (GM) of the relative and absolute indicators were computed separately for each institution, and they were scaled to 100 to visually compare them more easily.

Absolute Indicators	Definition
SCI papers	Number of papers in SCI journals (co)authored by authors from each institution in a given year
SCI authors	Number of authors from each institution that have coauthored at least a paper in a SCI journal in a given year
SCI Q1	Number of papers in SCI journals from the first quartile (co)authored by authors from each institution in a given year
SCI leadership	Number of papers in SCI journals with a corresponding author from each institution in a given year
SCI Q1 leadership	Number of papers in SCI journals from the first quartile with a corresponding author from each institution in a given year
Paleontology	Number of papers in SCI journals from the JCR category 'Paleontology' (co)authored by authors from each institution in a given year
Multidisciplinary sciences	Number of papers in SCI journals from the JCR category 'Multidisciplinary sciences' (co)authored by authors from each institution in a given year
SCI papers int. coll.	Number of papers in SCI journals (co)authored by authors from each institution and authors from at least one institution from another country in a given year

Relative Indicators	Definition
SCI productivity	SCI papers / SCI authors
SCI Q1 productivity	SCI Q1 / SCI authors
SCI Q1 ratio %	SCI Q1 / SCI papers x 100
SCI leadership ratio %	SCI leadership / SCI papers x 100
SCI Q1 leadership ratio %	SCI Q1 leadership / SCI papers x 100
SCI median JIF percentile	Median of journal impact factor percentile for all the SCI papers (co)authored by authors from each institution in a given year
SCI IF GM	Geometric mean of impact factor for all the SCI papers (co)authored by authors from each institution in a given year
%Paleontology	Paleontology / SCI papers x 100
%Multidisciplinary sciences	Multidisciplinary sciences / SCI papers x 100
SCI papers int. coll. (%)	SCI papers int. coll. / SCI papers x 100

Comparative sample of paleontological research institutions. The three main research institutions selected for comparison with the ICP are briefly described below:

- **Palaeobiology Research Group (PRG), School of Earth Sciences, University of Bristol (UK):** As advertised in their own webpage (https://www.bristol.ac.uk/earthsciences/research/palaeobiology/), in 2017 it was considered the best paleontology research group in the world in the first discipline-specific annual review by the Center for World University Rankings. In this regard it must be stressed that this concept of 'research group' is different

from that of the ICP, so that the eight different 'laboratories' of Bristol's PRG are comparable to the ICP 'research groups', being named after the group leader (the Benton laboratory, the Donoghue laboratory, etc.), although as a whole the PRG is clearly larger than the ICP. The members of the PRG are affiliated to the School of Earth Sciences of the University of Bristol, and therefore the scientific production of the group is difficult to retrieve on this basis, although it can be compiled based on the information provided on its website.

- **University of California – Museum of Paleontology (UCMP), Berkeley, USA:** This institution is more similar to the ICP in the sense that it consists of a museum with research staff (although the ICP is rather a research center with a museum). They are tightly ingrained within the university structure, with most experienced researchers being both university professors and museum curators. The fact that its affiliation is not recognized as distinct from the University of California in Scopus (unlike in the case of the ICP) hinders retrieving their SCI productivity, although this can be done with the help of the publication list reported on its website (http://www.ucmp.berkeley.edu/).
- **Centre de Recherche en Paléontologie (CR2P), CNRS-MNHN-Sorbonne Université, France:** This research center is exclusively devoted to paleontology (in a broad sense). It aims at elucidating the phylogenetic patterns and evolutionary history of living organisms through the fossil record and environments of the past. It is simultaneously supported by the Muséum National d'Histoire Naturelle (MNHN), Paris; the Centre National de la Recherche Scientifique (CNRS); and the Sorbonne Université. As indicated in its webpage (http://paleo.mnhn.fr/en), the CR2P equals to the Unité Mixte de Recherche (UMR) 7207. The CR2P resembles the ICP in involving the cooperation of a university, a museum, and a research national institution. It has three 'research teams', which are much larger than the ICP research groups: Team 1 (PALPAL: Palaeobiodiversities, palaeoenvironments); Team 2 (PDM: Metazoan phylogeny and diversification); and Team 3 (FOSFO: Forms, structures and functions).

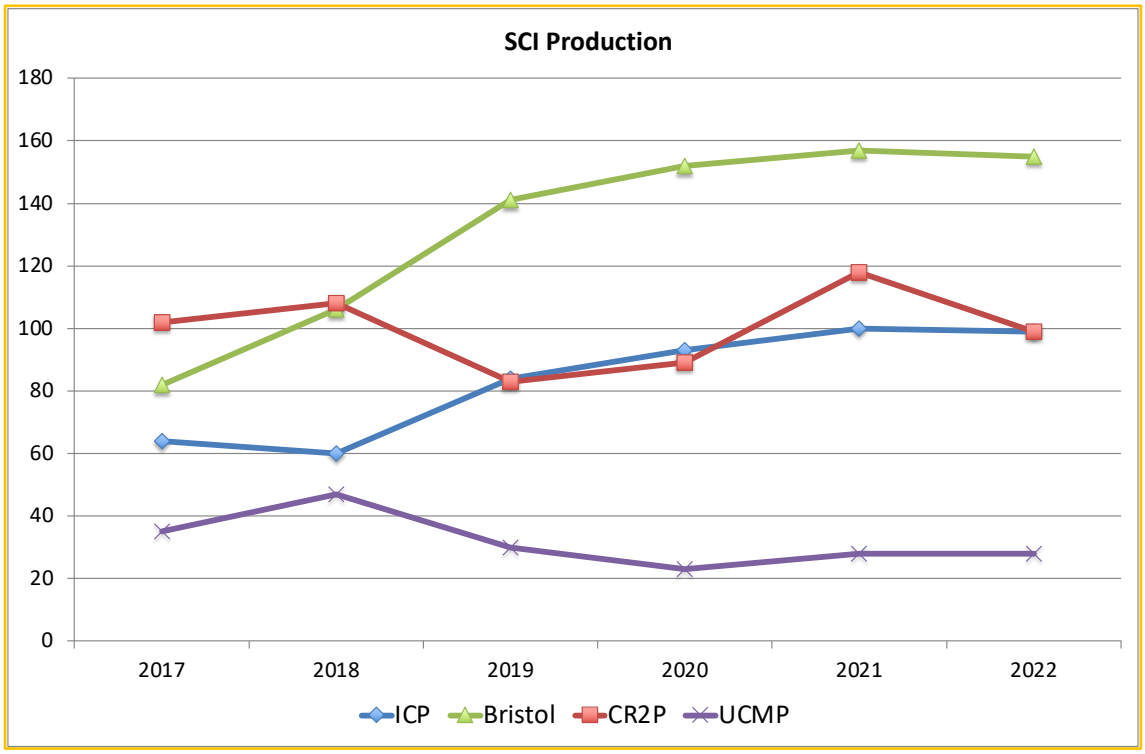
Absolute and relative indicators. The annual values for the aforementioned indicators during 2022, the preceding five years (2017-2021), and the average for the latter period are reported in the following table. Relative indicators are denoted in italics.

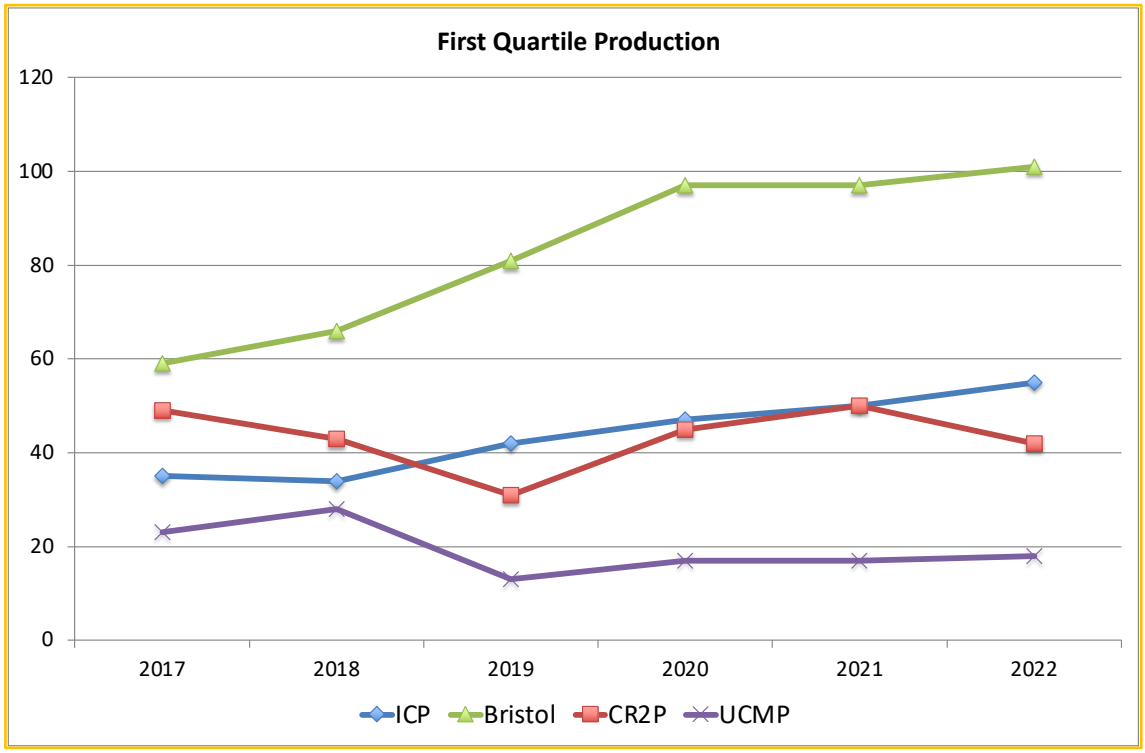
Institution	Metric	2017	2018	2019	2020	2021	2017-2021	2022
ICP	SCI papers	64	60	84	93	100	**80.2**	**99**
PRG	SCI papers	82	106	141	152	157	**127.6**	**155**
CR2P	SCI papers	102	108	83	89	118	**100.0**	**99**
UCMP	SCI papers	35	47	30	23	28	**32.6**	**28**
ICP	SCI Q1	35	34	42	47	50	**41.6**	**55**
PRG	SCI Q1	59	66	81	97	97	**80.0**	**101**
CR2P	SCI Q1	49	43	31	45	50	**43.6**	**42**
UCMP	SCI Q1	23	28	13	17	17	**19.6**	**18**
ICP	SCI authors	38	41	41	43	48	**42.2**	**56**
PRG	SCI authors	68	89	107	103	90	**91.4**	**99**

CR2P	SCI authors	72	80	76	80	75	**76.6**	**72**
UCMP	SCI authors	22	26	22	20	21	**22.2**	**25**
ICP	*SCI productivity*	*1.68*	*1.46*	*2.05*	*2.16*	*2.08*	***1.89***	***1.77***
PRG	*SCI productivity*	*1.21*	*1.19*	*1.32*	*1.48*	*1.74*	***1.39***	***1.57***
CR2P	*SCI productivity*	*1.42*	*1.35*	*1.09*	*1.11*	*1.57*	***1.31***	***1.38***
UCMP	*SCI productivity*	*1.59*	*1.81*	*1.36*	*1.15*	*1.33*	***1.45***	***1.12***
ICP	*SCI Q1 productivity*	*0.92*	*0.83*	*1.02*	*1.09*	*1.04*	***0.98***	***0.98***
PRG	*SCI Q1 productivity*	*0.87*	*0.74*	*0.76*	*0.94*	*1.08*	***0.88***	***1.02***
CR2P	*SCI Q1 productivity*	*0.68*	*0.54*	*0.41*	*0.56*	*0.67*	***0.57***	***0.58***
UCMP	*SCI Q1 productivity*	*1.05*	*1.08*	*0.59*	*0.85*	*0.81*	***0.87***	***0.72***
ICP	*SCI Q1 ratio %*	*54.7*	*56.7*	*50.0*	*50.5*	*50.0*	***52.4***	***55.6***
PRG	*SCI Q1 ratio %*	*72.0*	*62.3*	*57.4*	*63.8*	*61.8*	***63.5***	***65.2***
CR2P	*SCI Q1 ratio %*	*48.0*	*39.8*	*37.3*	*50.6*	*42.4*	***43.6***	***42.4***
UCMP	*SCI Q1 ratio %*	*65.7*	*59.6*	*43.3*	*73.9*	*60.7*	***60.6***	***64.3***
ICP	SCI leadership	23	24	35	36	51	**33.8**	**52**
PRG	SCI leadership	50	58	75	74	76	**66.6**	**85**
CR2P	SCI leadership	38	36	48	46	51	**43.8**	**46**
UCMP	SCI leadership	25	29	17	7	13	**18.2**	**8**
ICP	Q1 leadership	14	13	17	17	33	**18.8**	**26**
PRG	Q1 leadership	35	34	45	46	46	**41.2**	**52**
CR2P	Q1 leadership	14	16	15	20	24	**17.8**	**15**
UCMP	Q1 leadership	18	17	8	3	6	**10.4**	**7**
ICP	*SCI leadership ratio %*	*35.9*	*40.0*	*41.7*	*38.7*	*51.0*	***41.5***	***52.5***
PRG	*SCI leadership ratio %*	*61.0*	*54.7*	*53.2*	*48.7*	*48.4*	***53.2***	***54.8***
CR2P	*SCI leadership ratio %*	*37.3*	*33.3*	*57.8*	*51.7*	*48.0*	***44.7***	***46.5***
UCMP	*SCI leadership ratio %*	*71.4*	*61.7*	*56.7*	*30.4*	*46.4*	***53.3***	***28.6***
ICP	*Q1 leadership ratio %*	*40.0*	*38.2*	*40.5*	*41.2*	*66.0*	***44.2***	***47.3***
PRG	*Q1 leadership ratio %*	*59.3*	*51.5*	*55.6*	*50.0*	*47.4*	***52.2***	***51.5***
CR2P	*Q1 leadership ratio %*	*28.6*	*37.2*	*48.4*	*42.5*	*48.0*	***41.3***	***35.7***
UCMP	*Q1 leadership ratio %*	*78.3*	*60.7*	*61.5*	*27.3*	*35.3*	***50.7***	***38.9***
ICP	*SCI median JIF %ile*	*77.3*	*78.5*	*76.1*	*76.6*	*75.5*	***76.8***	***78.3***
PRG	*SCI median JIF %ile*	*89.4*	*87.9*	*83.5*	*82.8*	*83.3*	***85.4***	***83.3***
CR2P	*SCI median JIF %ile*	*78.2*	*71.1*	*68.3*	*76.9*	*76.0*	***74.1***	***72.3***
UCMP	*SCI median JIF %ile*	*84.5*	*86.5*	*71.5*	*77.4*	*86.2*	***81.2***	***85.2***
ICP	*SCI IF GM*	*2.17*	*2.58*	*3.05*	*3.75*	*3.99*	***3.11***	***3.69***
PRG	*SCI IF GM*	*3.56*	*3.45*	*3.25*	*4.47*	*4.48*	***3.84***	***5.02***
CR2P	*SCI IF GM*	*2.29*	*1.86*	*2.16*	*2.76*	*2.76*	***2.37***	***3.15***
UCMP	*SCI IF GM*	*3.45*	*3.18*	*2.83*	*4.02*	*5.07*	***3.71***	***5.02***
ICP	Paleontology	27	22	30	29	35	**28.6**	**38**
PRG	Paleontology	26	22	49	34	38	**33.8**	**30**
CR2P	Paleontology	42	36	43	35	54	**42.0**	**48**
UCMP	Paleontology	11	3	7	6	7	**6.8**	**7**
ICP	Multidisciplinary sciences	14	13	11	21	19	**15.6**	**19**
PRG	Multidisciplinary sciences	15	20	19	25	29	**21.6**	**27**
CR2P	Multidisciplinary sciences	16	10	9	7	12	**10.8**	**14**
UCMP	Multidisciplinary sciences	8	7	6	5	5	**6.2**	**3**
ICP	*%Paleontology*	*42.2*	*36.7*	*35.7*	*31.2*	*35.0*	***36.2***	***38.4***
PRG	*%Paleontology*	*31.7*	*20.8*	*34.8*	*22.4*	*24.2*	***26.8***	***19.4***
CR2P	*%Paleontology*	*41.2*	*33.3*	*51.8*	*39.3*	*45.8*	***42.3***	***48.5***
UCMP	*%Paleontology*	*31.4*	*6.4*	*23.3*	*26.1*	*25.0*	***22.4***	***25.0***

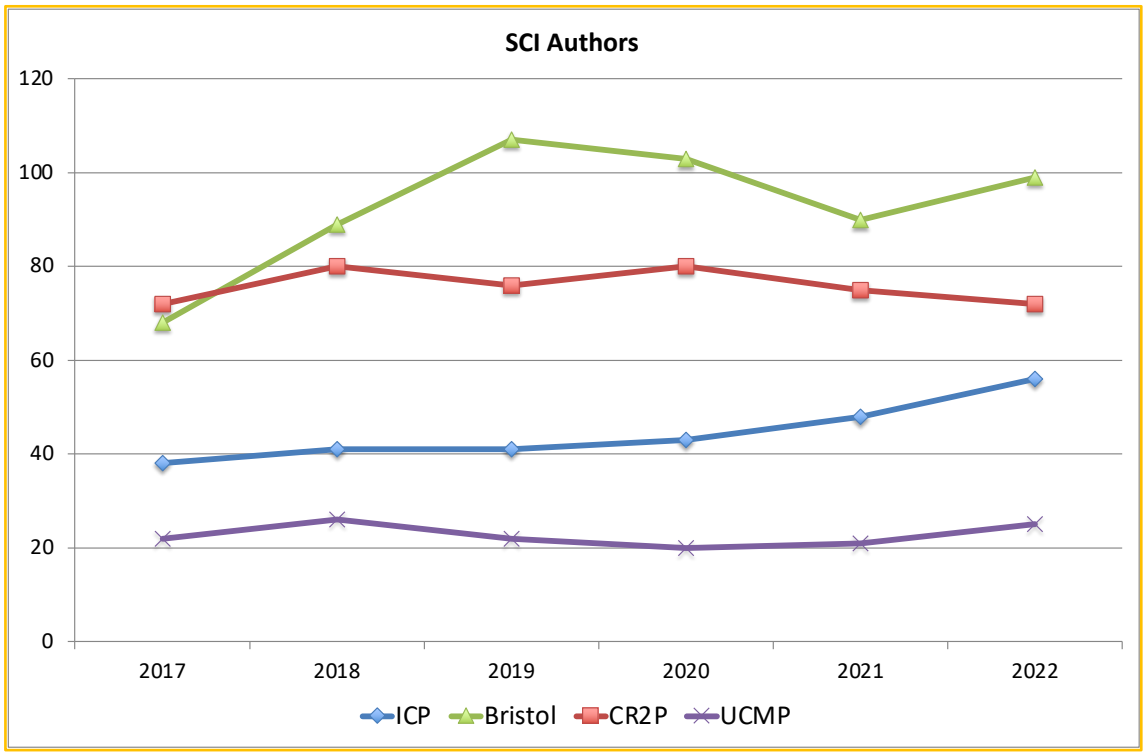
ICP	*%Multidisciplinary sci.*	*21.9*	*21.7*	*13.1*	*22.6*	*19.0*	***19.6***	***19.2***
PRG	*%Multidisciplinary sci.*	*18.3*	*18.9*	*13.5*	*16.4*	*18.5*	***17.1***	***17.4***
CR2P	*%Multidisciplinary sci.*	*15.7*	*9.3*	*10.8*	*7.9*	*10.2*	***10.8***	***14.1***
UCMP	*%Multidisciplinary sci.*	*22.9*	*14.9*	*20.0*	*21.7*	*17.9*	***19.5***	***10.7***
ICP	SCI papers int. coll.	47	48	67	80	76	**63.6**	**78**
PRG	SCI papers int. coll.	50	75	108	113	116	**92.4**	**121**
CR2P	SCI papers int. coll.	72	74	55	67	95	**72.6**	**74**
UCMP	SCI papers int. coll.	17	18	6	15	12	**13.6**	**19**
ICP	*SCI papers int. coll. (%)*	*73.0*	*80.0*	*79.8*	*86.0*	*76.0*	***79.0***	***78.8***
PRG	*SCI papers int. coll. (%)*	*61.0*	*70.8*	*76.6*	*74.3*	*73.9*	***71.3***	***78.1***
CR2P	*SCI papers int. coll. (%)*	*70.6*	*68.5*	*66.3*	*75.3*	*80.5*	***72.2***	***74.7***
UCMP	*SCI papers int. coll. (%)*	*48.6*	*38.3*	*20.0*	*65.2*	*42.9*	***43.0***	***67.9***

Production. In average SCI production and Q1 SCI production for the five previous years (2017-2021), the ICP is the third institution after Bristol and Paris, although the ICP closely approches the figures from Paris and has been as productive (or even more) during several years, particularly regarding Q1 papers.

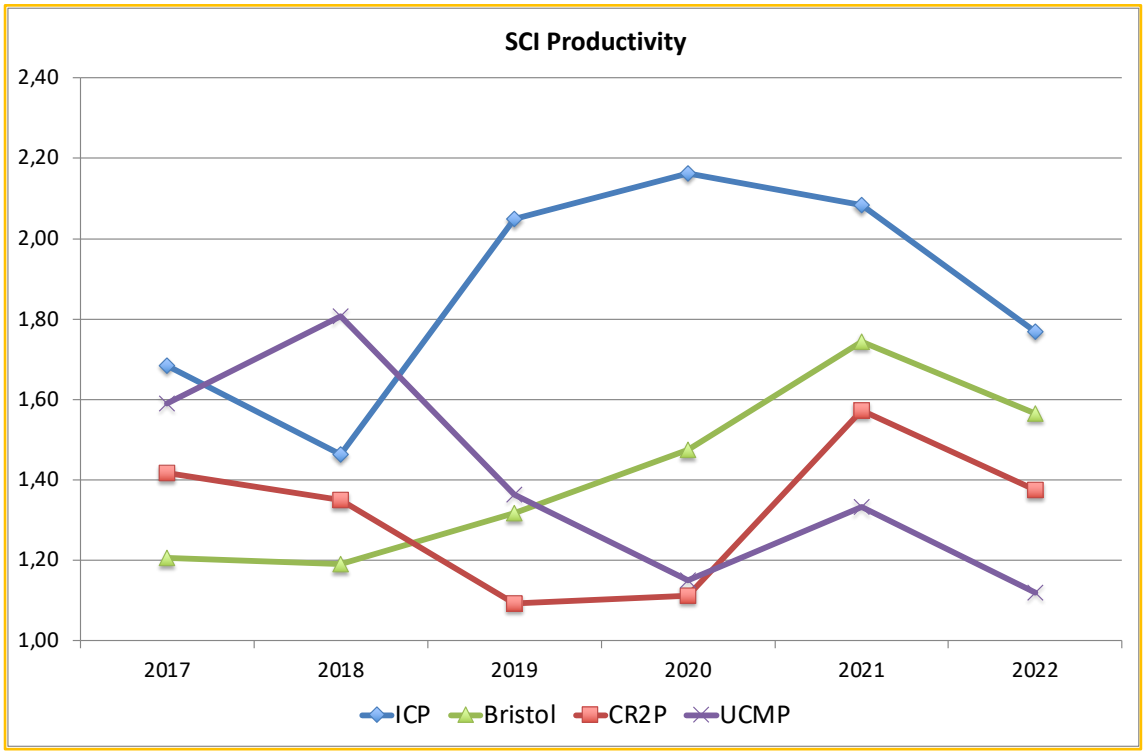


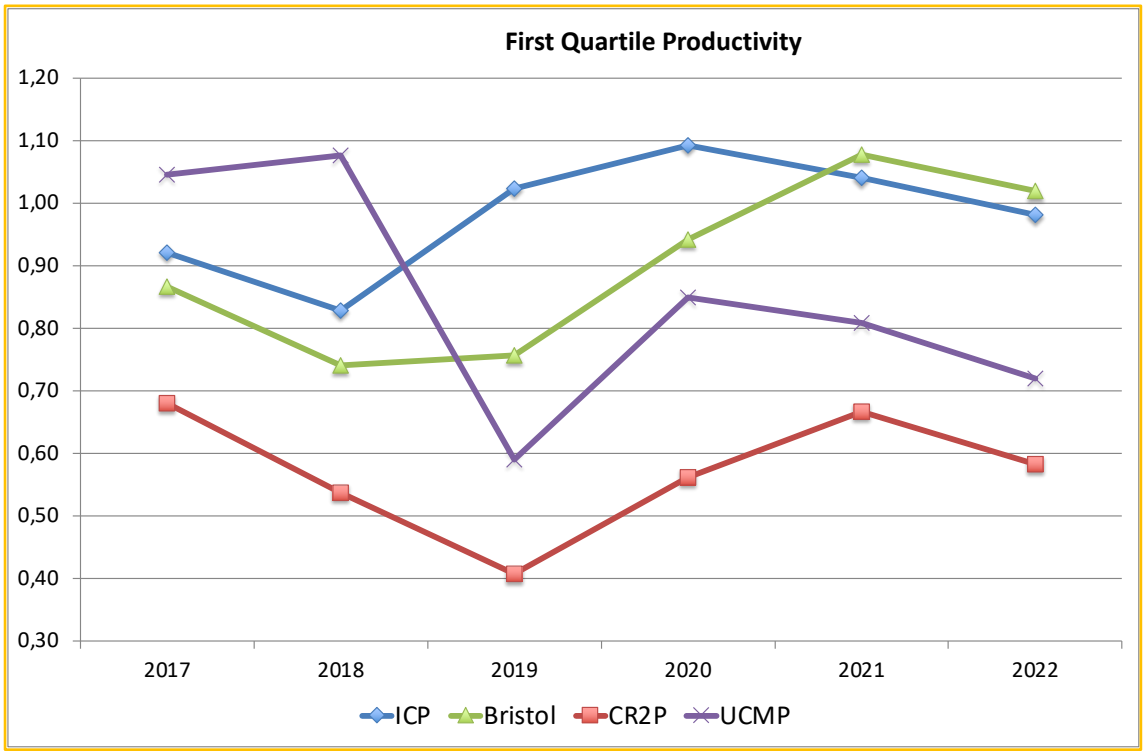


Productivity. The above-mentioned differences in total SCI and Q1 production are to a large extent attributable to differences in the number of authors of each institution—albeit not exclusively, as shown by the fact that the ICP is the third institution in number of authors (not only for the five preceding years but also for 2022) despite approaching Paris in terms of production.

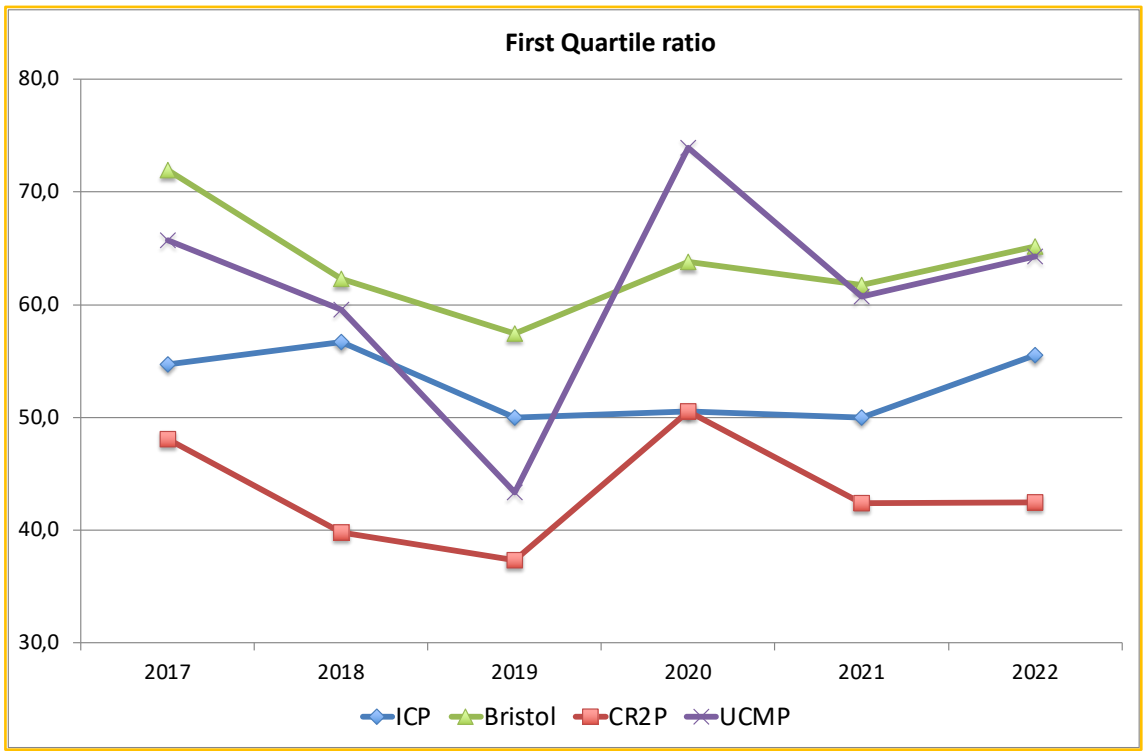


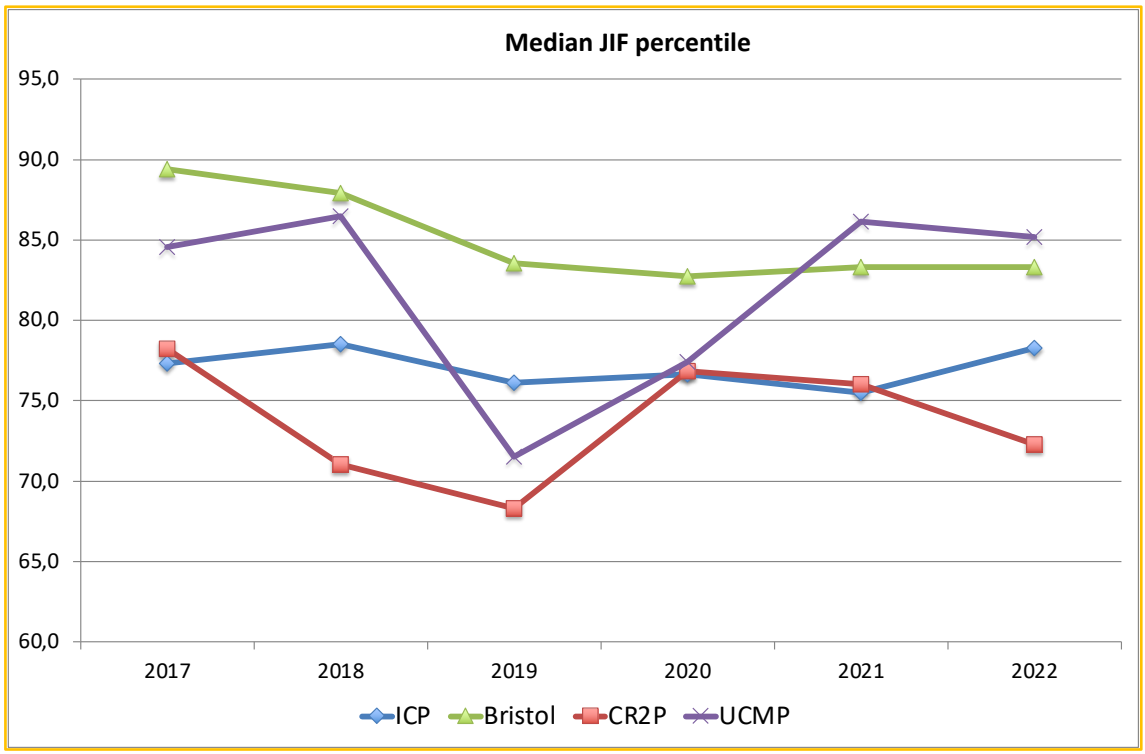
When productivity is computed by dividing production by authors, it emerges that, since 2019, the ICP is frequently the first institution in total SCI productivity, and generally also in terms of Q1 productivity (also when the average for the five preceding years is considered).

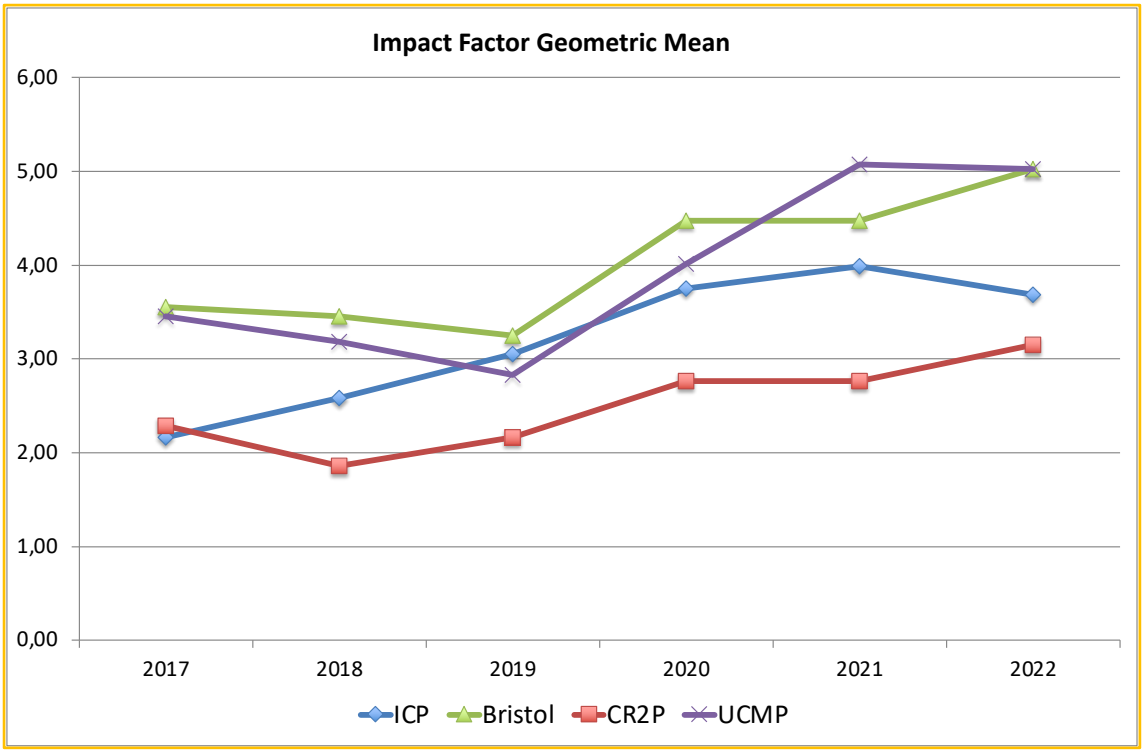




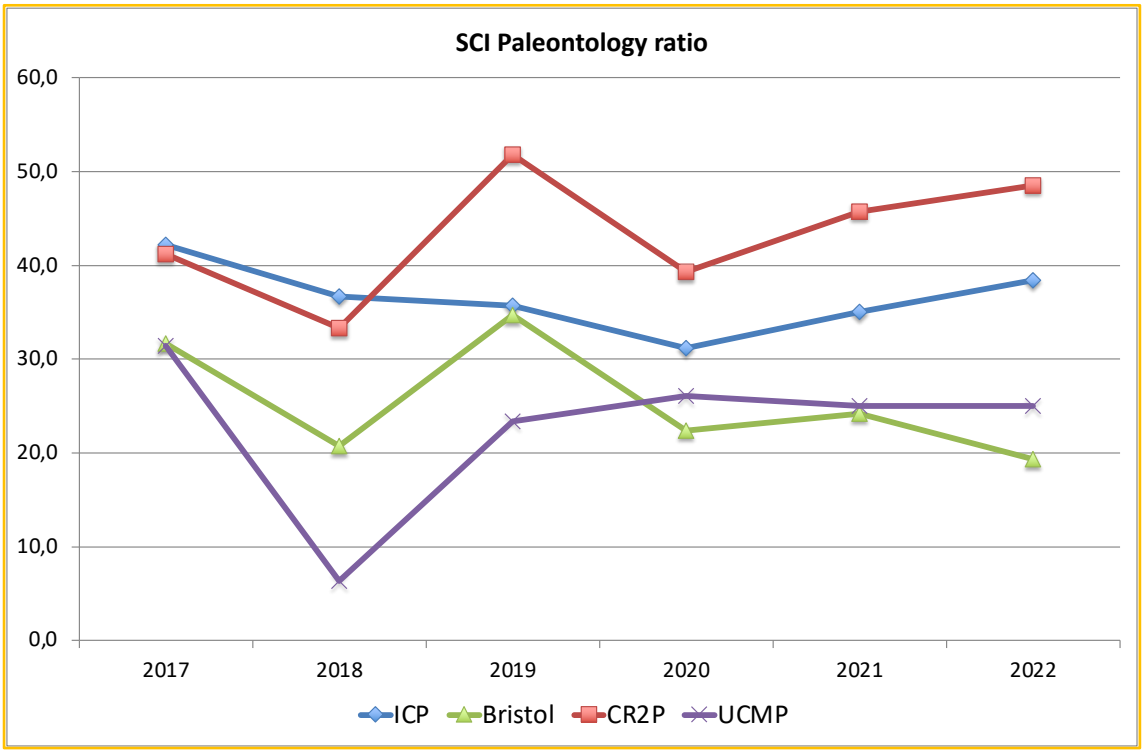
Quality and impact. With regard to the percentage of papers published in first quartile SCI journals, the ICP is the third institution, both in 2022 and considering the average of the five preceding years. With regard to the median JIF percentile and the geometric mean of the impact factor, the ICP is simialrly the third institution in 2022 and the five preceding years.

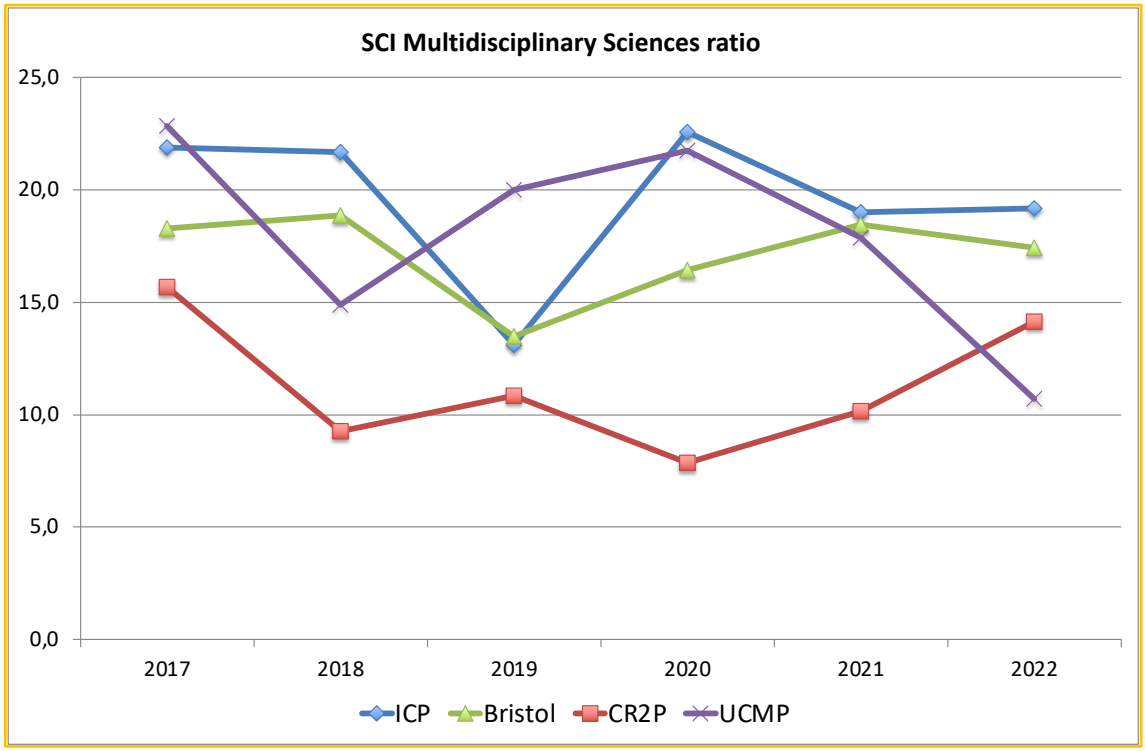




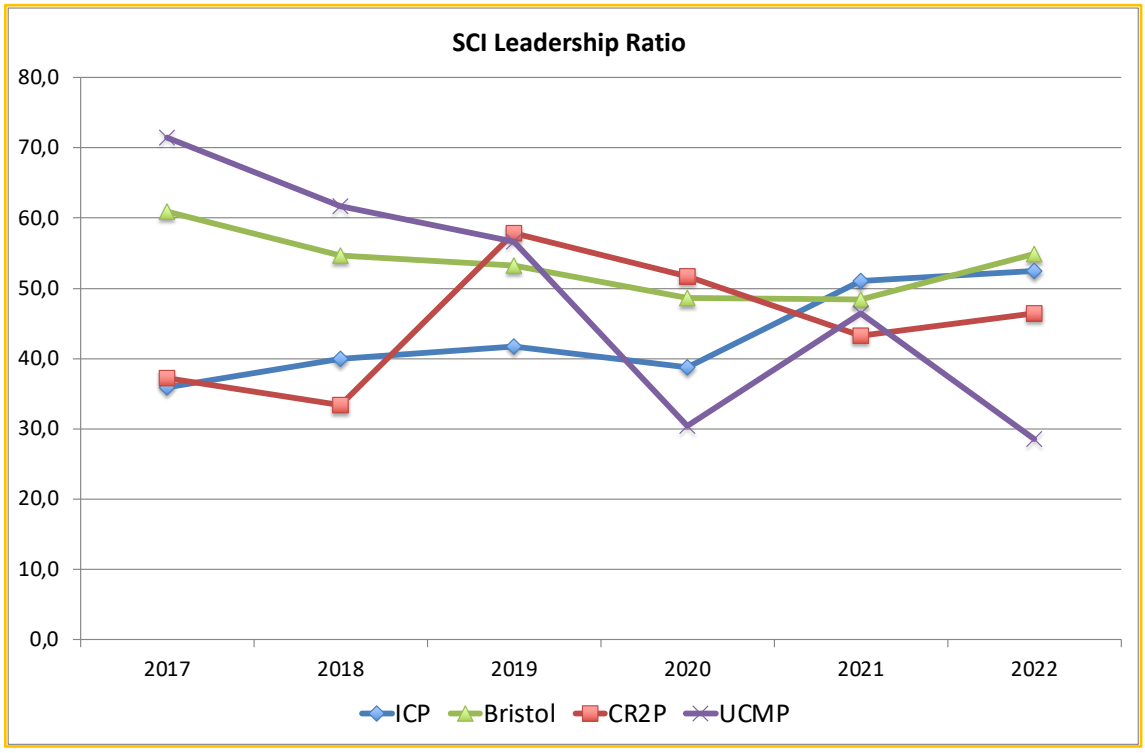


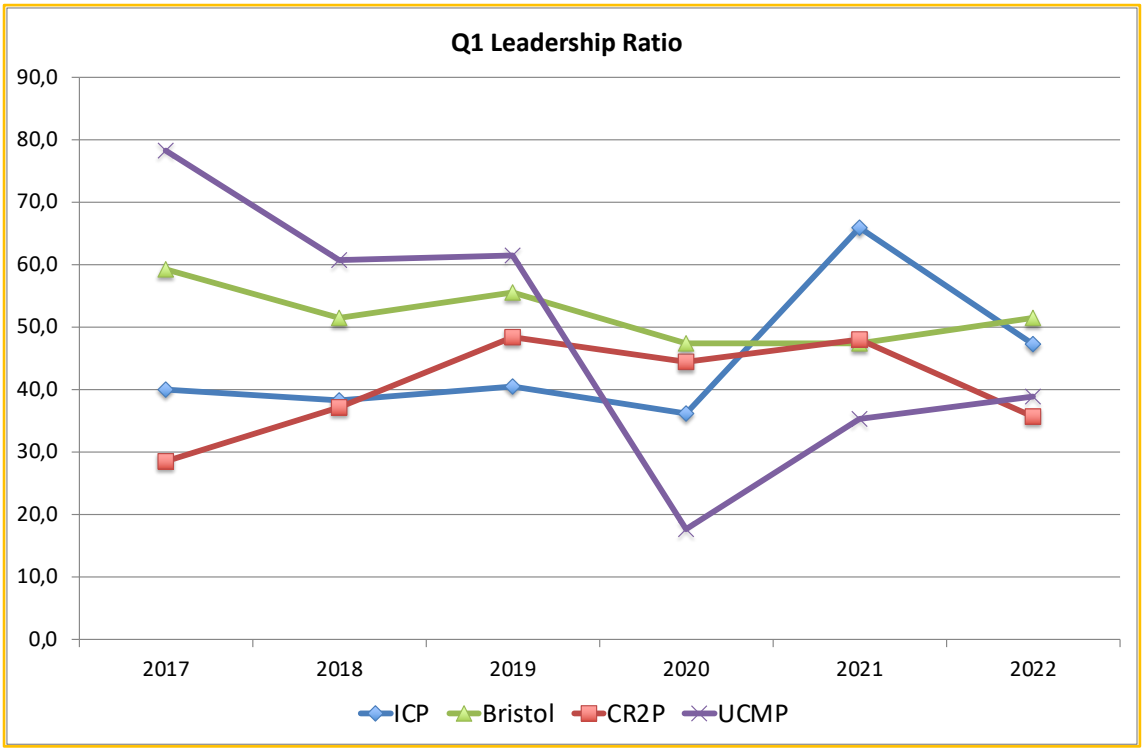
Discipline specificity and multidisciplinarity. Based on the proportion of papers published in SCI journals from the category 'Paleontology', the ICP occupies the second position in 2022 and the five preceding years. In contrast, the ICP is the first institution regarding the percentage of papers published in the category 'Multidisciplinary sciences', both in 2022 and the five preceding years.



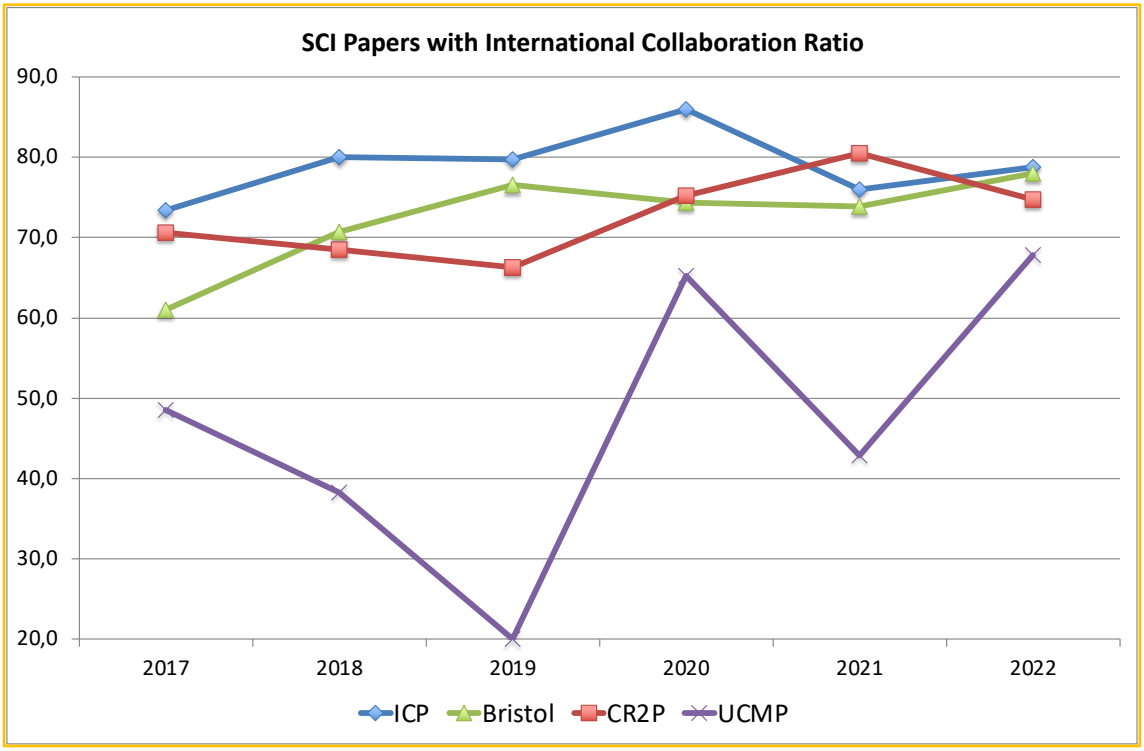


Leadership. The ICP ranks as the second institution in terms of SCI and Q1 leadership (as measured by the corresponding author) for 2022, as compared with the fourth and third positions (respectively) for the average of the five preceding years.





International collaborations. With regard to the ratio of papers with international collaboration(s), the ICP ranked as the first institution for both 2022 and the five preceding years.

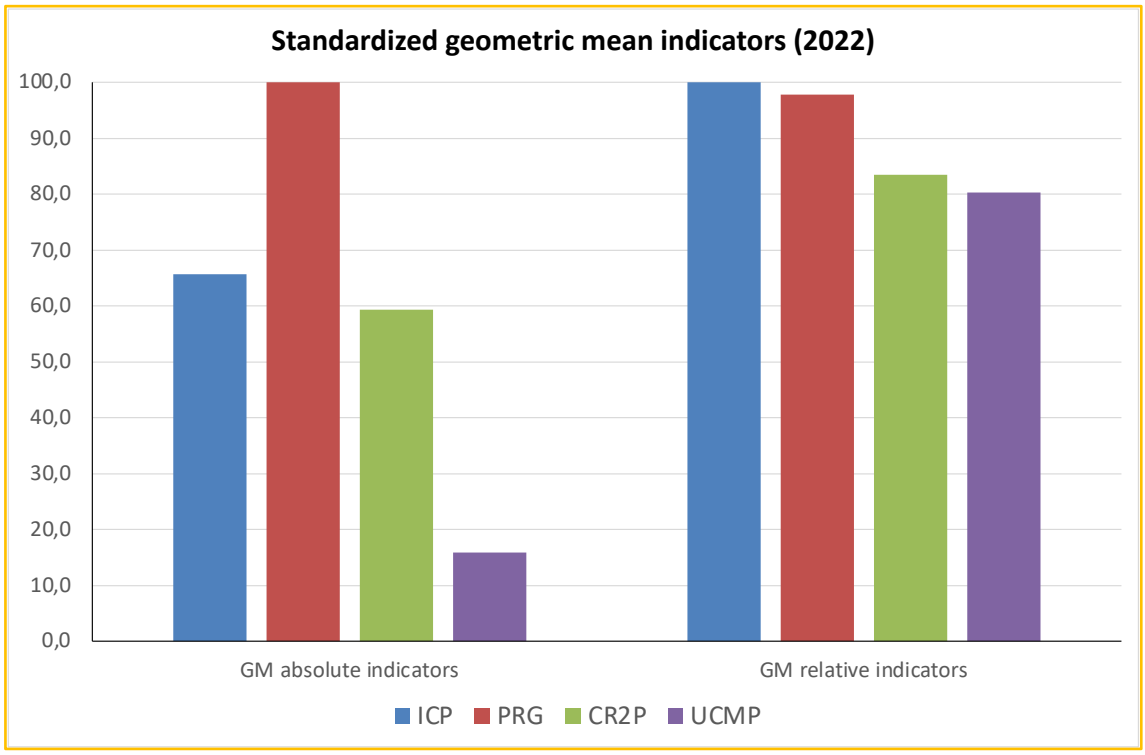


Summary results and rankings. The results for the ICP in 2022 are compared with those of the benchmarking institutions using two synthetic metrics: the geometric mean (GM) of the

indicators; and the GM of the indicators relative to that of the institution with the highest GM (in %). The results are reported below for absolute and relative indicators separately. The ICP is ranked second in absolute terms (with a performance of about two-thirds that of Bristol) and first in relative terms (being closely followed by Bristol).

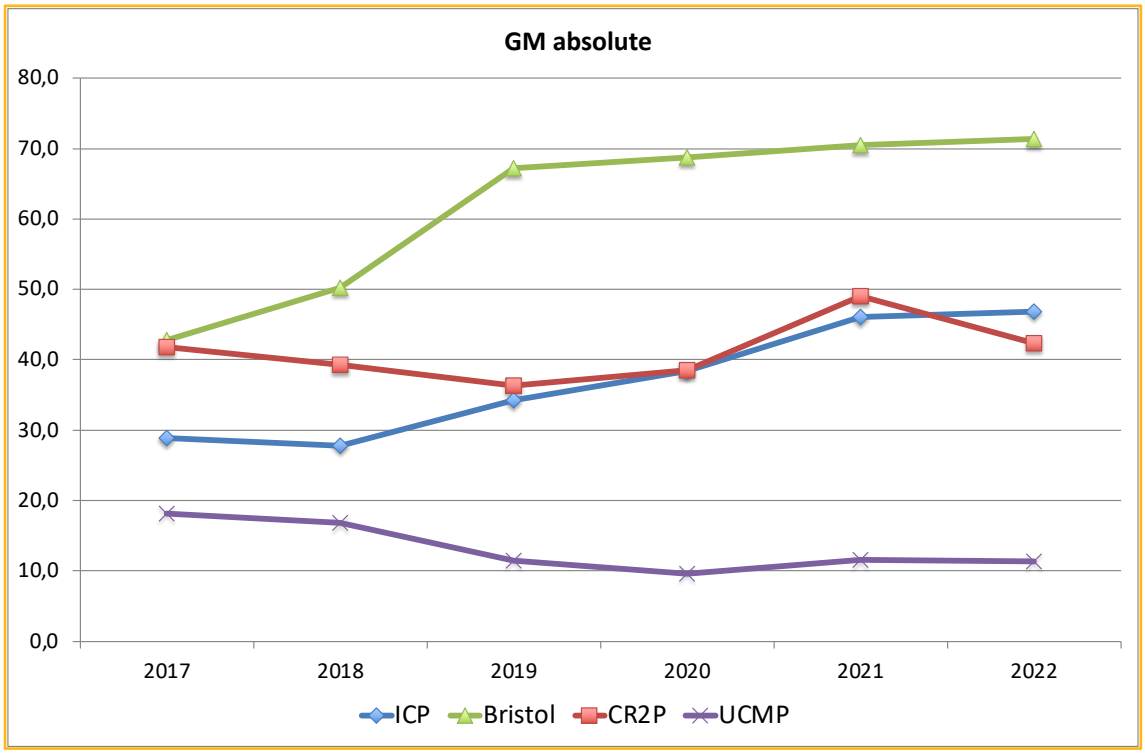
	2022			
SUMMARY METRICS	ICP	PRG	CR2P	UCMP
GM absolute indicators	46.9	71.3	42.3	11.4
GM absolute indicators (standardized)	65.7	100.0	59.3	16.0
GM relative indicators	18.2	17.8	15.2	14.6
GM relative indicators (standardized)	100.0	97.9	83.5	80.3

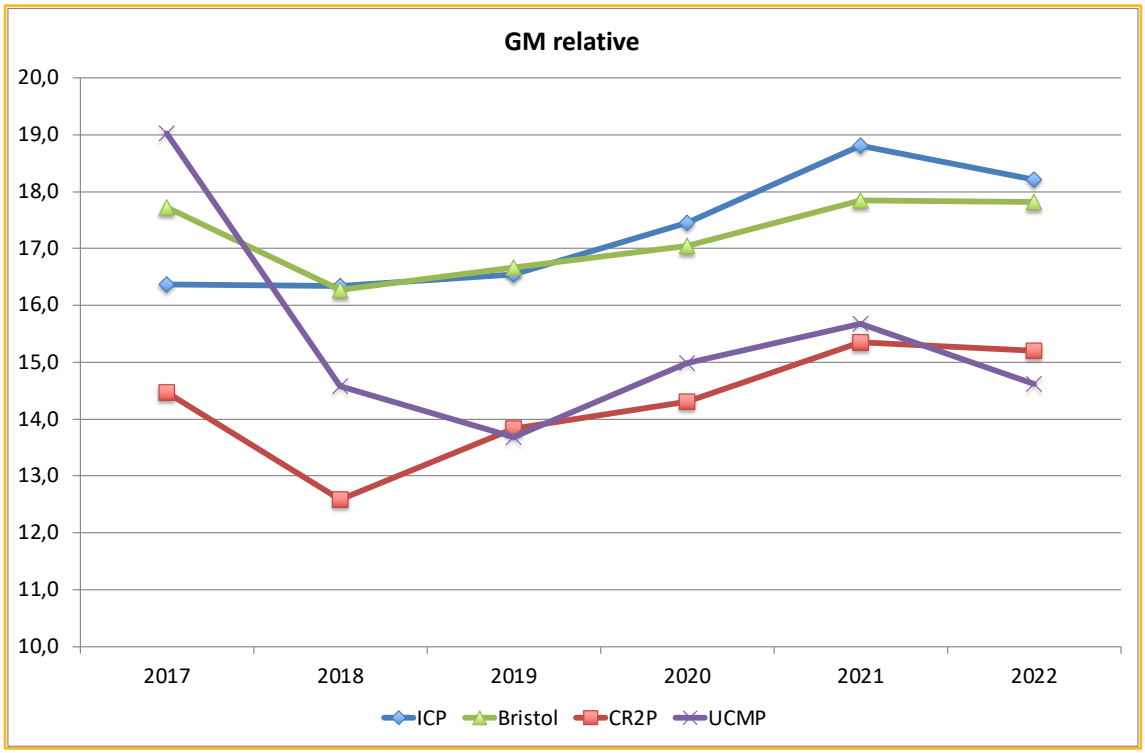
Absolute indicators better depict the global impact of a given institution among the international scientific community, but relative indicators are size-corrected and therefore are more reliable to evaluate the performance of a given institution irrespective of its size. The results for 2022 are very satisfactory, indicating that the ICP has improved its performance in absolute and relative terms.



If we track the changes in GM through time, it can be seen that only Bristol and the ICP have clearly improved during the last three or four years, both in absolute and relative terms. In absolute terms, the ICP most closely resembles Paris (despite the fact that the number of authors is clearly lower in the ICP), whereas in relative terms the ICP is most similar to Bristol. Taken together, these analyses indicate that the ICP is performing exceedingly well as far as research outputs are concerned (both in quality and quantity), and suggests instead that the

limitations in the global impact of the institution are almost entirely determined by its current size (i.e., by the number of payroll researchers as well as research associates and students).





Institution	Metric	2017	2018	2019	2020	2021	Average	2022
ICP	GM absolute	28.9	27.8	34.3	38.4	46.1	**35.1**	**46.9**
PRG	GM absolute	42.8	50.2	67.2	68.7	70.5	**59.9**	**71.3**
CR2P	GM absolute	41.8	39.3	36.3	38.5	49.0	**41.0**	**42.3**
UCMP	GM absolute	18.2	16.8	11.4	9.6	11.6	**13.5**	**11.4**
ICP	GM relative	16.4	16.3	16.5	17.5	18.8	**17.1**	**18.2**
PRG	GM relative	17.7	16.3	16.7	17.0	17.9	**17.1**	**17.8**
CR2P	GM relative	14.5	12.6	13.8	14.3	15.3	**14.1**	**15.2**
UCMP	GM relative	19.0	14.6	13.7	15.0	15.7	**15.6**	**14.6**

Equal opportunities & diversity management

Equality Plan. The ICP trusts in the implementation of a scientific culture with gender perspective, feminist and intersectional, sensible to diversity in every sense: individual and social, structural, institutional, and political. In order to achieve such scientific culture, transparency, responsibility and monitoring are required in decision-making, evaluation and recruitment. This is why it was considered imperative to improve the former Equal Opportunities and Diversity Management Plan as well as to implement new measures to create the necessary conditions and structures to attain actual and effective equal opportunities. A first draft of the Equality Plan was written by the Non-Discrimination Committee and reviewed by the ICP Director. A second draft was submitted for consideration to the ICP Steering Committee, which approved it with amendments on September 22, 2020. The final version was enforced immediately and made available to all ICP personnel on its Transparency website, pending the approval with eventual amendments by the ICP Board of Trustees when the next meeting takes place. The Plan includes the starting point diagnosis, the definition of principles and goals, the design and time schedule of the actions to put into effect, and the follow-up and evaluation mechanisms. Finally, it was considered necessary to include a glossary of terms related to non-discrimination and diversity management, not only with the aim of clarifying some concepts used in the plan, but also with an educational purpose. The actions included in the Plan are detailed in the table below, along with their degree of implementation at the end of 2022.

To achieve equality recognition and the promotion of cross-cutting policies contributing to the creation of conditions and structures that enable actual and effective equal opportunities, the following seven specific aims are defined:

- **Objective 1:** To distribute the Equal Opportunities and Diversity Management Plan and the direction's commitment to equal opportunities among the personnel.
- **Objective 2:** To implement prevention, detection, and intervention measures in cases of sexual harassment.
- **Objective 3:** Encourage a non-sexist and non-discriminatory use of language and images.
- **Objective 4:** To boost the reconciliation of work, private and family life.
- **Objective 5:** To ensure that equal opportunities recruitment processes are implemented.

- **Objective 6:** To raise awareness of equality issues among the personnel and train them on this topic.
- **Objective 7:** To incorporate gender and intersectional perspective in the center's vision and values.

Action No.	Description	Expected	Implementation
Action 1.1	Translating the Equal Opportunities and Diversity Management Plan into English	1Q 2021	Almost fully implemented
Action 1.2	Internal dissemination of the Equal Opportunities and Diversity Management Plan	2Q 2021	Fully implemented 2021
Action 2.1	Review and update of the protocol for the prevention, detection and intervention in cases of violence against women	4Q 2021	Almost fully implemented 2022
Action 2.2	Internal dissemination of the protocol for the prevention, detection and intervention in cases of violence against women	2Q 2022	Fully implemented 2021
Action 3.1	Establishing a good practices manual for a non-sexist use of language and images	4Q 2021	Delayed, under implementation
Action 3.2	Monitoring corporate documentation to ensure a non-sexist use of language and images	Continuous since 1Q 2022	Pending
Action 4.1	Promoting the implementation of new measures to guarantee the reconciliation of work, private and family life	Continuous since 1Q 2022	Pending
Action 5.1	Monitoring recruitment and internal promotion processes	Continuous since 3Q 2020	Fully implemented 2020
Action 6.1	Internal training in equal opportunities and diversity management from an intersectional perspective	Continuous since 3Q 2021	Fully implemented 2021
Action 6.2	Including a link to the new Equal Opportunities and Diversity Management Plan (and related documents) in the Welcome Handbook	Continuous since 4Q 2021	Delayed
Action 7.1	Incorporating a report on equal opportunities and diversity management in the annual reports	Continuous since 3Q 2020	Fully implemented 2021
Action 7.2	Improving the visibility of the scientific and technical tasks of ICP women	Continuous since 3Q 2020	Fully implemented 2021

No actions were fully implemented in 2022, but two remained almost fully implemented since previous years:

- **Action 1.1: Translating the Equal Opportunities and Diversity Management Plan into English.** Description/tasks: To translate the Plan into English to facilitate its dissemination among staff. Implementation: A first draft of the English version of the Plan was made in late 2020, but it remained to be corrected and approved during 2021. However, this was postponed due to changes in Spanish legislation, which require the elaboration of a new Equality Plan. It is expected to be drafted and approved during 2023.
- **Action 2.1: Review and update the protocol for the prevention, detection and intervention in cases of violence against women.** Description: Review and improve the protocol for prevention, detection, and intervention in cases of violence against women. Tasks: Write the new protocol; translate the new protocol into English. Implementation: The protocol was elaborated in 2021 and approved by the Board of Trustees in May 2022, but the translation into English is pending.

Finally, the following actions remained only partly implemented in 2022:

- **Action 3.1: Establishing a good practices manual for a non-sexist use of language and images.** Description/tasks: To adopt and improve, if necessary, the UAB guide of good practices for the non-sexist use of language. To disseminate the document through the center regular digital channels (email and newsletters) so the ICP staff can apply its principles in their public documents. Implementation: This action has been delayed due to the prioritization of the management of cases of gender-based violence. It is expected to be implemented during 2023.
- **Action 6.2: Including a link to the new Equal Opportunities and Diversity Management Plan (and related documents) in the Welcome Handbook.** Description/tasks: To include in the Welcome Handbook links to the new "Equality Opportunities and Diversity Management Plan", the "Protocol for the prevention, detection and intervention in cases of violence against women", the "Manual for a Non-Sexist Use of Language" and the document "Internal Regulation of Working Time". Implementation: This action has been delayed because the Welcome Handbook is pending.

Management of cases of violence against women. During 2022, the NDC registered 1 communication on sexual harassment and none on sex-based harassment. This communication gave rise to a formal internal complaint that, after an external investigation carried out by a lawyer specializing in sexist violence (Elna Advocades), resulted in a sanction for serious misconduct (disciplinary dismissal). This case is related to the one registered in 2021, in which the sanction was appealed before the court and the hearing is scheduled for 2023.

CERCA recommendations

CERCA Evaluation. A formal evaluation of the ICP was performed by the CERCA institution on 29 October 2018, by means of an Evaluation Commission (EC) composed by members of the ICP Scientific Advisory Board as well as independent members from abroad. The evaluation of the ICP by the EC was based on the responses provided by the ICP Director to the Evaluation Questionnaire elaborated by CERCA (submitted in August 2018) as well as by a presentation performed on 29 October 2018 in front of the EC, based on the results for 2013-2017.

The conclusions of the EC were provided in a written report elaborated by the EC and sent to the ICP Director on 27 December 2018. The EC awarded the ICP with a 'B' qualification (very good, with excellent results at national level although some pending issues to be addressed at the international scenario), although according to the report some members of the EC considered that the ICP deserved the upmost qualification 'A' (outstanding performance, placing the center among the top international performing institutions on its field). The EC took into account the significant progress of the institution during the 2013-2017 period, the high degree of fulfilment of the recommendations stated in the previous evaluation report (2013), the

scientific production and productivity, the excellent management of the center, and the performance in the knowledge transfer activities and the outreach and dissemination activities.

RECOMMENDATION NO.	DESCRIPTION	IMPLEMENTATION
Recommendation 1	ERC funding	Under implementation
Recommendation 2	SAB meetings	Fully implemented
Recommendation 3	SAB composition renewal	Almost fully implemented
Recommendation 4	Retirement of two Senior Group Leaders	Fully implemented
Recommendation 4'	CT scan	Almost fully implemented
Recommendation 5	Access to synchrotrons	Partly implemented
Recommendation 6	Articulating the network of research associates	Fully implemented
Recommendation 7	ICP-UAB common strategy	Fully implemented
Recommendation 8	Ascribe UAB professors to the ICP	Fully implemented
Recommendation 9	Recruitment	Fully implemented
Recommendation 10	Gender balance	Fully implemented
Recommendation 11	Engaging donors	Partly implemented
Recommendation 12	Spin-offs	Fully implemented

Action Plan for CERCA Recommendations. An action plan summarizing the recommendations provided by the EC and their implementation during 2019-2022 was approved in February 2019 by the Steering Committee, and subsequently ratified by the Board of Trustees in May 2019. The 13 recommendations provided by CERCA and the current degree of implementation are summarized in the table above and further detailed below.

- **Recommendation 1: ERC funding.** CERCA recommendation: To try to obtain European funding by focusing on the research collaboration agreement with ICREA Prof. Marquès-Bonet on palaeogenetics and palaeoproteomics, as well as by applying to ERC Synergy Grants. Under implementation: The research agreement with Prof. Tomàs Marquès-Bonet in September 2018 included his commitment to explore the organization and leadership of a transnational project proposal on primate paleogenetics and/or paleoproteomics with the participation of the ICP. In January 2019, an MSCA ITN-ETN application on hominid paleoproteomics (PUSHH) was submitted, with Prof. Marquès-Bonet as the scientist-in-charge of the UPF and the ICP as partner organization. The MSCA ITN-ETN project was awarded in 2019, and it started in 2020. Although, as partner organization, the ICP has no overheads, Dr. Alba is currently cosupervising two PhD grantees for the PUSHH network (one with Prof. Marquès-Bonet and another with Prof. Rook from Italy). This topic offers the prospect to apply for an ERC Synergy in years to come but not until current techniques have been able to retrieve Miocene proteomes. Furthermore, in early 2019 Prof. Marquès-Bonet was awarded an individual ERC grant to which he had previously applied, thereby limiting his possibilities to participate in other ERC projects. On the other hand, the new Project Manager recruited in 2019 joined the ICP January 2020. Since then, he has met with ICP group leaders and other researchers from various categories to discuss funding possibilities within the late H2020 Programme and, in particular, the possibility to apply to ERC grants

(StG, CoG and AdG). Additional follow-up monthly meetings have been held with those researchers that plan to apply, to inform them about ERC training webinars as well as to monitor the progress of their project proposals, particularly since the new EU Research and Innovation framework program 'Horizon Europe' was issued in 2021. A 'Beatriu de Pinós' postdoctoral researcher from the Paleoprimatology & Paleoanthropology Research Group submitted in 2022 a Starting Grant application; although she did not reach the interview phase, the project was positively evaluated and hence she will reapply in 2023 with an improved vesion of the project. Other ERC applications, which include both StG and AdG, are currently being conceived, to be submitted in years to come.

- **Recommendation 2: SAB meetings.** CERCA recommendation: The EC recommended to schedule at least one meeting of the SAB every two years at ICP headquarters, with an agenda made available to SAB members beforehand. Fully implemented: The SAB meeting scheduled for November 2020, including three new SAB members (see below) had to take place at the ICP, but this was not possible due to travel restrictions associated with the COVID-19 pandemic. So, with the approval of the Board of Trustees, it finally took place by telematic means. It was agreed by SAB members that they would regularly meet once per year online, except every four years (when coinciding with the CERCA evaluation), as the online format maximizes their attendance and helps reduce associated costs. In 2020, the ICP Director provided an update of the center's current situation as well as a brief introduction for the new SAB members. However, it was agreed that in future meetings ICP researchers would make short presentations, to provide SAB members with first-hand knowledge about the center's research staff. Therefore, when the next telematic meetings took place in late 2021 and 2022, two ICP researchers (in addition to the director) made short presentations to the SAB members. In all instances, an agenda was provided to SAB members beforehand, while the minutes were provided to them a posteriori. The next meeting is scheduled for October 2023, the next day after the upcoming CERCA evaluation, and will take place in person, although SAB members will be given the option to attend the meeting online if traveling to the ICP is not an option.
- **Recommendation 3: SAB composition renewal.** CERCA recommendation: To renew the composition of the SAB and define its duties and agenda to optimize its contribution, as well as to consider inviting some foreign ERC grantees to join it. Almost fully implemented: Following the action plan approved by the Board of Trustees in 2019, three SAB members were replaced in the spring of 2020. The new members were appointed by the Board of Trustees upon the Director's proposal. The new SAB members were selected by simultaneously taking into account their merits, reputation and expertise (in relation to ICP research lines), their experience in fundraising, and the need to keep a balanced gender ratio. The remaining members agreed to stay at least until 2022, when three additional replacements were expected to be proposed by the ICP Director to the Board of Trustees (to be appointed not later than 2023). Nevertheless, the retirement of two SAB members (including the President) precipitated their replacement and designation of a new President

in the Board of Trustees meeting that took place in May 2022. Another SAB member will be replaced in 2023, thereby completing the SAB renewal; this person has already been decided by the Steering Committee and is willing to become part of the SAB, but will not be formally proposed by the ICP Director to the Board of Trustees until the next meeting (scheduled for the spring of 2023). Therefore, this recommendation is not fully implemented yet.

- **Recommendation 4: Retirement of two Senior Group Leaders.** CERCA recommendation: To define a strategy to replace the two Group Leaders that were expected to retire before the next evaluation. Fully implemented: The EC referred to the ICREA Profs. Moyà-Solà and Köhler, which indeed were granted permission by ICREA to continue working at least until they are 70-year-old around 2025 (i.e., after the upcoming evaluation in 2023). Nevertheless, the ICP devised a plan approved by the Board of Trustees to consolidate the ICP strategic lines of research while allowing for further flexibility in the number of ICP research groups. In particular, ICP research was reorganized into three main research areas recognized in the Organization Chart approved by the Board of Trustees and two junior group leaders were appointed by the ICP Director in 2019 (elevating the number of research groups from four to six). Since then, two tenure-track researcher positions were offered in 2019 and 2021 to reinforce the Dinosaur Ecosystems and the Paleoprimatology & Paleoanthropology research groups, respectively, while postdoctoral positions opened in 2021 and 2023 to strengthen the Life History Evolution and Paleoprimatology & Paleoanthropology research groups, respectively. Furthermore, it is expected that in 2023 the research agreement with Prof. Marquès-Bonet will be expanded further, in order to constitute a Paleogenomics & Paleoproteomic research group at the ICP. All in all, the upcoming retirenment of the two ICREA research professors will represent the loss of two important assets but the current structure of the Research Department is flexible and robust enough to maintain and even expand further the current main lines of research.
- **Recommendation 4': CT scan.** CERCA recommendation: To balance the beneficial impact of having again fully operational the CT scan and the cost of fixing this equipment. Almost fully implemented: A viability plan for the CT, originally planned for late 2020 or the spring of 2021, was drafted in 2020 by the Computational Paleobiology research group leader, but it was decided by the Steering Committee of the ICP to leave in standby until the budgetary situation of the center improved further. Given the deficit accumulated until 2019, it was not possible to consider investing in the repair of the CT, given the elevated cost (ca. 100 k€) of fixing it. In the light of the positive financial results of 2020, it was expected that in 2021 it would be possible to decide how to proceed in this regard—particularly in the framework of the elaboration of the new Strategic Plan (2022-2025). Nevertheless, several unexpected financial difficulties in 2021 and other, more urgent strategic decisions made it recommendable to delay one year more the discussion with the SAB in this regard. Finally, the definitive version of the CT viability plan was approved in 2022 and presented to the SAB for discussion. The viability plan concluded that repairing the industrial CT scan of the ICP would be too expensive and unjustified based on the needs of ICP researchers. SAB

members agreed with such views and recommended instead to seek funding to buy a new microCT scan. This action is thus considered to be almost fully implemented, pending only the presentation of the viability plan to the Board of Trustees for review and approval.

- **Recommendation 5: Access to synchrotrons.** CERCA recommendation: To explore the access to other scientific facilities, such as synchrotrons (not only ALBA, but also the European Synchrotron Radiation Facility-ESRF in Grenoble). Partly implemented: Indeed, in 2018 the ICP already applied twice to the European Synchrotron Radiation Facility (ESRF) in Grenoble to use its facilities, but unfortunately these applications were rejected, as there it a lot of competition and paleontology is not among their prioritary research lines. Subsequently, during some time it was not possible to apply there because the facilities were closed. In the meantime, in 2019 the ICP explored other possibilities to collaborate with other synchrotrons (London and ALBA). In particular, the Computational Paleobiology research group leader (Dr. Fortuny) had a meeting with the person in charge of the future beamline FAXTOR from ALBA Synchrotron, which was expected to be fully operative after a few years, and it was agreed that he will play a key role as coordinator of Spanish paleontologists interested in using this new beamline. It is thus expected that the ICP will actively collaborate in the ALBA Synchrotron sometime in the near future. The ICP also successfully applied to use, in 2020, the neutron-CT facilities of the Heinz Maier-Leinitz Zentrum in Munich (Germany; ref. 15923-2019) and the MinoTauro cluster at the Barcelona Supercomputing Center (Spain; BCV-2020-1-0008). Furthermore, throughout 2019-2022 the ICP regularly used the micro-CT scanning facilities of the Centro Nacional de Investigación Humana (CENIEH) in Burgos (Spain), which is also considered a unique scientific and technical infrastructure (ICTS), and more sporadically also in 2020 in the AST-RX micro- and nanotomography platform of the Muséum National d'Histoire Naturelle in Paris (France). This action is not fully implemented because the ALBA synchrotron is not yet available to use its facilities for paleontological research, but in any case access to synchrotron light source is not essential to perform ICP research.
- **Recommendation 6: Articulating the network of research associates.** CERCA recommendation: To articulate the network of ICP research associates by creating some simple rules or strategies to deal with the criteria for membership within the network, making explicit their contributions to the ICP, and preparing the relevant documentation for each associate. Fully implemented: Since 2018, all research associates have written agreements with the ICP, where the terms of their collaboration with one or more ICP research groups are exposed. Some of these terms can be negotiated, but it is mandatory for ICP research associates to hold a PhD degree, to sign their research outputs with ICP affiliation, and follow the center's ethical guidelines, protocols and other regulations. The terms of the agreement further specify the commodities provided to them by the ICP (email address, access to fossil collections, working space, research funds, etc.). Research associate agreements must be approved by the Steering Committee upon the Director's proposal. Circumstances may vary, but normally they are motivated by the need to consolidate an

ongoing collaboration with researchers from other institutions (normally from abroad), or else by the convenience of maintaining a tight collaboration with former ICP researchers that have moved to a new institution. These agreements are valid for a given number of years and automatically extended if none of the parties oppose. Since 2018, the performance of research associates is evaluated together with that of ICP researchers on a yearly basis. On this basis and the recommendations provided by the relevant research group leader, the Steering Committee decides about the suitability to extend the duration of the agreements in due time. Since 2017, an updated list of ICP research associates is provided each year in the Organization Chart submitted to the Board of Trustees for review and approval. Furthermore, since 2019 an updated list of research associates with their current primary institution (if any) is given in the annual report, where the results of their evaluation (anonymized) are compared with those of ICP researchers. In 2020, the Steering Committee further clarified that it is mandatory for research associates to be actively involved in research, without prejudice that other kinds of stable collaborations may be established with non-staff members in relation to outreach activities. This recommendation is thus considered to be fully implemented.

- **Recommendation 7: ICP-UAB common strategy.** CERCA recommendation: To devise a common ICP-UAB strategy in the paleontology area, and to be more proactive in trying to establish a beneficial collaboration with the UAB. Fully implemented: Besides the obvious link between the UAB and the ICP (given by the fact that the former is one of the patrons of the ICP and that the latter is officially recognized as university research institute of the UAB), most of the collaborations formally established were mostly focused on teaching: one the one hand, most ICP researchers and several research associates participate in teaching of the Master in Paleobiology & Fossil Record; on the other, during 2020-2022 several ICP researchers were hired by the UAB Paleontology Unit (Department of Geology) as associate professors. It is also noteworthy that until 2021 several researchers from the Dinosaurs Ecosystems research group were members of a Consolidated Research Group recognized by the Generalitat de Catalunya led by an UAB professor. For many years, expanding the collaboration between the ICP and the UAB Paleontology Unit in terms of research was hindered by the different research topics to which they were devoted (vertebrate vs. invertebrate paleontology). Nevertheless, following the incorporation of a former ICP researcher (Dr. Furió) as Serra-Húnter lecturer of the UAB in January 2021, conversations with the head of the Geology Department led to the establishment of additional collaboration agreements (see also below the implications for the next recommendation with regard to the need to ascribe UAB professors to the ICP). Finally, it is noteworthy that, during 2021, researchers of the ICP actively worked together with UAB and UB professors to devise a new plan for the master studies in Paleobiology, which was validated in 2022 and will be implemented during the next academic course (2023-2024).
- **Recommendation 8: Ascribe UAB professors to the ICP.** CERCA recommendation: To try to affiliate professors from the University. A bottom-up approach of trying to convince

individual researchers of the benefits being affiliated with ICP should be promoted. The Board of Trustees (BoT) of ICP should discuss this issue and, where possible, facilitate solutions. Fully implemented: During 2019, the ICP Director had an interview with the UAB Vice-Rector for Research and Transference (Dr. Armand Sánchez, also one of the former UAB representatives in the ICP Board of Trustees) and another with the Head of the UAB Geology Dept. to discuss the possibility to ascribe UAB professors to the ICP. The former confirmed the feasibility of such possibility from the university viewpoint, but recommended to wait a few months until new internal regulations allowed a 50% ascription. Initially, the Head of the Geology Dept. opposed such possibility, given the small number of UAB professors in the two relevant units (Paleontology and Stratigraphy) of the department, but this situation changed in late 2020, when ICP researcher Marc Furió (hired by the university as associate professor) won a Serra Hunter lecturer position and joined the UAB Paleontology Unit in early 2021. After additional conversations between the ICP Director, the UAB Vice-Rector for Research and Transference, and the Head of the Geology Dept., an agreement was signed in 2022 by virtue ot which Marc Furió has 50% ascription to the ICP. In early 2023, a former ICP researcher (Judit Marigó) also joined the Paleontology Unit of the UAB as 'Ramón y Cajal' researcher and manifested her will to remain formally affiliated to the ICP in the same terms, so it is very likely that an additional agreement will be signed in 2023.

- **Recommendation 9: Recruitment.** CERCA recommendation: To develop further the ICP recruitment strategy to implement an open and transparent procedure without automatically prioritizing associate researchers (i.e., by making calls always open and international), so as to facilitate external applicants—even when the required expertise may only be available among internal applicants. Fully implemented: The ICP endorsed the principles of the EU Charter & Code for researchers in late 2016, and one year later submitted to the European Commission a Gap Analysis and an Action Plan aimed to implement the EU Human Resources Strategy for Researchers (HRS4R) at the ICP. The latter includes an open, transparent and merit-based recruitment (OTM-R) policy that is fully aligned with the CERCA recommendation in this regard. The ICP was formally granted the EU 'HR Excellence in Research' on March 2018, and two years later the internal evaluation of the HRS4R implementation at the ICP was positively assessed by the EU. The 14th action of the HRS4R Action Plan of the ICP was elaboration of a Protocol for the Evaluation, Internal Promotion and Recruitment of Researchers and Technicians. The document was completed by the Steering Committee and subsequently ratified by the Board of Trustees in the spring of 2019. This recruitment protocol requires that all vacant researcher positions defrayed by ICP basal (non-competitive) funds must be filled by means of an open international call. Since then, three tenured researcher positions (ICPJA001, ICPJA011, ICPJA014), two tenure-track researcher positions (ICPJA002 and ICPJA006), and two postdoctoral contracts (ICPJA008 and ICPJA012) have been offered (as detailed on the ICP webpage; https://www.icp.cat/index.php/en/icp-2/work-with-us/open-positions) and further publicized through the EURAXESS portal.

- **Recommendation 10: Gender balance.** CERCA recommendation: To keep in mind the currently unbalanced gender balance of the ICP at the upper levels of management and consider solving it in all future positions. Fully implemented: Multiple initiatives have been undertaken to try to correct this situation. First, the HRS4R Action Plan included the elaboration of a new ICP Equal Opportunities & Diversity Management Plan as well as the establishment of a Non-Discrimination Committee (NDC). Since February 2018, the NDC has been working to improve the ICP equality plan, which was finally issued in 2020 and includes several measures aimed to promote equal opportunities for female researchers and technicians (in relation to the reconciliation of work and private life, monitoring recruitment processes, and improving the visibility of the tasks performed by ICP women, among others). As explained above, a new version of the equality plan is currently being elaborated, to comply with current legislation, and several actions (such as a remuneration audit) will be performed in 2023 to better assess the situation of female staff at the ICP. In turn, the recruitment protocol elaborated in the framework of the HRS4R Action Plan and approved in 2019 also enforces a series of proactive measures to guarantee equal opportunities when applying for a position at the ICP (for example, it standardizes merits based on career duration, and subtracts by default longer periods of parental leave in the case of women, so as to compensate for gender-unbalanced parenthood efforts in a patriarchal society). As specified in the ICP job announcements, the recruitment protocol further stipulates that the NDC must oversee the recruitment process (by reviewing and approving the job offers and the composition of Selection Committees, to prevent any kind of discrimination and ensure that the protocol provisos are fulfilled). Furthermore, the ICP job announcements explicitly state that the "ICP aims to guarantee equal opportunities to all candidates and intends to promote a balanced sex ratio", so that applications by female candidates are "strongly encouraged". This is not restricted to researcher positions, and indeed the recruitment of the new Project Manager (and Head of the Research Support & External Services Department), of various preparator technicians, and the administrative officer were made following the same procedures. Admittedly, the ICP gender ratio is still unbalanced (particularly at executive and managerial levels) but the multiple measures that have been enforced in this regard justify considering that the CERCA recommendation is fully implemented, even if the goal is still very far.
- **Recommendation 11: Engaging donors.** CERCA recommendation: To start organizing events to engage donors and philanthropic Foundations (among other fundraising actions), as well as to develop a long-term plan in this regard with the help of the Board of Trustees, based on topics such as Catalan dinosaurs. Partly implemented: In 2018, the ICP was invited to apply to participate as strategic partner in The Jurassic Project of The Children's Museum (TCM) of Indianapolis, a large scale and long-term research and outreach project focused on dinosaurs. However, the ICP was finally excluded due to the lack of funds to cover the participation of ICP researchers in fieldwork activities during 2019. Unfortunately, due to the lack of Project Manager at the time, it was not possible to secure the required funds to

reapply in the following year. Nevertheless, it is noteworthy that in 2020 the ICP managed to increase the funds provided by the Culture Department of the Generalitat de Catalunya to the ICP for the Dinosaurs of the Pyrenees project, as well as to consolidate such kind of funds as a direct transfer from the Catalan government (instead of a discretional, non-competitive grant, as it was before). It is also worth noting that, following a meeting held at the ICP Museum in late 2020 by the ICP Director and the Mayor of Sabadell, the latter asked to become part of the ICP Board of Trustees—although unfortunately the City Council of Sabadell had yet to formally join the ICP Board of Trustees in 2022. In any case, the relative success of fundraising efforts with the public administration should be further complemented by private entities. Given the inability of the former ICP Project Manager to develop a successful strategy to attract private donors and sponsors (as recommended by CERCA), the ICP Director and General Manager agreed to dismiss her in January 2019. An open recruitment process to fill the vacant position was undertaken in 2019 and the new Project Manager joined the ICP in January 2020, further becoming the new Head of the Research Support & External Services Department later that year. Since then, the new Project Manager has had to devote most of his efforts to oversee and promote further service provision and competitive fundraising, while devising a long-term strategy to attract donors and sponsors. In 2020, it was agreed by the ICP Director and Project Manager to focus most of the efforts during the next few years in attracting sponsors (basically, private companies) for two types of ICP activities: fieldwork (paleontological excavations) and outreach (both temporary itinerant exhibits and the permanent exhibit of the ICP Museum). With the support from the Culture Department of the Generalitat de Catalunya to renew the exhibits of the ICP Museum, the design of a museological plan started in 2021 and was completed in early 2022, leading to the elaboration of a museographical plan in 2022-2023. Once it is completed, it will be the time to contact with potential sponsors to secure the required funds beyond those provided by the Culture Department. In the meantime, the Project Manager engaged several entities in sponsoring (with monetary or in-kind contributions) the NOW 25th Anniversary Meeting organized by the ICP in Sabadell, including the Ajuntament de Subirats, the Ajuntament de Sabadell, La Microcerveseria, Cafès Pont, and CERCAGINYS). It is considered that this action is only partly implemented because such initiatives should be promoted at a larger scale in years to come. The Project Manager has also established conversations with various companies to establish direct sponsorships to the ICP (instead of one of its activities) and is also elaborating a document about sponsors and donors and studying how to update the corresponding section of the ICP website.

- **Recommendation 12: Spin-offs.** CERCA recommendation: To try to keep a certain level of equity in those companies born from the Institute. That would allow ICP to maintain a certain degree of control of the company and eventually, if required, preserving the reputation of the Institute, as well as strengthening the visibility and impact of ICP. Fully implemented: In spite of the fact that no ICP spin-off has been created, this

recommendation is considered to be fully implemented for the reasons explained below. The reason why no spin-offs have emerged is attributable to the fact that the ICP has no patents to transfer, but also to current ICP policies (detailed in the 2018-2021 and 2022-2025 Strategic Plans) that stress service provision directly by the ICP. The center belongs to the public sector but its legal structure is that of a private foundation, implying that in spite of being non-profit it can provide services in a similar way to a private company. Therefore, since 2018 the ICP has focused on securing the provision of fieldwork services to the company that exploits the Can Mata landfill, once the construction of a new enlargement of the dump were resumed. Until 2014, such services were provided by private companies owned by some current ICP researchers and technicians, which facilitated the transition and generated remarkable revenues to the ICP in 2020. Nevertheless, in case that other entrepreneurial actions emerged that required to seek for additional partners, following the CERCA recommendation the ICP would aim to secure more than 50% of the spin-off equity.

FINAL NOTE

This Annual Report was written by the ICP Director in January-March 2023, with input from the other members of the Steering Committee, heads of Area, and various ICP committees and commissions. The final version is dated to March 28, 2023.

It will be presented by to the ICP Board of Trustees for their approval as soon as the next meeting takes place.

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DAVID M. ALBA
Director

APPENDIX

ICP publications 2022

The following list includes the publications (co)authored by authors with ICP affiliation in 2022, distributed in the different categories recognized in this report. Only those papers published in final form are included; those published online in 2022 without volume and pagination, pending publication in 2023, or published toward the end of 2022 but dated to 2023, have been excluded (pending their inclusion in the 2023 Annual Report). An updated list of ICP publications since its refoundation in 2006 can be found at http://www.icp.cat/attachments/publicacions/ICP_Publications.pdf

SCI papers (indexed in JCR)

1. Alba, D. M. (2022). A fistful of fossils: The rise and fall of the Orce Man and the politics of paleoanthropological science. *Journal of Human Evolution, 165*, 103166. https://doi.org/10.1016/j.jhevol.2022.103166
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7. Angelone, C., Čermák, S., Moncunill-Solé, B., & Rook, L. (2022). The body mass of *Paludotona* (Lagomorpha, Mammalia): first approach to the ecology of the last stem lagomorph (Tusco-Sardinia palaeobioprovince, Late Miocene). *Bollettino della Società Paleontologica Italiana, 61*, 61-70. https://doi.org/10.4435/BSPI.2022.01
8. Azanza, B., Pina, M., Quiralte, V., Sánchez, I. M., & DeMiguel, D. (2022). New fossils of the early Miocene stem-cervid *Acteocemas* (Artiodactyla, Ruminantia) from the Iberian

Peninsula shed light on the evolutionary origin of deer antler regeneration. *Historical Biology, 34*, 1520-1533. https://doi.org/10.1080/08912963.2022.2050720

9. Backwell, L., Wadley, L., d'Errico, F., Banks, W. E., de la Peña, P., Stratford, D., Sievers, C., Laue, G., Vilane, B., Clark, J., Tribolo, C., Beaudet, A., Jashashvili, T., Carlson, K. J., Lennox, S., Esteban, I., & Mauran, G. (2022). Border Cave: A 227,000-year-old archive from the southern African interior. *Quaternary Science Reviews, 291*, 107597. https://doi.org/10.1016/j.quascirev.2022.107597
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