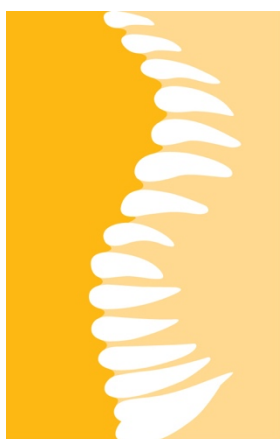


ANNUAL REPORT

2020

February 2021



KCP^R

Institut Català de Paleontologia
Miquel Crusafont

ANNUAL REPORT 2020

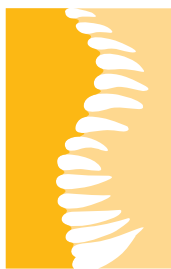
INSTITUT CATALÀ DE PALEONTOLOGIA MIQUEL CRUSAFONT



DAVID M. ALBA

Director

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ICP^R

Institut Català de Paleontologia
Miquel Crusafont

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**Generalitat
de Catalunya**



**Universitat Autònoma
de Barcelona**

CERCA Center:



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 that 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.

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

Toward consolidation

Following the replacement of the former Director and the design of new policies and strategic aims for years to come, 2017 was a year of turnover and intense planning at the Institut Català de Paleontologia Miquel Crusafont (ICP). In turn, 2018 was a year of very intense work with the main aim to take the ICP out of the 'survival model' 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).

The results of 2020 confirm the trend of improvement started in 2018 in terms of both scientific outputs and service provision, by displaying its best results ever in terms of published papers and revenues—despite the complicated situation generated by the COVID-19 pandemic and associated restrictions. Furthermore, the implementation of the HRS4R has progressed at a good pace (as recognized by the positive assessment provided by the EU on the ICP's internal HRS4R evaluation), and has led to the elaboration of a new Equality Plan. It is also noteworthy that, following the previous advice provided by CERCA, the renewal of the Scientific Advisory Board (SAB) started this year with the replacement of three members (to be completed in 2022) and the research groups were restructured with the recognition of two new junior group leaders. The degree of fulfillment of the Strategic Plan (2018-2021) is also satisfactory, although the obtention of ERC funds is still pending. Most importantly, the ICP overcame in 2020 the deficit that was still pending.

All in all, the results from 2020 attest that the ICP is on the right path toward consolidation and suggest that 2021 should be a year devoted to planning how to improve further in years to come, as well as to start investing in the improvement of our equipment and in the retention and recruitment of talented researchers. Based on the contributions of the Steering Committee and the ICP personnel as a whole, along with the guidance provided by the SAB, the Director will prepare throughout 2021 the new Strategic Plan (2022-2025). Further recruitment actions will also take place to continue reinforcing the ICP research groups, and renewed efforts will be devoted to the HRS4R implementation.

Finally, I would like 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 for many years restrained the growth of the ICP and the implementation of several other aspects.

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 Organization Chart ratified by the Board of Trustees in May 2020 and the update subsequently approved by the Steering Committee in December 2020.

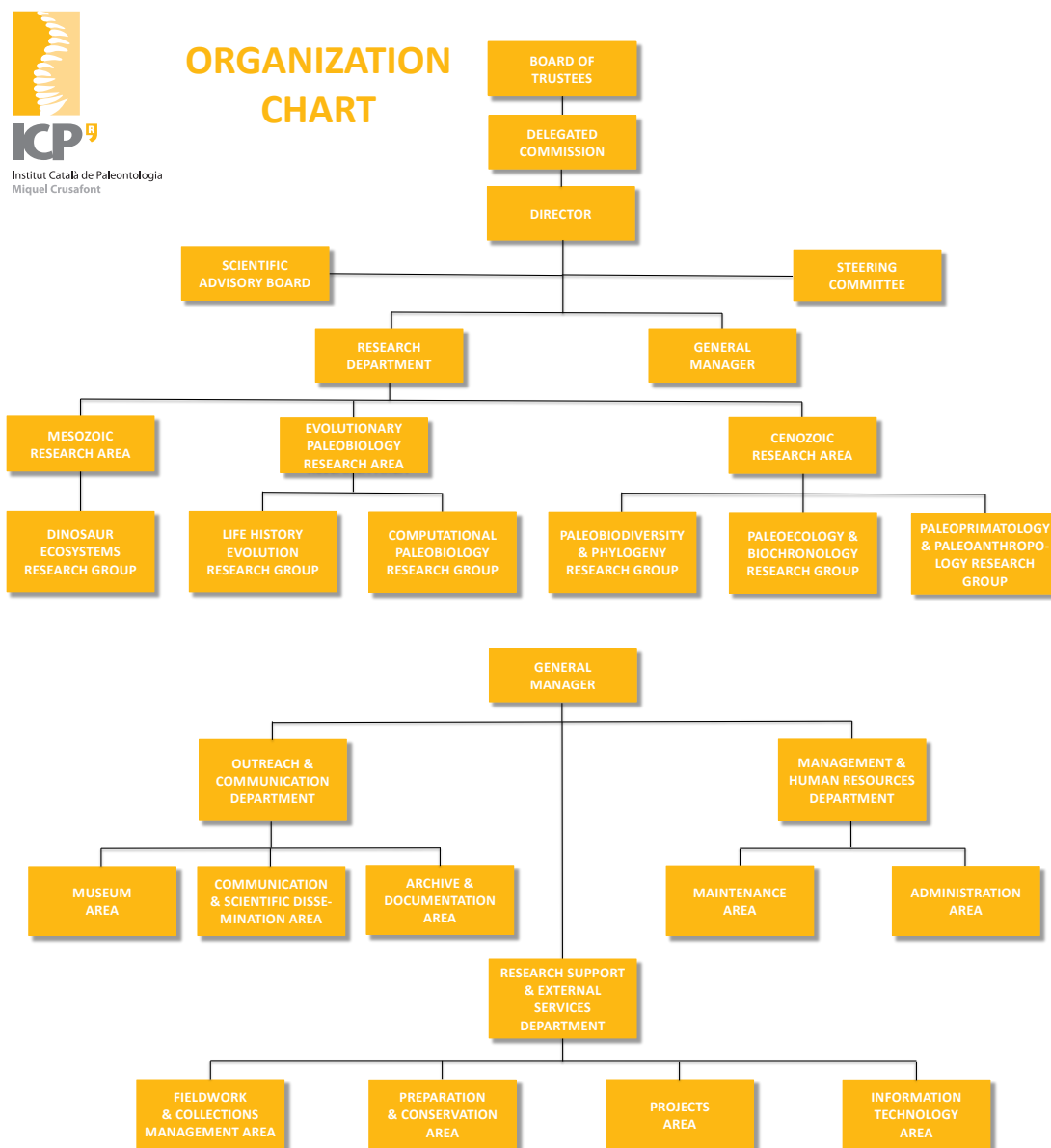
The hierarchical structure of our organization can be subdivided into the following bodies:

- 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. Ramon Tremosa i Balcells
Permanent	Rector of the UAB	Dr. Javier Lafuente Sancho
Designated	Secretary of Universities and Research, Generalitat de Catalunya	Dr. Francesc Xavier Grau
Designated	Director General of Research, Generalitat de Catalunya	Dr. Joan Gómez Pallarès
Designated	A Vice-Rector of the UAB	Dr. Armand Sánchez Bonastre

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 the USA. 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 three more should be renewed in 2022.

SCIENTIFIC ADVISORY BOARD		
TYPE	NAME	AFFILIATION
President	Prof. José Luis Sanz	Universidad Autónoma de Madrid, Spain
Member	Prof. Jorge Morales	Museo Nacional de Ciencias Naturales-CSIC, Spain
Member	Prof. David Pilbeam	Harvard University, USA
Member	Prof. Lorenzo Rook	Università di Firenze, Italy
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 Bordeaux, France

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 our 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
IT External Consultant	Josep Torres	External

HRS4R IMPLEMENTATION COMMITTEE & 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	Interim Administrative Officer

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	Manuel Fernández	Technician

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.

RESEARCHERS COMMISSION		
Chair	Dr. Salvador Moyà-Solà	Representative of R4 (senior experienced researchers)
Vice-Chair	Dr. Albert Prieto-Márquez	Representative of R3 (experienced researchers)
Rapporteur	Dr. Judit Marigó	Representative of R2 (postdoctoral researchers)
Member	Teresa Calderón	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

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.

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.
- Ombudsperson.
- Person in charge of University Teaching Coordination.

PERSONS IN CHARGE		
Information Systems Security	Pere Figuerola	Head of the Outreach & Communication Dept.
Ombudspersons	Pere Figuerola	Head of the Outreach & Communication Dept.
	Judit Marigó	'Beatriu de Pinós' Researcher
University Teaching Coordination	Dr. Marc Furió	Researcher

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), 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 agreement that implies ICP affiliation, including grantees (scholarship holders without a contractual relationship with the ICP) and PhD students without 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
Predocctoral 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, ERC Starting Grant)
Researcher	R3	Experienced	ICP tenured or tenure-track / Civil servant / External agency tenure-track (e.g., RyC, ERC Consolidator Grant)
Senior Researcher	R4	Experienced	ICP distinguished 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

Six research groups with definite aims and scope within three research areas

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 Head	Senior Researcher	R4	Civil Servant (GC)
Dr. Albert Prieto-Márquez	'Ramón y Cajal'	Researcher	R3	Tenure-track (GE)
Dr. Bernat Vilaş	Tenure-Track Researcher	Researcher	R3	Fixed-term (ICP)
Dr. Albert G. Sellés*	Postdoc	Postdoctoral Researcher	R2	Fixed-term (ICP)
Dr. Diego Castanera	'Beatriu de Pinós'	Postdoctoral researcher	R2	Fixed-term (AGAUR)
Rafel Matamalas-Andreu	FPU Predoc	Predoc	R1	Fixed-term (MICINN)
Dr. Fabio M. Dalla Vecchia	Researcher	Research Associate	R3	—
Dr. Nicolas Malchus	Researcher	Research Associate	R3	—
Dr. Víctor Fondevilla	Postdoc	Research Associate	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 Head	Senior Researcher	R4	Permanent (ICP)
Dr. Joan Madurell-Malapeira	Researcher	Researcher	R3	Permanent (ICP)
Dr. Antonio Sánchez-Marco*	Researcher	Researcher	R3	Permanent (ICP)
Dr. Juan Abella	'Beatriu de Pinós'	Postdoctoral Researcher	R2	Fixed-term (AGAUR)
Sharrah McKenzie	Predoc	Predoc Researcher	R1	Fixed-term (other)
Leonardo Sorbelli	FI Predoc	Predoc Researcher	R1	Fixed-term (AGAUR)
Maria Prat-Vericat‡	Predoc	PhD Student	R1	—
Guillem Pons-Monjo‡	Predoc	PhD Student	R1	—
Dr. Massimo Delfino	Researcher	Research Associate	R3	—
Dr. Israel M. Sánchez	Researcher	Research Associate	R3	—
Dr. Daniel DeMiguel	Researcher	Research Associate	R3	—
Dr. Àngel H. Luján‡	Postdoc	Research Associate	R2	—
Josep Aurell	Freelance	Research Collaborator	R1	—
Jordi Balaguer	Freelance	Research Collaborator	R1	—

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The Paleoeology & 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‡	Researcher	Researcher	R3	Permanent (ICP)
Dr. Chiara Angelone	Researcher	Research Associate	R3	—
Dr. Jan van Dam	Researcher	Research Associate	R3	—
Dr. Israel García-Paredes	Researcher	Research Associate	R3	—
Dr. Yuri Kimura§	Researcher	Research Associate	R3	—
Dr. Sílvia Jovells-Vaqué‡	Postdoc	Research Associate	R2	—

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The Paleoprimateology & 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 PALEOPRIMATEOLOGY & PALEOANTHROPOLOGY				
NAME	POSITION	CATEGORY	PROFILE	TYPE OF CONTRACT
Prof. Salvador Moyà-Solà	Senior Group Leader	Senior Researcher	R4	Permanent (ICREA)
Dr. Judit Marigó	'Beatriu de Pinós'	Postdoctoral Researcher	R2	Fixed-term (AGAUR)
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 (MICINN)
Florian Bouchet	FPI Predoc	Predoc	R1	Fixed-term (MICINN)
Alessandro Urciuoli§	Predoc	Predoc	R1	—
Dr. Víctor Fondevilla†	Lab Technician	Technician	R2	Fixed-term (ICP)
Dr. Esther Lizano†	Lab Technician	Technician	R2	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. Joan Femenias-Gual	Postdoc	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)
Teresa Calderón	FPI Predoc	Predocctoral Researcher	R1	Fixed-term (MICINN)
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)
Chabier De Jaime-Soguero	FI Predoc	Predocctoral Researcher	R1	Fixed-term (AGAUR)
Dr. Alejandro Serrano *§	Lab Technician	Technician	R2	Fixed-term (ICP)
Sergio Llácer*‡	Lab Technician	Technician	R1	Permanent (ICP)

Dr. Jordi Marcé-Nogué	Researcher	Research Associate	R3	—
Dr. Eudald Muijal	Postdoc	Research Associate	R2	—
Dr. Borja Holgado	Postdoc	Research Associate	R2	—
Dr. Soledad De Esteban-Trivigno	Postdoc	Research Associate	R2	—
Joan Cartanyà	Freelance	Research Collaborator	R1	—

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Paleoproteomics and paleogenomics research line

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.

This research line 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.

RESEARCH ASSOCIATES (2020)						
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	17/10/2022	
Prof. Eric Delson	Lehman College, City University of New York, USA	Senior Researcher (R4)	PPPA	24/10/2017	24/10/2021	
Dr. Tomàs Marquès-Bonet	ICREA-Universitat Pompeu Fabra, Barcelona, Spain	Senior Researcher (R4)	PPPA	21/09/2018	21/09/2022	
Dr. Massimo Delfino	Università degli Studi di Torino, Turin, Italy	Researcher (R3)	PBDP	01/01/2011	01/01/2023	
Dr. Chiara Angelone	Università di Roma Tre, Rome, Italy	Researcher (R3)	PEBC	01/01/2012	01/01/2024	
Dr. Fabio M. Dalla Vecchia	Museo Friulano di Storia Naturale, Udine, Italy	Researcher (R3)	DE	10/11/2017	10/11/2022	
Dr. Israel M. Sánchez	ICP (independent researcher)	Researcher (R3)	PBDP	01/06/2016	01/06/2022	
Dr. Jan van Dam	Utrecht University, The Netherlands	Researcher (R3)	PEBC	01/11/2017	01/11/2022	
Dr. Daniel DeMiguel	ARAID-Universidad de Zaragoza, Spain	Researcher (R3)	PBDP	19/10/2017	19/10/2022	
Dr. Nicolas Malchus	ICP (independent researcher)	Researcher (R3)	DE	01/11/2017	01/11/2022	
Dr. Raef Minwer-Barakat	Universidad de Granada, Spain	Researcher (R3)	PPPA	18/10/2017	18/10/2022	
Dr. Israel García-Paredes	Universidad Complutense de Madrid, Spain	Researcher (R3)	PEBC	12/01/2018	12/01/2022	
Dr. Jordi Marcé-Nogué	Universitat Rovira i Virgili, Spain	Researcher (R3)	CPB	22/12/2017	22/12/2021	
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	12/11/2024	
Dr. Marta Pina	University of Manchester, UK	Postdoc (R2)	PPPA	11/11/2019	11/11/2022	
Dr. Víctor Fondevilla	ICP (independent researcher)	Postdoc (R2)	DE	03/03/2017	03/03/2023	
Dr. Eudald Muijal	Staatliches Museum für Naturkunde Stuttgart, Germany	Postdoc (R2)	CPB	10/01/2017	10/01/2025	
Dr. Soledad De Esteban-Trivigno	Transmitting Science, Piera, Spain	Postdoc (R2)	CPB	01/06/2018	01/06/2022	
Dr. Borja Holgado	Universidade Federal do Rio de Janeiro, Brazil	Postdoc (R2)	CPB	22/09/2020	22/09/2024	
Dr. Sílvia Jovells	ICP (independent researcher)	Postdoc (R2)	PEBC	12/11/2020	12/11/2024	

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.

Only research associates active at the end of 2020 are reported in the table above, but the end date has been updated if they were expected to renew in early 2021. They include 21 research associates, most with a different primary affiliation; 10 are from Spain, 3 from Italy, 2 from the USA, 2 from UK, 1 from Germany, 1 from The Netherlands, 1 from Japan, and 1 from Brazil.

TECHNICAL DEPARTMENTS

Three departments to make the institute and museum work

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: Maria Pérez (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 (IT External Consultant).

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)
María Pereira*†	Receptionist	Museum	Permanent (ICP)
Mònica Ferré*	Receptionist (Dinosfera)	Museum	Fixed-term (ICP)
Pilar Argerich*	Receptionist (Dinosfera)	Museum	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)
Maria Pérez	Administrative Officer	Administration	Permanent (ICP)
Mónica Vincent	Interim Administrative Officer	Administration	Fixed-term (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.	Fixed-term (ICP)
Dr. Albert G. Sellés*	Collection Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Dr. Àngel H. Luján*	Collection Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Manel Llenas	Field Technician	Fieldwork & Collections Mgmt.	Civil Servant (GC)
Dr. Víctor Vinuesa†	Field Technician	Fieldwork & Collections Mgmt.	Fixed-term (ICP)

Manel Méndez	Field Assistant	Fieldwork & Collections Mgmt.	Permanent (ICP)
Itziar Llopart	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Esteban Meseguer-Despons†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Ángel García Pérez†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Montserrat Grau†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Sergi Cano†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Roger Llopart†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Albert Egea†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
David Rodríguez†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Montse Garcia†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Bernat-Josep Vázquez†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Víctor Ignacio Morenos†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Guillem Orlandi-Oliveras†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Alejandro Martínez†	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
César Nicolás Rodríguez‡	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Melanie Lex‡	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Lorena Palencia‡	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Guillem Marín‡	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Javier Salas‡	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Miguel Ángel Cervillas‡	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Carlos De Miguel‡	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Irene Sánchez‡	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Alba Rico‡	Field Assistant	Fieldwork & Collections Mgmt.	Fixed-term (ICP)
Xènia Aymerich‡	Head of Area	Preparation & Conservation	Permanent (ICP)
Núria Guerrero†	Preparation Technician	Preparation & Conservation	Permanent (ICP)
Marina Rull‡	Preparation Technician	Preparation & Conservation	Permanent (ICP)
Marina Vizcarro‡	Preparation Technician	Preparation & Conservation	Fixed-term (ICP)
Júlia López‡	Preparation Technician	Preparation & Conservation	Fixed-term (ICP)
Júlia Jiskoot‡	Preparation Technician	Preparation & Conservation	Fixed-term (ICP)
Josep Torres*	IT External Consultant	Information Technology	—

Abbreviations: * = Part-time; § = The relationship with the ICP started or was resumed in 2020; † = The relationship with the ICP ended in 2020; ‡ = The relationship with the ICP changed in 2020.

PART 2

ICP ACTIVITIES 2020

In 2020, the ICP has increased further its 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 webpage and social networks; fundraising has spectacularly increased thanks to service provision; and managerial activities have focused on HRS4R implementation, the goals of the Strategic Plan, and the recommendations by I-CERCA.

RESEARCH OUTPUTS

High productivity and quality in scientific publications

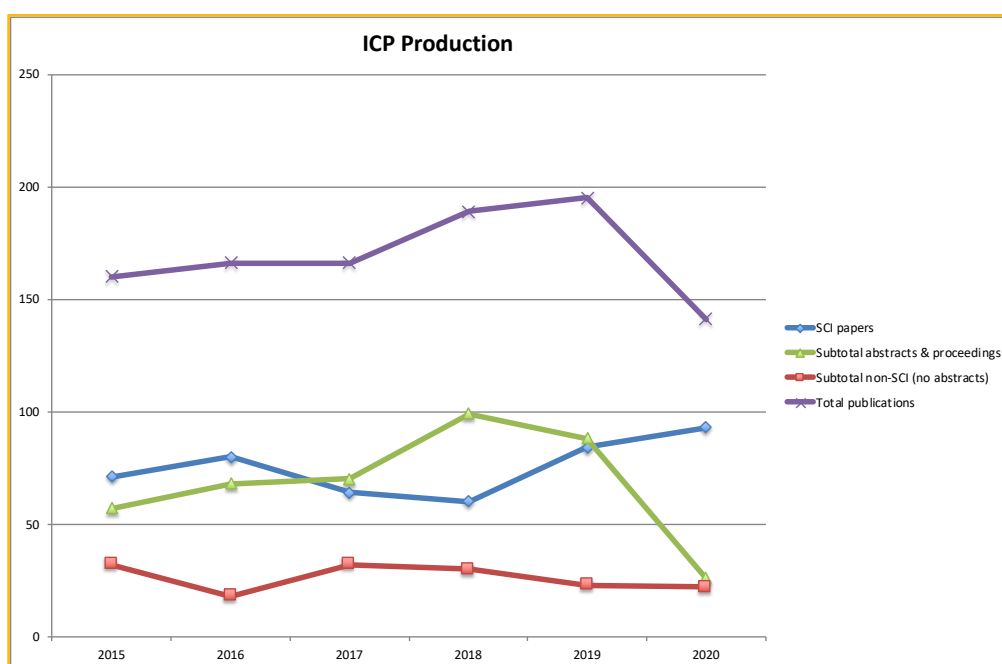
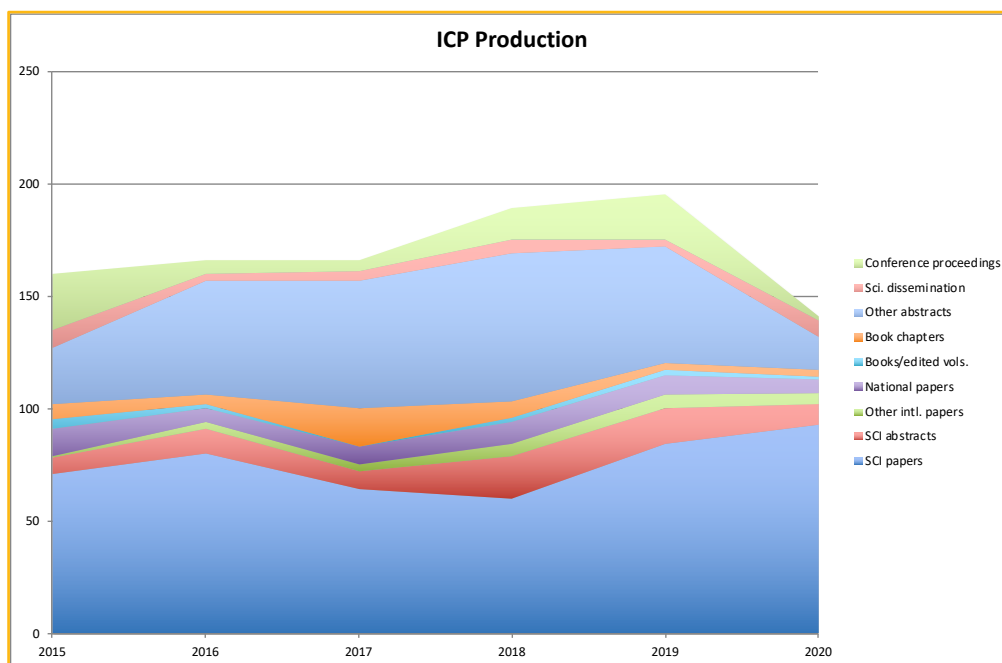
Publications

The publications of the ICP in 2020 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 (2015–2019 vs. 2020)							
PUBLICATION CATEGORIES	2015	2016	2017	2018	2019	AVERAGE	2020
SCI papers	71	80	64	60	84	71.8	93
SCI abstracts	7	11	8	19	16	12.2	9
Papers in other international journals	1	3	3	5	6	3.6	5
Papers in national journals	12	6	8	10	9	9.0	6
Books and edited volumes	4	2	0	2	2	2.0	1
Book chapters	7	4	17	7	3	7.6	3
Conference proceedings	25	6	5	14	20	14.0	2
Other abstracts	25	51	57	66	52	50.2	15
Scientific dissemination papers	8	3	4	6	3	4.8	7
TOTAL	160	166	166	189	195	175.2	141

The numbers of total publications (141) is much lower than that of the previous year (195) and the average for the preceding five years (175.2). However, this is mostly attributable to the marked decrease in the number of published abstracts and conference proceedings (see below). In contrast, the number of SCI papers published in 2020 (93) is even greater than that of 2019 (84) and well above the average for 2015–2019 (71.8). In other words, 2020 represents the best year of ICP history in terms of SCI production quantity, which seems to have gone unaffected by the pandemic.



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 2020 (26) is very low compared with that from 2019 (84) and the average of the previous years (75.6). This is undoubtedly a consequence of travel restrictions and meeting cancellations since March 2020 due to the COVID-19 pandemic. Normal levels of meeting communications will not be recovered until this situation is back to normal, but it might increase in 2020 thanks to a progressive increase of online meetings.

In particular, in 2020 ICP authors coauthored up to 26 contributions to a total of 9 meetings, all of them international and many of them performed by telematic means. Most noteworthy are the 9 ICP contributions to the Annual Meeting of the American Association of Physical Anthropologists, although attendance had to be cancelled due to travel restrictions. Also remarkable are the 6 contributions to the Palaeontological Virtual Congress and the 3 contributions to the virtual Annual Meeting of the Society of Vertebrate Paleontology.

MEETING	CITY (COUNTRY)	COMMS.
89 th Annual Meeting of the American Association of Physical Anthropologists	Los Angeles (USA)*	9
2 nd Palaeontological Virtual Congress	(Virtual)	6
80 th Annual Meeting Society of Vertebrate Paleontology	(Virtual)	3
XVIII Encuentro de Jóvenes Investigadores en Paleontología	Andorra	2
IVPday 2020 – 3 ^o Convegno Nazionale per Giovani Ricercatori in Paleontologia	Pisa (Italy)	2
Annual Meeting of the European Society for the Study of Human Evolution 2020	(Virtual)	1
Progressive Palaeontology 2020 (The Palaeontological Association)	Leeds (UK)	1
9 th World Congress of Herpetology	Dunedin (New Zealand)	1
64 th Palaeontological Association Annual Meeting	(Virtual)	1

*Cancelled.

Scientific production, productivity, and impact

Methods. Whereas ‘production’ refers to the number of scientific outputs published in 2020, ‘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 2020 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 2020, which were taken from 2019 (since the 2020 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 (IF).
- Journal quartile (Q1 = first quartile, Q2 = second quartile, etc.).
- Journal impact factor percentile (JIF%).
- Open access (excluding green open access).

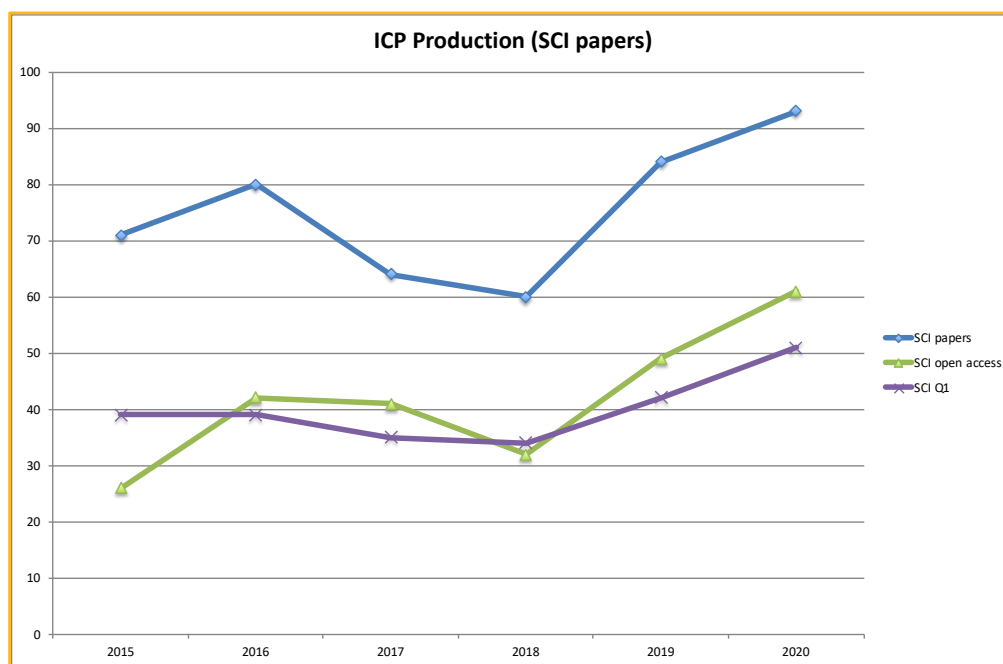
The following metrics of production, productivity and impact were computed for 2020:

- 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%.
- IF geometric mean (IFGM).

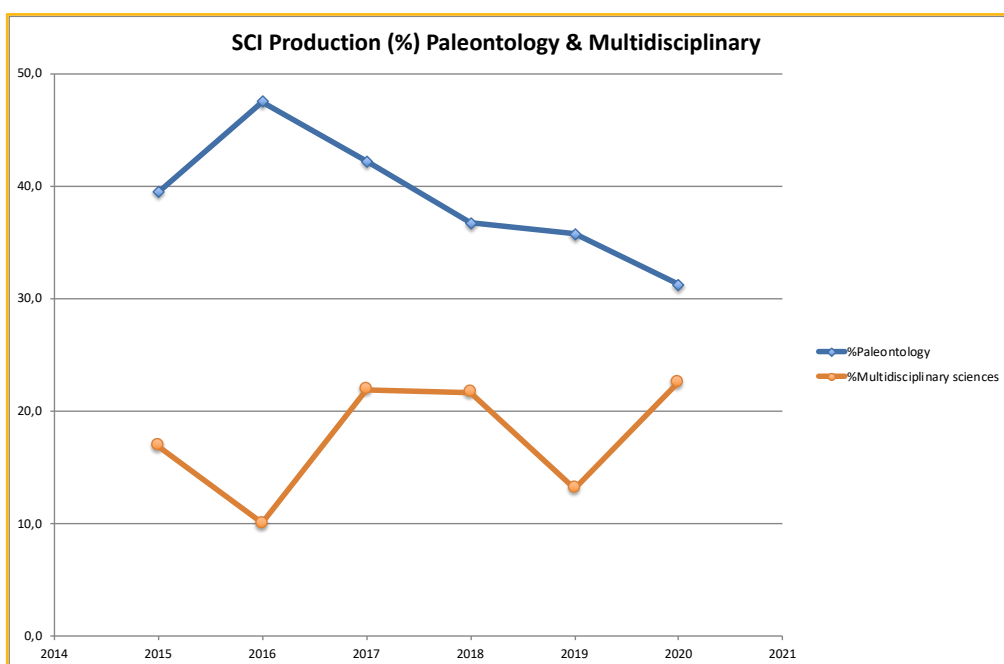
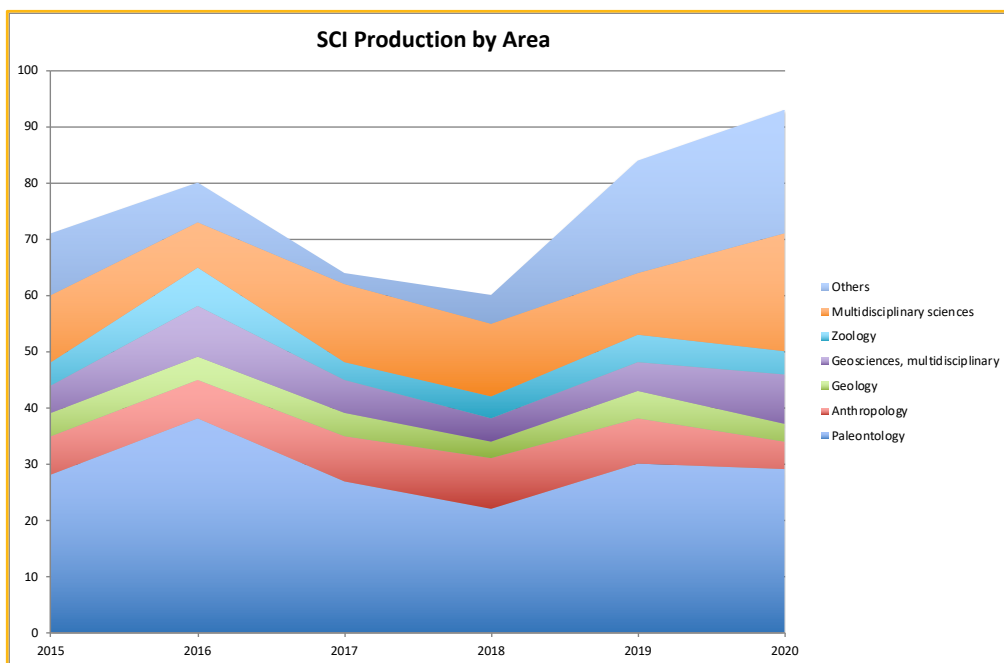
Production. The production of the ICP in terms of total SCI papers during 2020 is well above the average value for the preceding five years, and indeed highest than ever. In accordance with this, the production in terms of first quartile and gold/bronze open access SCI papers is also higher than in all the preceeding years.

SCI PRODUCTION (2015–2019 vs. 2019)							
METRICS	2015	2016	2017	2018	2019	AVERAGE	2020
SCI	71	80	64	60	84	71.8	93
Q1	39	39	35	34	42	37.8	51
OA	24	33	28	22	32	27.8	51



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 (32% in 2021), followed by Multidisciplinary sciences (23% in 2020) and Geosciences multidisciplinary (10% in 2020), and smaller contributions from the areas of Anthropology, Zoology, Geology, and others. It is noteworthy the high proportion of papers published in Multidisciplinary sciences in 2020, and the diversification of areas included in other categories at the expense of the percentage of papers published in the Paleontology category.

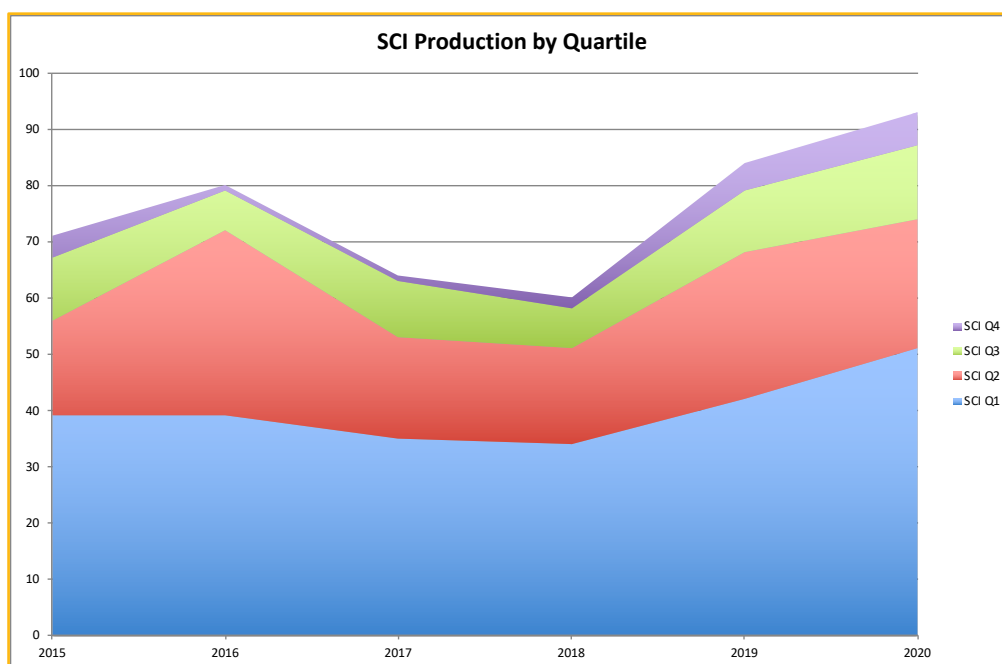
SCI PRODUCTION BY AREAS (2015–2019 vs. 2020)							
JCR AREAS	2015	2016	2017	2018	2019	AVERAGE	2020
Paleontology	28	38	27	22	30	29.0	29
Anthropology	7	7	8	9	8	7.8	5
Geology	4	4	4	3	5	4.0	3
Geosciences, multidisciplinary	5	9	6	4	5	5.8	9
Zoology	4	7	3	4	5	4.6	4
Multidisciplinary sciences	12	8	14	13	11	11.6	21
Others	11	7	2	5	20	9.0	22



% SCI PRODUCTION BY AREAS (2015–2019 vs. 2020)							
JCR AREAS	2015	2016	2017	2018	2019	AVERAGE	2020
%Paleontology	39.4	47.5	42.2	36.7	35.7	40.4	31.2
%Anthropology	9.9	8.8	12.5	15.0	9.6	10.9	5.4
%Geology	5.6	5.0	6.3	5.0	6.0	5.6	3.2
%Geosciences, multidisciplinary	7.0	11.3	9.4	6.7	6.0	8.1	9.7
%Zoology	5.6	8.8	4.7	6.7	6.0	6.4	4.3
%Multidisciplinary sciences	16.9	10.0	21.9	21.7	13.1	16.2	22.6
%Others	15.5	8.8	3.1	8.3	23.8	12.5	23.7

Quality and impact. If production is broken down by quartiles, it becomes obvious that most of ICP production in SCI journals is concentrated on the Q1 and that the increase in SCI production during 2019 and 2020 is mostly attributable to a greater number of published papers in Q1 journals.

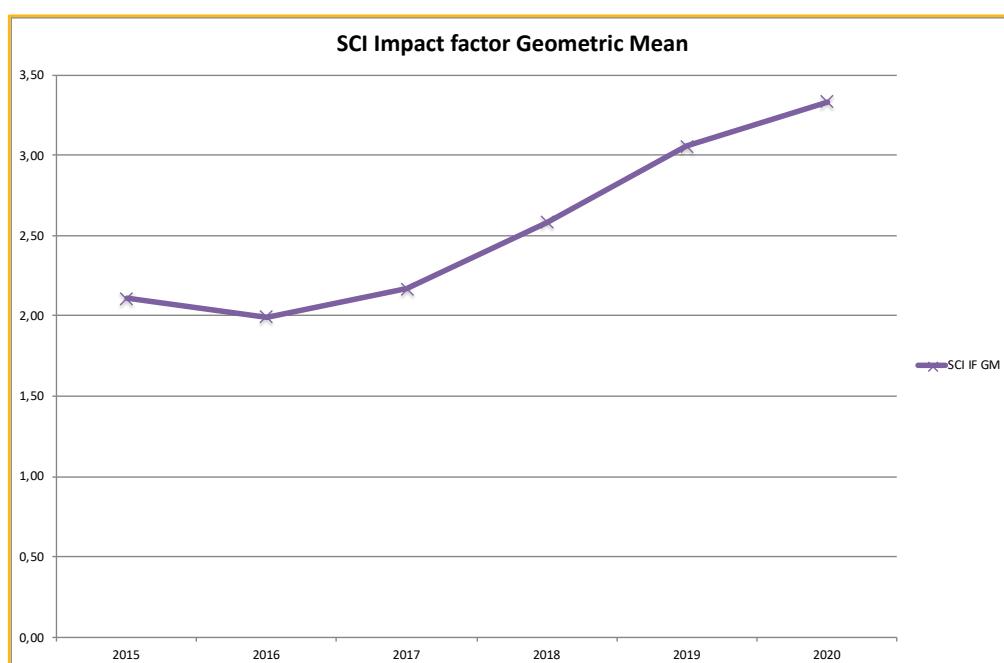
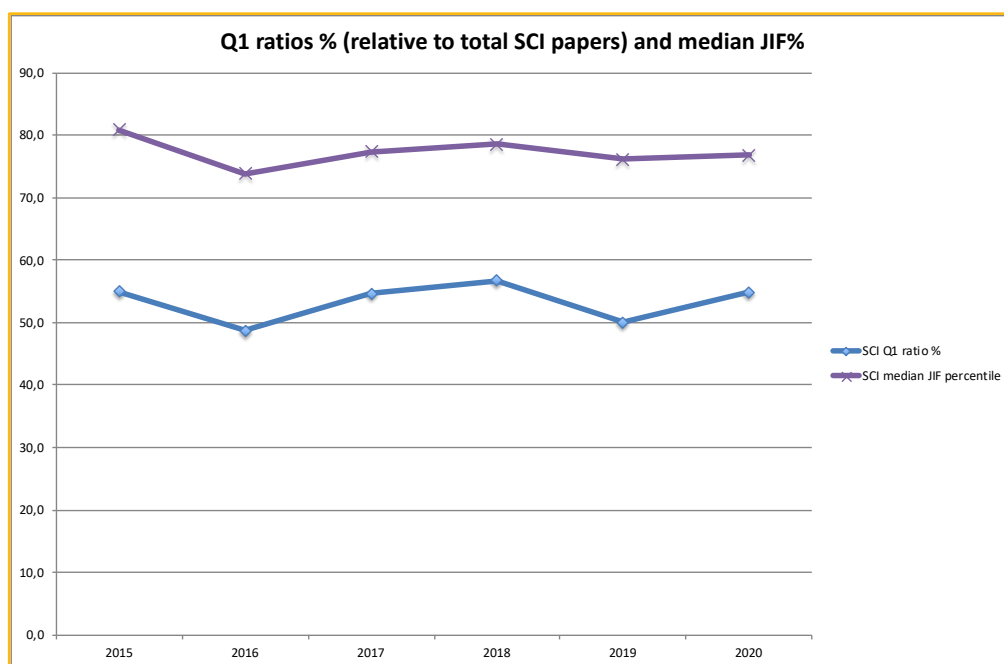
SCI PRODUCTION BY QUARTILES (2015–2019 vs. 2020)							
QUARTILE	2015	2016	2017	2018	2019	AVERAGE	2020
Q1	39	39	35	34	42	37.8	51
Q2	17	33	18	17	26	22.2	23
Q3	11	7	10	7	11	9.2	13
Q4	4	1	1	2	5	2.6	6



Nevertheless, the percentage of papers published in Q1 has remained more or less stable around 50%, with the figure for 2020 (55%) being slightly above the average for the preceding five years (53%). In agreement to this, the figure for the three-quarters, with the figure of 2020 (77th percentile) being virtually the same as the average for the preceding five years. In contrast, during the past three years the mean impact factor has significantly raised above 2,

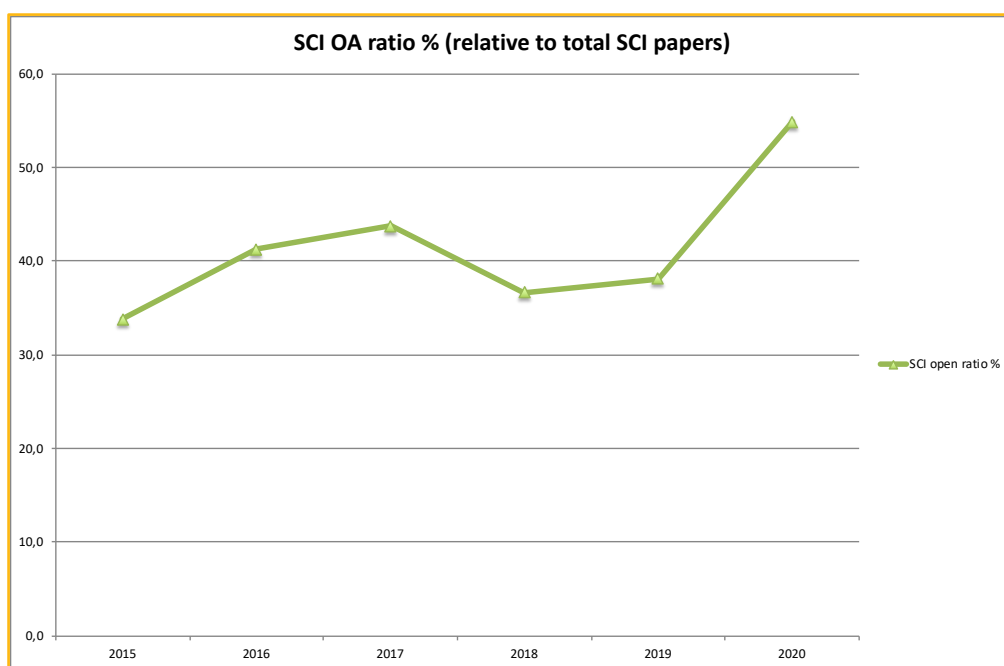
and the figure for 2020 (3.4) is above that in 2019 (3.1) and much higher than the average for the previous five years (2.4). In all probability, this is related to the publication of papers in other areas that, at equal percentiles, have higher impact factors. Be that as it may, the current mean impact factor is the highest ever attained by the ICP.

SCI PRODUCTION IMPACT & QUALITY (2015–2019 vs. 2020)							
METRICS	2015	2016	2017	2018	2019	AVERAGE	2020
Q1 ratio	54.9	48.8	54.7	56.7	50.0	52.6	55.4
Median JIF%	80.8	73.8	77.3	78.5	76.1	77.3	76.8
IFGM	2.11	1.99	2.17	2.58	3.05	2.36	3.33



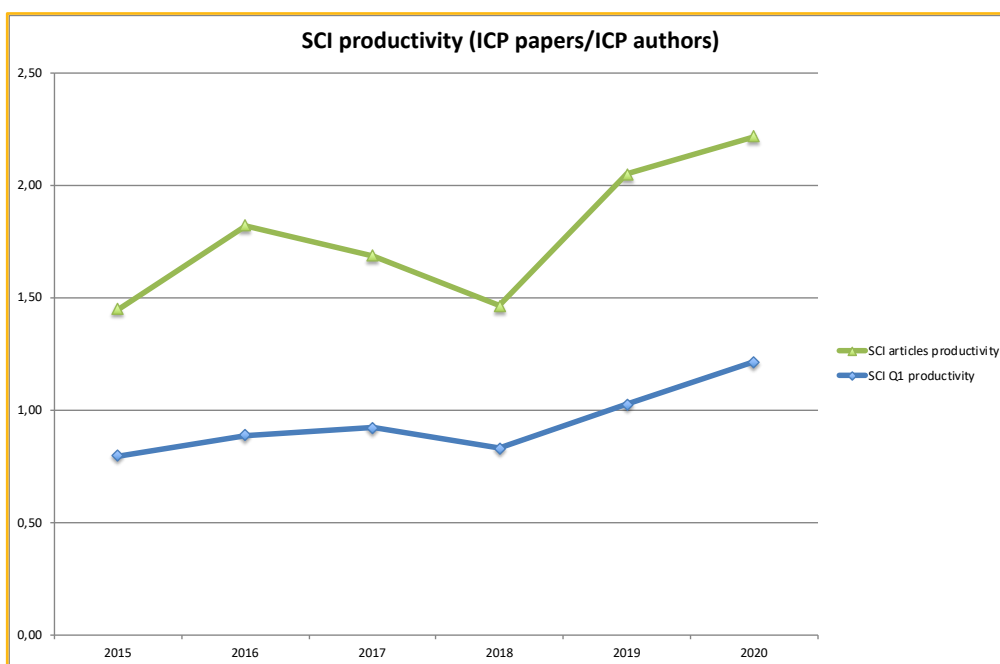
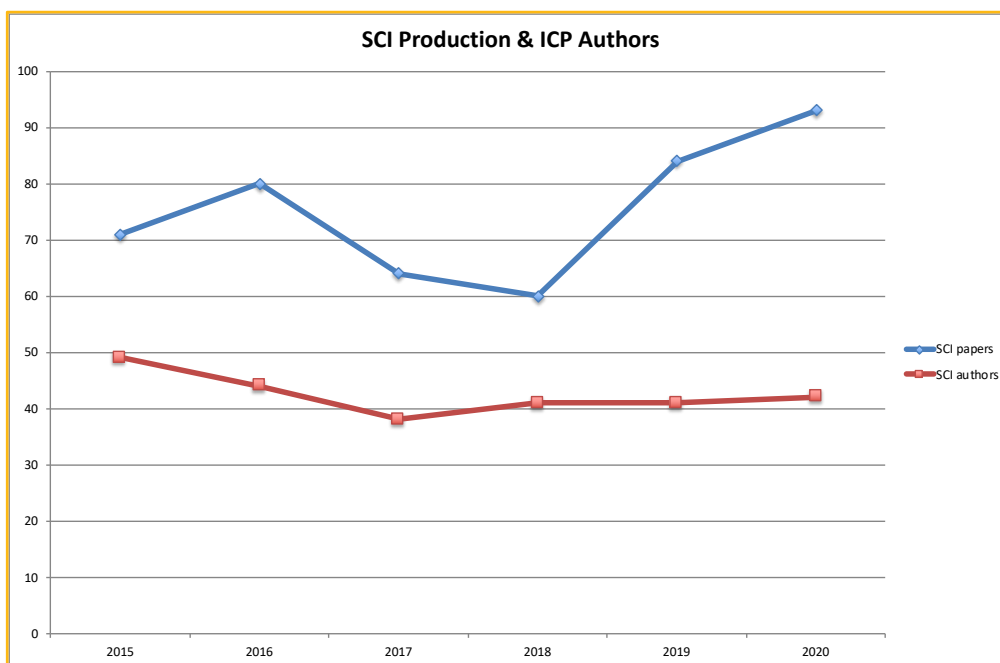
With regard to the open access ratio, the 2020 percentage (55%) is well above the average for the five preceding years (39%), and represents the highest figure attained by the ICP ever. It should be stressed that these figures do not take into account papers published using green open access (such as postprints subsequently posted in digital repositories). If these were included, the 2020 figure would raise to 66%, as compared to an average of 53% for the preceding five years.

OPEN ACCESS (2015–2019 vs. 2020)							
METRICS	2015	2016	2017	2018	2019	AVERAGE	2020
OA ratio	33.8	41.3	43.8	36.7	38.1	38.7	54.8



Productivity. The number of ICP authors (including researchers, research associates, collaborators, etc.) is lower than that of SCI papers published each year. The number of ICP authors for 2020 (42) is slightly below the average for the preceding five years (43). The increase in the absolute number of SCI and Q1 publications therefore results in a relative increase in SCI productivity (production/authors) as compared to the average values for the five preceding five years (2.2 and 1.2 vs. 1.7 and 0.9, respectively). These figures confirm the increasing trend started in 2019 and represent the best results in productivity terms for the ICP ever.

SCI PRODUCTIVITY (2015–2019 vs. 2020)							
METRICS	2015	2016	2017	2018	2019	AVERAGE	2020
ICP SCI authors	49	44	38	41	41	42.6	42
SCI productivity	1.45	1.82	1.68	1.46	2.05	1.69	2.21
Q1 productivity	0.80	0.89	0.92	0.83	1.02	0.89	1.21



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:

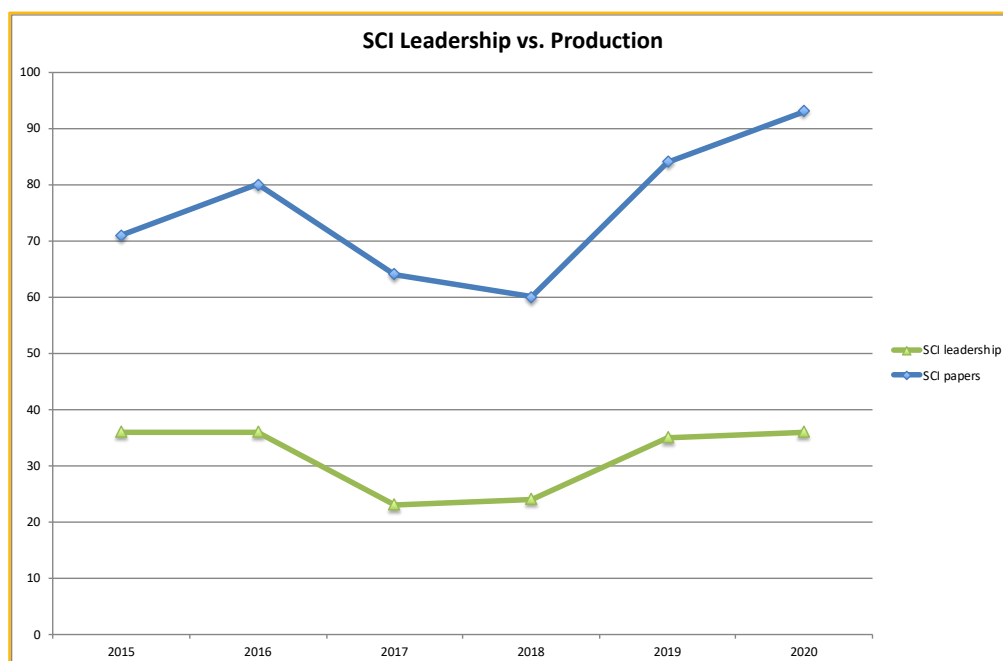
- SCI leadership = total number of SCI papers with ICP corresponding author.
- Q1 leadership = total number of Q1 papers with ICP corresponding author.
- SCI leadership ratio = SCI leadership / SCI x 100 (in %).
- Q1 leadership ratio = Q1 leadership / SCI x 100 (in %).

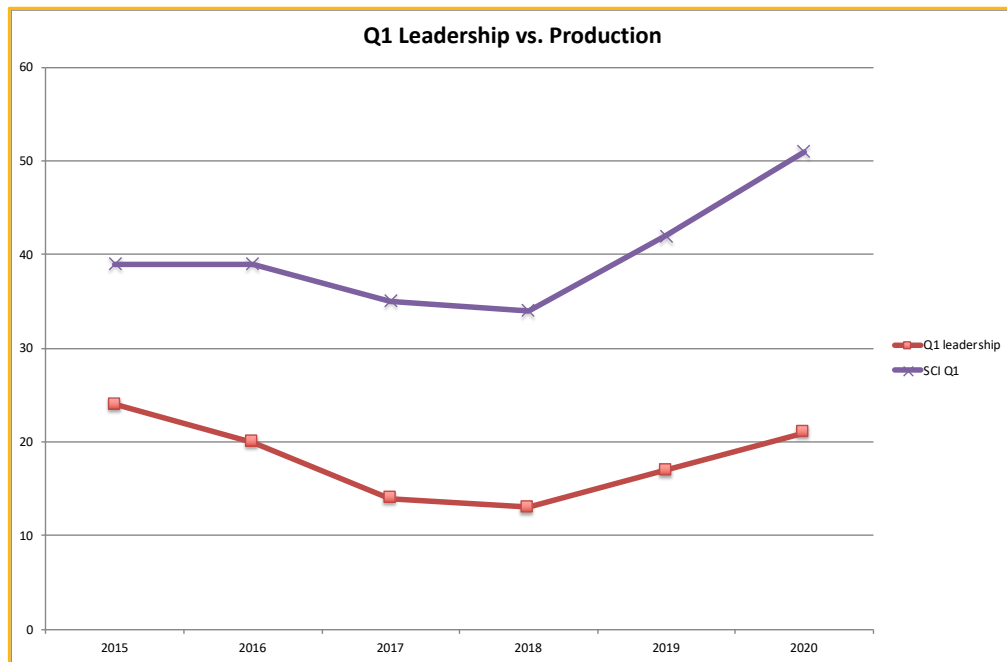
In turn, to measure collaborations (with emphasis on international ones), SCI papers are divided into three categories based on the affiliations of the coauthors from other institutions (i.e., excluding other affiliations of ICP researchers or research associates with more than a single affiliation):

- 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 2020 are above the average for the past five years (36 and 20 vs. 21 and 18, respectively), closely approaching the figures for 2015 and 2016. In relative terms, however, the leadership ratios for both SCI and Q1 papers are still slightly below the average for the preceding years (39% and 41% vs. 43% and 47%, respectively), although they remain stable since 2017 after the decrease compared with the two previous years.

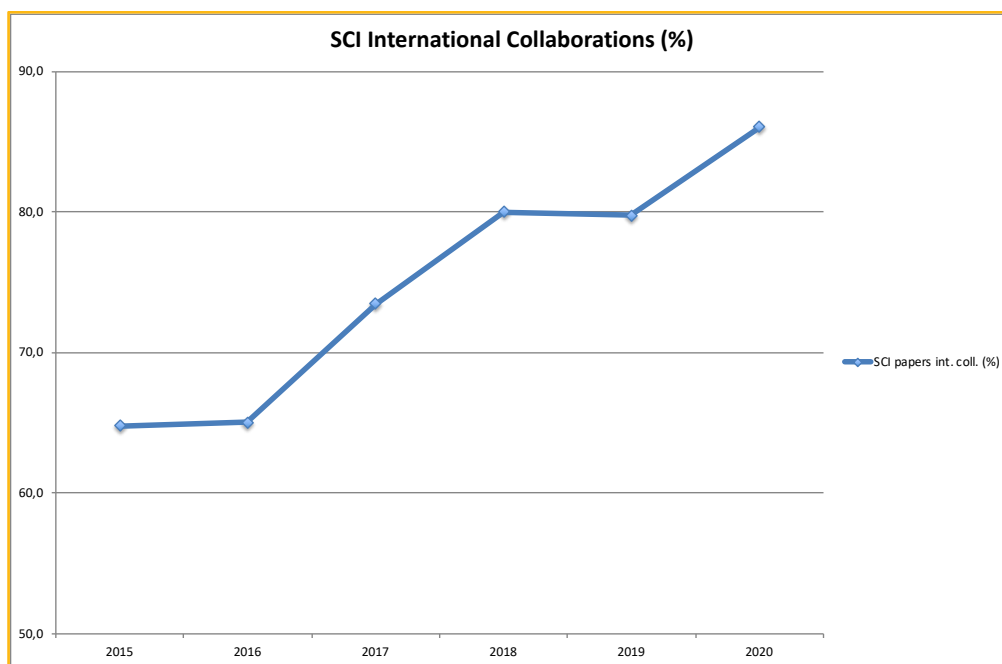
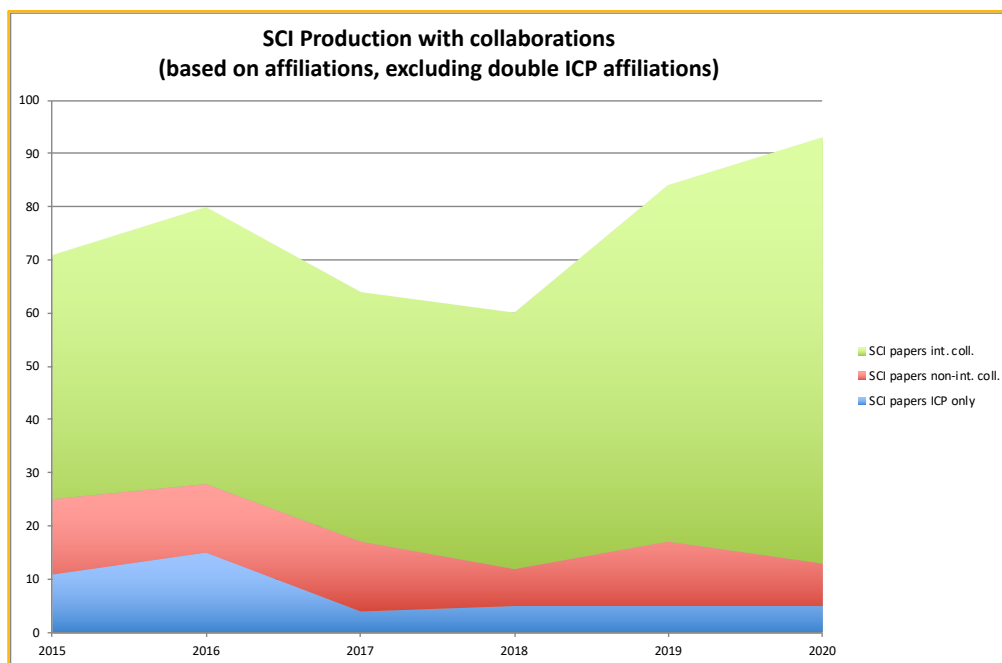
SCI LEADERSHIP (2015–2019 vs. 2020)							
LEADERSHIP	2015	2016	2017	2018	2019	AVERAGE	2020
SCI leadership	36	36	23	24	35	30.8	36
Q1 leadership	24	20	14	13	17	17.6	21
SCI leadership ratio (%)	50.7	45.0	35.9	40.0	41.7	42.9	38,7
Q1 leadership ratio (%)	61.5	51.3	40.0	38.2	40.5	46.6	41.2





Collaborations. During the last years there is a clear trend toward increasing international collaborations in SCI papers. In 2020 they were higher in both absolute and relative terms (78 and 86%) as compared with the average of the five preceding years (52 and 72%, respectively).

SCI PRODUCTION WITH COLLABORATIONS (2015–2019 vs. 2020)							
PRODUCTION ACCORDING TO COLLABORATIONS	2015	2016	2017	2018	2019	AVERAGE	2020
SCI papers – ICP only	11	15	4	5	5	8.0	5
SCI papers – non-international collaboration	14	13	13	7	12	11.8	8
SCI papers – international collaboration	46	52	47	48	67	52.0	80
SCI papers – ICP only (%)	15.5	18.8	6.3	8.3	6.0	11.1	5.4
SCI papers – non-international collaboration (%)	19.7	16.3	20.3	11.7	14.3	16.4	8.6
SCI papers – international collaboration (%)	64.8	65.0	73.4	80.0	79.8	72.4	86.0



PhD Dissertations

Two PhD dissertations of ICP predoctoral researchers/PhD students were finished in 2020 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). They are the following:

- **Joan Femenias-Gual:** “El gènere *Agerinia* (Primates, Adapiformes) i la seva evolució durant l'Eocè inferior al nord-est de la península Ibèrica” | Supervisors: S. Moyà-Solà (ICP), R. Minwer-Barakat (ICP).
- **Sílvia Jovells-Vaqué:** “Early Miocene cricetids from the Vallès-Penedès Basin (Catalonia): taxonomy, biostratigraphy and paleoecological implications” | Supervisor: I. Casanovas-Vilar (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 2020 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 2018–2021:

- **Els Casots-Vinya:** Excavation and documentation | Municipality: Subirats | Age: middle Miocene | Directors: S. Jovells-Vaqué, I. Casanovas-Vilar & J. Abella.
- **Aiguamúrcia, el Pont d'Armentera i Querol:** Prospection and documentation | Municipality: Aiguamúrcia, el Pont d'Armentera i Querol | Age: Triàssic | Directors: Josep Fortuny, Ramon Mercedes & R. Matamalas.
- **Can Xivill:** Excavation and documentation | Municipality: Odèn | Age: Triàssic | Directors: J. Fortuny, A. Bolet, and R. Garcia-Artigas.
- **Conca de Tremp:** Prospection, sampling, and documentation | Municipality: Isona i Conca Dellà, Tremp, Abella de la Conca | Age: Cretaci | Directors: A.G. Sellés & R. Gaete.
- **Les Gavarres:** Excavation and documentation | Municipality: Tremp | Age: Late Cretaceous | Directors: B. Vila, A. Prieto-Márquez & D. Castanera.
- **Pedrerres de Meià:** Excavation, sampling and documentation | Municipality: Vilanova de Meià | Age: Early Cretaceous | Directors: À. Galobart, A. Gil.
- **Montseny-Figaró:** Prospection, sampling, and documentation | Municipality: Tagamanent, Aiguafreda, Centelles, Balenyà, Bigues, Ametlla del Vallès, Montmany-Figaró, and el Brull | Age: Middle Triassic | Directors: J. Fortuny & Eudald Mujal.

- **La Carrière:** Excavation, sampling and documentation | Municipality: Corneilla-de-Conflent (França) | Age: Pleistocene | Director: J. Madurell-Malapeira.

Additionally, the following preventive paleontological interventions was also performed:

- **Pinyes/Mirdor del Cretaci:** Consolidation/restoration/conditioning | Municipality: Coll de Nargó | Age: Cretaci | Director: À. Galobart.
- **Cal Torrades (=Ca l'Andreu de Valldarques):** Consolidation/restoration/conditioning | Municipality: Coll de Nargó | Age: Cretaci | Director: A. Gil, A.G. Sellés & O. Castillo.

FUNDRAISING

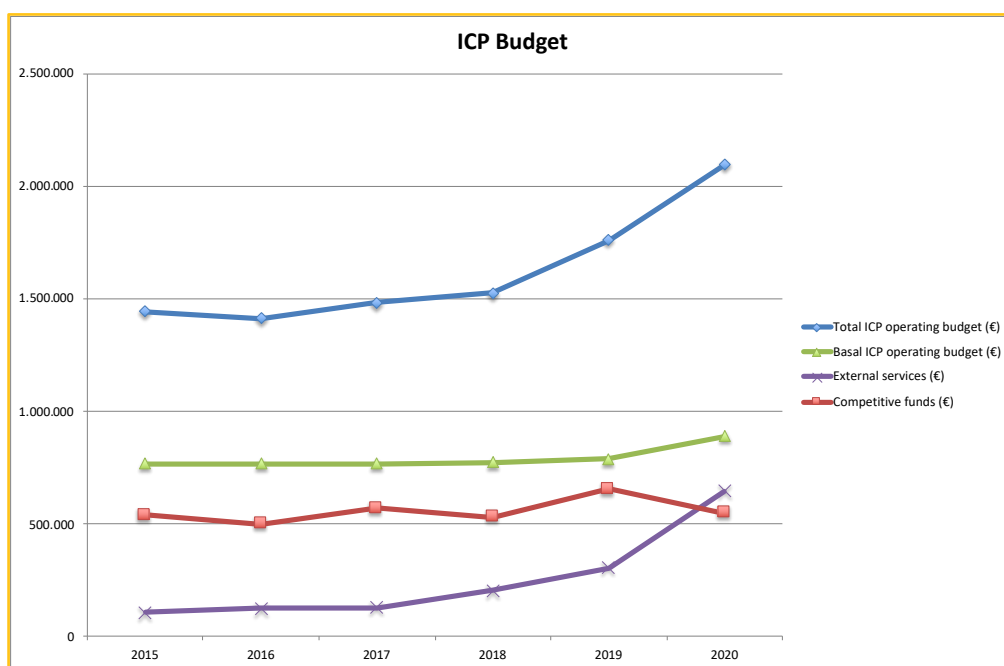
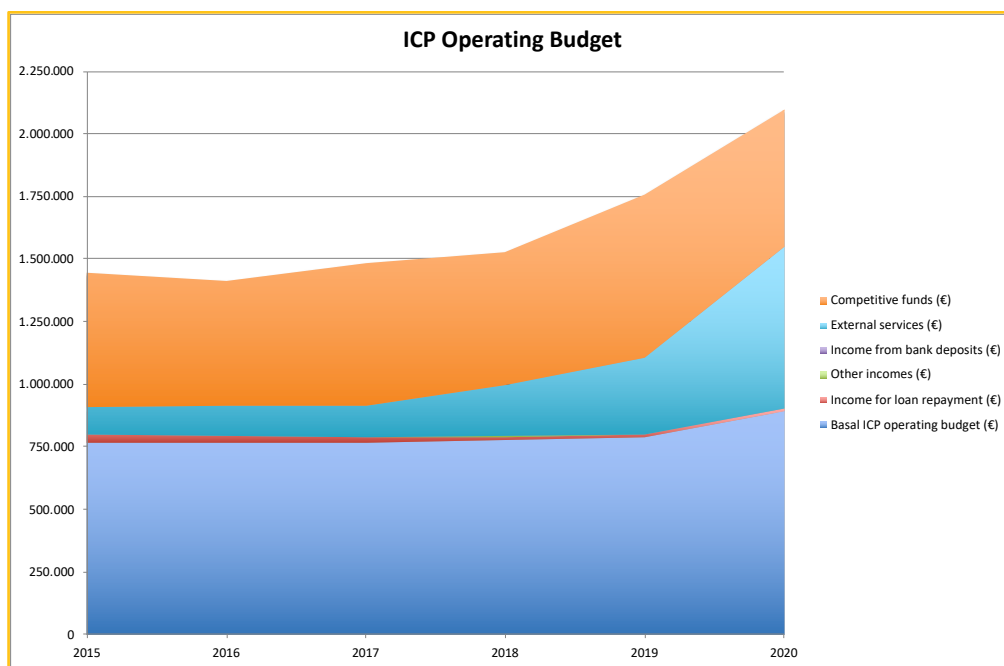
Inspiration and innovation when seeking financial support

Competitive funds and provision of services

The ICP operating budget (i.e., excluding investments) includes the basal budget endowed by the Generalitat de Catalunya 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 2020 (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.

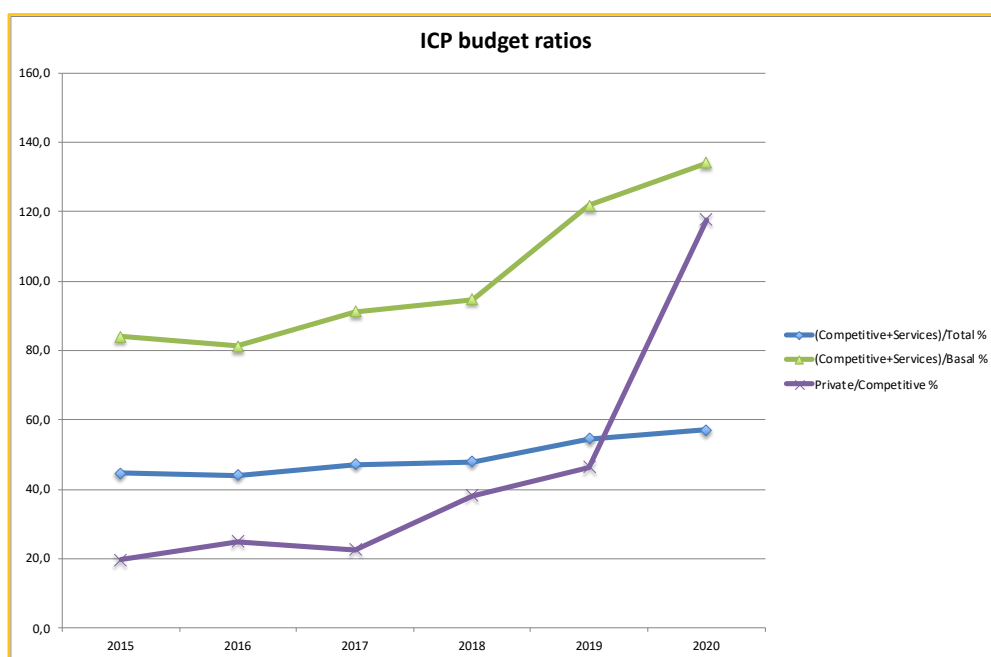
Total operating budget. Since the last significant decrease of the basal operating budget from 2012 to 2013, the total operating budget of the ICP had remained quite stationary until 2017-2018, when it started to increase slightly. The increase in the total operating budget has been much more marked during the last couple of years, being mostly attributable to a very significant increase in service provision, and only to a smaller extent to the increase in the basal operating budget—thanks to additional financial envelopes from the Generalitat de Catalunya, including: funds from the Business and Knowledge Department to increase the wages of the structural personnel (in 2019 and 2020) as well as to compensate for the effects of the COVID-19 pandemic (in 2020); and funds from the Culture Department to manage de Dinosaurs from the Pyrenees project (in 2020). It is noteworthy that the latter funds increased from 50,000 to 75,000 € in 2020. However, until 2019 such funds were provided to the ICP as a grant, whereas in 2020 they were transferred directly. As a result, in 2020 such funds have been computed as part of the basal budget, which further explains the apparent decrease in competitive funds as compared with 2019.

OPERATING BUDGET (2015–2019 vs. 2020)							
BUDGETARY INCOMES	2015	2016	2017	2018	2019	AVERAGE	2020
Total operating budget (€)	1,442,987	1,412,922	1,482,826	1,526,060	1,759,511	1,524,861	2,095,010
Basal operating budget (€)	765,500	765,500	765,500	774,070	787,470	771,608	890,206
Income for loan repayment (€)	34,896	25,221	19,467	15,091	12,576	21,450	10,309
Other incomes (€)	0	0	0	4,676	111	958	878
Income from bank deposits (€)	0	0	0	0	0	0	7
Provision of external services (€)	105,259	123,872	128,416	202,317	303,574	172,688	645,465
Competitive funds (€)	537,332	498,329	569,443	529,905	655,780	558,158	548,146



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, the former represented for the first time more than 50% of the total budget (55%) and more than the amount of the basal budget (122%). These figures have improved further in 2020 (respectively, 57% and 134%), thanks to an additional increase in service provision relative to competitive funds: in 2019, service provision represented slightly less than half competitive funds, whereas in 2020 they even surpassed the total amount of competitive funds. In other words, both in absolute and relative terms, service provision represented in 2020 a higher proportion of fundraising than ever before in the history of the ICP.

BUDGET RATIOS (2015–2019 vs. 2020)							
RATIOS	2015	2016	2017	2018	2019	AVERAGE	2020
(Competitive+External services)/Total %	44.5	44.0	47.1	48.0	54.5	47.6	57.0
(Competitive+External services)/Basal %	83.9	81.3	91.2	94.6	121.8	94.6	134.1
Private/Competitive %	19.6	24.9	22.6	38.2	46.3	30.3	117.8



Competitive funding sources

Spanish Government. Most of the competitive funds for research at the ICP come from the Spanish Agencia Estatal de Investigación—currently within the Ministerio de Ciencia, Innovación y Universidades (MICINN), formerly Ministerio de Economía y Competitividad (MINECO)—by means of multiannual R+D projects that are financed with funds from the European Regional Development Fund. They are the following:

- “Evolución del ciclo vital de los mamíferos en ecosistemas ibéricos continentales del Mioceno al Pleistoceno” (CGL2015-63777-P) | P.I.: M. Köhler, J. Quintana Cardona | Duration: 2016–2020.
- “Dinámica de la paleobiodiversidad de las faunas de vertebrados fósiles del Vallès-Penedès y comparación con otras cuencas miocenas” (CGL2016-76431-P) | P.I.: D.M. Alba, D. DeMiguel | Duration: 2017–2020.
- “Los primates del Cenozoico de la Península Ibérica: evolución, aspectos paleoambientales y paleobiogeográficos” (CGL2017-82654-P) | P.I.: S. Moyà-Solà, R. Minwer-Barakat | Duration: 2018–2020.

Research at the ICP is also funded by MICINN by means of 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) and for the training of university personnel (Formación de Personal Universitario, FPU)—the latter further 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 2020 (also listed is one granted in 2020, to start in 2021):

- Guillem Pons-Monjo (PTA2015-10789-I) | Modality: PTA technician | Duration: 2017–2020 (3 years).
- Marina Rull (PTA2015-10417-I) | Modality: PTA technician | Duration: 2017–2020 (3 years).
- Teresa Calderón (BES-2016-078938) | Modality: FPI predoc | Duration: 2017–2021 (4 years).
- Rafel Matamales-Andreu (FPU17/01922) | Modality: FPU predoc | Duration: 2018–2022 (4 years).
- Florian Bouchet (PRE2018-083299) | Modality: FPI predoc | Duration: 2019–2023 (4 years).
- Albert Prieto-Márquez (RYC-2015-17388) | Modality: RyC researcher | Duration: 2017-2022 (5 years).
- Arnau Bolet (IJC2018-037685-I) | Modality: JdC Incorporación researcher | Duration: 2020-2023 (3 years).
- Andrea Villa (FJC2019-039443-I) | Modality: JdC Formación researcher | Duration: 2021-2023 (2 years).

Generalitat de Catalunya. A large proportion of the competitive funding provided by the Generalitat de Catalunya in 2018 comes from various fieldwork grants from the Department of Culture, active from 2018 to 2021 (indeed, these funds were granted in December 2018, but with retroactive effects beginning in January). They are the following:

- “Evolució dels ecosistemes durant la transició Paleozoic-Mesozoic a Catalunya” (CLT009/18/00066) | P.I.: J. Fortuny | Duration: 2018–2021.

- “Xarxes paleoecològiques dels jaciments amb dinosaures del Cretaci català” (CLT009/18/00067) | P.I.: À. Galobart | Duration: 2018–2021.
- “El jaciment paleontològic dels Casots, un ecosistema de fa 16 milions d’anys. Recerca, recuperació patrimonial i socialització” (CLT009/18/00068) | P.I.: I. Casanovas-Vilar | Duration: 2018–2021.
- “Els primats i altres vertebrats del Paleogen de Catalunya” (CLT009/18/00069) | P.I.: J. Marigó | Duration: 2018–2021.
- “La transició del Pleistocè inferior-mitjà a Catalunya” (CLT009/18/00070) | P.I.: J. Madurell-Malapeira | Duration: 2018–2021.
- “Els primats fòssils del Miocè de la conca del Vallès-Penedès” (CLT009/18/00071) | P.I.: S. Moyà-Solà | Duration: 2018–2021.

Also remarkable are the grants provided by the Catalan Government to the ICP, generally in relation to the management the ICP Museum and collections. The grant related to the pandemic was approved in late 2020 but not communicated until early 2021, and hence it is considered to apply in 2021:

- “Actualització del registre, inventari, documentació, catalogació i digitalització de la Col·lecció de l’Institut Català de Paleontologia Miquel Crusafont, any 2020” (CLT052/20/0004) | OSIC, Departament de Cultura, Generalitat de Catalunya | Duration: 2020.
- “Pèrdues per cancel·lació d’espectacles i activitats culturals amb motiu de la COVID-19” (CLT39C/20/000630) | Oficina de Suport a la Iniciativa Cultural, Departament de Cultura, Generalitat de Catalunya | Duration: 2021.

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. Also listed are those granted in 2020 (even if to start in 2021), including one BP contract that was relinquished by the grantee:

- Sílvia Jovells-Vaqué (2017 FI_B 00054) | Modality: FI predoc | Duration: 2017–2020 (3 years).
- Leonardo Sorbelli (2019 FI_B 00579) | Modality: FI predoc | Duration: 2019–2022 (3 years).
- Chabier De Jaime-Soguero (2020 FI_B 00472) | Modality: FI predoc | Duration: 2020–2023 (3 years).
- Judit Marigó (2017 BP 00003) | Modality: BP postdoc | Duration: 2019–2021 (2 years).
- Diego Castanera (2017 BP 00195) | Modality: BP postdoc | Duration: 2019–2021 (2 years).
- Juan Abella (2017 BP 00223) | Modality: BP postdoc | Duration: 2019–2021 (2 years).
- Júlia Arias-Martorell (2018 BP 00058) | Modality: BP postdoc | Duration: 2020–2023 (3 years).
- Àngel H. Luján (2019 BP 00154) | Modality: BP postdoc | Duration: 2021–2023 (3 years).

- Emanuel Tschopp (2019 BP 00086) | Modality: BP postdoc | Duration: 2021–2023 (3 years), no accepted yet.
- Ornella Bertrand (2019 BP 00075) | Modality: BP postdoc | Duration: relinquished (3 years).

Finally, it is noteworthy that three research groups of the ICP are currently recognized as Consolidated Research Group by AGAUR (although only one has associated funding). The validity of these research groups was recently extended from the end of 2020 to September 30, 2021:

- “Paleoprimatologia i paleontologia humana (PIPH)” (2017 SGR 00086 GRC) | P.I.: S. Moyà-Solà | Duration: 2017–2021. With funding.
- “Neogene and Quaternary Vertebrate Paleobiodiversity (NQVP)” (2017 SGR 00116 GRC) | P.I.: D.M. Alba | Duration: 2017–2021.
- “Paleoecology and Evolutionary Biology (PEB)” (2017 SGR 00960 GRC) | P.I.: M. Köhler | Duration: 2017–2021.

Other public funds. In 2020 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:

- “Excavacions Miquel Crusafont” (338 4834000) | P.I.: I. Casanovas-Vilar | Duration: 2020.

The ICP also received a small grant from the Consell Insular de Menorca for actions to improve the knowledge, safeguard and dissemination of the historical heritage of Menorca:

- “Article “Menorca abans dels dinosaures: estudi dels vertebrats fòssils del Permià del jaciment de la cala del Pilar (Menorca, Illes Balears, Mediterrània Occidental)”” (EXP. 2112-2020-000001) | P.I.: J. Fortuny | Duration: 2020-2021.

Furthermore, during 2020 three grants from the Consell Insular de Mallorca were granted to the ICP to recover paleontological spaces (two grants) and to cover the fieldwork activities performed in that island (one grant):

- “Restauració d’alguns del fòssils del Permià inferior (270 milions d’anys) del jaciment del torrent de na Nadala (Mallorca) recuperats l’any 2019” | P.I.: J. Fortuny | Duration: 2020.
- “Restauració del fòssil de *Nothosaurus* del Museu Balear de Ciències Naturals (Sóller, Mallorca)” | P.I.: J. Fortuny | Duration: 2020.
- “Mallorca abans dels dinosaures: estudi dels ecosistemes continentals del Permià i Triàsic, amb especial èmfasi en les restes de vertebrats” | P.I.: J. Fortuny | Duration: 2020-2022.

European funds. A research funded by the French Direction Régionale des Affaires Culturelles from Montpellier was active from previous years:

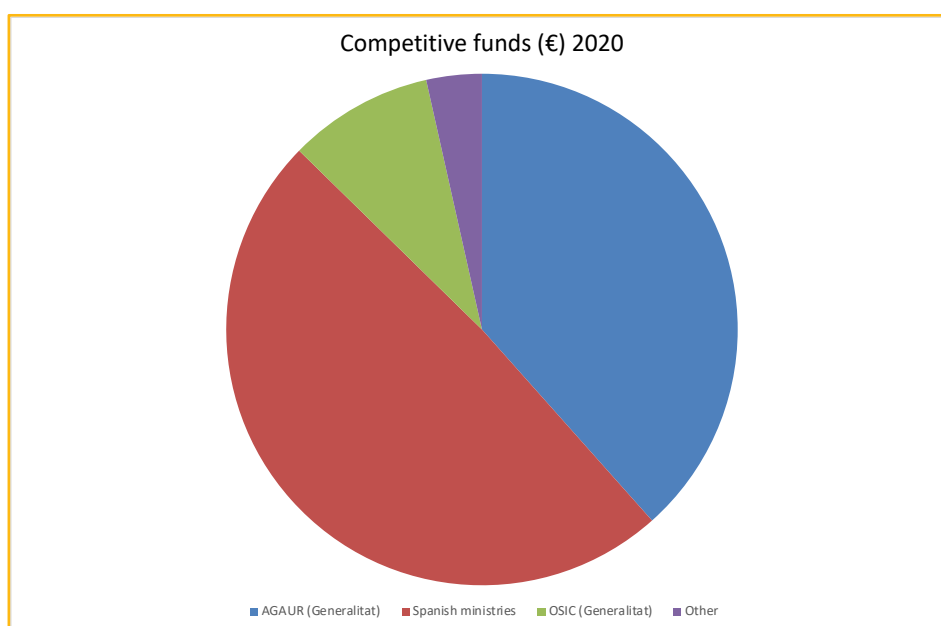
- “Projet de fouille programmée dans le Grotte de la Carrière (Gorges de Villefranche, Pyrénées-Orientales, Occitanie)” (660570016) | P.I.: J. Madurell-Malapeira | Duration: 2018-2020.

Furthermore, although in 2020 the ICP received no European/transnational funds, 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.

Comparisons. When all types of grants (research projects and contracts) are considered together, it can be seen that funding from the Spanish government in 2020 (211 k€) decreased as compared with the two previous years, and represented about 49% of the ICP competitive funds. This is mostly attributable that some MICINN projects terminated in 2019, while others where in their last year in 2020. Given that the new projects requested in 2020, even if granted, will not start until 2022, it may be predicted that Spanish funds will further decrease the next year. In turn, the funds from the Generalitat de Catalunya in 2020 (261 k€ when AGAUR and OSIC are considered together) also decreased slightly relative to 2019, although in this case this is attributable to the fact that the funds for the Dinosaurs of the Pyrenees project are now integrated in the basal funds.

COMPETITIVE FUNDS (2018-2020)			
SERVICES	2018 (€)	2019 (€)	2020 (€)
AGAUR (Generalitat)	53,292	161,442	210,600
Spanish ministries	399,307	351,642	268,061
OSIC (Generalitat)	71,720	139,697	50,285
Other	5586	3,000	19,200
TOTAL	529,905	655,780	548,146

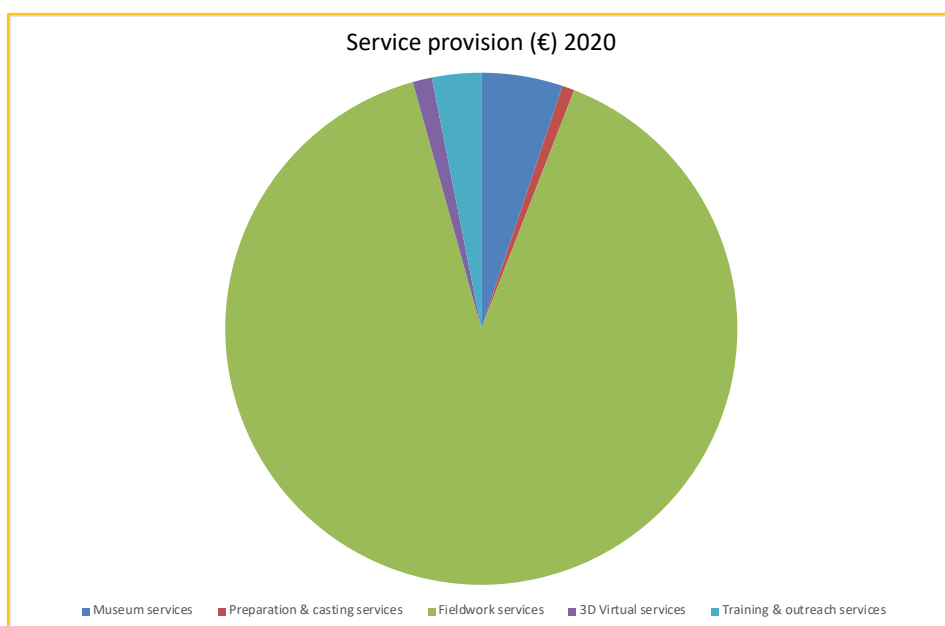


Most of the competitive income from AGAUR corresponded to research grants (Beatriu de Pinós postdoc and FI predoctoral contracts), except for a small proportion corresponding to support to consolidated research groups, while that from OSIC corresponded exclusively to research projects. In contrast, the competitive income from the Spanish government was more devoted to both: 184 k€ for grants (FPI and FPU predoctoral grants, as well as Juan de la Cierva and Ramón y Cajal contracts) and 84 k€ for MICINN projects—as compared to 167 and 185 k€ in 2019 and 181 and 218 k€ in 2018, respectively. This reflects the aforementioned fact that the MICINN projects terminated in 2019 and 2020, while no new projects started during these years.

Service provision

Almost 90% of service provision in 2020 corresponds to fieldwork services, which experience a threefold increase relative to the previous year (from 185 to 579 k€). As a result, the remaining activities represent a smaller percentage of total service provision: 5% museum services, 3% training and outreach services, and 1% both 3D virtual services and preparation and casting services. In absolute terms, 3D virtual services increased slightly, while the remaining types of services decreased to some extent.

PROVISION OF SERVICES (2017-2020)				
SERVICES	2017 (€)	2018 (€)	2019 (€)	2020 (€)
Museum services	65,665	66,209	56,614	33,163
Preparation & casting services	30,067	47,794	25,529	5,002
Fieldwork services	16,586	59,808	184,726	579,462
3D virtual services	1,240	4,000	4,037	7,837
Training and others	14,858	24,506	32,669	20,000
TOTAL	128,416	202,317	303,574	645,464



In the case of museum services, which include activities related to both the ICP Museum in Sabadell (tickets, museum shop, guided visits/workshops, etc) as well as the management of the Conca Dellà Museum in Isona and Diosfera in Coll de Nargó, the decrease is mostly attributable to the decrease in museum tickets and sells in the museum show, which together decreased more than 30% (from 17.0 k€ to 11.7 k€) due to the lockdown and subsequent additional restrictions throughout 2020 due to the pandemic.

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. In 2019 this was not possible due to the lack of a project manager and the impossibility to join the Jurassic Project of The Children's Museum of Indianapolis (due to the lack of sufficient resources). However, renewed efforts were devoted to fundraising from donors and sponsors in 2020, following the recruitment of a new project manager. The required actions have yet to be implemented, but would consist in seeking sponsors in relation to 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.

In-kind income. The in-kind income received by the ICP during 2020 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 Area and Leader of the Life History Evolution Research Group.
- Several 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 Universitat Autònoma de Barcelona grants to the ICP personnel access to the UAB network and, hence, to the vast collection of digital documents subscribed by the university, including not only subscription journals and books, but also bibliometric databases such as

the Web of Science/Journal Citation Reports and Scopus. The ICP researchers also have access to the Scientificotechnical Services of the UAB at reduced fees.

- 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 an 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.
- The Generalitat de Catalunya lends to 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 2020, 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 885 fossil remains—as compared to 1,250 in 2017, 1,727 in 2018, and 1,749 in 2019. The decreased in the number of prepared remains is partly attributable to the fact that the Preparation Lab was closed since mid March to late May due to the COVID-19 lockdown. The prepared fossils mostly (but not exclusively) come from the following sites:

- Els Casots.
- Les Cases de la Valenciana.
- La Carrière.
- Torrent de Na Nadala (Mallorca).
- Móra d'Ebra.
- Vallparadís Estació.
- Abocador de Can Mata.
- B40 Olesa de Montserrat-Viladecavalls.
- Incarcal.

Other research support actions performed by our preparators include molding (58 molds in 2020), casting (76 casts in 2020), rigid packaging and special packaging for transport/shipping (384 packages in 2020), repair of didactic casts, preventive conservation of fossil remains, elaboration of conservation reports, and museological activities.

Collection management. During 2020, 4,708 new catalog numbers have been registered into the inventory of the ICP collections (as compared to 7,739 in 2017, 3,240 in 2018, and 6,880 in 2019). In turn, 3,641 records have been registered in the collection management software MuseumPlus during 2020 (compared with 3,776 in 2017, 3,181 in 2018, and 4,429 in 2019), and 2,528 records have been modified during the same period (compared with 501 in 2018 and 496 in 2019). A total of 28 petitions to study materials from the ICP collections have been attended by the Fieldwork & Collections Management Area of the ICP (83 in 2017, 64 in 2018, and 74 in 2019), of which 26 internal and 2 external. Finally, 1 loan of original material and/or casts have been done for exhibits or activities organized by other institutions. In general terms, the pandemic has not impacted much on collection management, but has drastically reduced the petitions to study material.

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 2020, ICP researchers from several research groups benefited from the assistance of a specialized technician from the 3D Virtual Lab of the Computational Paleobiology Research Group concerning the 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 segmentation of craniodental remains of both extant and fossil vertebrates (amphibians, reptiles and mammals), although part of the time was also devoted to photogrammetry (e.g., for 3D modeling fossil-bearing sites—in some cases using drones—or fossils such as tetrapod ichnites, but also large-sized mammalian specimens), 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 μ CT scanner from Burgos (Spain), mostly consisting of craniodental remains of Miocene age, but overall ranging from the Permian to the Pleistocene.

Paleontological services

The paleontological services provided by the ICP are based on the know-how of both 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 the 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. Unfortunately, these activities were repeatedly disrupted throughout 2020 due to the restrictions associated with the COVID-19 pandemic.

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 provided by the Culture Department of the Generalitat de Catalunya. 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 Conservation & Preparation 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 2020 were prepared in the framework of research support, so that service provision was focused on casting, including the reproduction (mold + cast) of an *Amphicyon* skeleton from els Casots and a cast of a *Dryopithecus* femur.

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 2020 under the direction of the ICP in the framework of the specialized remunerated services provided by the ICP to both private companies and administrations:

- **Dipòsit Controlat de Can Mata – Sector NO:** Prospection, surveillance, excavation, sampling, and documentation | Municipality: els Hostalets de Pierola | Age: middle to late Miocene | Directors: J.M. Robles, Esteban Meseguer | Company: Cespa Gestión de Residuos S.A.U. (Ferrovia).
- **Dipòsit Controlat de Can Mata – Sector SO:** Prospection, surveillance, excavation, sampling, and documentation | Municipality: els Hostalets de Pierola | Age: middle to late Miocene | Directors: V. Vinuesa, I. Llopart | Company: Cespa Gestión de Residuos S.A.U. (Ferrovia).
- **Vial d'accés al Cementiri de Roques Blanques:** Surveillance and excavation | Municipality: el Papiol | Age: Miocene | Directors: M. Grau, A. Martínez Ruz | Company: Gestió Integral de Cementiri Nomb, S.L.
- **Illeta 3 de Can Gambús, Fase 3:** Surveillance and excavation | Municipality: Sabadell | Age: Miocene | Director: A.G. Sellés | Company: ATICS, S.L.

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). The CT scan is particularly promising in the latter regard, because it is a singular infrastructure that is useful for academic research and industrial applications alike. Unfortunately, the CT scan of the ICP is currently damaged and requires a considerable amount to be fixed, which in 2020 and preceding 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, which was restricted to the landmarking of 3D virtual models of primate bones.

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 2020.

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 Survey of the Generalitat de Catalunya (in relation to fossil sites from Catalonia), and more sporadically (directly or indirectly) also to the Catalan Police (Mossos d'Esquadra) and/or forest rangers as regards to cases of plundering.

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), and which might generate pecuniary revenues for the center. Unfortunately, the pandemic precluded organizing courses after March,

so that in 2020 the ICP participated as coorganizer in a single course instructed by TS, which was performed at the ICP Museum in Sabadell with a total attendance of 12 alumni.

COURSES COORGANIZED WITH TRANSMITTING SCIENCE (2020)			
COURSE TITLE	VENUE	DATE	ORGANIZERS
Introduction to R (2 nd ed.)	Sabadell	9-13 March	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 will be valid until 2021. 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 2020, ICP researchers and technicians participated in the following three official master degrees:

- **Master in Paleobiology and Fossil Record (UAB/UB):** academic courses 2019–2020 and 2020–2021.
- **Master in Biological Anthropology (UB/UAB):** academic courses 2019–2020 and 2020–2021.

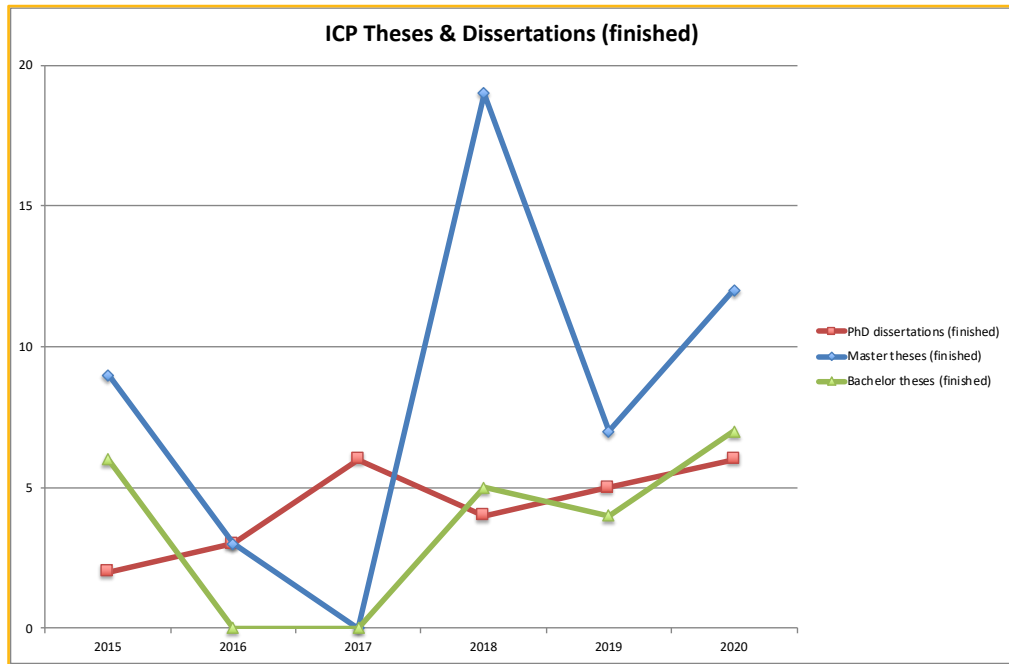
It is noteworthy that the Master in Paleobiology and Fossil Record (coorganized by the ICP, the UAB and UB) was resumed in academic year 2017–2018. This master is the successor of the former Master in Paleontology, in which the ICP participated since its start in 2007, until it was temporarily suspended in 2015 to be remodeled. The ICP played a prominent role in the remodeling of the master, and its teaching contribution represents as much as 35% (21/60) of the total ECTS credits (equating 146 teaching hours, the supervision of master theses excluded), by virtue of an agreement signed with the UAB and the UB in 2016. More than twenty ICP researchers, research associates and technicians participate as instructors in the master, and the co-coordinator of the master (M. Furió) is a researcher of the ICP with dual affiliation as associate professor to the UAB. The master had 6 students in 2020-2021, as compared 7 in 2017-2018, 5 in 2018-2019, and 13 in 2019-2020.

It is also noteworthy that the ICP participates in the “Campus d’Arqueologia i Paleontologia de la UAB” by means of the paleontology campus locations at Coll de Nargó and Isona, thanks to the collaboration between the ICP, the Geology Departament of the UAB, and the town councils of Isona i Conca Dellà and Coll de Nargó, respectively. Both locations, inaugurated in 2017, belong to the Geoparc Conca de Tremp-Monsec project and perform various research and teaching activities at the Dinosfera museographic space, the Conca Dellà Museum, and various fossil sites within the framework of the “Dinosaurs of the Pyrenees” project led by the ICP. Unfortunately, due to the pandemic there were no students in 2020, but the campus activity is expected to be resumed as soon as the pandemic allows.

Supervision. As in previous years, in 2020 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, or master students. 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 2020, 7 practicum agreements were formalized with the UAB (five students from the Geology degree and two students from the Master in the History of Science) and 2 with the UB (two students from the Fine Arts degree), implying a total 1600 working hours. 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 2020, our volunteers performed up to 160 hours in the Preparation Lab.

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 2016 and 2017, the number of finished master theses supervised was drastically reduced because the paleontology master in which ICP researchers teach the most had stopped in 2015 and was not resumed until September 2017. As a result, the number of supervised master theses increased again in 2018-2020 (albeit with considerable fluctuations). In 2020, the number of PhD Dissertations, master’s theses and bachelor’s theses (co)supervised by ICP personnel (respectively, 6, 12 and 7) was higher than the average of the five preceding years (4.0, 7.6 and 3.0, respectively). It is also noteworthy that, during 2020, up to 24 ongoing PhD dissertations were also (co)supervised by ICP researchers (S. Moyà-Solà, M. Köhler, À. Galobart, D.M. Alba, J. Fortuny, J. Madurell-Malapeira, I. Casanovas-Vilar and A. Prieto-Márquez) and research associates (E. Delson, S. Almécija, M. Delfino, À.H. Luján). Nine of these dissertations are being performed by current ICP predoc researchers/PhD students (T. Calderón, A. Urciuoli, S. McKenzie, R. Matamales-Andreu, F. Bouchet, L. Sorbelli, M. Prat-Vericat, J. Párraga, G. Pons-Monjo, C. De Jaime-Soguero, and M. Grau).

SUPERVISED MASTER THESES & PhD DISSERTATIONS (2015–2019 vs. 2020)							
CATEGORY	2015	2016	2017	2018	2019	AVERAGE	2020
PhD dissertations (finished)	2	3	6	4	5	4.0	6
Master’s theses (finished)	9	3	0	19	7	7.6	12
Bachelor’s theses (finished)	6	0	0	5	4	3.0	7



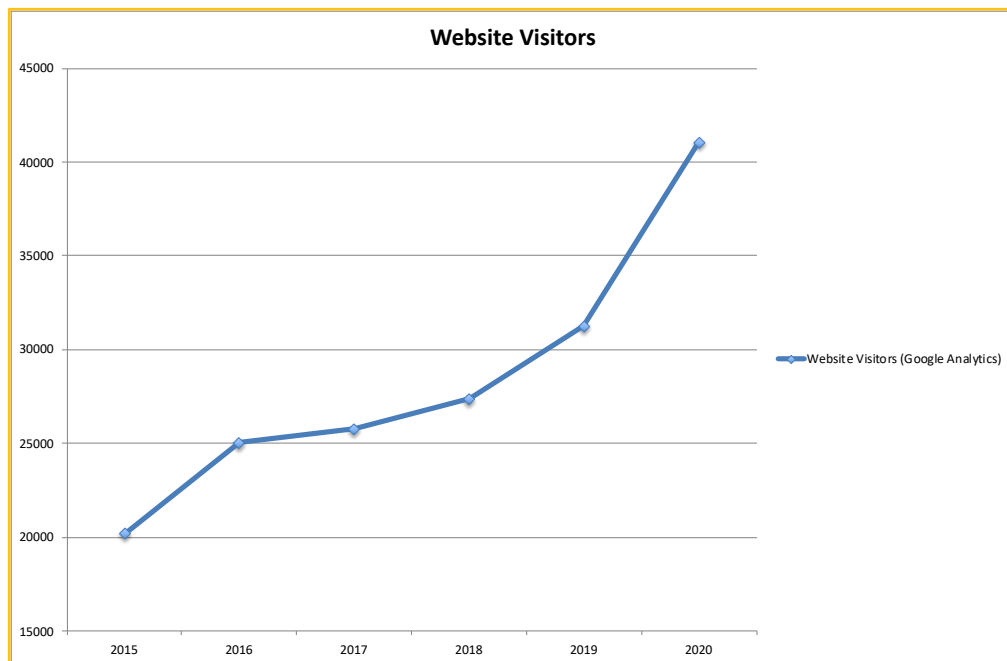
OUTREACH AND COMMUNICATION

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 must preferably be monitored based on the data recorded by Google Analytics (available since September 2015), given that the data from the web service provider (available since 2009) are not reliable (note that the Google Analytics figure for 2015 has been multiplied by three in the plot below to make it comparable to those for following years). These data indicate that the number of visitors to the ICP webpage in 2020 (42,029, of which 40,817 new and 212 returning visitors) displayed an increase as compared with the average of the five previous years (25,925).



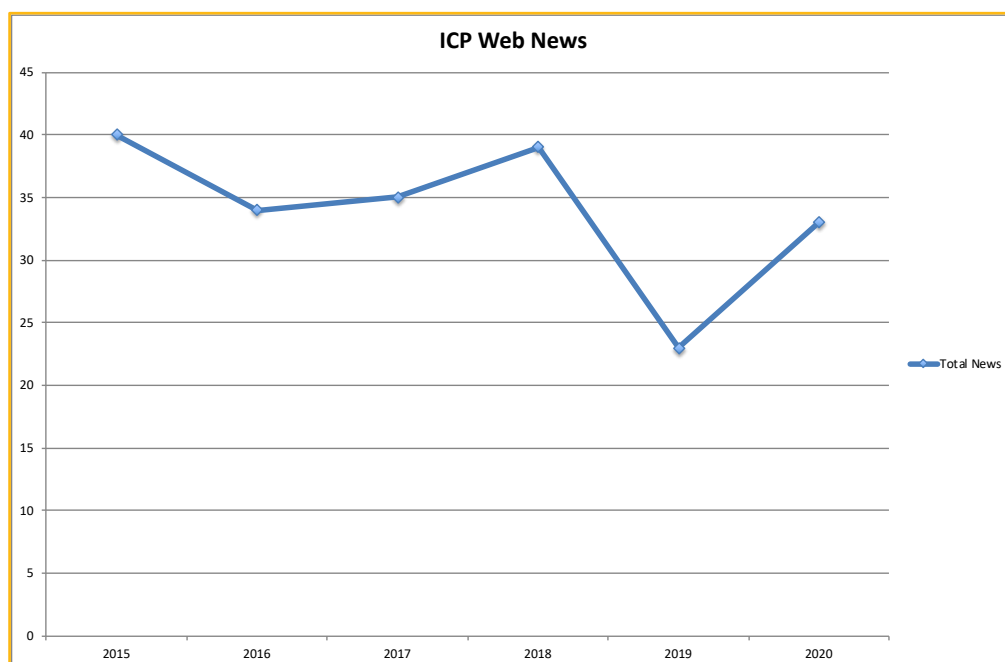
WEBSITE VISITORS (2015–2019 vs. 2020)							
DATA SOURCE	2015	2016	2017	2018	2019	AVERAGE	2020
Website Visitors (Google Analytics)	20,193	25,036	25,777	27,376	31,243	25,925	41,029

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 (e.g., inauguration of the new building, appointment of the new director, etc.).

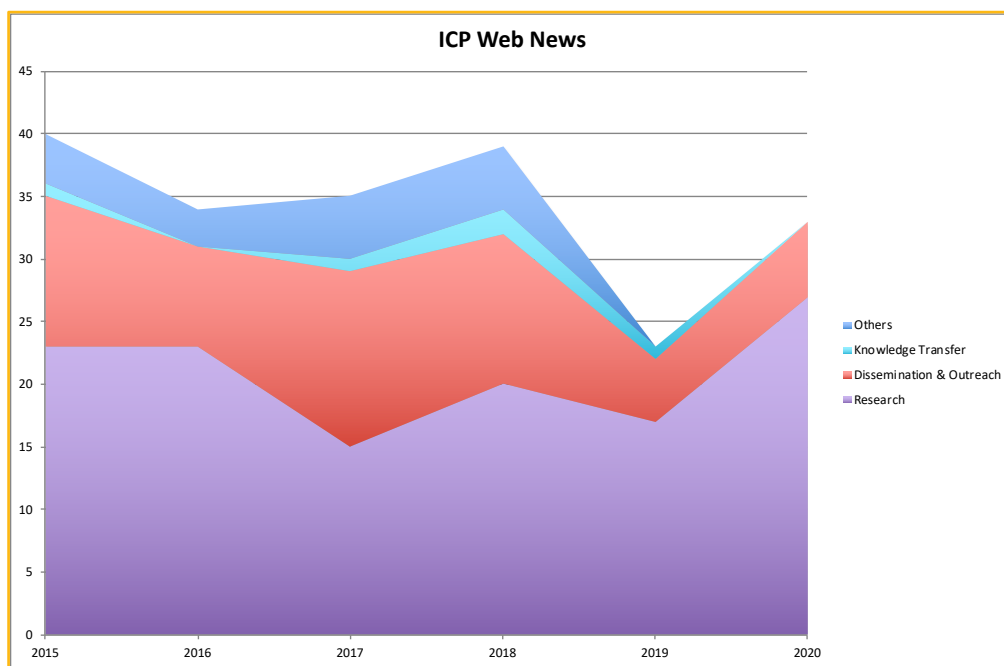
The total number of news posted in 2020 (33) is slightly below the average for the five preceding years (39) but much higher than or 2019 (23), when the Head of the Communication Area had to undertake other responsibilities during several months during which the General Manager was on medical leave.

WEB NEWS (2015–2019 vs. 2020)							
CATEGORY	2015	2016	2017	2018	2019	AVERAGE	2020
Research	23	23	15	20	17	19.6	27
Dissemination & Outreach	12	8	14	12	5	10.2	6
Knowledge Transfer	1	0	1	2	1	1.0	0
Others	4	3	5	5	0	3.4	0
Total News	40	34	35	39	23	39.0	33

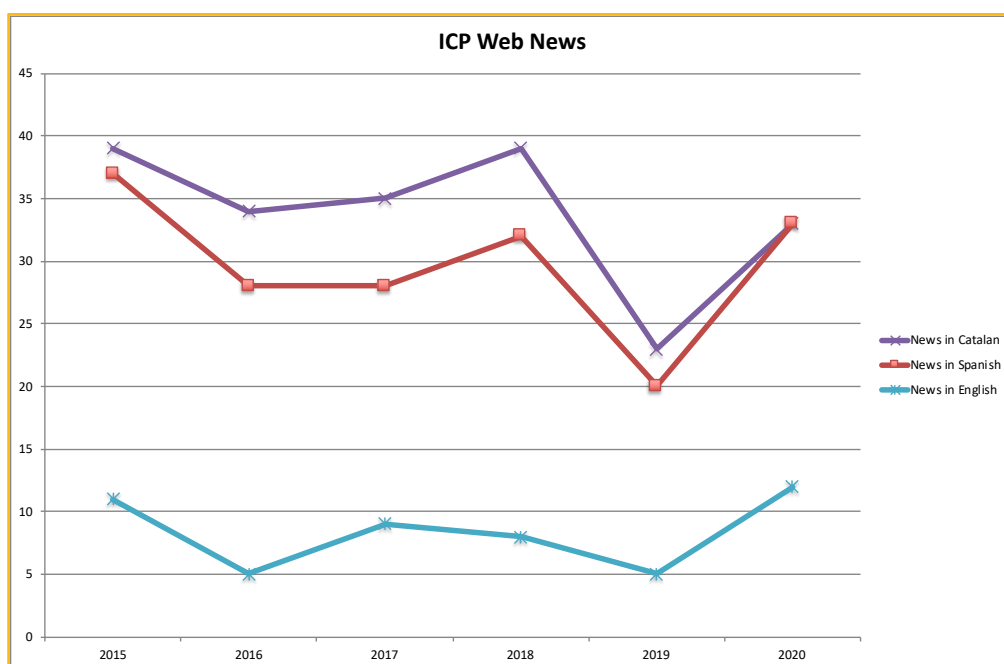


ICP WEB NEWS (2020)			
DATE	TITLE (CATALAN VERSION)	LANGUAGE	CATEGORY
23/1/20	L'os navicular del primat <i>Anchomomys</i> dona noves pistes sobre la seva locomoció	CAT ES	Research
10/1/20	ETN PUSHH: Paleoproteòmica per estudiar l'evolució del llinatge humà	CAT ES EN	Research
10/1/20	Seguint el rastre dels avantpassats dels amfibis a Alemanya	CAT ES	Research
11/2/20	Les dones de l'ICP	CAT ES EN	Diss. & Outreach
21/2/20	Arriba una nova edició de Cafès Científics a Sabadell	CAT ES	Diss. & Outreach
3/3/20	L'oïda interna amaga informació sobre el parentiu entre simis i humans	CAT ES EN	Research
4/3/20	El misteriós cas dels porcs desapareguts	CAT ES	Research
13/3/20	Tancament del Museu a causa de la pandèmia del COVID-19	CAT ES EN	Diss. & Outreach
1/4/20	Les proteïnes en l'esmalt dental d' <i>Homo antecessor</i> il·luminen el camí del llinatge humà	CAT ES	Research
2/4/20	Descrita una nova espècie de mustèlid del Miocè a Batallones	CAT ES	Research
20/4/20	Seguint el rastre dels dinosaures a Portugal	CAT ES	Research
22/4/20	Tancant el debat sobre el tipus de dieta dels primers homínids	CAT ES	Research
23/4/20	Aprofundint en la història evolutiva de la guineu roja	CAT ES	Research
30/4/20	Els taurons equatorians de l'Oligo-Miocè surten a la superfície	CAT ES	Research
12/5/20	Sabadell celebra el Dia Internacional dels Museus a la xarxa	CAT ES	Diss. & Outreach
3/6/20	Es localitzen dos fragments del meteorit de Barcelona que va caure el 1704	CAT ES	Research
12/6/20	A partir del 16 de juny, ens veiem al Museu!	CAT ES	Diss. & Outreach
23/7/20	Descobert a Líbia l'avantpassat dels cocodrils americans	CAT ES EN	Research
30/7/20	Aprofundint en l'evolució de l'escut del Triceratops	CAT ES EN	Research
7/9/20	Trobat a Sabadell l'exemplar més antic d'una espècie de dinoteri	CAT ES	Research
9/9/20	Lectures de tesi en temps de pandèmia: Joan Femenias defensa el seu treball sobre el primat de l'Eocè Agerinia	CAT ES EN	Research
10/9/20	El jaciment de dinosaures de la Peñuela s'obre al públic	CAT ES	Diss. & Outreach
11/9/20	Un treball sobre petjades fòssils guanya el Premi de Recerca Vila d'Olesa	CAT ES	Research
14/9/20	Les Balears abans dels dinosaures	CAT ES	Research
17/9/20	Un fòssil robat permet descriure una nova espècie de cocodril als Pirineus	CAT ES EN	Research
29/9/20	Un estudi aboca nova llum sobre la diversificació dels grans pterosaures amb dents	CAT ES EN	Research
15/10/20	Cocodrils africans van viure a València fa sis milions d'anys	CAT ES	Research
27/10/20	Els rosegadors del Miocè del Vallès-Penedès, objecte de la tesi doctoral de Sílvia Jovells	CAT ES EN	Research
5/11/20	Un rar amfibi fòssil conservat en ambre mostra l'evidència més antiga de llengua projectable	CAT ES EN	Research
9/11/20	Descrites noves restes fòssils del dinosaure de 'bec d'ànec' d'Isona	CAT ES	Research
10/11/20	Descrites noves petjades fòssils de dinosaures i cocodrils juràssics a Portugal	CAT ES	Research
19/11/20	Els eòmids a l'Àsia: ascens i caiguda d'uns petits rosegadors	CAT ES	Research
9/12/20	Desenterrades noves pistes sobre l'enigmàtic origen dels pterosaures	CAT ES EN	Research

As for the language, all the news posted to the ICP webpage have been published in both Catalan and Spanish, but English translations are still a much lower proportion (36%), even though higher than for the preceding years (22% on average).



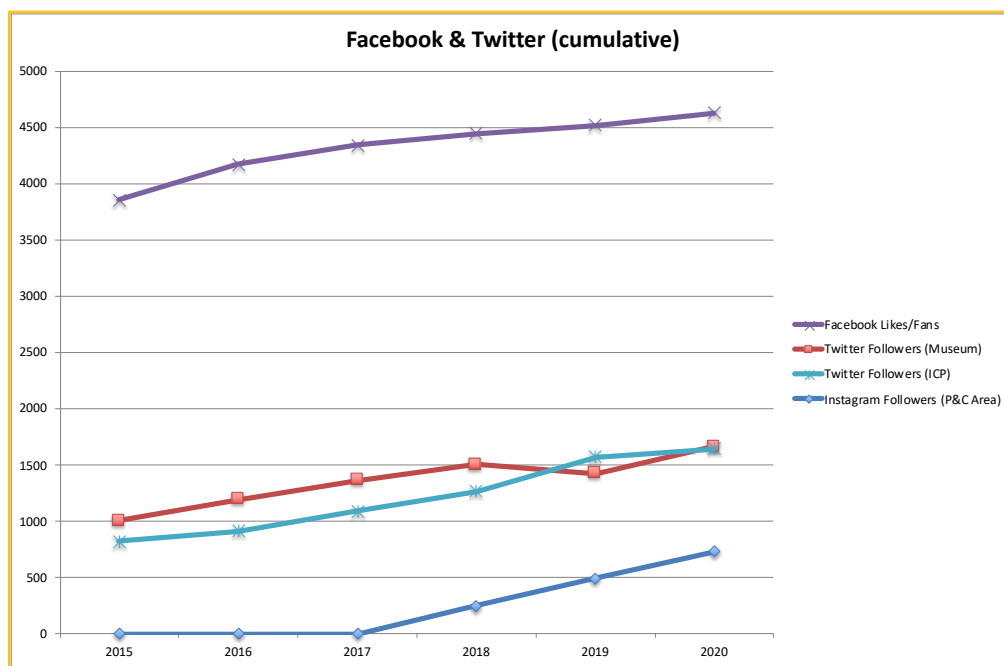
WEB NEWS (2015–2019 vs. 2020)							
CATEGORY	2015	2016	2017	2018	2019	AVERAGE	2020
News in Catalan (CAT)	39	34	35	39	23	34.0	33
News in Spanish (ES)	37	28	28	32	20	29.0	33
News in English (EN)	11	5	9	8	5	7.6	12
News in Catalan (CAT) %	97.5	100.0	100.0	100.0	100.0	99.4	100.0
News in Spanish (ES) %	92.5	82.4	80.0	13.5	87.0	84.8	100.0
News in English (EN) %	27.5	14.7	25.7	2.7	21.7	22.2	36.4



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 channel (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. Their cumulative metrics have more or less steadily increased during the last years in all instances. It is noteworthy the increase of the Preparation & Conservation Instagram since it was launched in late 2017 to disseminate the work performed by this area.

SOCIAL NETWORKS (2015–2019 vs. 2020)							
LIKES OR FOLLOWERS	2015	2016	2017	2018	2019	AVERAGE	2020
Facebook Likes/Fans (new)	343	314	175	99	74	201.0	109
Twitter Followers – Museum (new)	323	189	170	144	-78	149.6	233
Twitter Followers – ICP (new)	215	92	179	175	306	193.4	71
Instagram Followers – P&C Area (new)	—	—	—	248	244	246.0	238
Facebook Likes/Fans (cumulative)	3854	4168	4343	4442	4516	—	4625
Twitter Followers – Museum (cumulative)	1001	1190	1360	1504	1426	—	1659
Twitter Followers – ICP (cumulative)	818	910	1089	1264	1570	—	1641
Instagram Followers – P&C Area (cumulative)	—	—	—	248	492	—	730



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 2020 (see table below), as compared with 11 in 2017, 15 in 2018 and 18 in 2019). It is noteworthy the attention received from mass media worldwide

by the publication in Science of a new albanerpetontid species on November; press offices of the involved institutions agreed a press release and distributed it coordinately.

PRESS RELEASES (2020)	
TITLE	DATE
L'oïda interna amaga informació del parentiu entre simis i humans	3/3/20
El misteriós cas dels porcs desapareguts	4/3/20
Tancat el debat sobre el tipus de dieta dels primers homínids	23/4/20
Sabadell celebra el Dia Internacional dels Museus a la xarxa	12/5/20
Es localitzen dos fragments del meteorit de Barcelona que va caure el 1704	3/6/20
Descobert a Líbia l'avantpassat dels cocodrils americans	23/7/20
Trobat a Sabadell l'exemplar més antic d'una espècie de dinoteri	7/9/20
El jaciment de dinosaures de la Peñuela s'obre al públic	9/9/20
Un treball sobre petjades fòssils guanya el Premi de Recerca Vila d'Olesa	11/9/20
Les Balears abans dels dinosaures	14/9/20
Un fòssil robat permet descriure una nova espècie de cocodril als Pirineus	17/9/20
Un estudi aboca nova llum sobre la diversificació dels grans pterosaures amb dents	2/10/20
Un rar amfibi fòssil conservat en ambre mostra l'evidència més antiga de llengua projectable	5/11/20
Descrites noves restes fòssils del dinosaure de 'bec d'ànec' d'Isona	9/11/20
Desenterrades noves pistes sobre l'enigmàtic origen dels pterosaures	9/12/20

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 2020 was much lower than in 2019 and the average of the five preceding years, which is undoubtedly attributable to the lockdown and other restrictions related with the COVID-19 pandemic (see below for further details).

MUSEUM (2015–2019 vs. 2020)							
MUSEUM VISITORS	2015	2016	2017	2018	2019	AVERAGE	2020
Visitors	20,376	20,160	18,560	22,739	21,042	20,574.4	7,988



The most significant outreach activities of the ICP Museum during 2020 are summarized below.

Museum bulletin. The ICP distributes (without a regular periodicity) an electronic bulletin with ICP Museum activities, which at the end of 2020 had 1,591 subscribers (as compared with 1,223 in 2018, and 1,501 in 2019).

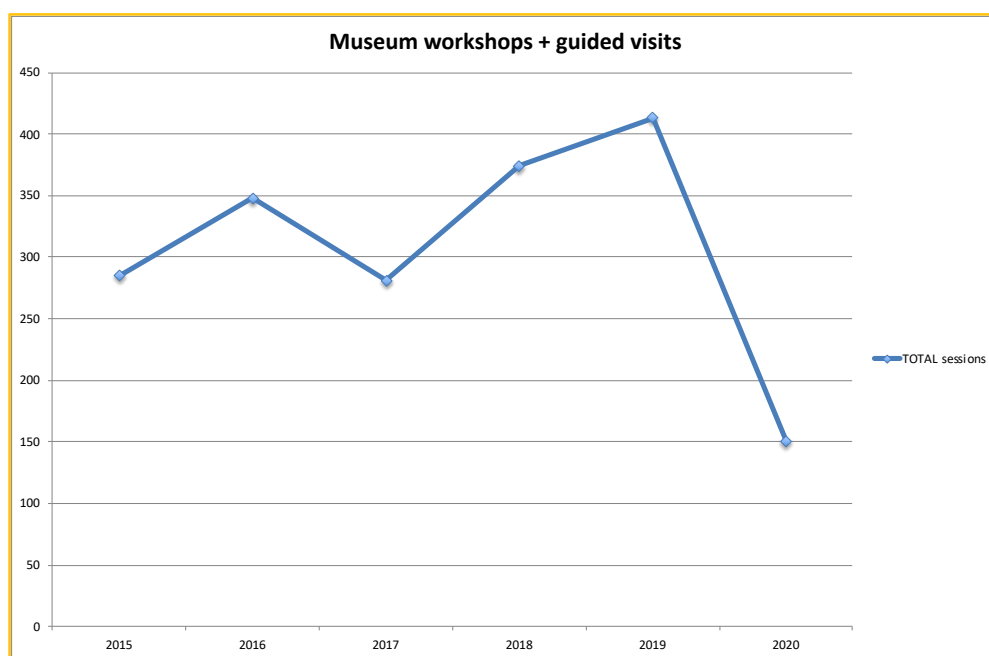
Permanent exhibit. The permanent exhibit, entitled ‘Today you investigate’, aims to explain to the general public how the various research groups of the ICP perform their research. The exhibit has not been remodeled since 2010, although during the last years it has been enriched with several additional elements and, periodically, also with temporary exhibits.

Temporary exhibits. Throughout 2020, 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.

Guided visits and workshops. A total of 10 different activities (workshops and guided visits) were offered to the school community in 2020. A total of 109 sessions of these activities, with 2,554 participant schoolchildren, were performed in 2020. This represents a significant decrease as compared with previous years (326 sessions with 7,761 attendees in 2018 and 354 sessions with 9,489 attendees in 2019). Furthermore, 34 family workshop sessions were performed, with

a total of 505 participants, which also represents a decrease as compared with the previous year (37 workshops with 786 attendees in 2018, and 46 workshops and 909 attendees in 2020). Finally, 7 guided visits for the general public were organized in 2020, with up to 105 attending people (as compared to 11 visits with 257 attendees in 2018, and 13 with 265 attendees in 2019).

MUSEUM OUTREACH ACTIVITIES (2015–2019 vs. 2020)							
MUSEUM ACTIVITIES	2015	2016	2017	2018	2019	AVERAGE	2020
School sessions (workshops/guided visits)	243	324	245	326	354	298.4	109
Family workshops	29	12	25	37	46	29.8	34
Guided visits	13	12	11	11	13	12.0	7
TOTAL sessions	285	348	281	374	413	340.2	150
School attendees	5,869	7,689	5,863	7,761	9,489	7,334.2	2,564
Family attendees	452	355	633	786	909	627.0	505
Guided visit attendees	179	255	217	257	264	234.4	264
TOTAL attendees	6,500	8,299	6,713	8,804	10,662	8,195.6	3,174



The number of museum visitors and attendees to activities decreased dramatically in 2020 compared with previous years due to the lockdown imposed on 14 March and the capacity limitations and mobility restrictions enacted by the Generalitat de Catalunya on the following months. On June, a contingency plan was approved to meet the government requirements while maintaining museum activities as far as possible. School sessions were entirely rethought, group sizes were reduced, and activities were limited to a single school a day to minimize contacts between different school groups. Since 14 December, following the regulations to face the second COVID-19 wave, all family activities with public attendees were forbidden and school visitors dropped significantly due to the municipal lockdown.



Free outreach activities at the Museum. As in preceding years, several outreach activities were planned at the ICP Museum in 2020. However, due to COVID-19 pandemic, from February on some of them were cancelled or held by telematic means, following capacity restrictions and prevention measures enacted by health authorities to guaranteeing health and safety for staff and visitors.

- **Open day:** Coinciding with Carnival, 23/2/20 | 70 attendees.
- **Literary contest:** “Històries fòssils”, 12/11/20 | Focused on a new crocodile species from the Pyrenees that preyed on dinosaur hatchlings.

Outreach activities outside the Museum

Presence in the mass media. The presence of ICP researchers and technicians in the mass media during 2020 can be summarized as follows (the list is not exhaustive):

- **Radio:** Catalunya Ràdio, 1/11/20 | Interview of Albert G. Sellés in the radio magazine “Catalunya al dia” following the publication of new remains of the dinosaur *Pararhabdodon izonensis*.
- **Radio:** RNE 5, 18/10/20 | Mention of research on Miocene crocs from Valencia led by Massimo Delfino and Àngel H. Luján.
- **Press:** Muy Interesante, October 2020 | Mention of research on Miocene crocs from Valencia led by Massimo Delfino and Àngel H. Luján.
- **TV:** Televisió de Catalunya, 7/9/20 | Mention of research on the oldest specimen of *Deinotherium proavum* from Europe in the Telenotícies Vespre.
- **TV:** Televisió de Catalunya, 22/9/20 | Coverage on a research on the new crocodile species *Ogresuchus furatus* in the Telenotícies Comarques and Info-K.

- **Radio:** Ràdio Ciutat de Badalona, 14/09/20 | Interview of X. Aymerich on deinotheres in radio magazine “Badalona Matí”.
- **TV:** Televisió de Badalona, 17/09/20 | Interview of X. Aymerich on deinotheres in TV show “Badalona Tres60”.

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 10th edition of “International Day and Night of Museums in Sabadell” in 18-19 May. Due to the pandemic situation, the initial planned activities were canceled but an online action was devised through the game-based learning platform Kahoot!. A total of 183 people played the quiz, consisting of 40 questions about Sabadell museums.

Science Cafés. As in previous years, in 2020 the ICP coorganized with other entities from Sabadell the series of talks entitled “Cafès Científics”. These scientific dissemination talks are intended to promote the contact between the scientific community and the general public, with the ultimate aim to boost the debate about scientific topics among the society. However, due to the COVID-19 outbreak, the whole cycle of talks (except the first one, planned for middle February) were canceled. In 2021 the talks will take place in a virtual format.

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

- **“Noves espècies de sauròpodes del Cretaci superior al Pirineu”:** Talk by Albert G. Sellés, within the framework of conference cycle “Tribuna d’Arqueologia 2019-2020” | 05/06/20, online.
- **Action on ICP social networks.** A series of 8 posts with fossil specimens from the ICP collections were programmed while the Museum was closed due to the lockdown | March, online.
- **Science Cafè “La proteínas, la caja negra para relacionar especies prehistóricas”:** Talk by Josep Fortuny, within the framework of CRG dissemination conferences | 02/12/20, online.

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 2020 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 Catalan Government. 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. The number of visitors the Conca Dellà Museum (2,882) and Dinosfera exhibit (4,975) in 2020 (including normal tickets, guided visits, and school visits) decreased as compared with 2017 (5,937 and 7,194, respectively), 2018 (6,724 and 7,846, respectively), and 2019 (7,871 and 7,974, respectively). The same generally applies to the number of participants in other activities organized by the Conca Dellà Museum (2,066) or Dinosfera (538) in 2020 as compared with 2017 (3,469 and 1,132, respectively), 2018 (3,073 and 273, respectively) and 2019 (5,123 and 1,079, respectively).

The main paleontological outreach activities performed in 2020 in the framework of the aforementioned project are reported below:

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

In 2020, the websites of the Conca Dellà Museum, Dinosfera and Dinsaures dels Pirineus had 9,243, 7,051, and 20,239 visitors, as compared with 10,847, 7,491, and 10,537 visitors in 2019, respectively. Their Facebook pages have 3,214 (Conca Dellà Museum), 2,108 (Dinosfera) and 1014 (Dinsaures dels Pirineus) fans, as compared with 3,173, 2,094 and 993 in 2019, respectively. Furthermore, the Conca Dellà Museum and Dinsaures dels Pirineus had 1,073 and 433 Twitter followers, respectively, at the end of 2020, as compared with 666 and 336 in 2019.

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. In 2019 the ICP collaborated with CosmoCaixa in organizing the exhibit of three partial skeletons of apes (*Pierolapithecus*, *Pliobates*, and *Hispanopithecus*), a partial skeleton of a deinotherium, and

two shells of giant tortoises, in the framework of the “Univers” exhibit. These fossils have been on exhibit throughout 2020.

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 Restauración Paleontològica (CRIP) in els Hostalets de Pierola, which aims to promote the recuperation, research and dissemination of the paleontological heritage from this area. Although ICP fossils had already been loaned to the CRIP in previous years to be exhibited there, the signature of this agreement represents the consolidation of previous collaborations as well as the formalization of the will to collaborate further in the same direction. On October 2020, a coordination meeting between the ICP and CRIP was held by telematic means. Along the year, ICP press releases and web news attaining fossils from els Hostalets de Pierola were shared with the CRIP in order to help them promoting this paleontological heritage.

Internal communication

Paleovermut. In 2020 the Communication & Outreach Department of the ICP organized four ‘paleovermut’ internal talks (see the table below for further details). Three were given by ICP personnel, whereas another one was given by an invited speaker from the UAB. The number of organized talks is much lower than usual due to the lockdown and subsequent restrictions associated with the pandemic. However, following the high attendance of the telematic paleovermut performed toward the year of 2021, this format will be repeated more often in 2021 until we are back to normal. The Director’s Paleovermut, normally organized in December each year, was delayed until the spring of 2021.

PALEOVERMUTS (2020)	
SPEAKER & TITLE	DATE
Joan Madurell-Malapeira (ICP Researcher) – “The karst complex of Les Gorges de Villefranche”	23/01/2020
Josep Torres (ICP IT External Consultant) – “Has provat de reiniciar-lo?”	13/02/2020
Florian Bouchet (ICP Predoctoral Researcher) – “Understanding catarrhine evolution:	26/02/2020
Marta Jordan (UAB Library Services) – “L’avaluació de la recerca i l’accés obert”	17/12/2020

Internal bulletin. The Communication & Outreach Department sent an internal bulletin to ICP personnel on December 2020.

Non-discrimination. The main actions undertaken by the Non-Discrimination Committee in terms of internal communication during 2020 are summarized below.

- Dissemination of video “De les microagressions a l’assetjament sexual”: Video elaborated by I-CERCA to raise awareness about violence against women in research centers | 10/07/2020.

- Dissemination round table “Què hi té la ciència a dir sobre les identitats trans*?”: Online round table organized by the Centre d'Estudis de Ciència, Comunicació i Societat de la Universitat Pompeu Fabra (CCS-UPF) together with the Associació per a la Diversitat Afectivo-Sexual i de Gènere en Ciència, Tecnologia i Innovació (PRISMA) | 09/09/2020.
- Dissemination of ICP “Pla d'Igualtat d'Oportunitats i Gestió de la Diversitat”: Dissemination of the new equality plan among ICP personnel | 28/09/20.
- Dissemination of “L'impacte del confinament en el personal investigador”: Study elaborated by unit Mujeres y Ciencia from the Ministerio de Ciencia e Innovación | 30/10/20.
- Dissemination of seminar “Fent de la ciència, la tecnologia i la innovació un espai més inclusiu”: Seminar organized by the l'Associació per a la Diversitat Afectivo-Sexual i de Gènere en Ciència, Tecnologia i Innovació (PRISMA) | 05/11/20.
- Dissemination of “Dia Internacional contra les violències masclistes”: Dissemination of various actions and talks organized by the Observatori per la Igualtat of UAB owing to the International Day for the Elimination of Violence against Women | 23/11/20.
- Dissemination of press release: Press release elaborated by the Generalitat de Catalunya about gender bias and violence against women in universities and research centers | 25/11/20
- Invitation of microcourse “De les microagressions a l'assetjament. Les dones en la recerca científica”: Invitation to online microcourse organized by I-CERCA | 01/12/20.
- Dissemination of seminar “La pandèmia i l'agreujament de violències masclistes sistemàtiques”: Seminar organized by Càtedra ETHOS – Universitat Ramon Llull (URL) | 04/12/20.

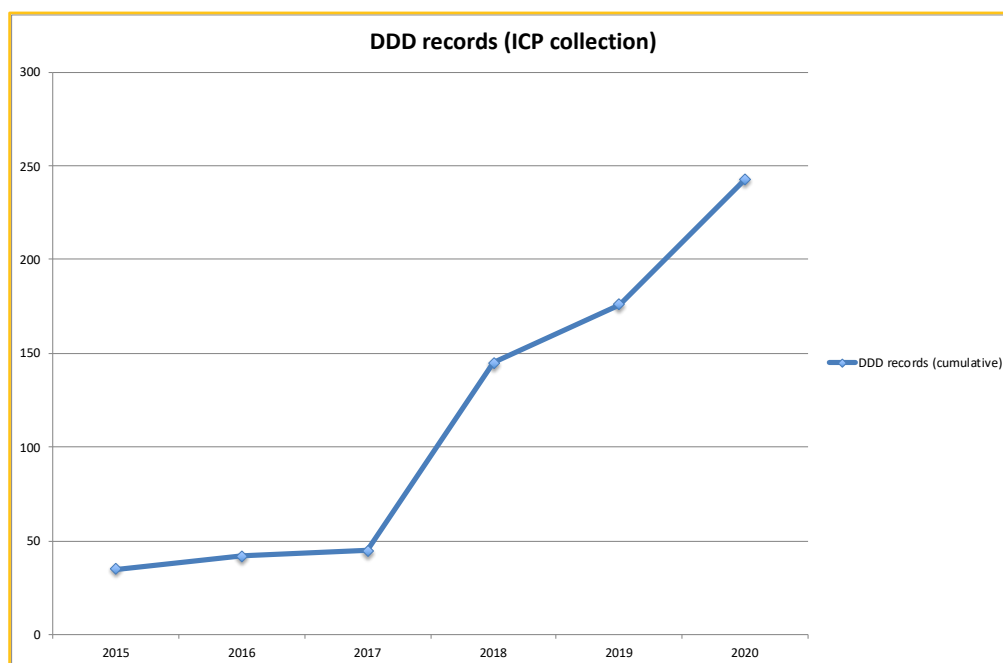
Digital repositories and platforms for research outputs

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 surpassed 50% in 2020. This represents an

important budgetary effort because many open access journals (particularly the most prestigious ones) have expensive publication fees. The Strategic Plan of the ICP aims to increase the proportion of papers published in OA, but 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.

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. This process has already begun by focusing on papers published in SCI open-access journals since 2006, and it will continue based on preprints and postprints of SCI papers published in subscription journals. Finally, it will proceed on the basis of the rest of the ICP production. Given the human resources currently available for this task, the implementation of this measure proceeds slowly following the initial peak in 2018.



UAB DDD RECORDS – ICP COLLECTION (2015–2019 vs. 2020)							
DDD RECORDS	2015	2016	2017	2018	2019	AVERAGE	2020
ICP collection records (cumulative)	35	42	3	100	31	—	67
ICP collection records (new)	5	7	45	145	176	29.2	243

CSUC PRC. The ICP also signed in 2018 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, but only that from a few 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. In November 27, 2020 the ICP had updated 606 records to the PRC.

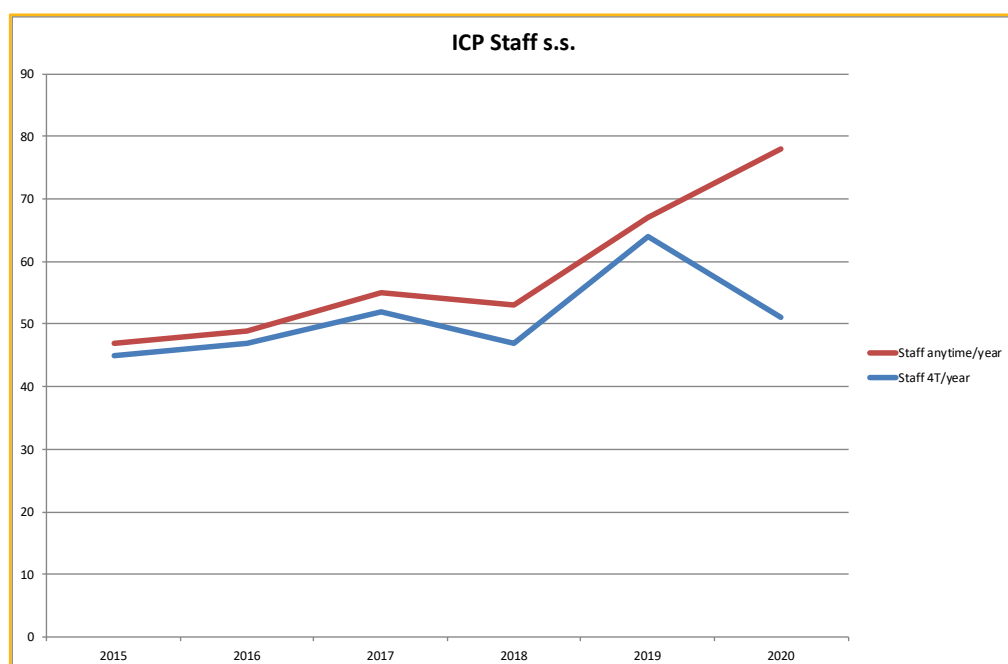
HUMAN RESOURCES

Aiming for excellence in the human resources policies for researchers

Staff personnel

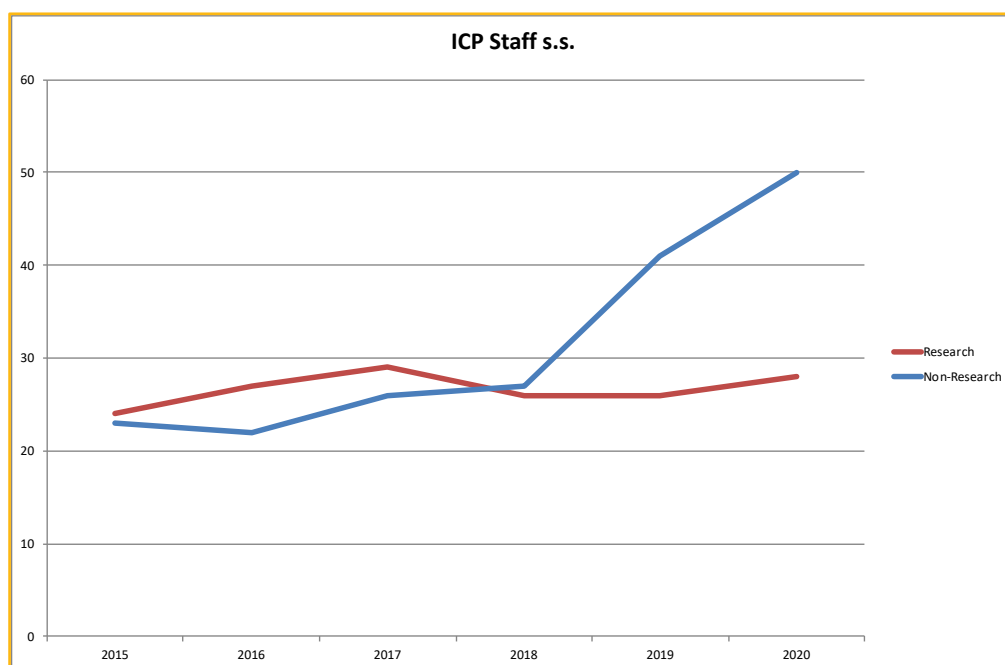
Staff composition. The composition of the staff personnel of the ICP (i.e., people with a contractual relationship with or formally ascribed to the ICP, thereby excluding research associates, collaborators, and people hired occasionally as freelance) is variable through time. In order to compare the ICP staff composition in 2020 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 are higher than the respective averages for the preceding five years, whereas the total count is highest than ever. The divergence between the total count and that for the last quarter of 2020 is due to the fact that service provision peaked around mid 2020. The count for the last quarter shows, however, that the situation in late 2020 was very similar to that in late 2019.

STAFF (2015–2019 vs. 2020)							
STAFF COMPOSITION	2015	2016	2017	2018	2019	AVERAGE	2020
Total staff members (total year)	47	49	55	53	67	54.2	78
Total staff members (4T)	45	47	52	47	64	51.0	64



Research staff. With some fluctuations, the proportion between research and non-academic staff remained stable around 50% until 2018, but during the last couple of years it decreased due to the aforementioned increase in work and service personnel for the provision fieldwork services, which in 2020 is even greater than in 2019 and indeed higher than ever. However, the number of researchers for 2020 (28) is above the figure for 2019 (26) as well as the average for the five preceding years (26.4).

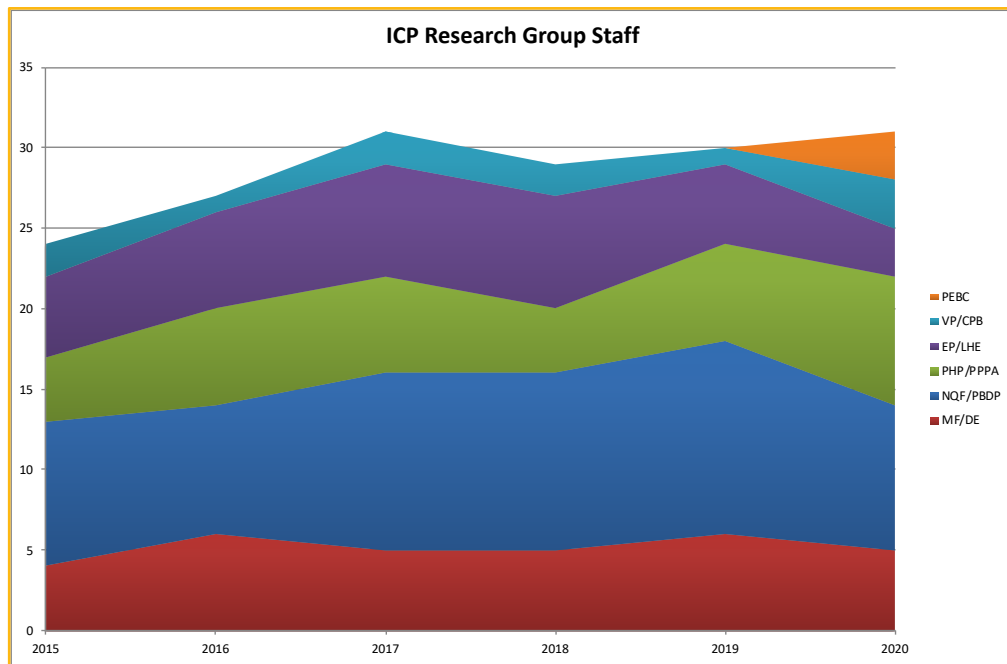
RESEARCH STAFF (2015–2019 vs. 2020)							
STAFF COMPOSITION	2015	2016	2017	2018	2019	AVERAGE	2020
Research staff members	24	27	29	26	26	26.4	28
Non-Research staff members	23	22	26	27	41	27.8	50
% Research/Total	51.1	55.1	52.7	49.1	38.8	54.0	35.9



Research groups. When the composition of research staff is broken down into research groups (associate researchers not included), using the new 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. In the last year, the Paleoprimateology and Paleoanthropology group has expanded beyond the size attained during the five previous years (thanks to the incorporation of competitive postdocs). In contrast, the Paleobiodiversity & Phylogeny group (formerly Neogene & Quaternary Faunas) has shrunk a bit (due to the scission of the Paleoecology & Biochronology group), even though it still remains the largest of the ICP research groups. The recently created Paleoecology & Biochronology group, together with the Life History Evolution and Computational Paleobiology groups (formerly Evolutionary Paleobiology and Virtual Paleontology, respectively), are comparatively too small and should ideally be promoted in years to come if resources are available.

RESEARCH GROUPS STAFF (2015–2019 vs. 2020)							
STAFF COMPOSITION	2015	2016	2017	2018	2019	AVERAGE	2020
DE	4	6	5	5	6	5.2	5
PBDP	9	8	11	11	12	10.2	9
PEBC	—	—	—	—	—	—	3
PPPA	4	6	6	4	6	5.2	8
LHE	5	6	7	7	5	6.0	3
CPB	2	1	2	2	1	1.6	3

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



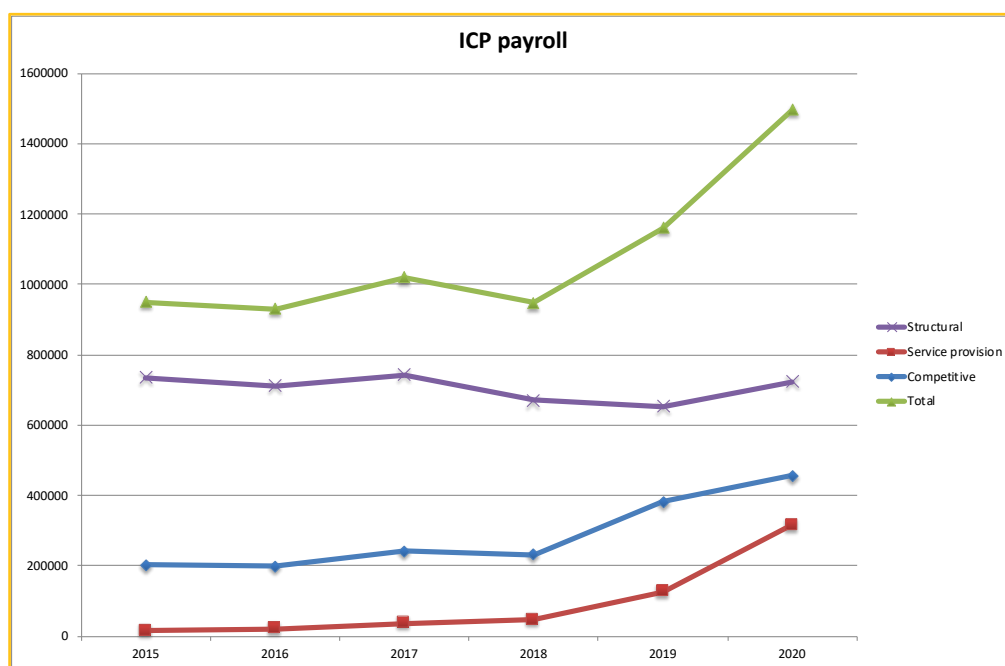
Total payroll. To better understand the evolution of ICP staff through time, the total payroll of the ICP can be divided into three distinct categories: structural, service provision and competitive. The structural portion of the payroll corresponds to the salaries and taxes associated to research and 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, the 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, when service provision represented more than 10% of the total payroll, competitive funds 33%, and structural only 56% of total payroll. This tendency continued throughout 2020, when service provision surpassed 30%

and structural decreased below 50%, being further accompanied by an even greater increase of total payroll (reaching almost 1.5 M€).

All in all, during the last couple years, the total payroll of the ICP has increased more than 50%, due to an absolute increase in both service provision (316 k€) and competitive funds (456 k€) as compared with their respective average values for the preceding five years (respectively, 48 and 251 k€), while the structural payroll has also increased slightly (723 vs. 702 k€).

ICP PAYROLL (2015–2019 vs. 2020)							
PAYROLL (k€)	2015	2016	2017	2018	2019	AVERAGE	2020
Structural	734.1	711.2	742.2	670.5	653.5	702.3	723.1
Service provision	14.1	21.0	35.5	45.6	125.3	48.3	315.9
Competitive	201.4	198.2	241.7	232.1	381.8	251.1	456.0
TOTAL	950	930.4	1,019.3	948.2	1,160.7	1,001.6	1,495.0
Structural (%)	77.3	76.4	72.8	70.7	56.3	70.1	48.4
Service provision (%)	1.5	2.3	3.5	4.8	10.8	4.8	21.1
Competitive (%)	21.2	21.3	23.7	24.5	32.9	25.1	30.5



Continuous training

The ICP has an internal policy of continuous training for its personnel, including not only contracted staff but further including research associates 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 2020: 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. As in 2019, the funds from the Social Security were not devoted to courses on languages or computer programs, but used to cover a course on conflict resolution that was attended by 14 staff members (both researchers and technicians), which added to those from the year before make a total of 27 people:

- “El conflicte a les organitzacions”: 02/10/20 to 16/10/20, instructed by Pitagora Advanced, S.L.U. and held online due to the pandemic | 14 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. In 2020, a total of three ICP employees attended three different courses:

- “Geometric Morphometrics in R”: 20/01/20 to 24/01/20, Capellades | 1 attendee.
- “Introduction to Macroevolutionary Analyses Using Phylogenies”: 13/01/20 to 17/01/20, Capellades | 1 attendee.
- “Storytelling for Scientists”: 29/07/20 to 31/07/20, online | 1 attendee.

Courses offered by CERCA. In 2020, the ICP personnel had the opportunity to perform the following course offered by I-CERCA:

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:

- “Perspectiva i dimensió de gènere en les nostres recerques i docència”: 13/02/20 to 27/02/20 (12 hours), organized by the Universitat Autònoma de Barcelona | 1 attendee (Member of the NDC).
- “Women in Science – Ecology Virtual Conference (WISE)”: 04/11/20 to 06/11/20, organized online by the Asociación Española de Ecología Terrestre (AEET) | 1 attendee (Member of the NDC).

- “Comunicar per a la igualtat i la prevenció de les violències masclistes”: 24/11/2020 (3 hours), organized online by the Institut Català de les Dones (ICD) and the Consell de l’Audiovisual de Catalunya (CAC) at the Universitat Autònoma de Barcelona (sessió online) | 1 attendee (Member of the NDC).
- “Identificar i actuar davant les discriminacions de gènere i les violències de gènere en els centres de recerca”: 04/11/20 to 04/12/20 (17 hours), instructed by Atena Gender Consulting and organized by I-CERCA | 2 attendees (President and Rapporteur of the NDC).
- Online minicourse “De les microagressions a l’assetjament. Les dones en la recerca científica”: 01/12/20 to 08/1/21, online through Snackson platform | 10 attendees during 2020.

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:

- “Normas básicas de prevención de riesgos laborales”: 18/1/2020 to 25/03/2020 (2 h), online, instructed by Quirón Prevención, S.L.U. | 18 attendees.
- “Curso formación seguridad en el trabajo”: 16/03/2020 (2 h), instructed by Quirón Prevención, S.L.U. | 25 attendees.

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 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.

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. 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. With this in mind, the ICP HRS4R Implementation Committee and Working Group will discuss during 2021 the design of new actions to fulfill this requirement. The EC Consensus report included an additional recommendation to publicize the degree of compliance of the Action Plan. In accordance with such an advice, on September 2020 the HRS4R Interim Assessment Report was uploaded to the ICP website (https://www.icp.cat/attachments/transparencia/HRS4R_Report_on_the_Interim_Assessment.pdf). We detail below the level of fulfillment of the HRS4R Action Plan at the end of 2020 and the actions that were implemented during that year.

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) includes 25 specific actions intended to attain a complete implementation of the forty principles included in the Charter & Code. 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 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 2020 is summarized in the following table.

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	Delayed, under implementation
Action 7	Transparency webpage and internal communication	1Q 2018	Almost fully implemented
Action 8	Protocol for Fund Expenditure Accountability	2Q 2018	Delayed, under implementation
Action 9	Safety & prevention training	4Q 2019	Fully implemented 2020
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
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	Delayed, under implementation
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	Delayed, under implementation
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	Regulations on working time	4Q 2020	New, fully implemented 2020

Out of the 25 actions originally planned for 2018-2020, 17 are fully implemented and 2 almost fully implemented, while 6 are delayed but already under implementation. A new action regarding working conditions (Action 26) was included on 1Q 2020 and became fully implemented on 3Q 2020.

The HRS4R actions that became fully implemented in 2020 are explained in greater detail below:

- **Action 3: Manual of Best Practices in Research, Intellectual Property and Scientific Authorship.** Description: To write an “ICP Manual of Best Practices in Research, Intellectual Property and Scientific Authorship”, specifying (a) the ethical principles and legal regulations specific to paleontology and the ICP protocols to comply with them; (b) the rights and obligations of the ICP and its personnel regarding intellectual property, industrial property and scientific authorship; (c) the obligation by researchers to ensure the safeguard of their data by means of standard protocols; including (d) a specific protocol that explains how and when should the ICP Communication Department be contacted by researchers to ensure that their research activities are adequately publicized to the society; (e) encouraging researchers to disseminate their research results as well as to explore its possible applications, by means of including a protocol on knowledge transfer; and in which (f) the principle of professional recognition is explicitly explained and promoted; (g) the rights and obligations of both researchers and the ICP in these matters are exposed, and explicit guidelines for researchers are provided; and (h) the rights and obligations of both researchers and the ICP with regard to scientific authorship are clearly stated. This manual should be compulsory for all ICP staff performing research. Indicator(s)/Target(s): Document available from the ICP website, emailed to researchers and technicians, and approved by the Board of Patrons; receipts of the manual signed by staff researchers and technicians. Implementation: Originally planned for the fourth quarter of 2019, the final version of this document was approved by the Steering Committee on December 2019 and publicized among ICP personnel, although it was not formally approved by the Board of Trustees until May 2020.
- **Action 4: ICP Protocol for Invasive and Destructive Analyses of Fossils.** Description: To write an “ICP Protocol for Invasive and Destructive Analyses of Fossils” to facilitate this kind of research while complying with the current Catalan legislation on paleontological heritage. Indicator(s)/Target(s): Document available from the ICP website, emailed to researchers and technicians, and approved by the Board of Patrons; receipts of the manual signed by staff researchers and technicians. Implementation: Originally planned for the first quarter of 2019, the final version of this document was approved by the Steering Committee on September 2020 and publicized among ICP personnel.
- **Action 9: Safety & prevention training.** Description: To encourage the ICP personnel to attend training sessions in safety at work and prevention of occupational hazards. Indicator(s)/Target(s): Progressively increase the number of personnel attaining the training sessions. Implementation: This is a continuous action. General training sessions in safety at

work and prevention of occupational hazards were organized for all staff members on 1Q 2020 and specific courses for field officers along 2019.

- **Action 16: Strategy for the Professional Development of Researchers.** Description: To develop and write an “ICP Strategy for the Professional Development of Researchers”, to be distributed among the ICP researchers and technicians, as well as to candidates to be hired by the ICP, to further promote the continuous development of ICP researchers, and establishing inter alia (a) the conditions to be met for transitioning from dependent postdoc to independent researchers and (b) the several categories of researchers and technicians officially recognized at the ICP; (c) taking into account the value of mobility; (d) outlining the different professional paths available to ICP researchers and candidates for recruitment; (e) explicitly mentioning teaching and supervision activities; (f) in which the supervision roles expected for each professional category are specified; (g) which explicitly mentions supervision, mentoring and leadership activities; and (h) in which the supervision roles expected for each professional category are specified. Indicator(s)/Target(s): Document approved by the Steering Committee, available from the ICP website, emailed to researchers, and approved by the Board of Patrons. Implementation: Originally planned for 4Q 2019, the final version of this document, with amendments by the Researchers Commission, was approved by the Steering Committee on December 2019 and publicized among ICP personnel, although it was not formally approved by the Board of Trustees until May 2020.
- **Action 20: Complaints protocol.** Description: To write a document stating what the procedure would be in case of a complaint, as well as designating two ombudspersons within our organization to mediate in work-related conflicts. Indicator(s)/Target(s): Internal document approved by the Steering Committee and emailed to personnel; two ombudspersons designated; training courses about conflict resolution performed by the ombudspersons. Implementation: Originally planned for 2Q 2018, the final version of this document was approved by the Steering Committee and publicized among ICP personnel on September 2020.
- **Action 26: Regulations on working time.** Description: To write an internal document for staff hired by the ICP with the regulations on working time (working days, rest breaks, flexible schedule, ordinary hours and overtime) as well as the time registration system to be established in the center. Indicator(s)/Target(s): Internal document with the regulation sent to the ICP staff. Implementation: This new action was originally planned for the last quarter of the year, but on 3Q 2020 the final version of this document was already approved by the Steering Committee and publicized among ICP personnel. A pilot test of the time registration system (TimeNet) was performed with some employees during July and implemented to all staff on September 14.

Other HRS4R actions that were almost fully implemented in 2020 are the following:

- **Action 7: Transparency webpage and internal communication.** Description: To officially designate the ICP employee in charge of regularly updating the documents available from the ICP Transparency webpage and automatically communicating such changes to all the personnel from the ICP. These documents should be made available also in the Spanish and English versions of the ICP website. Indicator(s)/Target(s): Relevant documents periodically updated on the webpage; quarterly electronic newsletter sent to personnel; email internal communiqués to personnel. Implementation: Originally planned for 1Q 2018, the fact is that this action requires continuous implementation. Throughout 2019 and 2020, the relevant documents were periodically uploaded to the transparency webpage of the ICP and the personnel was notified about the most relevant ones. Nevertheless, the action is not fully implemented because in 2020 the internal electronic newsletter for the ICP, like in the two previous years, was not issued on a quarterly basis.

Internal evaluation of researchers

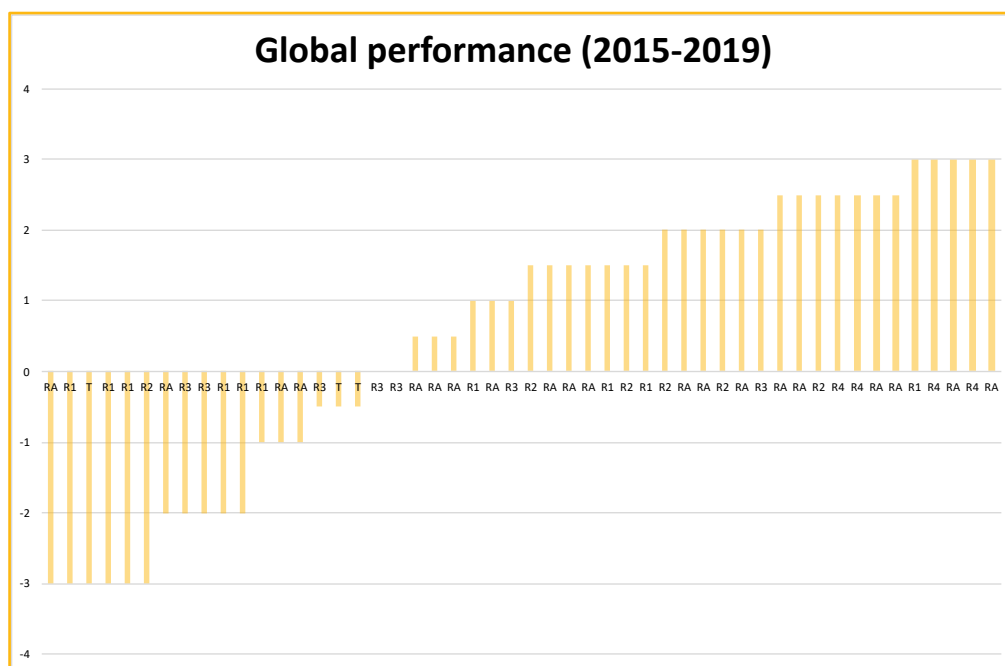
Evaluation metrics. The ICP “Protocol for the Evaluation, Internal Promotion and Recruitment of Researchers and Technicians” approved by the Steering Committee in February 2019 and approved by the Board of Trustees in May 2019 not only includes the rules for recruitment, but also the instructions for 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

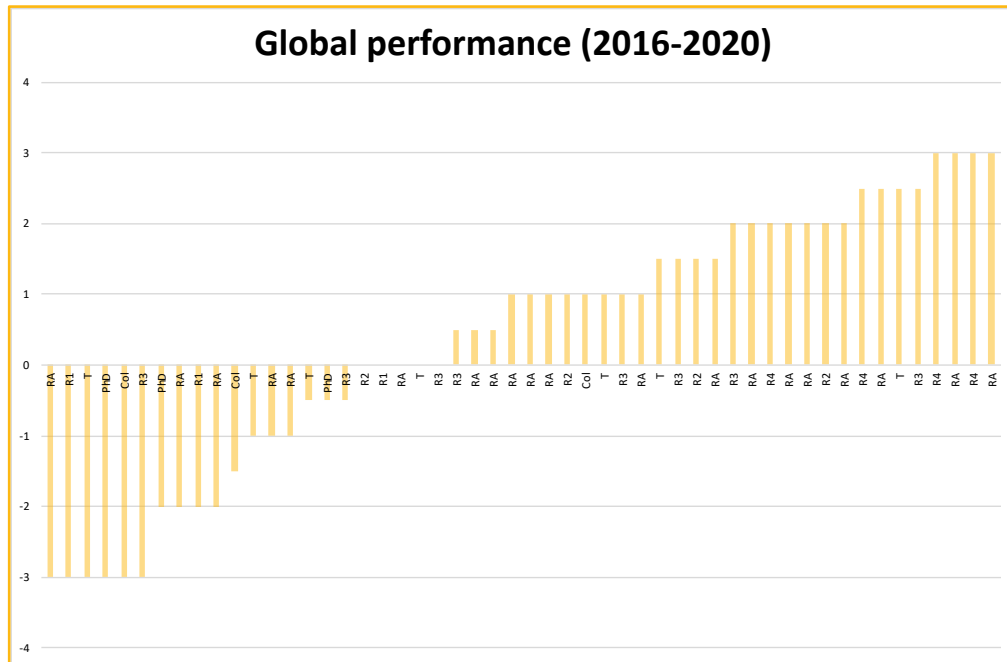
(between -1.5 and 0), positive (between +0.5 and +1.5), very good (between +2 and +2.5), and excellent (+3.0).

Evaluation results. The definitive results for the 2015-2019 evaluation period and the preliminary ones for the 2016-2020 period (pending refinement which the JCR of 2020 is published) are summarized in the plot below. For 2015-2019, there are 11 negative (22%), 8 neutral (16%), 13 positive (26%), 13 very good (26%), and 5 excellent (10%), while for 2016-2020 there are 10 negative (19%), 12 neutral (23%), 15 positive (29%), 11 very good (21%), and 4 excellent (8%). 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 the number of negative, neutral, positive, and very good plus excellent evaluations is expected to be roughly one-quarter each (with only small deviations depending on the rating of particular researchers for each of the three metrics employed). So 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 below, 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. For the 2015-2019 period, the five researchers with an excellent evaluation (global performance = +3) include two R4 research group leaders and two research associates, but also a predoc student. For the 2016-2020 period, the four researchers with an excellent evaluation include the same research

associates and research group leaders. 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.



Publication metrics. To help retrieving the publications of current (2020) 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 24th, 2021).

NAME	SCOPUS ID	ORCID	PUBLICATIONS	CITATIONS	H-INDEX	CATEGORY
Abella, J.	16686180200	https://orcid.org/0000-0002-3433-6093	35	376	11	R2
Alba, D.M.	56248806600	https://orcid.org/0000-0002-8886-5580	130	2478	29	R4
Almécija, S.	24366054500	https://orcid.org/0000-0003-1373-1497	55	1079	18	RA-R4
Angelone, C.	16633426200	https://orcid.org/0000-0002-7140-9431	50	721	15	RA-R3
Arias-Martorell, J.	55249683600	https://orcid.org/0000-0001-8110-2946	18	108	7	R2
Aurell-Garrido, J.	35279378500	https://orcid.org/0000-0001-6954-2033	9	251	7	RC-R1
Balaguer, J.	55616355200	https://orcid.org/0000-0001-7316-7774	3	18	3	RC-R1
Beaudet, A.	57002560700	https://orcid.org/0000-0002-9363-5966	28	158	8	RA-R2
Bolet, A.	15046423500	https://orcid.org/0000-0003-4416-4560	32	345	12	R2
Calderón, T.	—	https://orcid.org/0000-0001-5446-3244	—	—	0	R1
Cartanyà, J.	42360910000	https://orcid.org/0000-0001-6785-8886	5	63	2	RC-R1
Casanovas-Vilar, I.	24485251200	https://orcid.org/0000-0001-7092-9622	50	1103	18	R3
Castanera, D.	35344564400	https://orcid.org/0000-0003-3950-1630	33	549	14	R2
Dalla Vecchia, F.M.	55665437500	https://orcid.org/0000-0003-3914-3896	68	1003	19	RA-R3
De Esteban-Trivigno, S.	25225282600	https://orcid.org/0000-0002-2049-0890	16	332	11	RA-R2
De Jaime-Soguero, C.	57221459863	https://orcid.org/0000-0001-9665-6378	2	1	1	R1
Delfino, M.	7103371480	https://orcid.org/0000-0001-7836-7265	136	2022	26	RA-R3
Delson, E.	6701421285	https://orcid.org/0000-0002-4062-7567	66	1997	23	RA-R4
DeMiguel, D.	16686393400	https://orcid.org/0000-0001-6138-7227	41	548	14	RA-R3
Femenias-Gual, J.	56624424200	https://orcid.org/0000-0003-0574-9021	7	35	4	RC-R1

Fondevilla, V.	55842651200	https://orcid.org/0000-0001-9355-2389	16	208	10	RA-R2
Fortuny, J.	16177500700	https://orcid.org/0000-0003-4282-1619	70	762	16	R3
Furió, M.	16686168400	https://orcid.org/0000-0002-4582-3268	46	718	17	R3
Galindo, J.	24485260200	https://orcid.org/0000-0002-8796-3584	16	498	10	T-R1
Galobart, À.	55964223000	https://orcid.org/0000-0003-1508-4561	66	1412	23	R4
García-Paredes, I.	16686479900	https://orcid.org/0000-0003-4390-2349	26	428	12	RA-R3
Holgado, B.	57201085235	https://orcid.org/0000-0001-8968-0775	9	44	4	RA-R2
Jovells-Vaqué, S.	57194058140	https://orcid.org/0000-0003-0358-0840	4	13	2	RA-R2
Kimura, Y.	36637561000	https://orcid.org/0000-0002-7621-9901	16	156	7	RA-R3
Köhler, M.	35430989100	https://orcid.org/0000-0001-9228-3164	74	2338	27	R4
Llácer, S.	56584535700	https://orcid.org/0000-0003-0192-7943	8	30	3	T-R1
Llenas, M.	56721340800	https://orcid.org/0000-0002-0890-363X	3	10	2	T-R1
Luján, À.H.	55017368500	https://orcid.org/0000-0003-1844-0453	19	102	6	RA-R2
Madurell-Malapeira, J.	35185260200	http://orcid.org/0000-0003-4639-9451	42	581	14	R3
Malchus, N.	6602976736	https://orcid.org/0000-0002-7514-8670	18	317	10	RA-R3
Marcé-Nogué, J.	35766845300	http://orcid.org/0000-0001-9852-7027	38	301	11	RA-R3
Marigó, J.	35756539500	https://orcid.org/0000-0002-0547-3662	25	270	11	R2
Marques-Bonet, T.	11140868400	https://orcid.org/0000-0002-5597-3075	171	11772	50	RA-R4
Matamales-Andreu, R.	57193729945	https://orcid.org/0000-0001-9914-0510	7	7	2	R1
McKenzie, S.	--	https://orcid.org/0000-0002-8259-3756	—	—	0	R1
Méndez, J.M.	54930427700	https://orcid.org/0000-0003-0525-968X	4	49	4	T-R1
Minwer-Barakat, R.	6504521390	https://orcid.org/0000-0001-9441-3612	58	1015	2	RA-R3
Moyà-Solà, S.	6603807578	https://orcid.org/0000-0001-8506-1061	144	3602	33	R4
Mujal, E.	56898963700	https://orcid.org/0000-0002-6310-323X	19	172	8	RA-R2
Orlandi-Oliveras, G.	56766041700	https://orcid.org/0000-0002-9085-3183	8	46	4	T-R2
Pina, M.	55080353300	https://orcid.org/0000-0001-9762-6402	11	155	5	RA-R2
Pons-Monjo, G.	55240153000	https://orcid.org/0000-0002-5218-6877	3	16	2	PHD
Prat-Vericat, M.	57216636012	https://orcid.org/0000-0002-0771-7122	1	—	0	PHD
Prieto-Márquez, A.	12544776900	https://orcid.org/0000-0002-4836-4052	46	1004	19	R3
Quintana Cardona, J.	22235800700	https://orcid.org/0000-0003-0146-2154	28	286	11	R3
Robles, J.M.	24485708000	https://orcid.org/0000-0002-5410-3529	34	696	15	T-R2
Sánchez Marco, A.	6508189110	https://orcid.org/0000-0003-0654-1935	40	1156	16	R3
Sánchez, I.M.	7103004592	https://orcid.org/0000-0003-2151-7693	26	400	12	RA-R3
Sellés, A.G.	36459128600	https://orcid.org/0000-0002-4637-6084	27	373	12	T-R2
Sorbelli, L.	57202914897	https://orcid.org/0000-0002-3246-5887	3	7	1	R1
Urciuoli, A.	57191286102	https://orcid.org/0000-0002-6265-8962	5	15	3	PHD
van Dam, J.A.	7101784403	https://orcid.org/0000-0002-2748-3722	34	1606	17	RA-R3
Vila, B.	22636101700	https://orcid.org/0000-0002-5935-1732	45	920	19	R3
Vinuesa, V.	57193483737	https://orcid.org/0000-0001-7334-9105	8	37	4	T-R2

Abbreviations: R = researcher; PHD = PhD student; RA = research associate; RC = research collaborator; T = technician;

STRATEGIC MANAGEMENT

Implementing the Strategic Plan for 2018–2021

Viability Plan

In 2017 the ICP had a deficit of 46 k€, which added to that accumulated from previous years yielded a total deficit of 91 k€. In May 2018, the Steering Committee approved a Viability Plan (subsequently ratified by the Board of Trustees) with several actions aimed to correct this situation of budgetary deficit as well as to guarantee the economic viability of the institution (by reducing the ICP structural expenses and also increasing the incomes). Given that the total payroll of the ICP is by far the most important portion of the budget, the Viability Plan focused on this aspect rather than maintenance expenses or those related to reject projects and service provision, which are most difficult to reduce. The measures included in the Viability Plan and implemented in 2018 included: (1) facilitating voluntary leaves; (2) linking voluntary leaves of researchers with research associate agreements; (3) dismissing workers that do not perform adequately; (4) postpone until 2019 salary increases linked to the new Salary Scale; (5) promote the application of competitive contracts by ICP researchers and technicians; and (6) restrict hiring to short work and service contracts and do not replace vacant positions until an OTM-R protocol were available. Other, midterm measures included in the Viability Plan focused on boosting market-oriented policies to increase service provision, while recognizing that competitive funds should also be increased (especially by means of European projects).

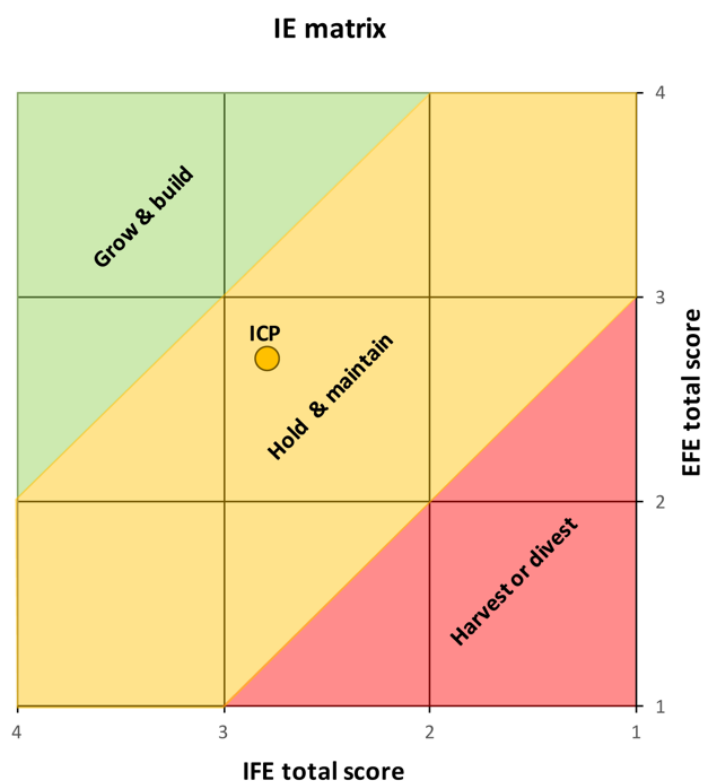
The viability plan approved in 2018 predicted a reduction in the total payroll and an increase in service provision, implying a surplus of 47 k€ in 2018. The reduction of the total payroll and the increase in service provision in 2018 were greater than anticipated, but due to other expenses the resulting surplus was only of 22 k€, resulting in a reduction of the accumulated deficit from 91 k€ to 69 k€. In the update of the viability plan for 2019, it was predicted that the total payroll would increase due to the incorporation of new researchers with competitive grants, but that the reduction of the accumulated deficit would not be lesser than that of 2018. The results for 2019 finally indicated a surplus of 47 k€, resulting in a reduction of the accumulated deficit from 69 k€ to 22 k€. It is noteworthy that such surplus was attained despite a significant increase in the total payroll of the ICP, mostly attributable to additional competitive funds to hire researchers or to the recruitment of technicians with work and service contracts for service provision (mostly fieldwork). The increase in competitive funds and especially service provision in 2019 enabled recovering the same level of structural payroll as in 2017, while at the same time increasing the number of personnel and having revenues that enabled the reduction of the accumulated deficit below the social capital of the foundation.

As anticipated a year ago based on the levels of funding and service provision attained in 2019, the results of 2020 have enabled to completely remove the accumulated deficit. Indeed,

the results are even more positive than anticipated, thanks to a spectacular increase in service provision and a further increase in competitive funds for hiring researchers. As a result, the total payroll of the ICP is ca. 50% higher than two years ago, but the revenues generated by service provision have ultimately resulted in a surpluss of 147.5 k€ for 2020, resulting in a cumulative surpluss of ca. 125 k€. Beginning in 2021, these resources will be devoted to hire new research and research support personnel, as well as to renew some pending equipment and infrastructures (such as vehicles and servers).

Strategic Plan

SWOT analysis. A SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of the ICP was performed by the Director in late 2017 in the framework of the elaboration of a new Strategic Plan (2018-2021), which was publicized in February 2018 and subsequently ratified by the Board of Trustees in June 2018. (http://www.icp.cat/attachments/transparencia/Strategic_plan_2018_2021.pdf). A summary of the SWOT analysis was already provided in the Annual Report 2017 and in the 2018 Annual Report, while the full version is included in the Strategic Plan. Essentially, the SWOT analysis enabled the identification of 70 factors (23 strengths, 12 weaknesses, 21 opportunities, and 14 threats), which were subjected to internal factor evaluation (IFE) and external factor evaluation (EFE) analyses, and combined in an internal-external (IE) matrix divided into three different regions with different strategical implications in terms of a research center's performance.



The IFE and EFE values calculated for the ICP (2.8 and 2.7, respectively) 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 was 'hold and maintain' (see figure above)—i.e., that the ICP was generally doing well and could take advantage of some opportunities, although there was room for improvement and the institution was not powerful enough to plan growing further on the midterm (so that some opportunities must be left unexplored due to excessive risk or lack of resources).

Strategic goals, actions and indicators. The Strategic Plan for 2018–2021, elaborated on the basis of the SWOT analysis summarized above, was conceived as a management tool that sought 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 19 strategic goals within four strategic areas: Scientific Policy & Research (7 goals), Management & Human Resources (5 goals), Fundraising & Knowledge Transfer (5 goals), and Outreach & Communication (2 goals). Each strategic goal was based on one of the following four strategies: Strength-Opportunity (SO, 10 goals), Weakness-Opportunity (WO, 3 goals), Strength-Threat (ST, 2 goals), and Weakness-Threat (WT, 4 goals). The 19 strategic goals defined by the Strategic Plan are the following:

- **Scientific Policy & Research (SPR):**

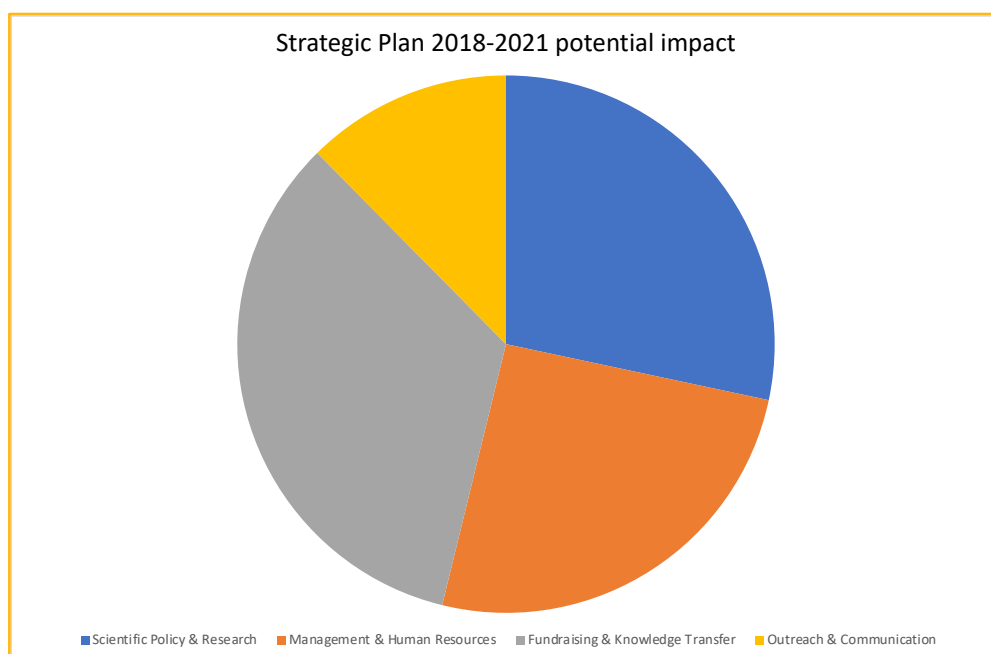
- ✓ **SO1:** Consolidate the excellent scientific production and productivity of the ICP.
- ✓ **SO2:** Consolidate the high quality and impact of the ICP scientific production.
- ✓ **WO1:** Increase the excellent visibility of the scientific production of the ICP by promoting publication in open-access papers.
- ✓ **WO2:** Improve research support provided to ICP researchers by the Virtual Paleontology Area.
- ✓ **ST1:** Preserve the high competitiveness and foster the fidelity of ICP researchers by means of maintaining the excellent research support provided to them.
- ✓ **ST2:** Provide to researchers specific guidelines of ethics in publishing, with emphasis on intellectual property rights and authorship issues.
- ✓ **WT1:** Foster talent retention and attraction to secure the continuity of the successful ICP research lines.

- **Management & Human Resources (MHR):**

- ✓ **SO3:** Increase the critical mass of ICP staff researchers by fostering talent attraction, with emphasis on the recruitment of foreign researchers.
- ✓ **SO4:** Increase talent attraction at early career stages.
- ✓ **SO5:** Improve the internal cohesion and coordination and promote staff involvement in decision-making at the ICP by implementing the new Organization Chart.

- ✓ **WT2:** Improve the salaries and general working conditions of ICP staff (including HRS4R implementation) in spite of financial risks and budgetary constraints.
- ✓ **WT3:** Improve the effectiveness and internationalization of researchers' recruitment by developing and implementing OTM-R policies.
- **Fundraising & Knowledge Transfer (FKT):**
 - ✓ **SO6:** Increase the ICP operating budget by means of the provision of external services.
 - ✓ **SO7:** Increase the ICP operating budget by means of competitive calls or research projects and grants, with emphasis on ERC grants and the application of modern techniques to paleontological research.
 - ✓ **SO8:** Foster knowledge transfer also in relation to training.
 - ✓ **WO3:** Increase the ICP operating budget by means of competitive calls for dissemination and outreach activities.
 - ✓ **WT4:** Avoid budgetary deficit at the ICP and increase the ratio of competitive + private income relative to the total budget.
- **Outreach & Communication (OC):**
 - ✓ **SO9:** Promote further the dissemination of the research performed by ICP researchers by means of digital media.
 - ✓ **SO10:** Promote further the outreach activities performed by the ICP.

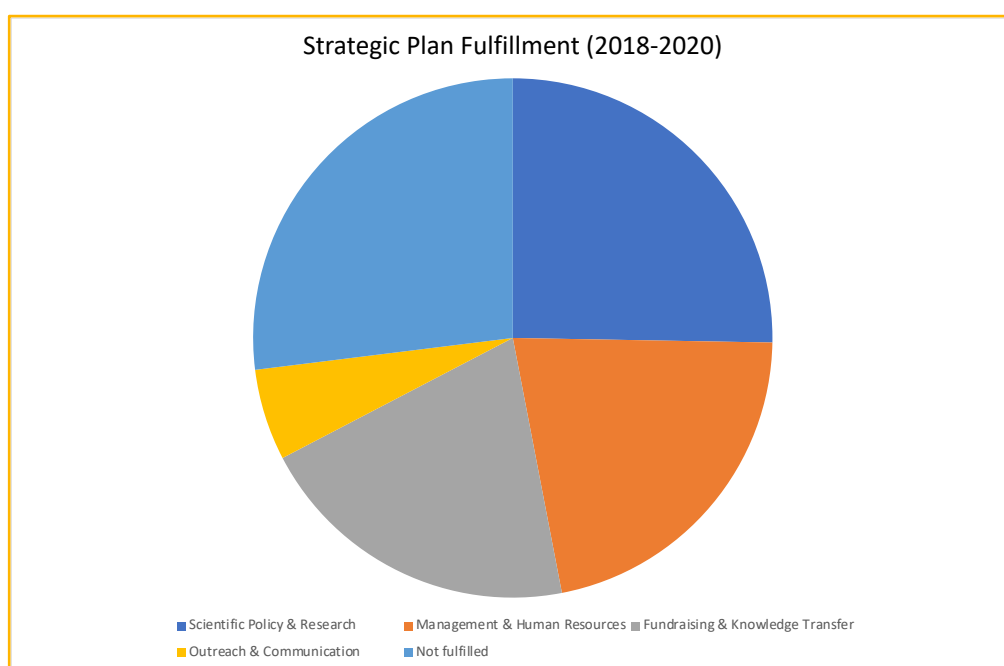
The relative potential impact of the four strategic areas is summarized in the plot below.



In the Strategic Plan, the aforementioned strategic goals were ranked based on the sum of the weighted scores of the internal and external factors included in each of them, and then these values are converted into percentages relative to the total summatory, to evaluate the potential

impact of each goal. In turn, for each goal, several actions were defined, resulting in a total of 38 strategic actions. The potential impact of each goal was distributed among the contained actions based on a total of 84 indicators, which were rated (1 to 4) according to their perceived importance regarding the corresponding action. The average rating for each action within a goal was converted into a percentage of perceived importance, which served to distribute the goal's potential impact among the included actions. A similar procedure was followed to compute the potential impact of the various indicators, which will be used to evaluate the degree of accomplishment of the present Strategic Plan for 2018–2021 at the end of its term. All of the indicators are binary, in the sense that each one includes a criterion/condition) that may be fulfilled (1) or not (0). The summatory of these values multiplied by their respective potential impact percentages will yield the degree of achievement of the strategic plan (from 0% to 100%).

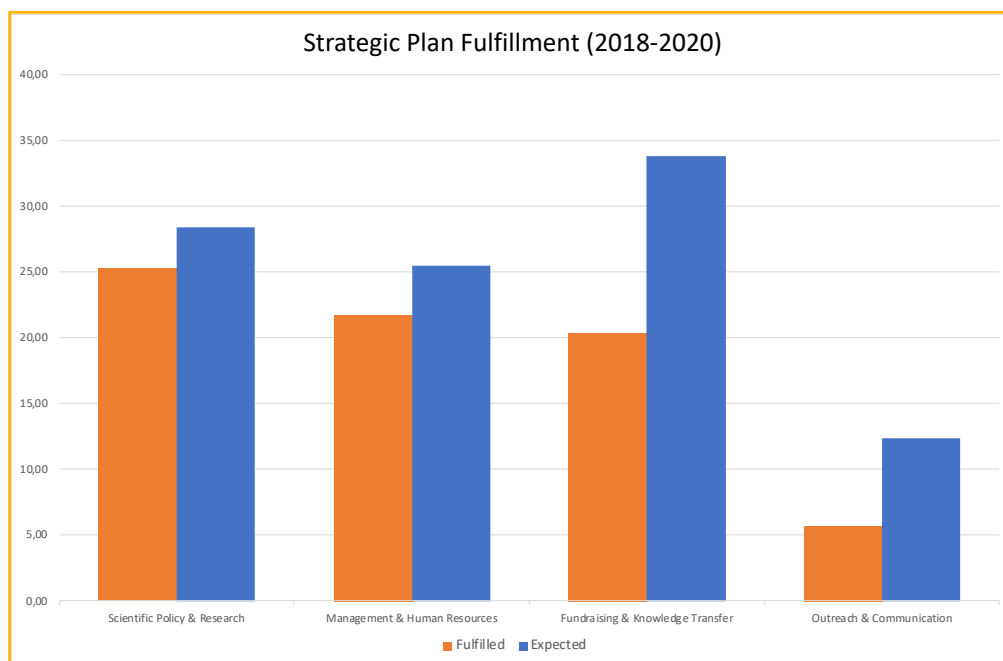
Although the accomplishment of the Strategic Plan cannot be computed until 2022, an approximation can be provided on an annual basis. The results after the first two years (2018–2019) indicated a degree of fulfillment of 76.5%, whereas the results after the first three years (2018–2020) are slightly lower (73.0%).



By strategic areas, the current fulfillment is as follows:

- Scientific Policy & Research (SPR): 25.3% (as compared with 25.4% the previous year) out of a maximum 28.4%.
- Management & Human Resources (MHR): 21.7% (as compared with 21.1% the previous year) out of a maximum 25.5%.
- Fundraising & Knowledge Transfer (FKT): 20.4% (as compared with 25.8% the previous year) out of a maximum 33.8%.

- Outreach & Communication (OC): 5.7% (as compared with 4.3% the previous year) out of a maximum 12.4%.



As it can be seen in the plot above, the strategic area with a greater degree of action fulfillment is SPR (89.1%), followed by MHR (85.1%), FKT (60.4%), and OC (46.8%). MHR and particularly OC have improved as compared to the results for the first two years, while SPR and particularly FKT have decreased to some extent. Taken globally, these figures indicate a slight decrease of the degree of fulfillment of the Strategic Plan (of 3.5 percentual points), which is mostly attributable to the impact of the pandemic. Nevertheless, the global pattern is very similar to that obtained the previous year: the performance of the ICP has improved since the Strategic Plan was issued in early 2018, and its degree of fulfillment is quite satisfactory for SPR and MHR, while there is still much room for improvement regarding FKT and OC; therefore, particular efforts should be devoted to the latter two strategic areas in years to come. The indicators that changed in 2020 as compared with 2019 (from 'yes' to 'no' or vice versa) are **bolded** in the table provided in the following pages.

ICP STRATEGIC GOALS & ACTIONS (2018–2021)	POTENTIAL IMPACT %	FULFILLED? (Yes/No)
SO1 [SPR] — Consolidate the excellent scientific production and productivity of the ICP:		
A1. Encourage ICP researchers to publish more papers in SCI journals	3.31	
I1. Production SCI: 2018-2021 average \geq 2013-2017 average (325/5=65 SCI papers/year)	1.65	Yes
I2. Productivity SCI: 2018-2021 average \geq 2013-2017 average (1.56 SCI papers/SCI author/year)	1.65	Yes
A2. Recruit new research associates, with emphasis on R3 and R4 categories	2.07	
I3. Research associates: 2021 figure > February 2018 figure (18)	1.24	Yes
I4. R3-R4 research associates: 2021 figure > February 2018 figure (10)	0.83	Yes
A3. Promote further international collaborations	1.32	
I5. SCI papers with international collaboration: 2018-2021 % > 2013-2017 % (210/325=64.6% international SCI papers/total SCI papers)	0.33	Yes
I6. SCI international collaborations-1 (including repeated affiliations): 2018-2021 average > 2013-2017 average (515/5 = 103.0 international collaborations-1/year)	0.33	Yes
I7. SCI international collaborations-2 (excluding repeated affiliations): 2018-2021 average > 2013-2017 average (391/5 = 78,2 international collaborations-2/year)	0.33	Yes
I8. SCI international collaborations-1 % (including repeated affiliations): 2018-2021 % \geq 2013-2017 % (515/859 = 60.0% of international/total collaborations-1)	0.17	Yes
I9. SCI international collaborations-2 % (excluding repeated affiliations): 2018-2021 % \geq 2013-2017 % (391/552 = 70.8% international/total collaborations-2)	0.17	Yes
SO2 [SPR] — Consolidate the high quality and impact of the ICP scientific production:		
A4. Encourage ICP researchers to prioritize publication in SCI journals from the first quartile	2.41	
I10. Production Q1: 2018-2021 average > 2013-2017 average (170/5=34 Q1 SCI papers/year)	0.88	Yes
I11. Productivity Q1: 2018-2021 average > 2013-2017 average (0.82 SCI papers/SCI author)	0.88	Yes
I12. Q1 ratio %: 2018-2021 % \geq 2013-2017 % (170/325=52.3% Q1/total SCI papers)	0.66	Yes
A5. Encourage ICP researchers to target more often SCI journals from the multidisciplinary category	1.84	
I13. Production multidisciplinary: 2018-2021 average > 2013-2017 average (51/5=10.2 multidisciplinary SCI papers/year)	0.53	Yes
I14. Multidisciplinary ratio %: 2018-2021 % \geq 2013-2017 % (51/325=15.7% multidisciplinary/total SCI papers)	0.39	Yes
I15. Minimum multidisciplinary ratio %: 2021 figure > 20%	0.26	No
I16. h-index R3: 2021 average > February 2018 average (12.3)	0.26	Yes
I17. h-index R4: 2021 average > February 2018 average (22.4)	0.39	Yes
A6. Encourage ICP researchers to favor journals with high impact factors and/or impact factor percentiles	1.65	
I18. SCI IF GM: 2018-2021 average \geq 2013-2017 average (2.1 IF GM/year)	0.66	Yes
I19. SCI median JIF percentile: 2018-2021 average \geq 2013-2017 average (77.6 median JIF percentile/year)	0.99	No

WO1 [SPR] — Increase the excellent visibility of the scientific production of the ICP by promoting publication in open-access papers:		
A7. Encourage ICP researchers to publish in SCI open-access journals	1.89	
I20. OA SCI ratio %: 2018-2021 average > 2013-2017 average (85/325=26.2% OA/total SCI papers)	1.26	Yes
I21. OA SCI ratio % in 2021: 2018-2021 average >= 33%	0.63	Yes
WO2 [SPR] — Improve research support provided to ICP researchers by the Virtual Paleontology Area:		
A8. Elaboration of a viability plan for the CT and subsequent repair	1.82	
I22. CT viability plan: CT viability plan finished in 2018	1.04	No
I23. CT repair: CT repaired not later than 2021	0.78	No
ST1 [SPR] — Preserve the high competitiveness and foster the fidelity of ICP researchers by means of maintaining the excellent research support provided to them:		
A9. Maintain or increase the number of research support staff	6.54	
I24. Research support staff: 2021 non-research personnel >= February 2018 non-research personnel	6.54	Yes
ST2 [SPR] — Provide to researchers specific guidelines of ethics in publishing, with emphasis on intellectual property rights and authorship issues:		
A10. Elaborate a manual of best practices in research, in relation to intellectual property and authorship.	3.09	
I25. Manual of best practices: Manual available not later than 2020	0.66	Yes
I26. Lack of internal complaints: 0 external complaints about intellectual property during 2018-2021	0.44	Yes
I27. Lack of external complaints: 0 external complaints about intellectual property during 2018-2021	0.44	Yes
I28. Expressions of concerns: 0 expressions of concerns in 2018-2021	0.66	Yes
I29. Retractions: 0 retractions in 2018-2021	0.88	Yes
WT1 [SPR] — Foster talent retention and attraction to secure the continuity of the successful ICP research lines:		
A11. Encourage R3-R4 talented ICP researchers to stay at the ICP	1.60	
I30. R3-R4 researchers: 2021 R3+R4 researchers >= February 2018 R3+R4 researchers	1.60	Yes
A12. Correct the disequilibria between NQF and the remaining research groups.	0.80	
I31. NQF researchers %: 2021 NQF staff <= 33%	0.53	Yes
I32. SCI NQF production %: 2018-2021 % <= 2013-2017 % (164/325=50.5% SCI papers/year)	0.27	Yes
SO3 [MHR] — Increase the critical mass of ICP staff researchers by fostering talent attraction, with emphasis on the recruitment of foreign researchers:		
A13. Maintain or increase the critical mass of ICP researchers	3.97	
I33. Staff researchers: 2021 researchers >= February 2018 researchers (24)	3.97	Yes
A14. Increase the number of foreign ICP staff researchers, both in absolute and relative terms	2.48	
I34. Foreign researchers: 2021 foreign researchers > February 2018 foreign researchers (2)	1.49	Yes
I35. Foreign researchers ratio %: 2021 % > February 2018 % (2/24=8.3%)	0.99	Yes
A15. Encourage former R1 and R2 researchers to come back to the ICP after a postdoctoral phase abroad	1.99	
I36. R1-R2 returned %: 2021 former R1 or R2 researchers returned > 20%	1.99	Yes

SO4 [MHR] — Increase talent attraction at early career stages:		
A16. Increase the number of R1 and R2 researchers at the ICP	2.44	
I37: R1-R2 researchers: 2021 R1+R2 researchers >= February 2018 R1+R2 researchers (13)	2.44	No
A17. Increase the number of master students supervised by ICP researchers	2.44	
I38: Master theses: 2018-2021 average > 2013-2017 average (35/5=7.0 master theses/year), i.e., at least 28 supervised master theses in 2017-2021	2.44	Yes
A18. Increase the number of PhD candidates supervised by ICP researchers	3.05	
I39: PhD dissertations: 2018-2021 average > 2013-2017 average (16/5=3.2 PhD dissertations/year), i.e., at least 13 supervised finished PhD in 2017-2021	1.83	Yes
I40. Ongoing PhD: 2021 ongoing PhD > 2016 ongoing PhD (19)	1.22	Yes
SO5 [MHR] — Improve the internal cohesion and coordination and promote staff involvement in decision-making at the ICP by implementing the new Organization Chart:		
A19. Organize a meeting of the Steering Committee almost every month	2.03	
I41. Steering Committee meetings: 2018-2021 average >= of 10 meetings/year	2.03	Yes
A20. Regularly organize meetings of the various ICP advisory organs	1.01	
I42. Researchers Commission meetings: 2018-2021 average >= of 2 meetings/year	1.01	Yes
A21. Organize coordination meetings of quarterly periodicity	1.01	
I43. Coordination meetings: 2018-2021 average >= of 4 meetings/year	1.01	No
WT2 [MHR] — Improve the salaries and general working conditions of ICP staff (including HRS4R implementation) in spite of financial risks and budgetary constraints:		
A22. Improve the ICP salaries of non-competitive staff to the level before the budget cuts during the crisis	1.00	
I44. ICP salaries: 2020 salaries > 2018 salaries	1.00	Yes
A23. Implementation of excellence in human resources for researchers according to the ICP HRS4R Action Plan	1.00	
I45. HRS4R award: HRS4R award before 2021	0.44	Yes
I46. HRS4R Implementation Commission meetings: 2018-2021 average >= of 4 meetings/year	0.33	No
I47. Non-Discrimination Committee meetings: 2018-2021 average >= of 3 meetings/year	0.22	Yes
A24. Elaborate a strategy for the professional development of researchers.	0.67	
I48. Career development: Manual written not later than 2020	0.67	Yes
WT3 [MHR] — Improve the effectiveness and internationalization of researchers' recruitment by developing and implementing OTM-R policies:		
A25. Elaborate a protocol for the evaluation, internal promotion and recruitment of researchers	2.39	
I49. Recruitment protocol: Protocol written not later than 2019	1.06	Yes
I50. International publicization: No new research positions without international publicization	0.53	Yes
I51. Selection: No new research positions without a selection committee	0.80	Yes
SO6 [FKT] — Increase the ICP operating budget by means of the provision of external services:		
A26. Promote the provision of external services by the Research Support & External Services Department	7.57	
I52. External services: 2018-2021 average > 2012-2017 average (535,000/5=ca. 107,000 €/year)	4.32	Yes
I53. External services 50% increase: 2021 figure >= 2017 figure x 1.3 (ca. 128,500 € x 1.3=ca. 167,000 €/year)	3.24	Yes

SO7 [FKT] — Increase the ICP operating budget by means of competitive calls or research projects and grants, with emphasis on ERC grants and the application of modern techniques to paleontological research:		
A27. Promote fundraising by means of competitive projects and grants achieved by the research groups	2.91	
I54. Competitive funding for projects: 2018-2021 average > 2013-2017 average (0.29 M€/year)	2.91	No
A28. Increase the competitive income from Catalan and Spanish research projects	2.54	
I55. Catalan competitive funding for projects: 2018-2021 average > 2013-2017 average (0.10 M€/year)	1.09	No
I56. Spanish competitive funding for projects: 2018-2021 average > 2013-2017 average (0.18 M€/year)	1.45	Np
A29. Obtain significant European funding (e.g., ERC grant)	2.91	
I57. Significant international funding: >= 1 ERC grant (or equivalent) in 2018-2021	2.91	No
A30. Consolidate competitive funding for predoctoral grants as well as postdoctoral and tenure-track contracts	2.54	
I58. Tenure-track competitive contracts (RyC): At least 1 new RyC in 2018-2021	0.92	No
I59. Postdoctoral competitive contracts (JdC+BP): At least 3 new postdoctoral contracts in 2018-2021	0.69	Yes
I60. Predoctoral competitive grants (FI+FPI+FPU): At least 4 new predoctoral grants in 2018-2021	0.46	Yes
I61. Technician cofunding (PTA): At least 2 new PTA in 2018-2021	0.46	No
SO8 [FKT] — Foster knowledge transfer also in relation to training:		
A31. Maintain and further promote university training by means of teaching in university masters and courses	7.14	
I62. Master: Still ongoing in 2021	3.57	Yes
I63. Transmitting Science: Still ongoing in 2021	3.57	Yes
WO3 [FKT] — Increase the ICP operating budget by means of competitive calls for dissemination and outreach activities:		
A32. Promote the achievement of competitive funding for scientific dissemination and outreach	5.13	
I64. Competitive funding for communication %: 2018-2021 average > 10% total competitive funds	2.20	No
I65. Competitive funds for exhibit remodeling: 2018-2021 funds >= 50,000 €	1.47	No
I66. Conca Dellà Museum and Dinosfera funding: 2018-2021 funds >= 50,000 €	1.47	Yes
WT4 [FKT] — Avoid budgetary deficit at the ICP and increase the ratio of competitive + private income relative to the total budget:		
A33. Increase the ratio between competitive funds s.l. (competitive + external services) and total operating budget above 50%	3.05	
I67. Competitive s.l. vs. total budget ratio %: 2018-2021 average > 2013-2017 average (3.26 M€ / 7.28 M€ = 45%)	1.74	Yes
I68. Competitive s.l. vs. total budget ratio 50%: 2021 competitive + external / total > 50%	1.31	Yes
SO9 [OC] — Promote further the dissemination of the research performed by ICP researchers by means of digital media:		
A34. Promote the visibility of the ICP website	5.63	
I69. Website visitors: 2018-2021 average >= 2016-2017 average (Google Analytics: ca. 25,500 website visitors/year)	1.30	Yes
I70. Web news: 2018-2021 average >= 35 news/year	1.30	No
I71. Web news in Spanish: 2018-2021 web news in Spanish >= 80% web news in Catalan	0.87	Yes
I72. Web news hits: 2018-2021 average >= 2015-2017 average (ca. 60,000 web news hits/year)	0.87	Yes

I73. Web news hits/post: 2017-2021 average >= 2015-2016 average (1664 web news hits/post)	0.87	Yes
I74. English web news hits/post: 2018-2021 average > 2015-2017 average (656 web news hits/post)	0.43	No
A35. Promote the visibility of the ICP on social networks	3.47	
I75. Facebook 'likes': 2018-2021 average > 2013-2017 average (311 FB 'likes'/year)	1.73	No
I76. Twitter followers (Museum): 2018-2021 average >= 2013-2017 average (198 new followers/year)	0.87	No
I77. Twitter followers (ICP): 2018-2021 average >= 2013-2017 average (157 new followers/year)	0.86	Yes
SO10 [OC] — Promote further the outreach activities performed by the ICP:		
A36. Attract a higher number of visitors to the ICP Museum in Sabadell	1.23	
I78. Museum visitors: 2018-2021 average >= 2013-2017 average (18,715 museum visits/year)	0.61	No
I79. Museum temporary exhibits: >= 4 temporary exhibits 2018-2021	0.61	No
A37. Elaborate a remodeling plan for the permanent exhibit of the ICP Museum in Sabadell	0.82	
I80. Museum remodeling plan: Plan available not later than 2021	0.82	No
A38. Increase the territorial scope of the ICP outreach activities	1.23	
I81. CosmoCaixa exhibits: >=2 collaborations in 2018-2021	0.41	Yes
I82. Temporary exhibits organization: >= 1 organization in 2018-2021	0.31	No
I83. Conca Dellà Museum and Dinosfera: Relationship still ongoing in 2021	0.31	Yes
I84. Agreements with city councils: >= 2 collaborations active in 2021	0.20	Yes
TOTAL (Potential impact to the left as compared to accomplished impact to the left, in %; the impact of each indicator is summed when fulfilled)	100	73,0

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 sur la Paléobiodiversité et les Paléoenvironnements (CR2P), CNRS-MNHN-Sorbonne Université, France (currently named Centre de Recherche en Paléontologie).

In the CERCA Evaluation Questionnaire elaborated in 2018, the comparison of the ICP with the above-mentioned institutions was circumscribed for the five preceding years (2013–2017). However, in the 2018 and 2019 Annual Reports, updated versions of these results based on the scientific production and productivity for years 2014–2018 and 2015–2019 was provided. Here we further update these comparisons based on the 2020 results for the period 2016–2020, by relying on a slightly simplified methodology that removes some indicators that were a bit redundant and others that were not stable through time (open access).

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.

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

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, multidisciplinaryity, 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.

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/>).

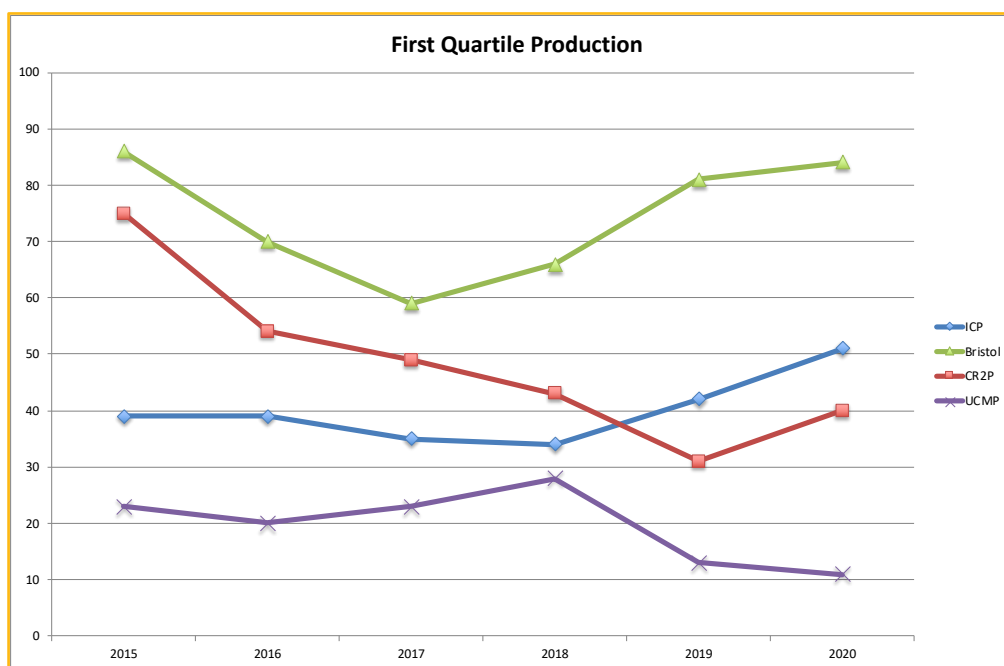
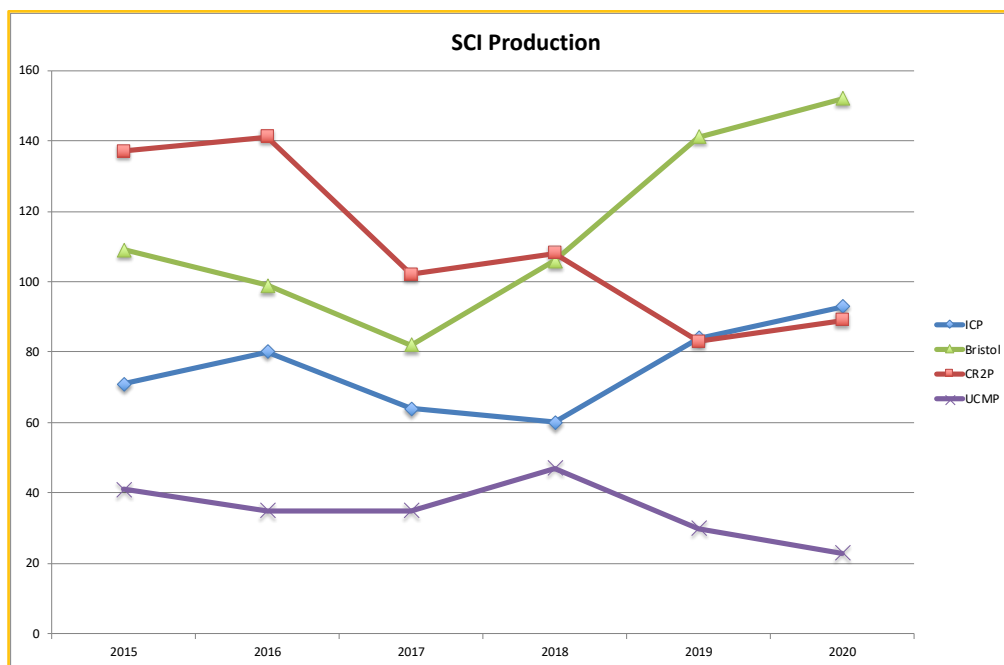
- Centre de Recherche en Paléontologie (CR2P), CNRS-MNHN-Sorbonne Université, France:**
 This research center is exclusively devoted to paleontology (in a broad sense). It aims at elucidating the phylogenetic patterns and evolutionary history of living organisms through the fossil record and environments 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 2020, the preceding five years (2015-2019), and the average for the latter period are reported in the following table. Relative indicators are denoted in *italics*.

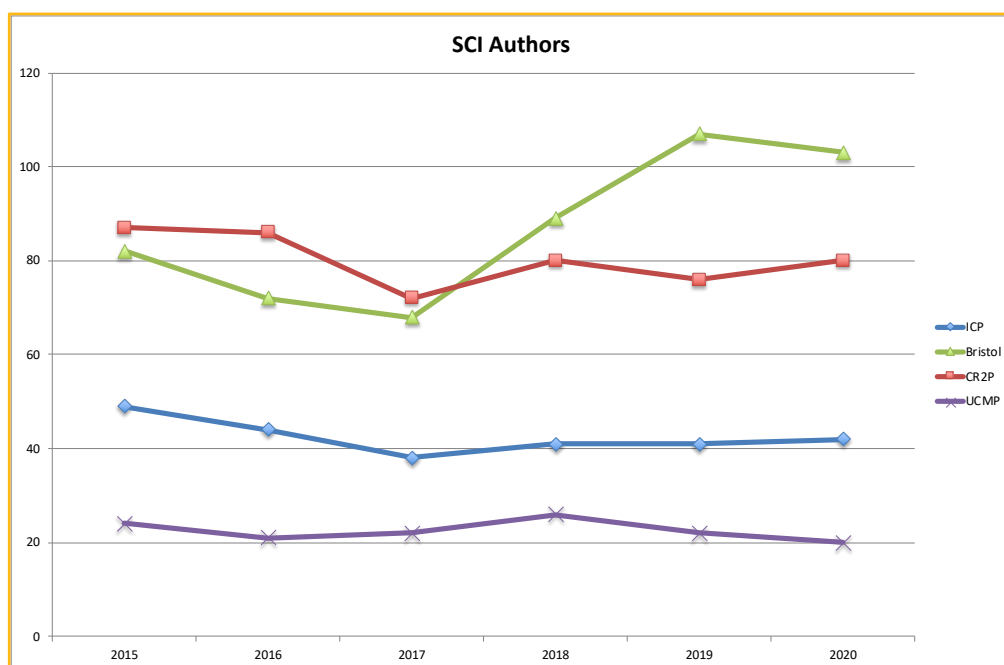
INSTITUTION	METRIC	2015	2016	2017	2018	2019	2015-2019	2020
ICP	SCI papers	72	80	64	60	84	71.8	93
PRG	SCI papers	109	99	82	106	141	107.4	152
CR2P	SCI papers	137	141	102	108	83	114.2	89
UCMP	SCI papers	41	35	35	47	30	37.6	23
ICP	SCI Q1	39	39	35	34	42	37.8	51
PRG	SCI Q1	86	70	59	66	81	72.4	84
CR2P	SCI Q1	75	54	49	43	31	50.4	40
UCMP	SCI Q1	23	20	23	28	13	21.4	11
ICP	SCI authors	49	44	38	41	41	42.6	42
PRG	SCI authors	82	72	68	89	107	83.6	103
CR2P	SCI authors	87	86	72	80	76	80.2	80
UCMP	SCI authors	24	22	22	26	22	23.0	20
ICP	<i>SCI productivity</i>	<i>1.47</i>	<i>1.82</i>	<i>1.68</i>	<i>1.46</i>	<i>2.05</i>	<i>1.69</i>	<i>2.21</i>
PRG	<i>SCI productivity</i>	<i>1.33</i>	<i>1.38</i>	<i>1.21</i>	<i>1.19</i>	<i>1.32</i>	<i>1.28</i>	<i>1.48</i>
CR2P	<i>SCI productivity</i>	<i>1.57</i>	<i>1.64</i>	<i>1.42</i>	<i>1.35</i>	<i>1.09</i>	<i>1.41</i>	<i>1.11</i>
UCMP	<i>SCI productivity</i>	<i>1.71</i>	<i>1.67</i>	<i>1.59</i>	<i>1.81</i>	<i>1.36</i>	<i>1.63</i>	<i>1.15</i>
ICP	<i>SCI Q1 productivity</i>	<i>0.80</i>	<i>0.89</i>	<i>0.92</i>	<i>0.83</i>	<i>1.02</i>	<i>0.89</i>	<i>1.21</i>
PRG	<i>SCI Q1 productivity</i>	<i>1.05</i>	<i>0.97</i>	<i>0.87</i>	<i>0.74</i>	<i>0.76</i>	<i>0.88</i>	<i>0.82</i>
CR2P	<i>SCI Q1 productivity</i>	<i>0.86</i>	<i>0.63</i>	<i>0.68</i>	<i>0.54</i>	<i>0.41</i>	<i>0.62</i>	<i>0.50</i>
UCMP	<i>SCI Q1 productivity</i>	<i>0.96</i>	<i>0.95</i>	<i>1.05</i>	<i>1.08</i>	<i>0.59</i>	<i>0.92</i>	<i>0.55</i>
ICP	<i>SCI Q1 ratio %</i>	<i>54.9</i>	<i>48.8</i>	<i>54.7</i>	<i>56.7</i>	<i>50.0</i>	<i>53.0</i>	<i>54.8</i>
PRG	<i>SCI Q1 ratio %</i>	<i>78.9</i>	<i>70.7</i>	<i>72.0</i>	<i>62.3</i>	<i>57.4</i>	<i>68.3</i>	<i>55.3</i>
CR2P	<i>SCI Q1 ratio %</i>	<i>54.7</i>	<i>38.3</i>	<i>48.0</i>	<i>39.8</i>	<i>37.3</i>	<i>43.6</i>	<i>44.9</i>
UCMP	<i>SCI Q1 ratio %</i>	<i>56.1</i>	<i>57.1</i>	<i>65.7</i>	<i>59.6</i>	<i>43.3</i>	<i>56.4</i>	<i>47.8</i>
ICP	SCI leadership	36	36	23	24	35	30.8	36

PRG	SCI leadership	71	56	50	58	75	62.0	74
CR2P	SCI leadership	58	57	38	36	48	47.4	46
UCMP	SCI leadership	15	18	25	29	17	20.8	7
ICP	Q1 leadership	24	20	14	13	17	17.6	21
PRG	Q1 leadership	53	40	35	34	45	41.4	42
CR2P	Q1 leadership	31	20	14	16	15	19.2	17
UCMP	Q1 leadership	9	9	18	17	8	12.2	3
ICP	SCI leadership ratio %	50.0	45.0	35.9	40.0	41.7	42.7	38.7
PRG	SCI leadership ratio %	65.1	56.6	61.0	54.7	53.2	58.1	48.7
CR2P	SCI leadership ratio %	42.3	40.4	37.3	33.3	57.8	42.2	51.7
UCMP	SCI leadership ratio %	36.6	51.4	71.4	61.7	56.7	55.6	30.4
ICP	Q1 leadership ratio %	61.5	51.3	40.0	38.2	40.5	46.3	41.2
PRG	Q1 leadership ratio %	61.6	57.1	59.3	51.5	55.6	57.0	50.0
CR2P	Q1 leadership ratio %	41.3	37.0	28.6	37.2	48.4	38.5	42.5
UCMP	Q1 leadership ratio %	39.1	45.0	78.3	60.7	61.5	56.9	27.3
ICP	SCI median JIF %ile	80.8	73.8	77.3	78.5	76.1	77.3	76.8
PRG	SCI median JIF %ile	90.0	87.6	89.4	87.9	83.5	87.7	79.7
CR2P	SCI median JIF %ile	80.7	67.6	78.2	71.1	68.3	73.2	73.4
UCMP	SCI median JIF %ile	78.6	80.6	84.5	86.5	71.5	80.3	71.8
ICP	SCI IF GM	2.11	1.99	2.17	2.58	3.05	2.38	3.33
PRG	SCI IF GM	3.43	3.61	3.56	3.45	3.25	3.46	3.76
CR2P	SCI IF GM	2.01	2.07	2.29	1.86	2.16	2.08	2.21
UCMP	SCI IF GM	2.93	3.26	3.45	3.18	2.83	3.13	3.38
ICP	Paleontology	28	38	27	22	30	29.0	29
PRG	Paleontology	29	21	26	22	49	29.4	26
CR2P	Paleontology	65	57	42	36	43	48.6	30
UCMP	Paleontology	12	8	11	3	7	8.2	6
ICP	Multidisciplinary sciences	12	8	14	13	11	11.6	21
PRG	Multidisciplinary sciences	19	18	15	20	19	18.2	25
CR2P	Multidisciplinary sciences	15	16	16	10	9	13.2	7
UCMP	Multidisciplinary sciences	8	10	8	7	6	7.8	5
ICP	%Paleontology	39.4	47.5	42.2	36.7	35.7	40.3	31.2
PRG	%Paleontology	26.6	21.2	31.7	20.8	34.8	27.0	17.1
CR2P	%Paleontology	47.4	40.4	41.2	33.3	51.8	42.8	33.7
UCMP	%Paleontology	29.3	22.9	31.4	6.4	23.3	22.7	26.1
ICP	%Multidisciplinary sci.	16.9	10.0	21.9	21.7	13.1	16.7	22.6
PRG	%Multidisciplinary sci.	17.4	18.2	18.3	18.9	13.5	17.2	16.4
CR2P	%Multidisciplinary sci.	10.9	11.3	15.7	9.3	10.8	11.6	7.9
UCMP	%Multidisciplinary sci.	19.5	28.6	22.9	14.9	20.0	21.2	21.7
ICP	SCI papers int. coll.	46	52	47	48	67	52.0	80
PRG	SCI papers int. coll.	65	67	50	75	108	73.0	113
CR2P	SCI papers int. coll.	99	100	72	74	55	80.0	67
UCMP	SCI papers int. coll.	27	23	17	18	6	18.2	15
ICP	SCI papers int. coll. (%)	64.8	65.0	73.0	80.0	79.8	72.6	86.0
PRG	SCI papers int. coll. (%)	59.6	67.7	61.0	70.8	76.6	67.1	74.3
CR2P	SCI papers int. coll. (%)	72.3	70.9	70.6	68.5	66.3	69.7	75.3
UCMP	SCI papers int. coll. (%)	65.9	65.7	48.6	38.3	20.0	47.7	65.2

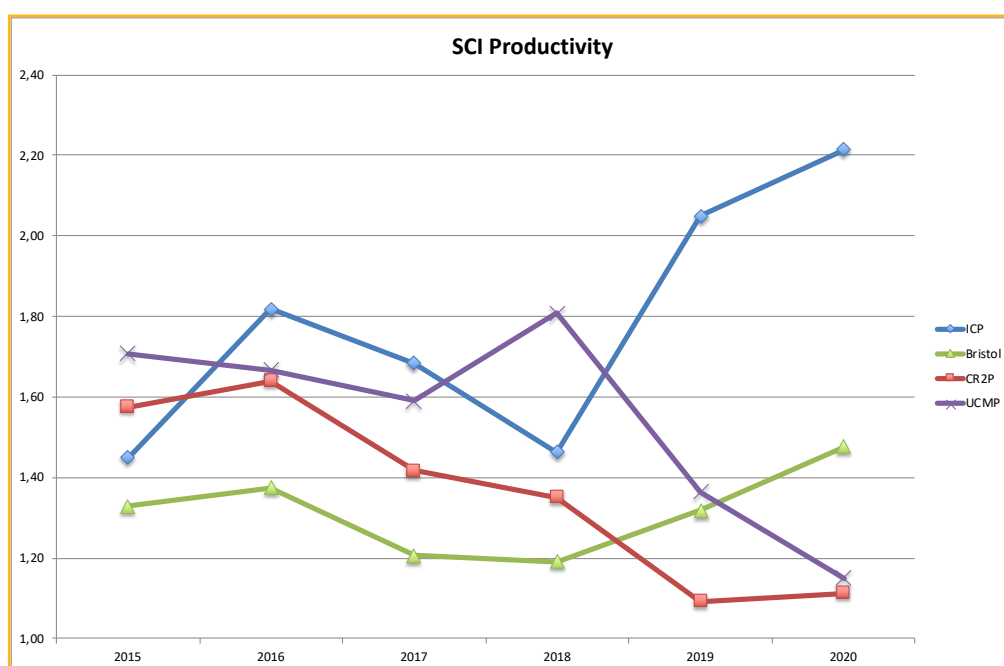
Production. In average SCI production and Q1 SCI production for the five previous years (2015-2019), the ICP is the third institution after Bristol and Paris, but in 2020 the ICP is the second institution for both metrics—only after Bristol.

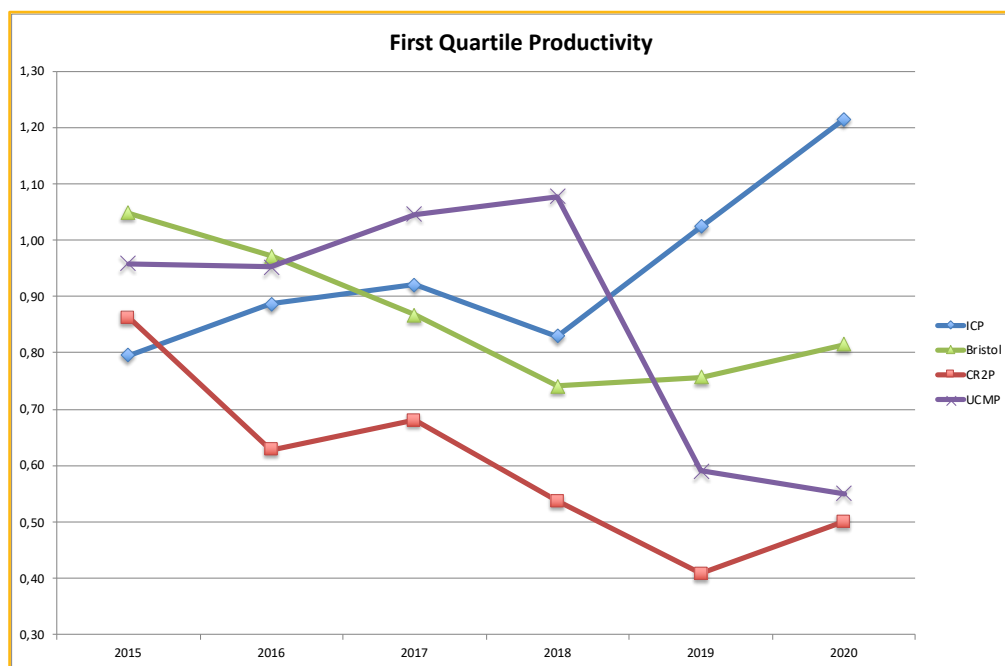


Productivity. The above-mentioned differences in total SCI and Q1 production are to a large extent attributable to differences in the number of authors of each institution—but not exclusively, as shown by the fact that the ICP the third institution in number of authors, not only or the five preceding years but also for 2020.

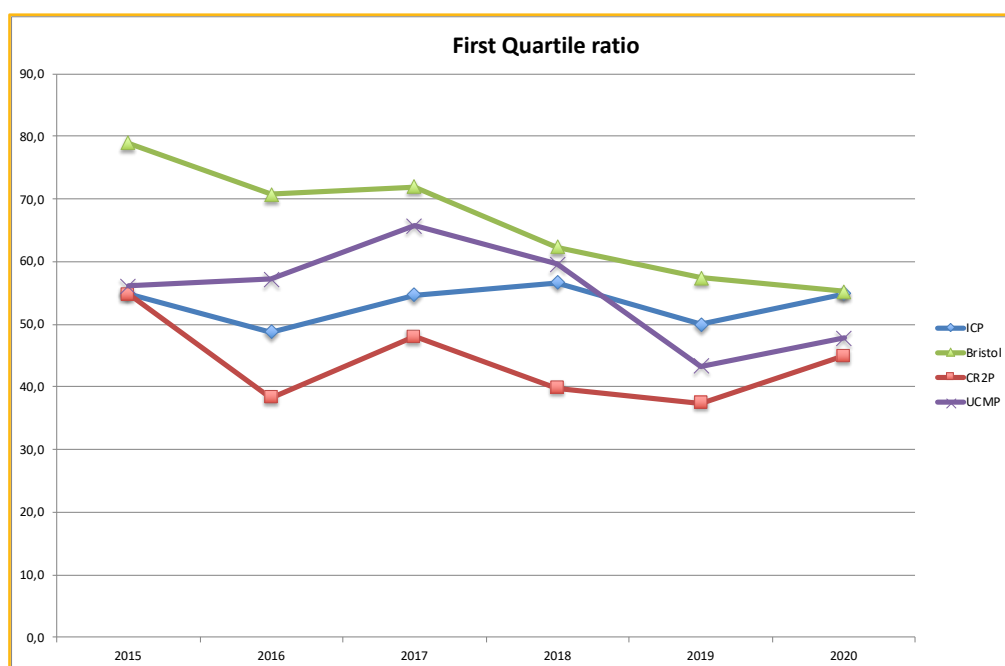


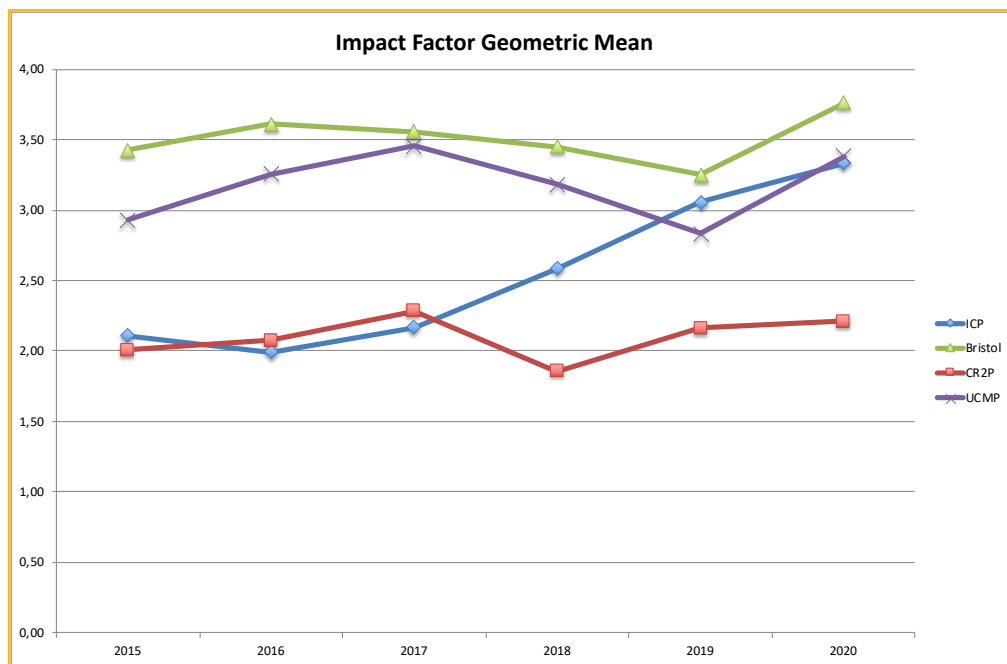
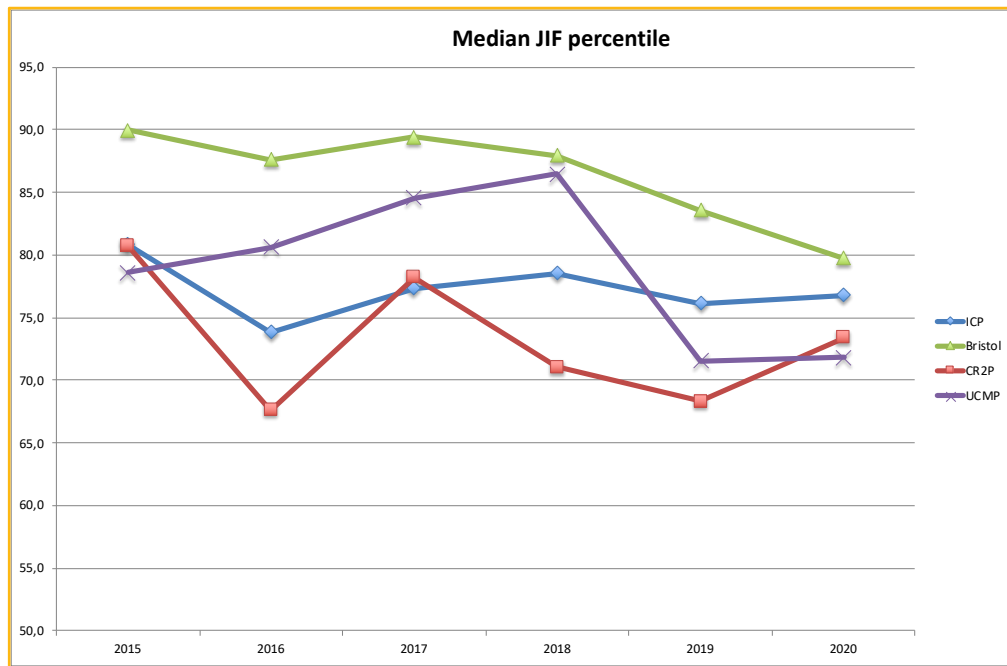
When productivity is computed by dividing production by authors, it emerges that the ICP is the first institution in total SCI productivity and Q1 productivity for 2020, while it is respectively the first and the second for the average of the five preceding years. It is most noteworthy the increase in SCI and Q1 productivity of the ICP during 2019 and 2020.



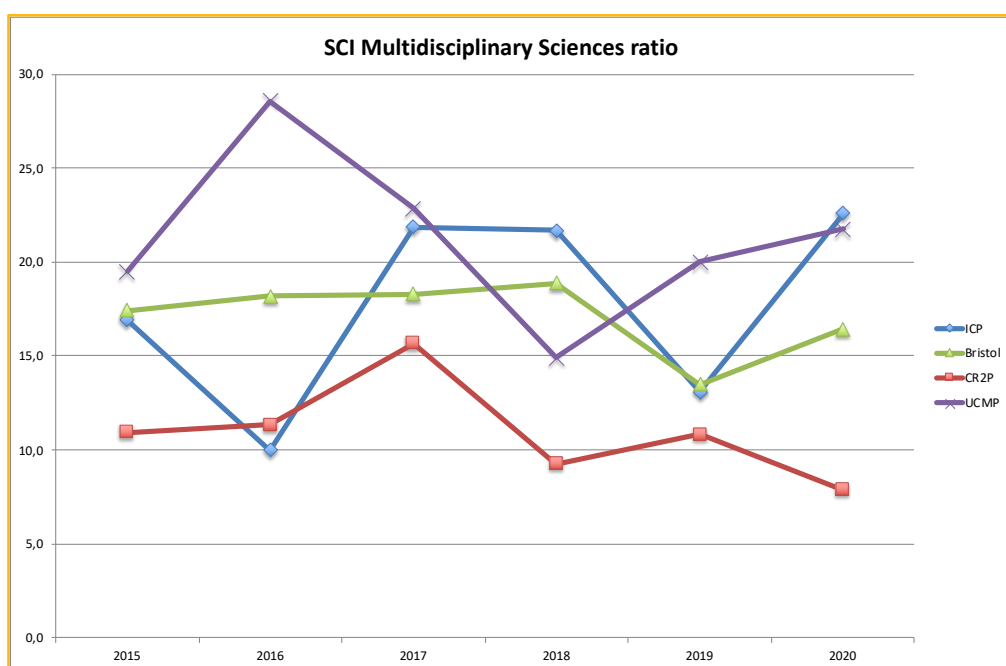
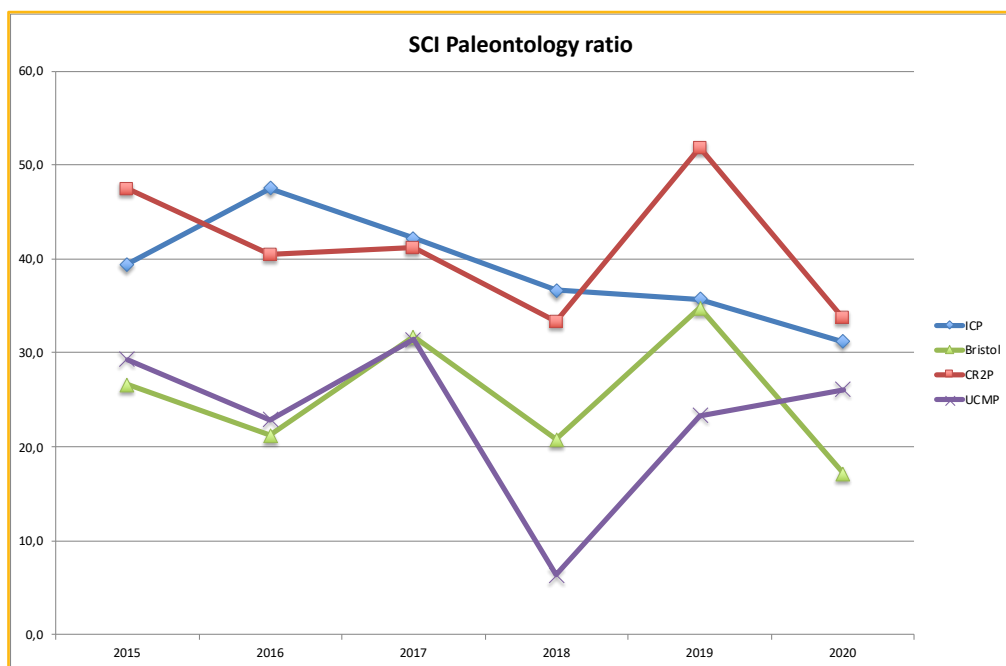


Quality and impact. With regard to the percentage of papers published in first quartile SCI journals, the ICP is the first institution in 2020 (closely followed by Bristol), but only the third in terms of the average for the five preceding years. With regard to the median JIF percentile and the geometric mean of the impact factor, the ICP is the second institution in 2020 and the third for the five preceding years. Overall, these data reflect that the increase of production and productivity of the ICP in 2020 has not been accompanied by a decrease in quality or impact, but rather the contrary.

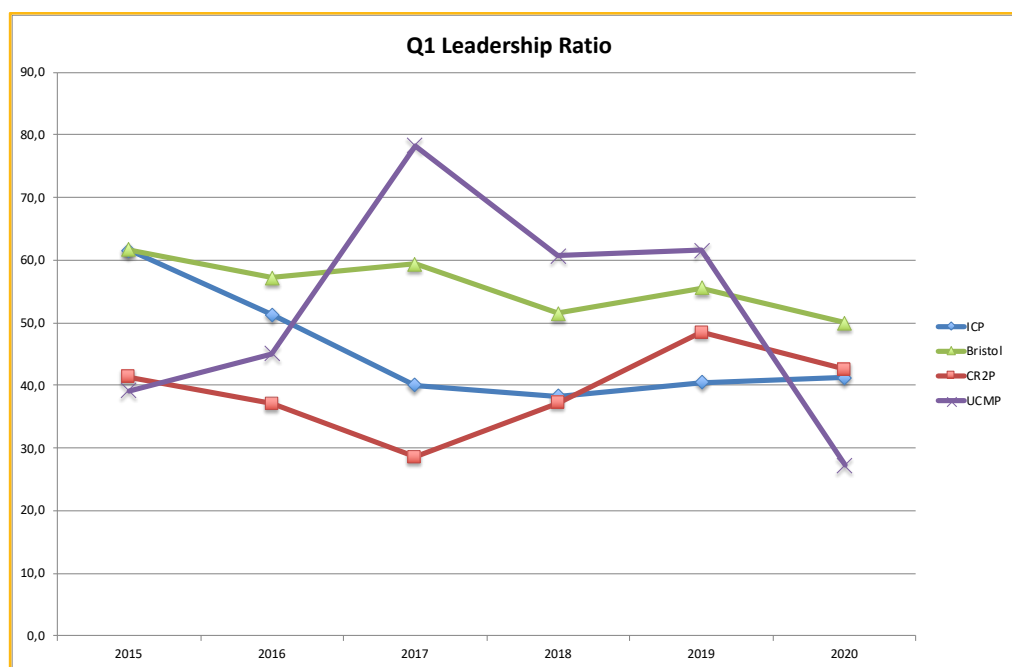
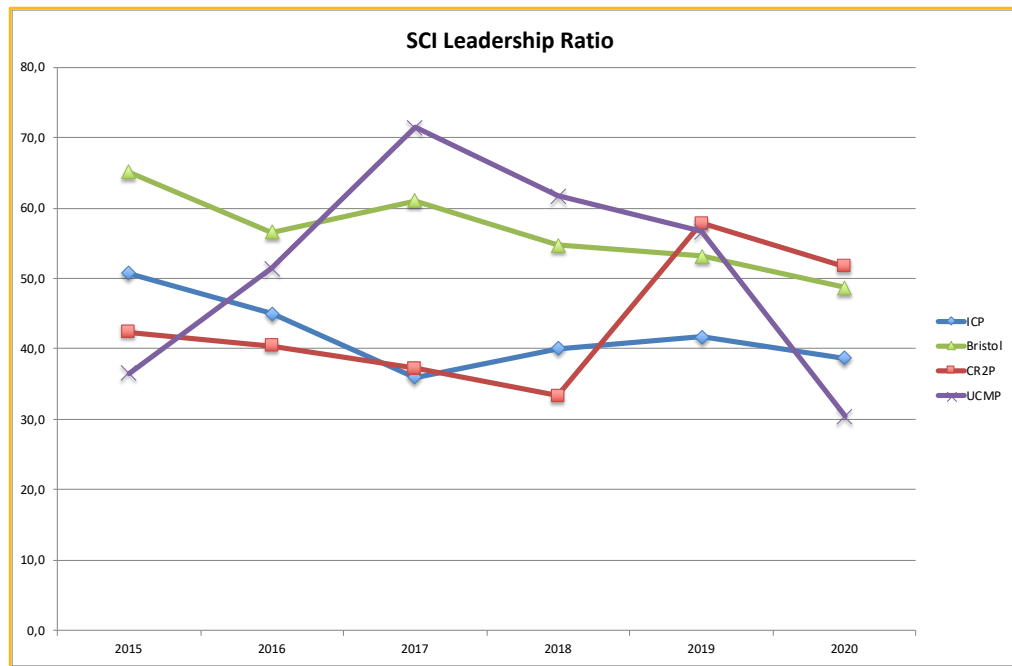




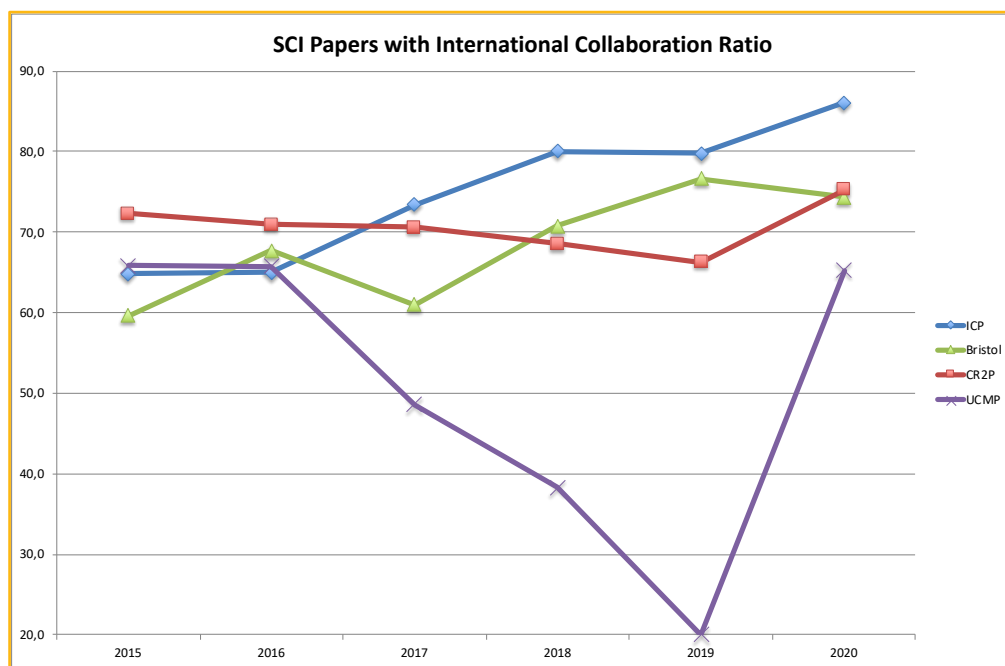
Discipline specificity and multidisciplinary. Based on the proportion of papers published in SCI journals from the category 'Paleontology', the ICP occupies the second position in 2020, and the third for the five preceding years after Paris and closely approaching Bristol. The same situation is found for papers published in the category 'Multidisciplinary sciences', except that the relative positions of Paris and Bristol are exchanged.



Leadership. The ICP ranks as the third institution in terms of SCI and Q1 leadership (as measured by the corresponding author) for both the previous five years and for 2020. The results for the ICP have remained quite stable for the past three years, after some decrease between 2015 and 2017.



International collaborations. For the ratio of papers with international collaboration(s), the ICP is recovered as the first institution for both 2015-2019 and 2020.

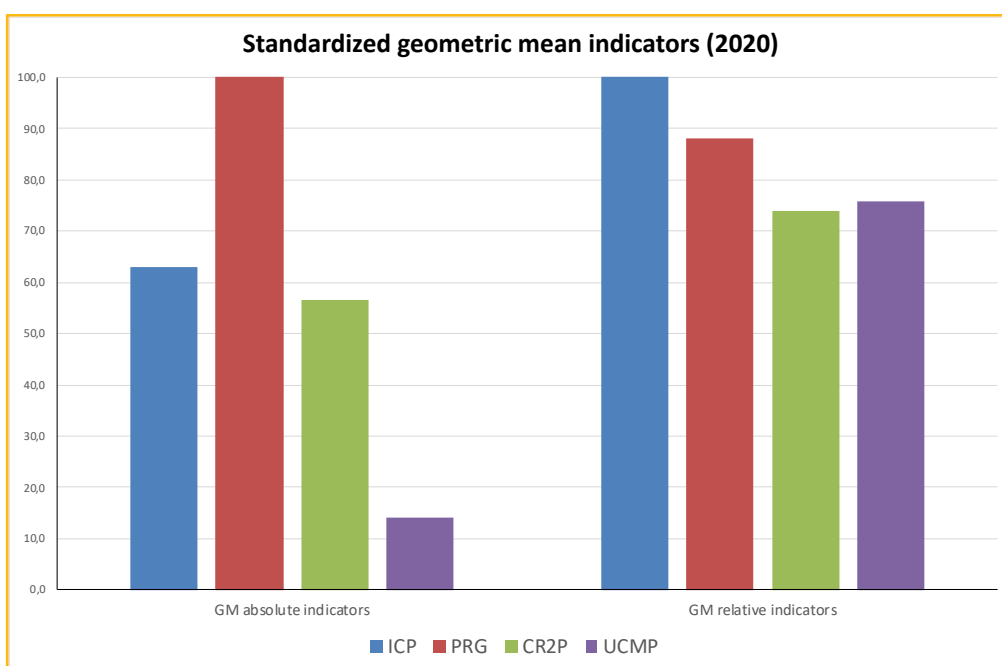
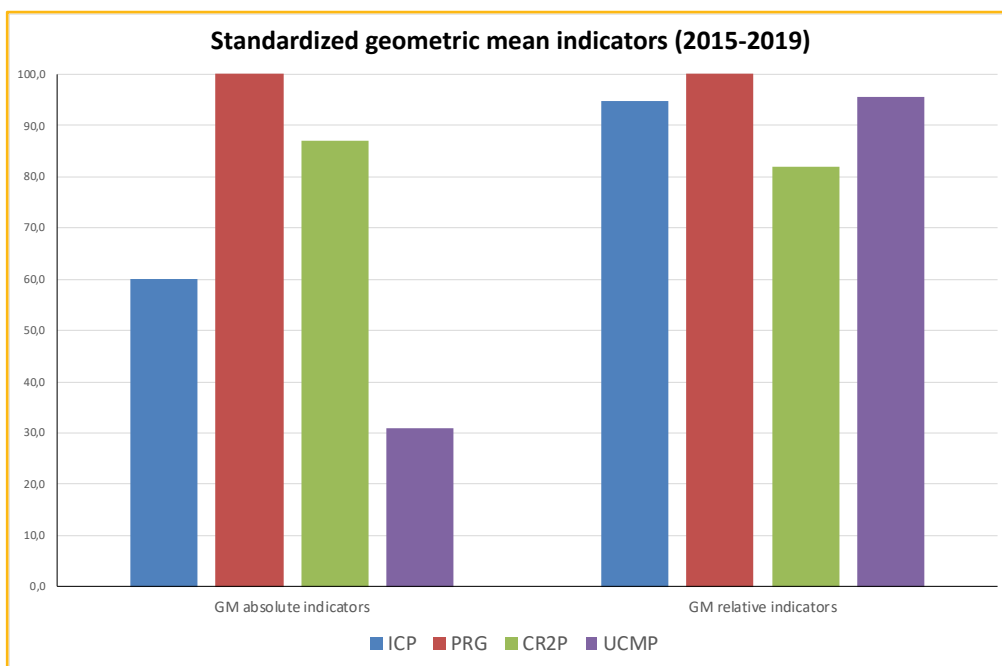


Summary results and rankings. The results for the 2015-2019 annual average values and the 2020 values can be compared by means of two synthetic metrics: the geometric mean (GM) of the indicators; and the GM of the indicators relative to that of the institution with the highest GM (in %). The results are reported below for absolute and relative indicators separately.

For the previous five years, the ICP is ranked third in absolute terms (after Bristol and Paris, with a performance of ca. 60% that of Bristol) and in relative terms (after Bristol and Berkeley, with a performance of ca. 95% that of Bristol). The numerical results for the ICP in 2020 for both absolute and relative indicators indicate an improvement relative to the previous years, as it is ranked second in absolute terms (ca. 63% the performance of Bristol) and first in relative terms (with Bristol displaying a performance ca. 88% that of the ICP).

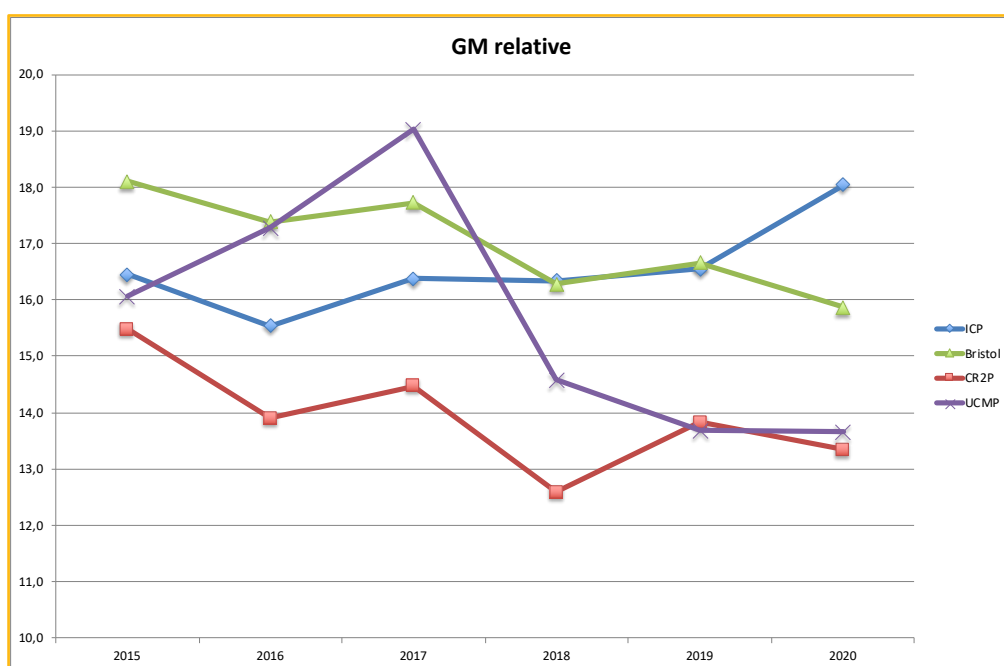
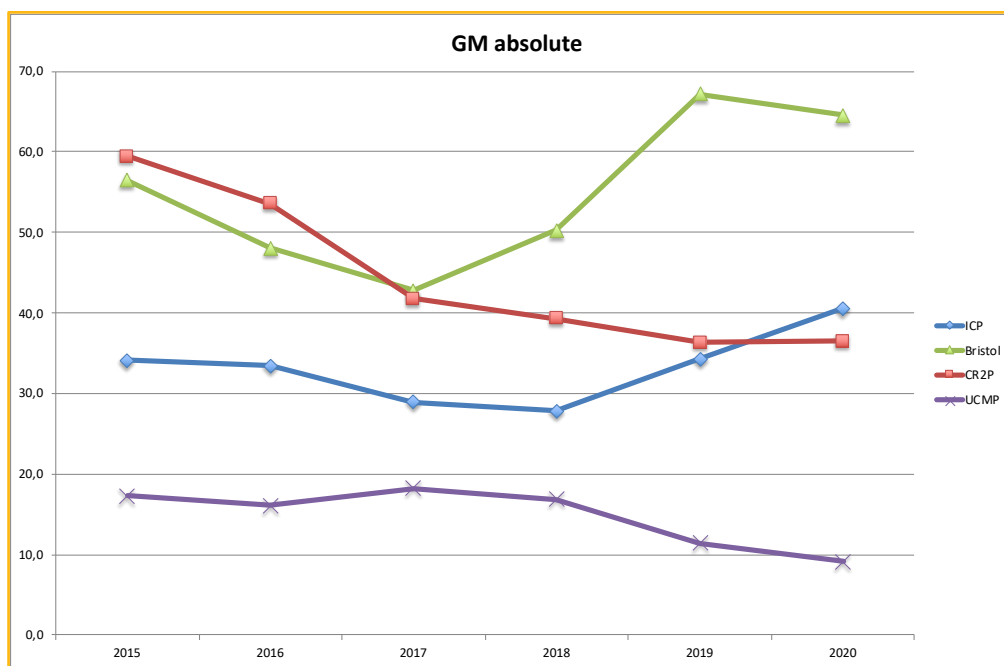
SUMMARY METRICS	2015-2019				2020			
	ICP	PRG	CR2P	UCMP	ICP	PRG	CR2P	UCMP
GM absolute indicators	32.0	53.3	46.4	16.5	40.6	64.5	36.5	9.1
GM absolute indicators (standardized)	60.0	100.0	87.1	30.9	62.9	100.0	56.5	14.1
GM relative indicators	16.4	17.3	14.2	16.6	18.0	15.9	13.3	13.7
GM relative indicators (standardized)	94.9	100.0	81.9	95.6	100.0	88.0	73.9	75.7

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 2020 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, in absolute terms, the ICP already reached very similar values to Paris in 2019, while in relative terms the ICP was already similar to Bristol both in 2018 and 2019. All in all, these data once again that the ICP is performing exceedingly well as far as research outputs are concerned, and suggests 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).

INSTITUTION	METRIC	2015	2016	2017	2018	2019	AVERAGE	2020
ICP	GM absolute	34.1	33.4	28.9	27.8	34.3	31.7	40.6
PRG	GM absolute	56.5	48.0	42.8	50.2	67.2	52.9	64.5
CR2P	GM absolute	59.4	53.6	41.8	39.3	36.3	46.1	36.5
UCMP	GM absolute	17.3	16.0	18.2	16.8	11.4	15.9	9.1
ICP	GM relative	16.5	15.5	16.4	16.3	16.5	16.3	18.0
PRG	GM relative	18.1	17.4	17.7	16.3	16.7	17.2	15.9
CR2P	GM relative	15.5	13.9	14.5	12.6	13.8	14.1	13.3
UCMP	GM relative	16.1	17.3	19.0	14.6	13.7	16.1	13.7



Equal opportunities & diversity management

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.

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	Partly implemented
Action 2.1	Review and update of the protocol for the prevention, detection and intervention in cases of violence against women	4Q 2021	Pending
Action 2.2	Internal dissemination of the protocol for the prevention, detection and intervention in cases of violence against women	2Q 2022	Pending
Action 3.1	Establishing a good practices manual for a non-sexist use of language and images	4Q 2021	Pending
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
Action 6.1	Internal training in equal opportunities and diversity management from an intersectional perspective	Continuous since 3Q 2021	Partly implemented
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	Pending
Action 7.1	Incorporating a report on equal opportunities and diversity management in the annual reports	Continuous since 3Q 2020	Almost fully implemented
Action 7.2	Improving the visibility of the scientific and technical tasks of ICP women	Continuous since 3Q 2020	Almost fully implemented

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.

The following action was fully implemented in 2020:

- **Action 5.1: Monitoring recruitment and internal promotion processes.** Description: The Non-Discrimination Committee will monitor the recruitment and internal promotion processes to ensure that they comply with the provisos of the Recruitment Protocol. Tasks: To guarantee the compliance with the Recruitment Protocol, by reviewing the selection processes as they occur. Implementation: The CND has reviewed all the job offers and the composition of all Selection Committees since the ICP Recruitment Protocol was enforced in 2019.

In turn, two additional actions were almost fully implemented in 2020:

- **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 remains to be corrected and approved during 2021.
- **Action 7.1: Incorporating a report on equal opportunities and diversity management in the annual reports.** Description: Including a summary of the equal opportunities and diversity management report in the ICP annual reports. Tasks: Writing the annual summary and sending it to the Director, so that it can be included in the ICP annual report. Implementation: The annual summary corresponding to 2020 was elaborated in late 2020 but sent to the Director in January 2021, to be included in the present annual report. As such, this action was almost but not fully implemented (but almost) in late 2020.
- **Action 7.2: Improving the visibility of the scientific and technical tasks of ICP women.** Description: To make it visible the scientific and technical tasks of ICP women and to take part in initiatives aimed to foster scientific and technical vocations in girls and young women. Tasks: To promote participation equal opportunities in working groups, activities,

meetings, etc.; to review the guidelines of external representation to incorporate, whenever possible, a more balanced presence of women and men; to carry out actions in social media in occasions such as the International Day of Women and Girls in Science (February 11); to participate, whenever possible, in initiatives aimed to foster scientific and technical vocations in girls and young women. Implementation: Throughout 2020, the NDC has been vigilant about equal opportunities regarding the participation of women and men in working groups, activities, and meetings. Furthermore, two communication actions were performed to make it visible the scientific and technical tasks of ICP women: actions on the ICP social networks and website in occasion of the International Day of Women and Girls in Science (February 11); and mention in the social networks of Dr. Margió's participation in the newspaper section "Nosotras respondemos" (El País), where female researchers answer questions from readers.

Finally, the following actions were only partly implemented in 2020:

- **Action 1.2: Internal dissemination of the Equal Opportunities and Diversity Management Plan.** Description: Publicizing the Equal Opportunities and Diversity Management Plan among the center personnel. Tasks: To disseminate the document through the center regular digital channels (email and newsletters); to organize a talk (Paleovermut) to present the Plan; to survey the degree of knowledge about the new Plan among ICP personnel. Implementation: The Plan has been publicized through the regular digital channels of the ICP, but the talk and the survey are pending.
- **Action 6.1: Internal training in equal opportunities and diversity management from an intersectional perspective.** Description: To provide the center personnel with active training on various issues related to equal opportunities, the prevention of violence against women, and the use of non-sexist language. Tasks: Selection of the subject as well as the person or company that will act as training instructor; to ask for the explicit support of the Director to maximize the attendance to training; to set up the dates for the training session; to convene all the personnel; to carry out the session. Implementation: A virtual course organized by I-CERCA on sexual harassment and the situation of women in scientific research was offered in late 2020 to the ICP personnel. In parallel, throughout 2020, the NDC members attended multiple training sessions on non-discrimination issues and emailed the ICP personnel about various non-discrimination-related activities organized by other entities.

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 centre 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 implementarion
Recommendation 2	SAB meetings	Partly implemented
Recommendation 3	SAB composition renewal	Under implementarion
Recommendation 4	Retirement of two Senior Group Leaders	Fully implemented
Recommendation 4'	CT scan	Pending implementation
Recommendation 5	Access to synchrotrons	Partly implementd
Recommendation 6	Articulating the network of research associates	Fully implemented
Recommendation 7	ICP-UAB common strategy	Under implementation
Recommendation 8	Ascribe UAB professors to the ICP	Under implementation
Recommendation 9	Recruitment	Fully implemented
Recommendation 10	Gender balance	Fully implemented
Recommendation 11	Engaging donors	Under implementation
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. An internal talk about ERC projects for ICP researchers was planned for 2020 but had to be rescheduled to 2021 because of the pandemic. We are also waiting for the new EU Research and Innovation framework program to better align with it the two proposals that are currently being drafted, with the aim of submitting them in 2021 or 2022 to the latest.

- **Recommendation 2: SAB meetings.** CERCA recommendation: The EC recommended to scheduled at least one meeting of the SAB every two years at ICP headquarters, with an agenda made available to SAB members beforehand. Partly 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 that the SAB would regularly meet once per year by telematic means, except every four years (when coinciding with the CERCA evaluation). 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.
- **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. Under implementation: 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 should be proposed by the ICP Director to the Board of Trustees (to be appointed not later than 2023). A new President should also be appointed by then.

- **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 until they are 70-year-old—respectively until 2025 and 2023 (i.e., after the next evaluation). Nevertheless, the ICP devised a plan approved by the Board of Trustees to consolidate the ICP strategic research lines 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 have been open to reinforce the Dinosaur Ecosystems and the Paleoprimateology & Paleoanthropology research groups, and a postdoctoral position for the Life History Evolution research group was also approved in 2020 (to be offered in 2021).
- **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. Pending implementation: A viability plan for the CT was drafted in 2020 by the Computational Paleobiology research group leader, but is pending a decision from the Steering Committee of the ICP, which has been waiting for the budgetary situation of the center to improve. 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. However, in the light of the positive economic results of 2020, in 2021 it will be mandatory to decide (with the help of the SAB advice) how to proceed in this regard—particularly in the framework of the elaboration of the new Strategic Plan (2022-2025). A proposal should thus be presented for review and approval by the Board of Trustees in 2022 (this was originally planned for late 2020 or the spring of 2021, but finally delayed for the reasons exposed above).
- **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 they were rejected, as there it a lot of competition and paleontology is not among their priority 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 (expected to be fully operative in 2-3 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 in a couple of years. 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 2019-2020 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).

- **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 agreements 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.
- **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. Under implementation: 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 established thus far are focused on teaching: on 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 four ICP researchers had dual affiliation with the UAB Paleontology Unit (Department of Geology) as associate professors. The current challenge is thus expanding the current collaboration in teaching into a research collaboration. Thus far, this has been hindered by the fact that the ICP and the UAB Paleontology Unit are devoted to different research topics (vertebrate vs. invertebrate paleontology). Nevertheless, the ICP considers that a deeper collaboration including joint research efforts would be a win-win scenario for the two parties involved, and that currently there are more favorable conditions to reach an agreement in this regard than ever before, for the reasons exposed in the next recommendation with regard to the need to ascribe UAB professors to the ICP.

- **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. Under implementation: During 2019, the ICP Director had an interview with the UAB Vice-Rector for Research and Transference (Dr. Armand Sánchez, also one of the 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 manifested the feasibility of such possibility from the university viewpoint, but recommended to wait a few months until new internal regulations allowed a 50% ascription. This would allow the ascribed professor to ask for funding from both institutions and, hence, facilitate dissipating the reticences that the Head of Dept. (who must approve the deal) might have in this regard. Nevertheless, the Head of the Geology Dept. was quite opposed to such possibility, given the small number of UAB professors in the two relevant units (Paleontology and Stratigraphy) of the department. This evinced that the bottom-up approach recommended by CERCA is necessary but not sufficient to reach the goal, as the approval by the Head of Dept. is mandatory to ascribe UAB professors to the ICP. In late 2020, one of the aforementioned ICP researchers hired by the university for teaching won a Serra Hunter lecturer position and will join the UAB Paleontology Unit in early 2021. This person would like to remain officially ascribed to the ICP in order to preserve his working space, direct access to the ICP collections, and other commodities and facilities of the ICP. Therefore, such a situation represents a long-awaited opportunity window to explore again the possibility to ascribe a UAB professor to the ICP. With this aim in mind, in late 2020 the ICP Director had another interview with the aforementioned UAB Vice-Rector for Research and Transference to discuss the most suitable strategy. It was agreed that the ICP should request the Head of the Geology Dept. to approve the eventual 50% ascription to the ICP of its former researcher, and offer as well the possibility to ascribe to the UAB the current ICP researchers hired for teaching at the university as research collaborators (“investigador

vinculat a la universitat”, IVU). This would enable to extend into research the current teaching collaboration by undertaking joint (ICP-UAB) research projects. This was not explored further in 2019 because the UAB Geology Dept. is pending the appointment of a new Head, but conversations should be initiated as soon as possible in 2021.

- **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, a tenured researcher position (ICPJA001), and two tenure-track researcher positions (ICPJA002 and ICPJA006) 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). 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) in 2019 was made following the same procedures. Nevertheless, the selected candidate was a man, so that the unbalanced gender ratio at an executive and managerial level has yet to improve. Nevertheless, multiple measures 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. Under implementation: 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 discretionary, 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 formally asked to become part of the ICP Board of Trustees; this would imply some financial contribution, even if meager, to the institution. Nevertheless, 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. The new Project Manager joined the ICP in January 2020, further becoming the new Head of the Research Support & External Services Dept. later that year. Since then, the new Project Manager has been working in 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). A strategy should further be developed regarding donors with the help of the Board of Trustees in 2021-2022.

- **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 Strategic Plan) 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-February 2021, with input from the other members of the Steering Committee and other ICP committees and commissions. The final version is dated to February 23, 2020.

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

DAVID M. ALBA
Director

APPENDIX

ICP publications 2020

The following list includes the publications (co)authored by authors with ICP affiliation in 2020, distributed in the different categories recognized in this report. Only those papers published in final form are included; those published online in 2020 without volume and pagination, pending publication in 2021, or published toward the end of 2020 with date 2021, have been excluded (pending their inclusion in the 2021 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)

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