



# ANNUAL REPORT

FOR 2019



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**ZAGREB, 2020**

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OPENING ADDRESSES

I assumed the role of Executive Director on 01 January 2019. In the first year of my term of office, I tried increasing the presence and visibility of the Foundation in the scientific community, at both the national and international level.

I would especially like to highlight the importance of the Foundation’s involvement in two international associations that bring together the heads of national foundations, councils and agencies with the aim of enhancing their communication, quality collaboration and exchange of information and best practices for funding scientific research. At the annual meeting of the Global Research Council, the Foundation verified the Statement of Principles on Expectations of Societal and Economic Impact of research funded with public resources and took part in the discussions related to the promotion of open science and better position of women in national science and higher education systems.

As part of its Science Europe membership, the Foundation participated in the working group for preparation of the agreement on multilateral collaboration of European foundations, councils and agencies under the Lead Agency principle. This agreement would facilitate international networking potential of Croatian research teams as joint research projects would be funded from several national sources, while the evaluation would be conducted only by a single national organization. The Lead Agency conducts the evaluation of submitted project proposals and this role would be assumed by a different national organization each year. Bilateral projects ranked in the top 20% of all projects submitted to the national call will be funded. The Foundation’s participation in such a form of multilateral collaboration represents international recognition of the high standards of independent assessment of competitive science in Croatia and additional incentive for continually improving our work.

In order to increase the visibility and networking potential of Croatian researchers active in the field of Humanities and Social sciences, the Foundation joined the Trans-Atlantic Platform, which assembles leading national research funding organizations in South America, North America and Europe. I myself was elected to the Steering Committee of this platform. The Trans-Atlantic Platform supports groups of scientists that use culture, collaboration and trans-



Atlantic networking to explore societal diversity and inequality, resistant and innovative societies and new research methods through transformative science, which includes collection and analysis of big data, interdisciplinary teams and inter-sectoral collaboration of academia with non-academic stakeholders.

Another specific objective set for my term of office is making the Foundation’s work more approachable to scientists. Together with the Foundation’s Board members, evaluation panel members and our programme coordinators, I attended the various practical workshops at universities and research institutes in Zagreb, Rijeka, Osijek, Zadar, Split, Pula, Dubrovnik and Varaždin, which were organised to introduce potential applicants to the Foundation’s strategic goals regarding the spread of the culture of excellence and raising the quality of scientific work in Croatia and to clarify the objectives of specific calls, evaluation criteria and good practice for drafting and submitting project proposals. We tried enhancing the quality of communication between the Foundation’s Office and scientists in order to facilitate administrative management of projects and provide greater flexibility in project implementation and mentoring young researchers.

*Irena Martinović Klarić, PhD*  
*Executive Director of the Croatian Science Foundation*





**FIVE-YEAR CYCLE OF SETTING UP THE SYSTEM OF COMPETITIVE FUNDING OF SCIENTIFIC RESEARCH IN CROATIA REACHES ITS END**

In the majority of developed countries, independent national institutions, largely science foundations, are in charge of funding competitive fundamental and applied scientific research. An independent and impartial national system of evaluation and funding top-quality scientific projects and research is one of the basic pre-requisites which enables that investments in scientific research deliver measurable results that have a direct and positive effect on general development and prosperity of society, including better education, healthcare and social life, knowledge-based technological development and economic growth as well as on solving national and global issues and challenges.

In its report *European Research Area – Progress Report 2018*, the European Commission listed six priorities for the implementation of the European Research Area, one of them being the development of efficient national research and innovation systems which would ensure a high return rate of the public resources invested. Due to stable financial resources received from the State Budget, between 2015 and 2019 we managed to set up the system of competitive funding of scientific research in the Republic of Croatia. The Croatian Science Foundation became the central institution that finances the best scientific projects and researchers through an independent system of evaluation based on international criteria for assessing research performance. National bodies are the ones defining science policies and priorities and providing the necessary budgetary funds, while the Foundation sets up an independent system of calls, selecting projects and funding research, a system which is independently managed by the research community. We have established a regular rhythm of opening calls for research and installation research projects and young researchers’ career development, leading to the Foundation evaluating and monitoring more than a thousand scientific projects. In the previous five-year period, the Foundation invested HRK 651 million in the best Croatian researchers and projects, the database of successful and renowned scientists conducting research with national and international significance and recognition has been expanded, promising young scientists



who were provided with the opportunity to install their own research teams and explore new research paths have been affirmed. In addition, new generations of mentors and doctoral students have arisen, who obtain their degrees after four years and achieve notable scientific results comparable to their peers at the most prestigious European universities and research institutes.

The peak of funding for competitive science in the Republic of Croatia was reached in 2019, when the Foundation disbursed **HRK 192 million** for the benefit of more than 600 scientific projects and career development of 600 doctoral students. 2019 saw the start of research projects implemented within two very significant programmes with an international focus: Cooperation Programme with Croatian Scientists in Diaspora “Research Cooperability” and “Promoting Excellence in Higher Education – Tenure Track Pilot Programme”. The aim of the “Research Cooperability” Programme is the transfer of knowledge and attracting investments into the Croatian science and technology system, and indirectly into the economy as well, through collaboration between Croatian-based scientists and Croatian scientists who live and work abroad, with special focus on young researchers’ career development. The Tenure Track Pilot Programme represents joint cooperation of the Croatian Science Foundation, Ministry of Science and Education and *École polytechnique fédérale de Lausanne* (EPFL) for the preparation of the tenure track model for the development of careers of excellent young researchers in Croatia. The goal of the programme is to offer young and talented researchers the possibility of long-term career in Croatia. Principal Investigators are provided with an exciting opportunity to conduct state-of-the-art research at Croatia’s leading universities and research institutes. The long-term objective of the programme is the introduction of an entirely new and fully competitive system of career advancement into the science and higher education system modelled on more developed countries where this model has proved itself extremely successful.

Compared to the institutional distribution of financial resources – be it in terms of number of researchers or the projects’ scientific potential and success rate – competitive funding of scientific research enables researchers to focus much more on scientific priorities and stimulates scientific collaboration of research teams. This is particularly true for Croatia, where scientific results achieved through the Foundation’s projects and programmes exceed those achieved within institutional (programme) funding of scientific research, in both qualitative and quantitative terms.



If we were to highlight the most relevant results of the Foundation's first five-year cycle, which saw the establishment of an independent system of calls, selection and funding of top scientific project and researchers in Croatia, I would especially like to emphasise the need to maintain regular funding and increase budgetary funds provided for this purpose as well as the necessity to develop new instruments of international collaboration and greater networking of our scientific community within the European Research Area. The upcoming period should focus on continuous and strong development of research and innovation capacities for general socio-economic development, demographic revitalization and prosperity of Croatian society.

*Professor Dario Vretenar, PhD, F.C.A.*

*President of the Croatian Science Foundation's Board*







## ABOUT THE CROATIAN SCIENCE FOUNDATION

The Croatian Science Foundation (hereinafter: the Foundation) was established by a special act of the Croatian Parliament<sup>1</sup> on 21 December 2001 under the name The National Foundation for Science, Higher Education and Technological Development of the Republic of Croatia. The Foundation was established with the aim of promoting science, higher education and technological development in the Republic of Croatia and supporting scientific, high-level education and technological programmes and projects. Since 2009, it operates under the name the Croatian Science Foundation.

In 2013, the Foundation assumed the role of funding national scientific research projects, previously held by the Ministry of Science and Education. A year later, the Foundation also took on funding of young researchers' career development. In the past decade, the Croatian Science Foundation has ensured all preconditions for meeting its purpose and launched several programmes with different goals and aimed at different beneficiaries. More than 1,000 projects approved for funding in the amount of almost HRK 484 million and funding career development of almost 700 doctoral students in the amount of HRK 164 million are a good indicator of the Foundation's contribution to the Croatian science and higher education system in the past five years (2015 to 2019).

In 2019, the Foundation funded **571 national research projects** in the amount of HRK 117.8 million and **34 international research projects** in the amount of HRK 20.9 million. 134 young researchers were funded through the Foundation's projects, while the "Young Researchers' Career Development Project – Training New Doctoral Students" saw 474 doctoral students funded in the amount of HRK 53.5 million. In sum, **the Foundation disbursed HRK 192.2 million** for funding national and international scientific projects and young researchers' career development. It should be highlighted that the Foundation awards public funds solely through public calls, following the criteria of excellence of the proposed

<sup>1</sup> Official Gazette 117/2001.

research and Principal Investigator as well as promoting education and training of young researchers through their inclusion in research work.

In order to ensure that the best projects are selected and funded, the Foundation developed a two-stage project proposal evaluation procedure. The evaluation procedure is based on the internationally acclaimed practice of peer review, conducted by international scientists, and evaluation by panels, comprised of Croatian scientists.

Scientific projects are funded through several different programmes: the “**Research projects**” programme supports internationally or nationally relevant scientific research, the programme “**Installation Research Projects**” supports the establishment of new research groups whose Principal Investigators are excellent young researchers, the programme “**Partnership in Research**” facilitates the establishment of cooperation of experts at universities and institutes with the economic sector, while the “**Unity through Knowledge Fund**” offers possibility for cooperation with eminent Croatian scientists in diaspora.

By providing support to quality projects and researchers, the Foundation ensures that outstanding research is implemented at Croatian scientific institutions, thus increasing their ability to apply for internationally competitive projects. With regard to the development of young researchers’ careers, the Foundation puts focus on the inclusion of doctoral students in research activities, the primary goal being the writing of their doctoral thesis and obtaining a doctoral degree within four years as well as continuous monitoring and evaluation of achieved results both in their doctoral studies and research activities. This will enable the doctoral students to compete, on equal terms, with their peers abroad, and will offer them better chance of obtaining post-doctoral training grants in the best research groups.

In 2019, the Foundation funded and monitored **134 young researchers (doctoral students and post-doctoral researchers)** employed through research projects, **311 doctoral students** funded from the State Budget through the “Young Researchers’ Career Development Project – Training New Doctoral Students” and **163 doctoral students** funded from the European Social Fund.

In 2019, the Foundation also monitored more than **600 scientific research projects** and evaluated **631 project proposals** submitted to the calls “Research Projects”, “Installation Research Projects” and “Cooperation Programme with Croatian Scientists in Diaspora – Research Cooperability”. In addition, 10 projects

are funded within the framework of the “**Programme of Supporting Research and Development Activities in the Area of Climate Change**”. This Call was launched in cooperation with the Ministry of Environmental Protection and Energy and the Environmental Protection and Energy Efficiency Fund to support research and developmental activities in the field of climate change mitigation and adaptation. In 2019, the Foundation resumed with the programme “**Support to Researchers for Applying to ERC Programmes**”, supporting cooperation of Croatian researchers with Principal Investigators of projects funded by the European Research Council (ERC), used for gaining experience for preparing their own project proposals for ERC’s calls. Through this programme, the Foundation financed a three-month visit of Assoc. Prof. Jasenka Gudelj, PhD, from the Faculty of Humanities and Social Sciences at the University of Zagreb to the University of Udine in early 2018, where she was hosted by Professor Angela Nuovo, Principal Investigator of ERC project “*The Early Modern Book Trade: An Evidence-based Reconstruction of the Economic and Juridical Framework of the European Book Market*”. We believe that this experience was beneficial for her as it was revealed in December 2019 that she was awarded the prestigious ERC Consolidator Grant in the amount of almost EUR 2 million for her project “Architectural Culture of the Early Modern Eastern Adriatic”.

The Foundation participates in the Swiss-Croatian Cooperation Programme to Reduce Economic and Social Disparities within the Enlarged European Union by implementing two programmes: **The Croatian-Swiss Research Programme 2017-2023** and **Promoting Excellence in Higher Education – Tenure Track Pilot Programme**. The **Croatian-Swiss Research Programme** is implemented in cooperation with the Swiss National Science Foundation (SNSF). The programme provides funding for 11 joint research projects of Croatian and Swiss scientists. The **Promoting Excellence in Higher Education – Tenure Track Pilot Programme**, implemented by the Foundation in cooperation with our Swiss partner *École polytechnique fédérale de Lausanne* (EPFL), provides funding for three projects of excellent young scientists who arrived/returned to Croatia from Japan, Switzerland and the USA.

2019 saw the launch of 20 collaborative projects financed within the **Collaboration Programme with Croatian Scientists in Diaspora “Research Cooperability”**, co-funded from the European Social Fund. The total value of the programme amounts to HRK 44,842,440.00.



## VISION

*Promoting international standards of excellence in research*

*Establishing a system for funding young researchers' career development*

*Strengthening international collaboration and integration of Croatian scientists into the European Research Area*

## MISSION

*Central body responsible for funding scientific research through an independent system of calls, evaluation, selection and funding the best scientific projects and researchers*

## STRATEGIC GOALS

*Securing stable funding of competitive research projects*

*Connecting scientists from public research organisations and universities with researchers from the business and social/public sector*

*Setting up an integral programme for young researchers' career development at the doctoral and postdoctoral level*

*Establishing a programme for permanent cooperation of Croatian scientists, public research organisations and universities with the scientific diaspora*

*Integrating Croatian scientific community into the European Research Area*

## THE FOUNDATION'S VALUES

### WORK CRITERIA

The most important criteria for the Foundation's work are research excellence, impartiality during the project selection, evaluation, funding and monitoring procedures. In order to ensure funding of the best projects and researchers, submitted project proposals are referred to peer review conducted by international experts. The Foundation applies the principles for the evaluation of scientific excellence (Statement of Principles for Scientific Merit Review), which embody the highest international standards of expert assessment, transparency, impartiality, confidentiality and scientific integrity.

Evaluation is conducted through objective scientific and expert assessment based on the internationally accepted practice of peer review, taking into consideration scientific quality, feasibility and balanced development of scientific areas and fields. The procedure for identifying conflict of interest and preventing the participation of persons who might have a conflict of interest in the evaluation was defined.

### TRANSPARENCY AND AVAILABILITY

Grants for scientific research are awarded solely through public calls, and all calls are published according to the Work Plan, which is published on the Foundation's website at the beginning of the year.

The public call is published on the Foundation's website together with the full documentation related to the Call, including all evaluation forms containing the evaluation criteria for project proposals. The Foundation's experts provide answers to all questions on a regular basis. The questions and answers are published on the website on pre-defined dates for all to see. All decisions of evaluation panels and the Board are based on clearly defined rules, procedures and evaluation criteria, all published in advance. The applicants are notified of the relevant decisions of the Board.

Basic information about funded projects, names of mentors and doctoral students can be found in the database accessible through the Foundation's website. The Foundation's website also provides links to the Foundation's Annual Report, Financial Report, Audit Report, the Statute, regulations and other normative acts, Procurement Plan and annual work plans.

**EXPERTISE AND CONFIDENTIALITY OF INFORMATION**

Peer reviewers taking part in the evaluation procedure are selected based on pre-defined criteria, including knowledge of the proposed research theme and expertise. All persons involved in the evaluation procedure must permanently respect the confidentiality of all information stated in the project proposals revealed to them for the purpose of evaluation. This commitment is permanent and shall apply even after the evaluation procedure has ended. Evaluators are not allowed to discuss project proposals with other participants in the evaluation procedure or persons not involved in the procedure. Communication with applicants about the projects is also not allowed. Each participant in the evaluation procedure is personally responsible for maintaining the confidentiality of information related to the projects in the evaluation process, as well as for the documentation related to the content of the project proposals and must not disclose any information about the projects.

**INTEGRITY AND ETHICAL ISSUES**

Ethics, integrity and professional and scientific responsibility are the highest principles in the entire evaluation process and their protection is the responsibility of all persons involved in the evaluation. Evaluation of project proposals implies independent scientific evaluation, used to determine the scientific quality and priorities of the proposed research.

**VISIBILITY**

All news, call announcements, call results, information about funded projects and doctoral students, all important documents and rules of procedure are regularly published on the Foundation’s website. The Electronic Application System (EPP) can also be accessed through the Foundation’s website.

As of 10 December 2019, the EPP system was accessed 995,392 times. At the end of 2019, the EPP system counted 19,487 registered users. The system is available 24 hours a day, seven days a week.

Besides posting information on the website, the Foundation notifies Principal Investigators, mentors and heads of institutions about all important decisions or amendments via electronic mail.

**DISSEMINATION**

The Foundation regularly presents the objectives of its calls and the application procedure at universities and public institutes. Public presentation of the Foundation intensifies in the months preceding the opening date of a specific call for project proposals.

In 2019, several information workshops were held at all Croatian universities. These workshops were used for presenting guidelines for submitting project proposals and terms and conditions of the calls “Cooperation Programme with Croatian Scientists in Diaspora – Research Cooperability”, “Young Researchers’ Career Development Project – Training New Doctoral Students” as well as “Research Projects” and “Installation Research Projects”.

**Q&A REGARDING THE FOUNDATION’S CALLS**

To ensure transparency and equality of treatment for every applicant, all queries regarding an open call are submitted only through e-mail to the generic addresses listed in the call documentation. The received questions and answers to them are published at the Foundation’s website twice a week, on Tuesdays and Fridays. This ensures that all applicants are provided with the same information about the call. Answers are published taking into account anonymity of the authors and confidentiality of information contained in the query.



2019 IN NUMBERS

**631** PROJECT PROPOSALS EVALUATED

**2585** INTERNATIONAL PEER REVIEWERS INVOLVED IN THE  
EVALUATION

**210** PROJECTS ACCEPTED FOR FUNDING

**605** PROJECTS MONITORED

**494** PERIODIC REPORTS PROCESSED

**578** REPORT EVALUATORS (CROATIAN SCIENTISTS)

**474** DOCTORAL STUDENTS FUNDED

**82** POST-DOCTORAL RESEARCHERS EMPLOYED

**1182** PUBLICATIONS ORIGINATING FROM THE FOUNDATION'S  
PROJECTS PUBLISHED

**498** PUBLICATIONS PUBLISHED BY DOCTORAL STUDENTS,  
OF WHICH **236** AS FIRST OR ONLY AUTHOR

16

**860** CONFERENCE PRESENTATIONS HELD BY DOCTORAL STUDENTS

**244** DOCTORAL STUDENTS' TRAININGS

**48** DOCTORAL DISSERTATIONS COMPLETED

**347** DOCTORAL STUDENT'S PROGRESS REPORTS EVALUATED

**37** UKF PROJECTS EVALUATED

**20** UKF PROJECTS MONITORED

**20** UKF PROJECTS REIMBURSED

MORE THAN HRK **192** MILLION ALLOCATED BY THE FOUNDATION

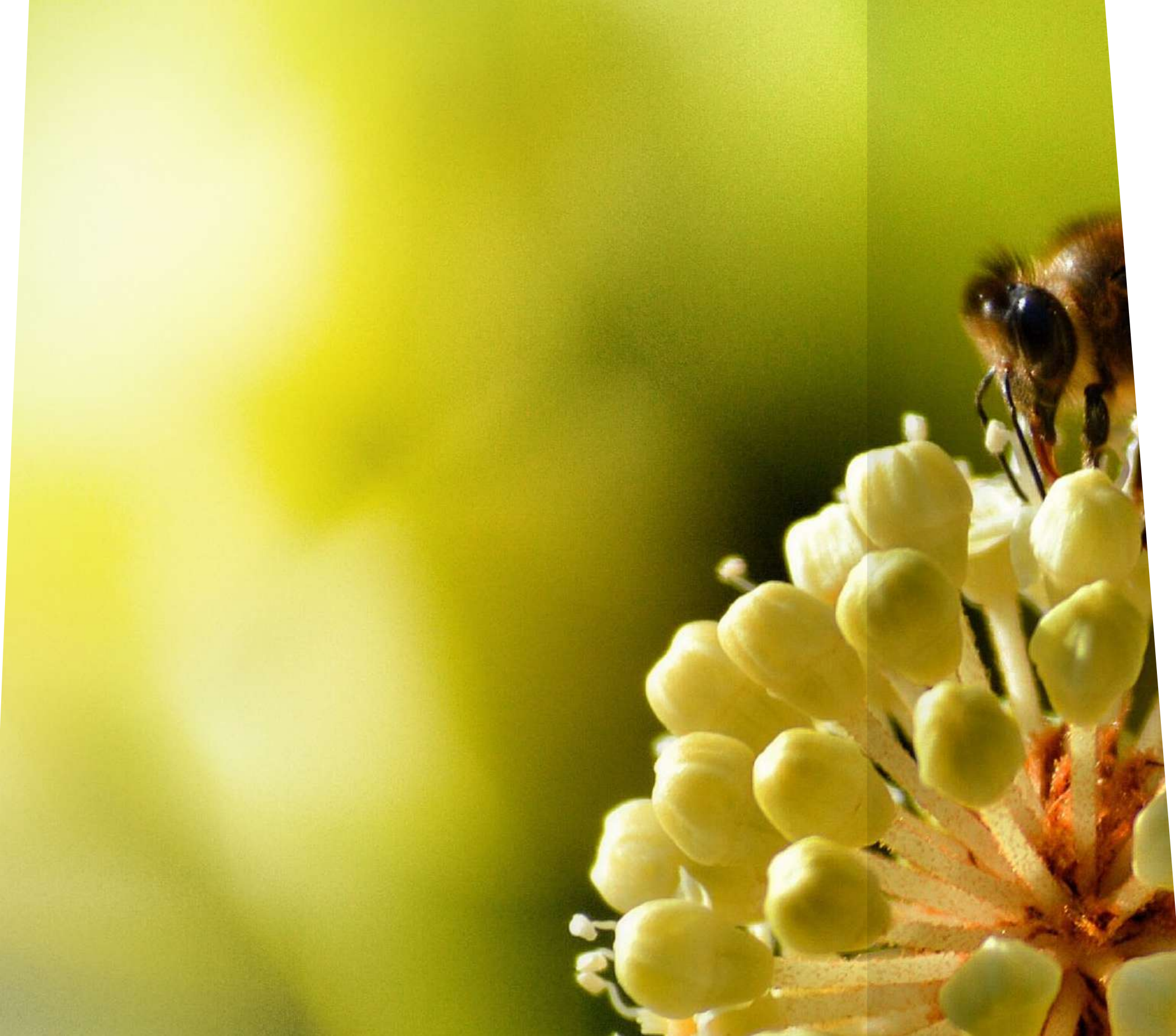
**30** BOARD MEETINGS HELD

**77.261** VISITORS TO THE FOUNDATION'S  
WEBSITE AND THE EPP SYSTEM

**1.687.154** VIEWS OF WWW.HRZZ.HR

**19.974** REGISTERED USERS OF THE EPP SYSTEM

17



## **THE FOUNDATION'S ACTIVITIES IN 2019**

In 2019, the Foundation resumed with enhancing the system for funding scientific activities so that it becomes exclusively guided by criteria of scientific excellence and expertise. In its work to date, the Foundation proved its professionalism in implementing evaluation and monitoring of funded projects, which arises from several years of work and harmonising the procedures with other international organizations that fund research from public resources.



## JANUARY

Call “Cooperation Programme with Croatian Scientists in Diaspora – Research Cooperability” opened (PZS-2019-02)

## MARCH

Signing of the Bilateral Slovenian-Croatian Collaboration Agreement between ARRS and HRZZ

## MAY

Calls “Research Projects” and “Installation Research Projects” closed (IP/UIP-2019-04)

## JULY

Results of the Call “Quanteria 2019”

## SEPTEMBER

The Foundation took part in organizing European Researchers’ Night 2019

Results of the Call “Cooperation Programme with Croatian Scientists in Diaspora – Research Cooperability”

## NOVEMBER

Results of the Call “Promoting Excellence in Higher Education - Tenure Track Pilot Programme”

Results of the Calls “Research Projects” and “Installation Research Projects” (IP/UIP-2019-04)

Calls “Research Projects” and “Installation Research Projects” opened (IP/UIP-2020-02)

## DECEMBER

Call for Proposals “Research Projects – Slovenian-Croatian Bilateral Projects” (IPS-2020-01) opened

## FEBRUARY

Calls “Research Projects” and “Installation Research Projects” opened (IP/UIP-2019-04)

Call “Cooperation Programme with Croatian Scientists in Diaspora – Research Cooperability” closed

Call “Quanteria 2019” closed

## APRIL

Public presentations of open calls “Research Projects” and “Installation Research Projects” (2019-04) in Dubrovnik, Split, Zadar, Rijeka, Pula, Zagreb, Varaždin and Osijek

Presentation ceremony of results delivered through the “Young Researchers’ Career Development Project- Training New Doctoral Students”

## JUNE

## AUGUST

Call “Support to Researchers for Applying to ERC Programmes” opened

## OCTOBER

Call “Young Researchers’ Career Development Project – Training New Doctoral Students” opened (DOK-2020-01)

Results presentation ceremony for the Call “Excellence in Higher Education - Tenure Track Pilot Programme”

Results presentation ceremony for the Call “Cooperation Programme with Croatian Scientists in Diaspora ‘Research Cooperability’”

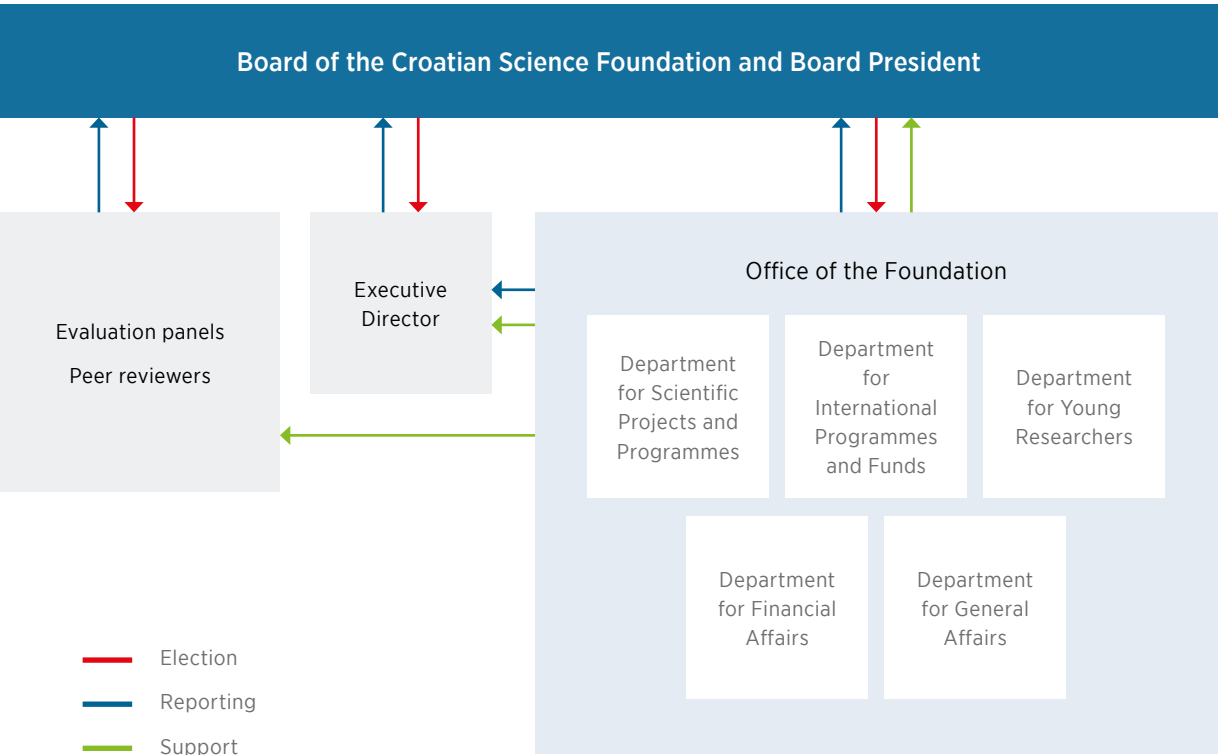
Public call for nomination and selection of the Foundation’s Evaluation Panel members opened

Information workshops for the Call “Young Researchers’ Career Development Project – Training New Doctoral Students” in Dubrovnik, Split, Zadar, Rijeka, Pula, Zagreb, Varaždin and Osijek

# ORGANIZATIONAL STRUCTURE

Pursuant to the Act on the Amendments to the Croatian Science Foundation Act (Official Gazette 78/2012), the Foundation's Bodies are the Board and Executive Director. Besides the Foundation's Bodies, the work of the Foundation in 2019 also involved evaluation panels, peer reviewers and administration, i.e. the Foundation's Office, organised into five departments.

Figure 1. Organisational structure of the Croatian Science Foundation



## THE BOARD

The Croatian Science Foundation is managed by the Board, the body that adopts the Foundation's legal acts and grant award decisions, manages and monitors the Foundation's activities, proposes the Foundation's strategic plan and conducts other activities pursuant to the Act and the Statute.

Board members are appointed from the pool of prominent Croatian scientists, especially those with results recognized at the international level, taking into account that all scientific areas are represented. They are appointed by the Croatian Parliament, upon nomination by the Government of the Republic of Croatia. The Government establishes a list of Board candidates upon nomination by scientific institutes, the Croatian Rectors' Conference, universities' Senates, the Croatian Academy of Sciences and Arts, Croatian Chamber of Commerce, employers' associations, National Council for Science and individual scientists and academics, following a public call for nominations published by the Ministry of Science and Education. Board members are elected to a five-year term, renewable once. The current Board's term of office expired in April 2018; however, pursuant to the Statute, the Board remains in seat until the Parliament appoints new members so that the Foundation's activities are not disrupted.

The Board held 30 sessions in 2019, ten of which were live sessions and twenty electronic sessions.

## MEMBERS OF THE FOUNDATION'S BOARD:

- Professor **Dario Vretenar**, PhD, F.C.A., President
- Professor **Dean Ajduković**, PhD, Deputy President
- Ms **Smiljana Goreta Ban**, PhD
- Professor **Stipan Jonjić**, PhD, MD
- Professor **Ljiljana Marks**, PhD
- Professor **Dragan Poljak**, PhD
- Professor **Pavao Rudan**, PhD, MD, F.C.A.



## EXECUTIVE DIRECTOR

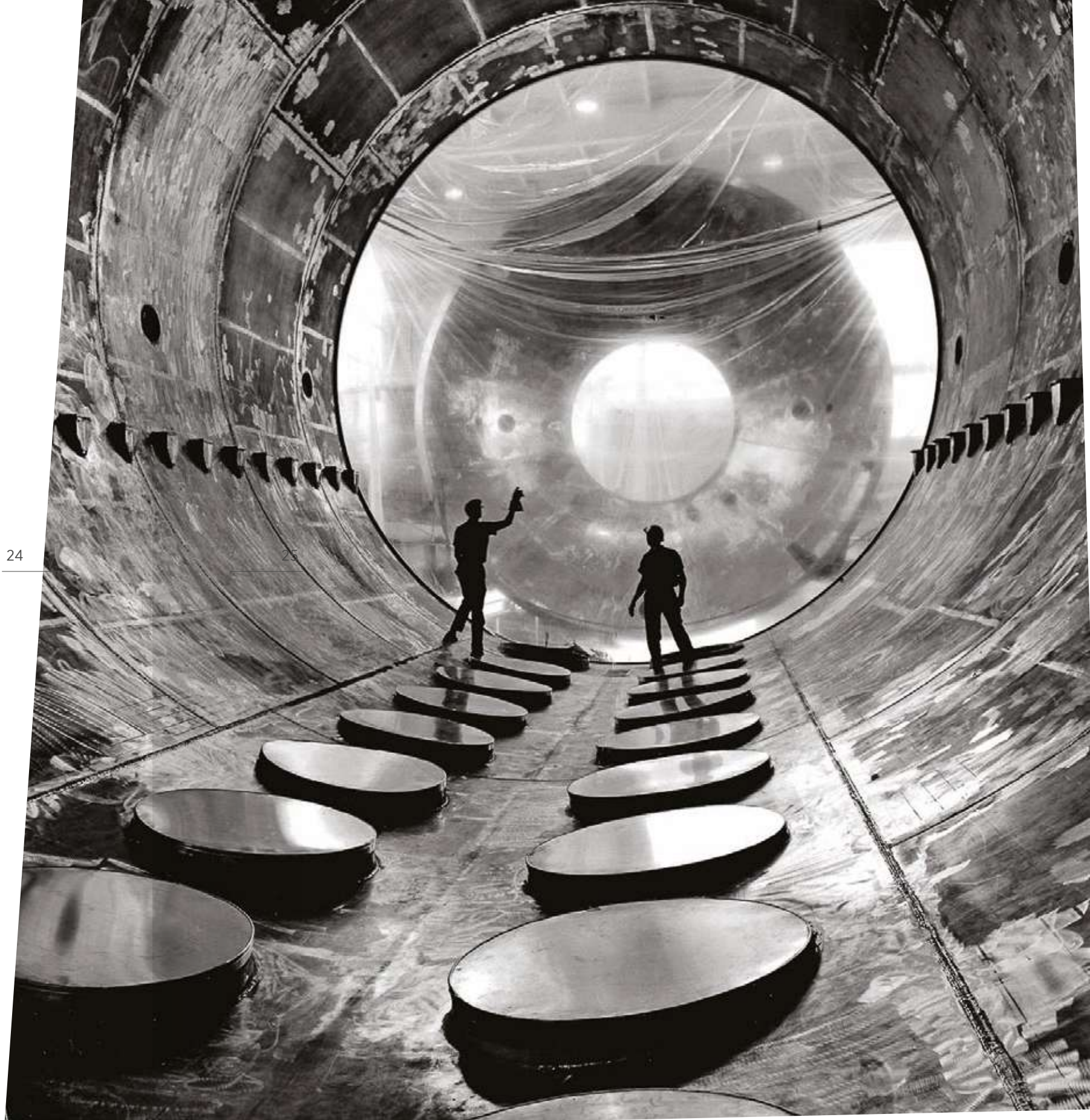
The Executive Director is in charge of the Foundation's operations and manages the work of the Foundation's Office. Pursuant to the provisions of the Act on the Amendments to the Croatian Science Foundation Act (Official Gazette 78/12), the Executive Director is selected following a public call to a five-year term, and is appointed and released from duty by the Board.

At its 122<sup>nd</sup> session, held on 16 November 2018, the Board nominated Ms Irena Martinović Klarić, PhD, for the position of Executive Director, who started her five-year term of office in January 2019.

## THE FOUNDATION'S OFFICE

The Foundation's Office is divided into five departments: Department for Scientific Projects and Programmes, Department for Young Researchers, Department for International Programmes and Funds, Department for Financial Affairs and Department for General Affairs.

On 31 December 2019, the Foundation had 36 employees, with two employees covering for maternity/parental leave. Salaries for 32 employees were financed from the State Budget, while four employees received their salaries from the European Social Fund (*Operational Programme Efficient Human Resources 2014-2020*).



# PROJECT PROPOSAL EVALUATION PROCEDURE AND PROJECT MONITORING

The Foundation implements independent scientific evaluation of project proposals. The evaluation procedure is competitive and includes the comparison of submitted project proposals while taking into account the terms and conditions of the call and scientific quality of the proposals as well as a balanced development of scientific areas and fields in the Republic of Croatia.

The evaluation procedure has been set out in detail in the Project Proposal Evaluation Manual. The Manual describes the evaluation procedure and participants therein and sets out the procedure from the publication of the call to the decision of the Board on the approval of funding.

The Manual provides important guidelines to all evaluation panel members, but also to project proposal applicants about the evaluation procedure and the evaluation criteria.

## BASIC EVALUATION PRINCIPLES

The project proposal evaluation procedure is based on the principles of expertise, excellence, transparency, equality of treatment, confidentiality, impartiality and efficiency and promptness. In 2011, as member of the European Science Foundation Forum on Peer Review, the Foundation took an active part in drafting the basic evaluation principles (Statement of Principles on Merit Review). The principles were adopted at the Global Summit on Scientific Evaluation, held in Washington in May 2012, and their purpose is to ensure the standardisation of basic evaluation procedures at the international level.

The evaluation procedure is adjusted to the specific call, particularities of the scientific area and is commensurate to the value of the project proposals.

## PARTICIPANTS IN THE EVALUATION PROCEDURE

Project proposal evaluation procedure is based on the work of the evaluation panels and international reviewers.

## EVALUATION PANELS

Panels for evaluating project proposals submitted to the Croatian Science Foundation’s calls were established by the Board in 2016 following a public call aimed at public scientific institutions. They were divided by scientific areas; hence, evaluation panels were formed for the Natural sciences, Technical sciences, Biotechnical sciences, Biomedicine and Health sciences, Social sciences and Humanities. Since the Foundation highly encourages interdisciplinary projects, upon agreement of panel members and if the need arises, interdisciplinary panels may be formed.

Pursuant to the recommendations of the Evaluation Committee of the IP-01-2018 Call (see p. 32) and ERC classification, the Board adopted the decision on the consolidation of panels, whereby Social Sciences were joined with the Humanities, Natural Sciences were joined with Technical Sciences, while Biomedicine, Biotechnical Sciences and Biology were conjoined into Life Sciences. This optimises the operation of the panels since all panels are now interdisciplinary with a roughly equal number of members and all panel members evaluate roughly the same number of project proposals.

The panels’ basic tasks include assessing project proposals for referral to the next stages of the evaluation procedure, nominating peer reviewers and ensuring that the evaluation procedure is conducted in accordance with the Project Proposal Evaluation Manual and other general acts of the Foundation. The panels analyse all received reviews and adopt recommendations for funding/rejecting project proposals. Panels are also involved in the evaluation of candidates for mentors of doctoral students, ranking of proposals and giving recommendations to the Board on funding doctoral students. The panels may submit to the Board their proposals for improving the evaluation procedures for future calls.

Evaluation panel members are elected from the pool of eminent scientists with internationally recognisable achievements. They are appointed for a three-year term, renewable once. The names of panel members are publicly available and published on the Foundation’s website. During their term, panel members may submit project proposals to the Foundation’s calls, take part in the Foundation’s projects in the capacity of team members or apply for mentorship of doctoral students. In such cases, the panel member shall not be involved in the evaluation process for the call they are applying to.

Panel members are not remunerated for their work.



1) LIFE SCIENCES

PANEL ZŽ1 (BASIC MEDICAL SCIENCES, BIOLOGY (BIOCHEMISTRY AND MOLECULAR BIOLOGY, GENETICS, GENERAL BIOLOGY), BIOTECHNOLOGY IN BIOMEDICINE)

prof. dr. sc. Hrvoje Banfić  
dr. sc. Tihomir Balog  
prof. dr. sc. Ines Drenjančević  
doc. dr. sc. Željka Krsnik  
dr. sc. Zrinka Kovarik  
prof. dr. sc. Felix Wensveen  
prof. dr. sc. Miranda Mladinić Pejatović  
izv. prof. dr. sc. Ivana Ivančić Baće  
prof. dr. sc. Tihana Lenac Roviš  
prof. dr. sc. Janoš Terzić  
prof. dr. sc. Olga Gornik

PANEL ZŽ2 (CLINICAL MEDICINE, VETERINARY MEDICINE, DENTAL MEDICINE)

prof. dr. sc. Boris Labar  
prof. dr. sc. Igor Prpić  
prof. dr. sc. Marija Heffer  
prof. dr. sc. Toni Valković  
prof. dr. sc. Dean Konjević  
prof. dr. sc. Asja Čelebić  
dr. sc. Anđelko Vidović  
prof. dr. sc. Zdravko Janicki  
dr. sc. Relja Beck

PANEL ZŽ3 (PUBLIC HEALTH AND HEALTH PROTECTION, PHARMACY, BIOTECHNOLOGY, FOOD PROCESSING TECHNOLOGY, NUTRITION, KINESIOLOGY)

prof. dr. sc. Karin Kovačević Ganić  
izv. prof. dr. sc. Tatjana Škarić-Jurić  
prof. dr. sc. Daniela Čačić Kenjerić  
doc. dr. sc. Pavle Mikulić  
prof. dr. sc. Tea Bilušić  
prof. dr. sc. Jurislav Babić  
prof. dr. sc. Vesna Jureša  
prof. dr. sc. Vladimir Mićović  
prof. dr. sc. Verica Dragović-Uzelac  
dr. sc. Kristina Pilipović  
izv. prof. dr. sc. Jelka Pleadin

PANEL ZŽ4 (AGRICULTURE, FORESTRY, WOOD TECHNOLOGY, BIOLOGY (BOTANY, ECOLOGY, ZOOLOGY, EVOLUTION AND PHYLOGENY)

dr. sc. Domagoj Šimić  
prof. dr. sc. Vlatka Rozman  
doc. dr. sc. Vjekoslav Živković  
dr. sc. Alojzije Lalić  
prof. dr. sc. Živana Ninčević Gladan  
izv. prof. dr. sc. Sandra Radić Brkanac  
prof. dr. sc. Goran Kušec  
prof. dr. sc. Marilena Idžojtić  
prof. dr. sc. Ivana Maguire  
prof. dr. sc. Neven Voća

2) SOCIAL SCIENCES AND THE HUMANITIES

DHZ1 (ECONOMICS, DEMOGRAPHY, INFORMATION AND COMMUNICATION SCIENCES, POLITICAL SCIENCES, SOCIOLOGY, SOCIAL WORK, SECURITY STUDIES, GENDER STUDIES, LAW)

prof. dr. sc. Mirjana Čižmešija  
prof. dr. sc. Nataša Šarlija  
prof. dr. sc. Sonja Špiranec  
prof. dr. sc. Vesna Crnić-Grotić  
prof. dr. sc. Brislava Baranović  
prof. dr. sc. Mira Lulić  
prof. dr. sc. Josip Arnerić  
prof. dr. sc. Gordana Vilović  
izv. prof. dr. sc. Maja Čukušić  
prof. dr. sc. Saša Božić  
prof. dr. sc. Marko Petrak

DHZ2 (ETHNOLOGY AND ANTHROPOLOGY, ART SCIENCE, ART HISTORY, HISTORY, ARCHEOLOGY, THEOLOGY, PHILOSOPHY)

prof. dr. sc. Robert Matijašić  
prof. dr. sc. Mirjana Matijević Sokol  
izv. prof. dr. sc. Domagoj Tončinić  
prof. dr. sc. Anita Sujoldžić  
izv. prof. dr. sc. Luca Malatesti  
dr. sc. Tvrtko Zebec  
prof. dr. sc. Tihana Petrović Leš  
prof. dr. sc. Nadežda Čačinović  
prof. dr. sc. Marina Vicelja  
prof. dr. sc. Zdenka Janeković Römer  
dr. sc. Milan Pelc

DHZ3 (PEDAGOGY, PSYCHOLOGY, EDUCATION AND REHABILITATION SCIENCES, SPEECH THERAPY, PHILOLOGY, EDUCATION SCIENCES)

prof. dr. sc. Dinka Čorkalo Biruški  
dr. sc. Renata Franc  
prof. dr. sc. Kornelija Mrnjaus  
prof. dr. sc. Sanja Roić  
dr. sc. Amir Kapetanović  
prof. dr. sc. Neven Jovanović  
prof. dr. sc. Davor Dukić  
prof. dr. sc. Ingrid Brdar

3) NATURAL SCIENCES AND TECHNICAL SCIENCES

PTZ1 (MATHEMATICS, COMPUTER SCIENCE)

prof. dr. sc. Mladen Jurak  
prof. dr. sc. Ninoslav Truhar  
prof. dr. sc. Nenad AntoniĆ  
prof. dr. sc. Borka Jadrijević  
prof. dr. sc. Ozren Perše  
prof. dr. sc. Sanja Singer  
izv. prof. dr. sc. Sanda Martinčić-Ipšić  
prof. dr. sc. Slobodan Ribarić  
dr. sc. Ivica Kopriva  
prof. dr. sc. Sven Lončarić  
izv. prof. dr. sc. Ljiljana Šerić

PTZ2 (ARCHITECTURE AND URBAN PLANNING, GEODESY, CIVIL ENGINEERING, GEOLOGY, GRAPHIC TECHNOLOGY, TEXTILE TECHNOLOGY, MINING, PETROLEUM AND GEOLOGIC ENGINEERING)

prof. dr. sc. Tatjana Rukavina  
prof. dr. sc. Miodrag Roić  
doc. dr. sc. Igor Majnarić  
dr. sc. Josip Terzić  
prof. dr. sc. Zenun Skenderi  
prof. dr. sc. Dražen Balen  
prof. dr. sc. Franjo Šumanovac  
doc. dr. sc. Damir Modrić  
dr. sc. Aleksandra Deluka Tibljaš  
prof. dr. sc. Ante Šiljeg

PTZ3 (ELECTRICAL ENGINEERING, NAVAL ARCHITECTURE, METALLURGY, MECHANICAL ENGINEERING, TRAFFIC AND TRANSPORT TECHNOLOGY, AERONAUTICS, ROCKET SCIENCE AND SPACE TECHNOLOGY)

Prof. dr. sc. Anica Trp  
prof. dr. sc. Branko Blagojević  
prof. dr. sc. Nenad Vulić  
izv. prof. dr. sc. Andrej Jokić  
doc. dr. sc. Silvestar Šesnić  
prof. dr. sc. Srete Nikolovski  
prof. dr. sc. Joško Deur  
prof. dr. sc. Jasna Prpić-Oršić  
dr. sc. Roberto Žigulić  
dr. sc. Daniel Rolph Schneider

PTZ4 (PHYSICS, GEOPHYSICS)

prof. dr. sc. Krešimir Pavlovski  
dr. sc. Andreja Gajović  
prof. dr. sc. Miroslav Požek  
dr. sc. Biljana Lakić  
dr. sc. Osor Slaven Barišić  
doc. dr. sc. Ivana Herceg Bulić  
dr. sc. Ticijana Ban  
dr. sc. Ivan Kokanović  
dr. sc. Matko Milin  
dr.sc. Mirko Planinić  
dr. sc. Denis Sunko  
prof. dr. sc. Darko Koraćin

PTZ5 (CHEMISTRY, CHEMICAL ENGINEERING)

prof. dr. sc. Silvana Raić-Malić  
dr. sc. Kata Majerski  
prof. dr. sc. Igor Jerković  
prof. dr. sc. Marina Trgo  
prof. dr. sc. Ines Primožič  
prof. dr. sc. Predrag Novak  
dr. sc. Sanja Tomić  
dr. sc. Borislav Kovačević  
dr. sc. Vesna Tomašić  
prof. dr. sc. Hrvoje Kušić

REVIEWERS

Reviewers are international experts who assess project proposals in the second round of evaluation (peer review) according to pre-defined criteria. They are appointed by the evaluation panels. In specific cases, when the evaluation panel estimates that this is necessary, reviews can be provided by Croatian scientists. The nominated reviewers need to be competent in the research topic of the project proposal they are evaluating.

EVALUATION COMMITTEE OF THE IP-01-2018 CALL

Pursuant to Article 20 of the Statute of the Croatian Science Foundation (O-1330-2013), the Foundation’s Board, at its 121<sup>st</sup> session, held on 26 October 2018, adopted a decision on the establishment of the Evaluation Committee of the IP-01-2018 Call and appointed the following members to this Committee:

Professor **Ida Raffaelli**, PhD, Faculty of Humanities and Social Sciences, University of Zagreb

Professor **Srećko Gajović**, PhD, MD, School of Medicine, University of Zagreb

Professor **Mirela Galić**, PhD, Faculty of Civil Engineering, Architecture and Geodesy, University of Split

Professor **Snježana Kereša**, PhD, Faculty of Agriculture, University of Zagreb

**Tomislav Sokol**, PhD, Croatian Parliament

**Marko Kralj**, PhD, Institute of Physics

Professor **Ignac Lovrek**, PhD, Faculty of Electrical Engineering and Computing, University of Zagreb

Professor **Antonija Žižak**, PhD, Faculty of Education and Rehabilitation Sciences, University of Zagreb

None of the Committee members submitted a project proposal to the Call in question nor were involved in proposal evaluation or any other form of the Foundation’s work. The Committee started its activities after the grant agreements with the Principal Investigators were concluded and the projects were in their implementation stage. Each Committee member assessed the criteria for the scientific area assigned to them but was also invited to review the results for other scientific areas.

Committee members reviewed the composition, number and structure of the evaluation panels. The Committee members’ reports indicated that the structure of the panels should be more balanced. Since some panels cover several

scientific disciplines, while others cover only one, there are differences in the number of projects evaluated by individual panels and the number of panel members evaluating individual proposals. In addition, differences in pass rates were registered between different panels; panels covering a single scientific discipline registered higher pass rates, leading to the recommendation that related disciplines be combined and that evaluation panels be consolidated.

The Committee recommended the consolidation of evaluation panels so that they cover several disciplines within a single area of science. Such panels would have more members, which would make the work and evaluation process of different panels more balanced. Pursuant to the recommendations of the Evaluation Committee, the Foundation restructured the panels, which used to be arranged by scientific areas: Natural sciences, Technical sciences, Biotechnical sciences, Biomedicine and Health, Social sciences and Humanities into related interdisciplinary panels.

During the evaluation procedure, panels follow defined evaluation criteria, which are the same for all scientific areas and disciplines and are available on the Foundation’s website, together with the Call documentation. The panel’s final mark is an expert assessment based on the criteria referred to above. This mark is justified and substantiated and serves as the basis for referring a proposal to further evaluation rounds.

The Committee established that the evaluation procedure has been conducted in accordance with the Foundation’s Project Proposal Evaluation Manual. The Committee’s work led to the introduction of two important changes regarding the structure of the panels and structure of the application.

The panel structure was modified in such manner that the previous 22 panels were replaced by 12 interdisciplinary panels. The panel **Life Sciences** now includes the following panels: Panel ZŽ1 covering: basic medical sciences, biology (biochemistry and molecular biology, genetics, general biology), biotechnology in biomedicine; Panel ZŽ2 covering clinical medical sciences, veterinary medicine and dental medicine; Panel ZŽ3 covering public health and health protection, pharmacy, biotechnology, food processing technology nutrition and kinesiology; Panel ZŽ4 evaluating proposals in the fields of agriculture, forestry, wood technology, biology (botany, ecology, zoology, evolution and phylogeny). The panel **Social Sciences and Humanities** includes three panels: DHZ1 covering economics, demography, information and



communication sciences, political sciences, sociology, social work, security studies, gender studies and law; DHZ2 covering ethnology and anthropology, art science, art history, history, archaeology, theology and philosophy; DHZ3 evaluating project proposals in the fields of pedagogy, psychology, education and rehabilitation sciences, speech therapy, philology and education sciences. The area of **Natural and Technical Sciences** includes the following panels: PTZ1 covering mathematics and computer science; PTZ2 covering architecture and urban planning, geodesy, civil engineering, geology, geography, graphic technology, textile technology, mining, petroleum and geologic engineering; PTZ3 covering electrical engineering, naval architecture, metallurgy, mechanical engineering, technology of traffic and transport, aeronautics, rocket and space technology; PTZ4 evaluating proposals in physics and geophysics, while PTZ5 evaluates project proposals in chemistry and chemical engineering.

Furthermore, the Foundation modified the structure of submitting applications. When submitting their project proposals, applicants are now required to submit the Extended Abstract Form, in which they summarise all relevant information about their proposal in pre-defined form, not exceeding four pages. This form should contain basic information from the applicant's CV, theoretical grounds of the proposal, justification as to why the project is being proposed, overview of the research objectives and methods to be used for their accomplishment, expected results as well as the expected impact of the project on the scientific area, profession, economy etc. The purpose of this form is to describe the basic elements of the project, which facilitates the panels' work in the first evaluation round. The Evaluation Form used in the first round has been adapted so that the evaluation criteria match the Extended Abstract Form.

Applicants who submitted a project proposal to a previous Call and received negative evaluation are also obliged to submit the Repeated Submission to Call Form. If the current project proposal is identical or similar to the previous one, this form should explain in what way the comments of the panel and/or peer reviewers were accounted for in the repeated submission.

## EVALUATION OF PROJECT PROPOSALS

Pursuant to the Act on the Croatian Science Foundation, grants are awarded solely through public calls for proposals, and all calls are published on the Foundation's website. All persons involved in the evaluation procedure are obliged to abide by the principle of confidentiality of information they have been provided with for the purpose of implementing and/or monitoring the evaluation procedure, respecting the highest ethical and professional standards of their profession and not representing or supporting the interests of the institution where they are employed or any other organisation.

All documents related to the evaluation of project proposals (guidelines for submitting proposals, evaluation criteria, forms, etc.) are published on the Foundation's website together with the Call.

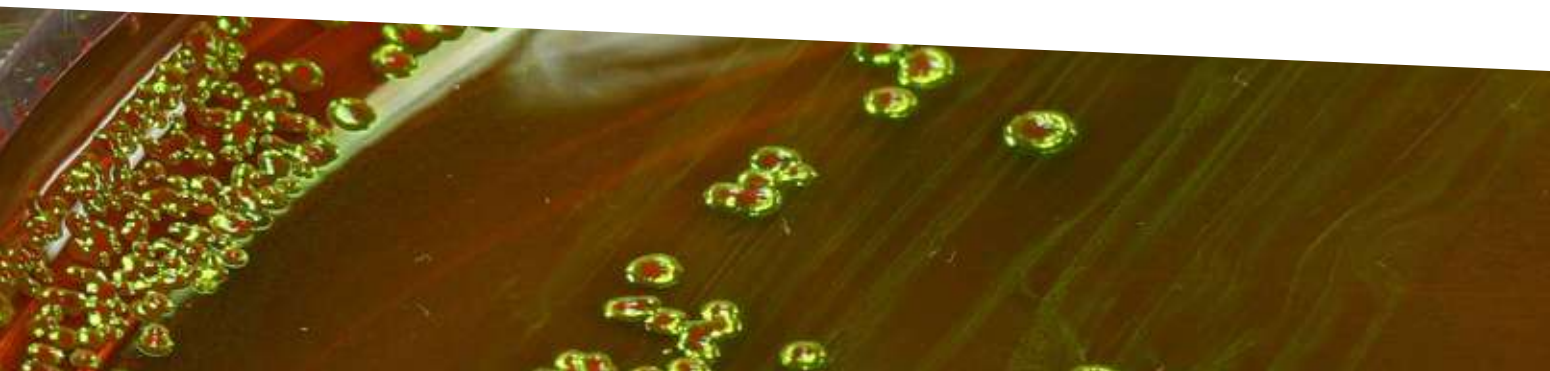
### EVALUATION CRITERIA

Based on the recommendations of the Evaluation Board, the Board adopted criteria for project proposal evaluation. Evaluation criteria are adjusted to each call, according to the goals of the specific funding programme. In the first evaluation round, the evaluation panels determine which project proposals will be referred to the second evaluation round (peer review) on the basis of the extended abstract and work and financial plans.

General criteria for evaluating project proposals are scientific quality, relevance and feasibility of the proposed research, together with quality of the applicant and the research team. In addition, supporting the development of autonomous research careers of young scientists in its crucial stage, when they are capable of establishing a new research group that would deal with internationally competitive and/or nationally relevant scientific topics, is the objective of calls within the programme Installation Research Projects.

### ADMINISTRATIVE CHECK

Administrative check of submitted project proposals begins after the call closing date. The administrative check includes a review of the submitted documentation by following the relevant administrative check protocol. All project proposals that have been assessed as meeting the administrative requirements are referred to the evaluation procedure and are grouped according to the scientific areas within which they were submitted.



The purpose of the administrative check is that only project proposals whose supporting documentation is complete and in order are referred to further evaluation. If the documentation is not complete, the applicant can supplement the documentation upon notification by the Foundation.

**FIRST ROUND OF EVALUATION**

In the first evaluation round, the evaluation panels evaluate project proposals according to pre-defined criteria. The Panel will adopt a decision on referring project proposals to the second evaluation round or make a recommendation not to send it to the second evaluation round (peer review).

The Panel Coordinator’s task is to ensure that each project proposal is evaluated by several competent panel members and that evaluation is conducted in accordance with highly professional and scientific standards.

**SECOND ROUND OF EVALUATION (PEER REVIEW)**

Peer review is a widely accepted international standard for conducting evaluation of scientific project proposals. Project proposal evaluation in the second round is carried out by international peer reviewers according to pre-defined criteria, which differ from first-round criteria since the international reviewers are experts in the research topic. Apart from the applicant’s scientific track record, the reviewers also assess the proposal’s scientific quality, estimate the feasibility of the proposed research and evaluate the scientific contribution of the project proposal.

Reviewers should provide very detailed justifications for their awarded mark, which serves as valuable feedback to the applicant, coming from researchers who deal with the same topic at the international level. The Foundation pays special attention to contacting high-quality and active researchers as peer reviewers.

For each project proposal that is referred to peer review, two reviews are provided. Reviews are sent to the applicants upon completion of the entire evaluation procedure. Reviewers are not allowed to communicate mutually and exchange information.

**FINAL EVALUATION**

During the final evaluation, evaluation panel members read all reviews, assess

the financial plans of the project proposals, discuss ethical issues, support of the host organization, additional documentation and, if necessary, additional criteria determined by the Board for individual calls. During the evaluation of the project’s financial plan, evaluation panel members must assess whether all items are based on actual costs, necessary and justified in relation to the project needs. Project proposals that obtained positive reviews are ranked based on the abovementioned criteria. The project proposals are ranked according to the final scores, reviewers’ comments and the panel’s judgment.

After each panel has generated its own ranking list, all panel coordinators for the same scientific area hold a meeting to determine the final ranking lists of project proposals recommended for funding, taking into consideration the evaluation results, the financial resources available and equal development of fields and disciplines in respective scientific areas. The ranking list of project proposals recommended for funding is then referred to the Foundation’s Board.

**FINANCIAL NEGOTIATIONS**

Based on the evaluation results and the evaluation panels’ recommendations, the Board adopts a decision on opening financial negotiations. During the negotiations, Principal Investigators are asked to update their financial and work plan according to the recommendations and comments of the reviewers and evaluation panel. The updated financial and work plans are reviewed by the panel members, who then notify the Foundation’s Office whether all recommendations and comments have been taken into account. The goal of the financial negotiations is to determine a sound and accurate project budget.



MONITORING FUNDED PROJECTS

The Foundation carries out continuous monitoring and supervision of projects to ensure implementation of project activities according to the work plan, responsible management of allocated financial resources, as well as compliance with relevant requirements in line with the Foundation’s acts. Based on the grant agreement, Principal Investigators are obliged to submit regular periodic reports on the completion of the work and financial plan of the project and to submit the final report upon completion of the project. Each report consists of a narrative and a financial part. It is submitted and evaluated electronically through the EPP system.

NARRATIVE REPORT

The narrative report consists of two parts: the Narrative Report Form and a table for collecting data on project progress during the reporting period. The Narrative Report Form includes: project results according to the work plan or deviations from the work plan, information about the research team, risks envisaged in the upcoming period and plan for their elimination and other information considered relevant.

Tables with other important information about project implementation which is not listed in the narrative report (such as trainings, number of doctoral theses and master theses that are a result of the project, publication, dissemination or cooperation) and proof of achieved result (published scientific publication and other documents demonstrating result dissemination, reports on experiments, patent application certificates and other) should also be submitted at this stage.

FINANCIAL REPORT

The financial report is submitted to establish efficient and committed spending of public resources. All expenses listed in the financial report need to be in accordance with the approved financial plan for the reporting period, and each expense needs to be substantiated with appropriate receipts. Evaluators and independent monitoring experts participate in the evaluation procedure. All persons involved in the evaluation procedure must respect the confidentiality of data and prescribed procedures for monitoring funded projects.

Project report evaluation procedure includes the following steps:

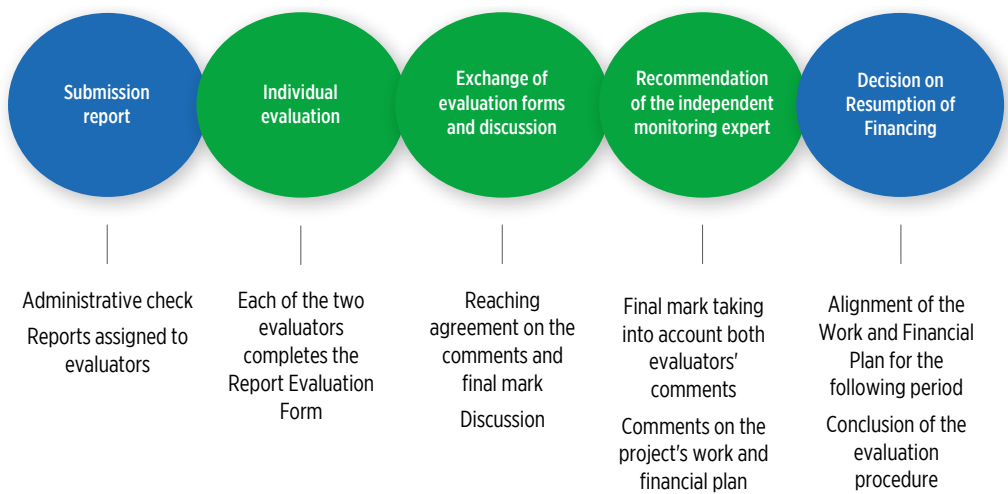


Figure 2. Depiction of the report evaluation procedure

Each report may be given one of the following marks:

- **A - Excellent progress** (the project met all the objectives defined for the reporting period or even exceed them - funding to resume);
- **B - Good progress** (the project met the majority of objectives defined for the reporting period - funding to resume);
- **C - Satisfactory progress** (the project met some of the objectives, but there are relevant deviations in implementation that affect the planned activities - funding to resume with proposed amendments);
- **D - Unsatisfactory progress** (the project failed to meet the key objectives in the set period and/or is not implemented according to the Plan - funding to terminate).

In 2019, the Foundation evaluated **494** reports submitted by Principal Investigators of funded projects. The distribution of final marks awarded to project reports is presented below, broken down by scientific area:



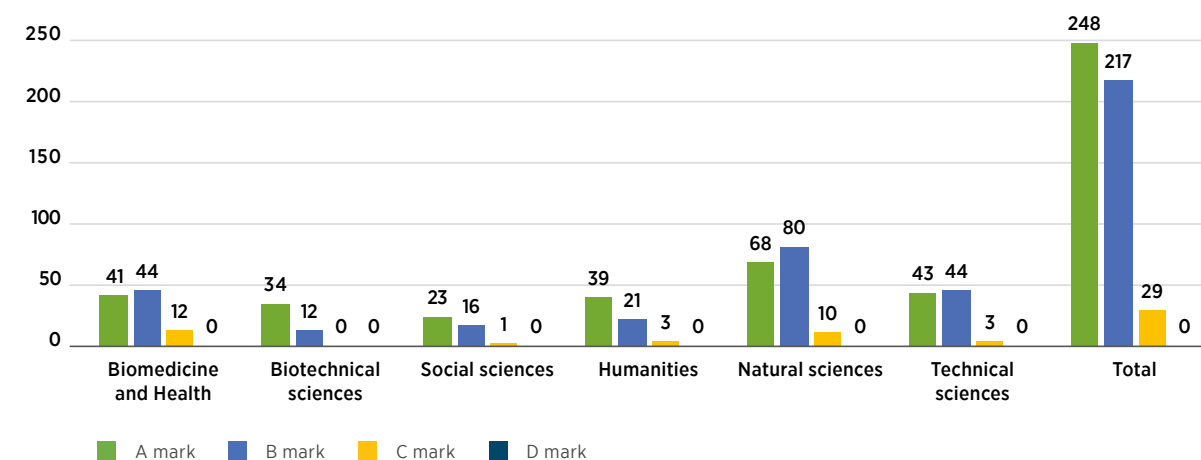


Figure 3. Distribution of marks awarded to project reports in 2019

### OFFICIAL VISITS

In order to determine that contractual commitments are being met and that committed funds are being spent in an appropriate manner as well as to assist institutions and principal investigators with following the Foundation’s rules, the Board may adopt a decision on conducting an official visit to the institutions hosting the Foundation-funded Principal Investigators or their partner institutions. The purpose of the official visit is to gain an insight into the implementation of the project that cannot be ascertained from the periodic or final reports or other project documents.

The official visit is conducted by members of the Official Visit Board and members of the Project Board. The Official Visit Board is composed of three to five scientists, experts in the field of the project subject to the visit and the Foundation’s Scientific Projects Coordinator, who is responsible for organising the visit.

Apart from the Official Visit Board, the meeting is attended by the representatives of the project and the institution at which the project is implemented (hereinafter: Project Board). The Project Board is comprised of the Principal Investigator, Head of their institution and project team members.

The official visit takes place at the institution at which the project is being

implemented. Prior to the visit, the Principal Investigator and the Head of the institution are required to submit the Self-evaluation Report, where they provide additional information about project implementation.

The visit includes a presentation by the Principal Investigator about the project activities, achieved objectives, future plans and potential problems, discussion with project team members, tour of the facilities used for project implementation, all rounded up with a final meeting and discussion.

After the conducted visit, the Official Visit Board drafts the minutes which contain a recommendation regarding the resumption of funding, which is then referred to the Foundation’s Board. Six official visits were held in 2019.



# THE FOUNDATION’S CALLS IN 2019

The Foundation published nine new Calls in 2019:

- ERA-NET Cofund in Quantum Technologies (QuantERA-2019-02)
- Cooperation Programme with Croatian Scientists in Diaspora “Research Cooperability” (PZS-2019-02)
- Research projects (IP-2019-04)
- Installation Research Projects (UIP-2019-04)
- Support to Researchers for Applying to European Research Council Programmes (ERC-2019-10)
- Young Researchers’ Career Development Project – Training New Doctoral Students (DOK-2020-01)
- Research Projects – Slovenian-Croatian Bilateral Projects (IPS-2020-01)
- Research projects (IP-2020-02)
- Installation Research Projects (UIP-2020-02)

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In addition, early 2019 saw the closure of the financial negotiation and contracting stages for the Call Tenure Track Pilot Program (TTP-2018-07).

## RESEARCH PROJECTS (IP-2019-04)

The Programme “Research Projects” has been established for funding fundamental research whose goal is creating new and enhancing existing knowledge about a specific area and that is directed at better understanding of the research topic as well as applied research that is conducted with clear technological, economic or social aims in mind.

The research topic needs to be internationally recognisable and/or nationally relevant, while the applicant needs to have an excellent scientific track record. Projects that will be funded through this Call need to be based on strong research teams, whose Principal Investigators are scientists recognised on a national and international level and which include integration of scientific organisations, research and equipment, development of research capacity and plan the development of young researchers.

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## GOALS OF THE PROGRAMME:

- creating new knowledge with the ultimate aim of strengthening the Croatian economy and social welfare
- encouraging the networking of researchers and creating recognisable research teams that address internationally and/or nationally important problems, whose Principal Investigators are prominent scientists with internationally recognised achievements
- to create scientific research groups that can be competitive at the international level and scientists who are capable of mentoring new generations of young researchers
- developing the Croatian scientific research potential

## SUBMITTED PROJECT PROPOSALS

The overall budget for the Call “Research Projects” in 2019 amounted to HRK 40,000,000.00.

A total of **382 project proposals** were submitted. Figures below show the distribution of submitted project proposals by scientific areas (Figure 4) and institutions (Figure 5).

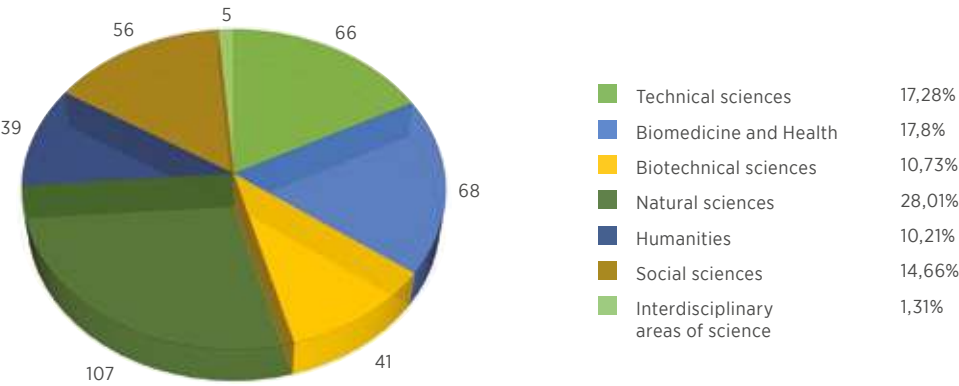


Figure 4. Overview of submitted project proposals per scientific area

The highest number of project proposals was received from the area of Natural sciences, a total of 107 (28.01%). Biomedicine and Health are next with 68 applications (17.80%), followed by Technical sciences with 66 project proposals (17.28%), Social sciences with 56 applications (14.66%) and Biotechnical sciences with 38 (10.73%) project proposals submitted. The lowest number of applications was submitted in the area of Humanities, a total of 39 (10.21%). In addition, 5 interdisciplinary project proposals (1.31%) were also submitted.

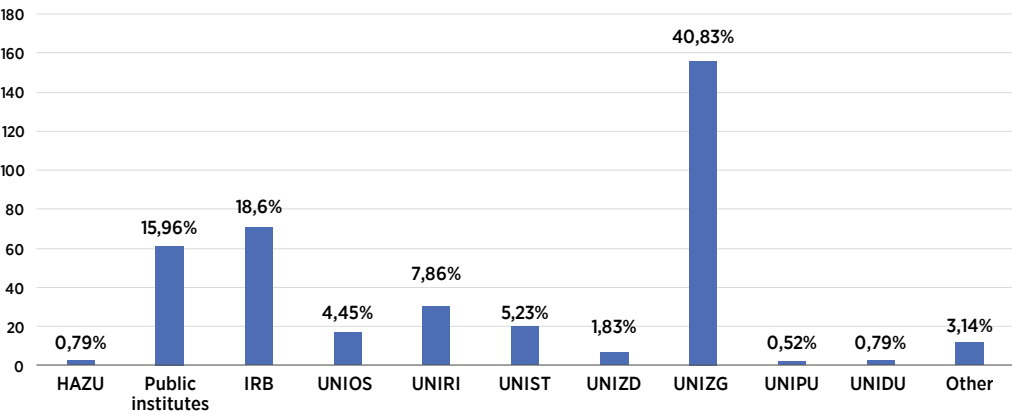


Figure 5. Overview of submitted project proposals per institution

The highest number of applications arrived from the University of Zagreb (156), while the smallest number was submitted from the University of Pula (2 applications). Due to a large number of applications from the Ruđer Bošković Institute, data for this institution are presented individually, while data for all other public institutes have been aggregated. The column “Public institutes” includes the following institutions: The Institute of Economics, Zagreb (3 applications), Croatian Geological Survey (2), Croatian Institute of History (4), Croatian Forest Research Institute (2), Croatian Veterinary Institute (2), Institute of Social Sciences Ivo Pilar (5), Institute for Anthropological Research (5), Institute of Archaeology (3), Institute for Social Research in Zagreb (1), Institute of Ethnology and Folklore Research (3), Institute of Physics (3), Institute of Croatian Language and Linguistics (1), Institute for Adriatic Crops and Karst Reclamation (4), Institute of Public Finance (2), Institute for Medical Research and Occupational Health (5), Institute for Migration and Ethnic Studies (2), Institute of Oceanography and Fisheries (4), Institute of Agriculture and Tourism

(3), Institute of Art History (2), Institute for Tourism (2), Old Church Slavonic Institute (2) and Mediterranean Institute for Life Sciences (1). .

**Administrative check** – Administrative check of all submitted project proposals began after the Call closing date. The administrative check included a review of the submitted documentation by following the administrative check protocol. **381** project proposals passed the administrative check and were referred to the evaluation procedure. One project proposal did not pass the administrative check.

**First round of evaluation** – Decision on the referral of project proposals to peer review was taken after the evaluation panels assessed the project proposals according to the criteria from the Evaluation Form.

**Second round of evaluation (peer review)** – Reviewers assess project proposals according to the criteria outlined in the Evaluation Form. Each project proposal needs to obtain two reviews, which are delivered to the applicants upon completion of the entire evaluation procedure, together with the notification on the evaluation results.

A total of 300 project proposals, or 78.5% of submitted applications, were referred to peer review. The largest number of project proposals evaluated in the second round came from Natural sciences (33.67%), which also had the highest share of submitted proposals. The lowest share (0.67%) was registered in interdisciplinary areas of science, which is not surprising considering that only five interdisciplinary proposals were submitted (Figure 6).

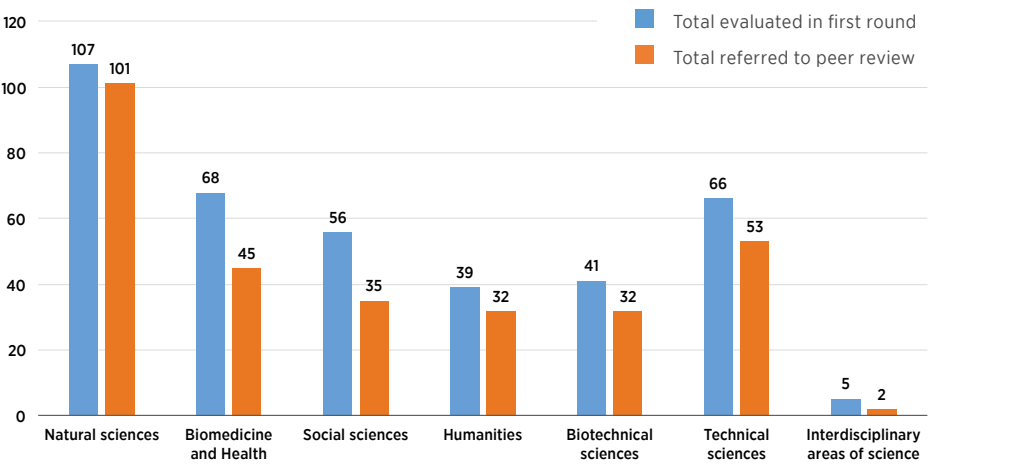


Figure 6. Number of project proposals referred to peer review per scientific area



**Final evaluation** – After the peer review, the evaluation panels conduct final evaluation of project proposals which obtained two positive reviews. Final evaluation involves examination of the received reviews, evaluation of the projects’ financial and work plans, and discussion about ethical issues, followed by ranking of project proposals that are recommended for funding.

**Adopting the recommendation for funding** – Based on the evaluation results and panels’ recommendations, the Board of the Foundation adopted the final decision on funding.

**Evaluation results** – The overall pass rate for Research Projects (number of contracted projects divided by number of proposals submitted to the Call) equals 42%. However, it should be noted that not all project proposals that had been evaluated positively were also contracted and financed due to lack of funds envisaged in the Call.

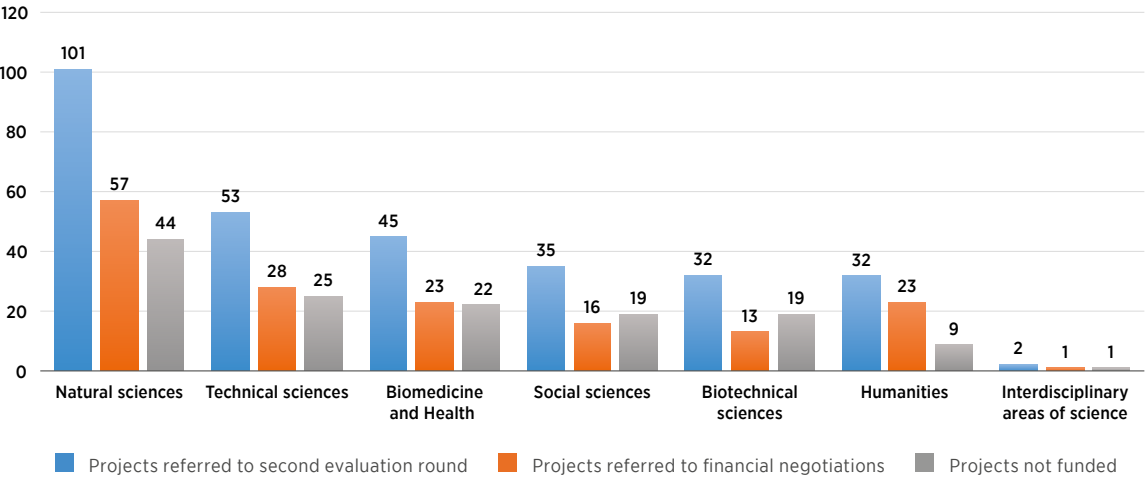


Figure 7. Overview of the pass rate in the second evaluation round per scientific area

The relation between the number of submitted and the number of funded projects, as presented in Figure 7, is not uniform in all scientific areas. The highest pass rate is registered in the Humanities (71.88%). On the other hand, Biotechnical sciences show the lowest pass rate of 40.6%.

## INSTALLATION RESEARCH PROJECTS (UIP-2019-04)

The “Installation Research Projects” Programme was developed to support the development of independent research careers of young scientists and new research teams that engage in internationally recognisable and nationally relevant topics. The Call represents a logical sequel to post-doctoral specialization and focuses on the moment in the careers of young scientists at which they are prepared to develop new research topics and/or methodologies and install a new research group.

Funding provided by the Foundation in a five-year period represents a solid base for research independence and successful implementation of an internationally competitive project as it enables funding of research costs, acquisition of crucial scientific equipment, recruitment of new research team members and dissemination, collaboration and training for research team members. Since the basic selection criteria are quality and innovation potential of the research and topic that is internationally recognisable and nationally relevant, the applicants shall enjoy the freedom to define their own research topic in all scientific areas. The main pre-requisite for all of the above is strong support of the scientific organization at which the Applicant is or will be employed during the project implementation period. The Organization should, in a clear and concrete manner, provide support to the work of the emerging research group and describe how the new research topic would integrate in the Organization’s existing development strategy.

### AIM OF THE CALL:

Supporting the development of autonomous research careers of young scientists in its crucial stage, when they are capable of establishing a new research group that would deal with internationally competitive and/or nationally relevant scientific topics.

SUBMITTED PROJECT PROPOSALS

The overall budget for the Call “Installation Research Projects” in 2019 amounted to HRK 20,000,000.00.

A total of **172 project proposals** were submitted to the Call. Figure 8 below shows the number of submitted project proposals per scientific area.

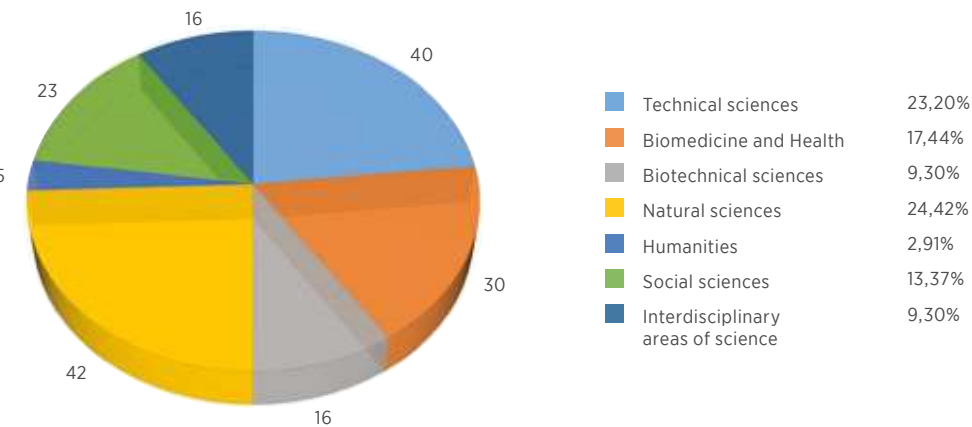


Figure 8. Overview of submitted project proposals per scientific area

The highest number of project proposals (42, or 24.42%) was submitted in the Natural sciences. Technical sciences come next with 40 proposals (23.20%), followed by Biomedical and Health sciences with 30 (17.44%), Social sciences (23, or 13.37%), Biotechnical sciences (16 or 9.30%) and 16 interdisciplinary proposals (9.30%) – 6 in interdisciplinary technical sciences, 3 in social sciences, 3 in humanities, 2 in natural sciences and one each in biomedicine and biotechnical sciences. The fewest project proposals (5, or 2.91%) were submitted in the Humanities.

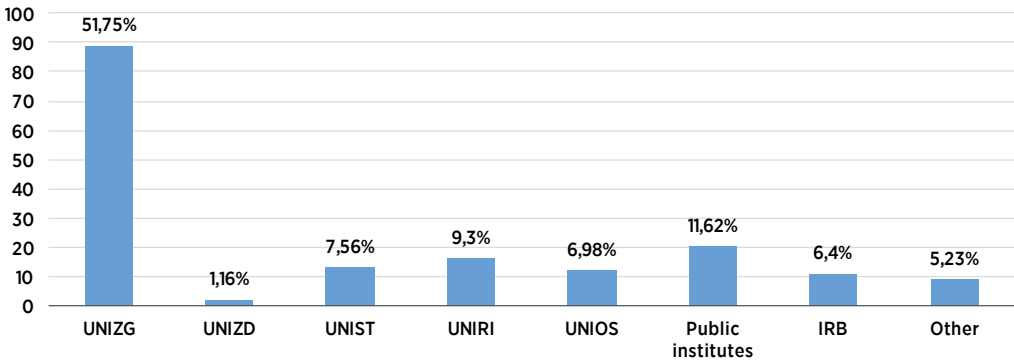


Figure 9. Overview of submitted project proposals per institution

The highest number of applications arrived from the University of Zagreb (89), while the lowest number was submitted from the University of Zadar (2 applications). Due to a large number of applications from the Ruđer Bošković Institute, data for this institution are presented individually in Figure 9, while data for all other public institutes have been aggregated. The column “Public institutes” includes the following institutions: Croatian Geological Survey (3 applications), Croatian Veterinary Institute (2), Institute of Social Sciences Ivo Pilar (1), Institute for Anthropological Research (1), Institute of Archaeology (1), Institute for Social Research in Zagreb (1), Institute of Physics (3), Institute for Adriatic Crops and Karst Reclamation (1), Institute for Medical Research and Occupational Health (2), Institute of Oceanography and Fisheries (1), Institute of Agriculture and Tourism (3) and the Agricultural Institute Osijek (1).

**Administrative check** – Administrative check of all submitted project proposals began after the Call closing date. The administrative check included a review of the submitted documentation by following the administrative check protocol. 171 project proposals passed the administrative check and were referred to the evaluation procedure. One project proposal did not pass the administrative check.

**First round of evaluation** – Decision on the referral of project proposals to peer review was taken after the evaluation panels assessed the project proposals according to the criteria from the Evaluation Form.

**Second round of evaluation (peer review)** – Reviewers assess project proposals according to the criteria outlined in the Evaluation Form. Each project proposal needs to obtain two reviews, which are delivered to the applicants upon

completion of the entire evaluation procedure, together with the notification on the evaluation results.

72.10% of submitted applications were referred to peer review. The highest number of project proposals referred to the second evaluation round was in the Natural sciences (27%), and the lowest in the Humanities (3.23%).

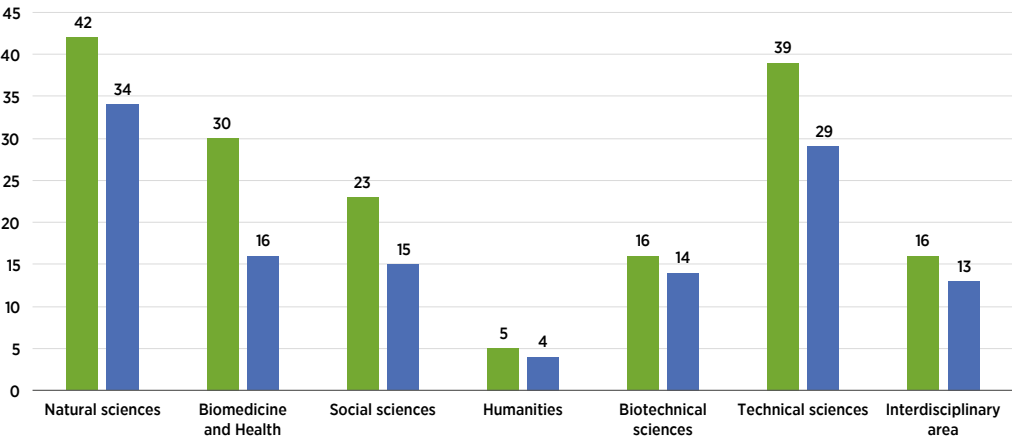


Figure 10. Number of project proposals referred to peer review per scientific area

**Final evaluation** – After the peer review, the evaluation panels conduct final evaluation of project proposals which obtained two positive reviews. Final evaluation involves examination of the received reviews, evaluation of the projects’ financial and work plans, and discussion about ethical issues, followed by ranking of project proposals that are recommended for funding.

**Adopting the recommendation for funding** – Based on the evaluation results and panels’ recommendations, the Board of the Foundation adopts the final decision on funding.

**Evaluation results** – The overall pass rate for Installation Research Projects (number of contracted projects divided by number of proposals submitted to the Call) equals 29.65%. However, it should be noted that not all project proposals that entered the financial negotiations stage were also contracted and financed. A total of **51 projects were contracted**, while the remaining ones were not due to lack of funds committed for in the Call.

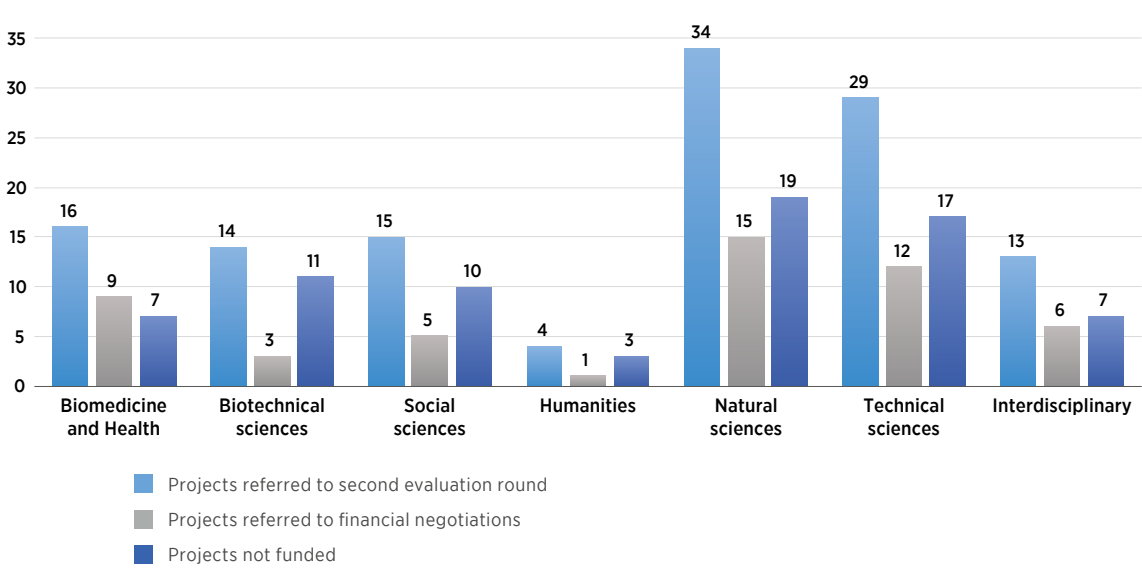


Figure 11. Overview of the pass rate in the second evaluation round per scientific area (UIP-2019-04)

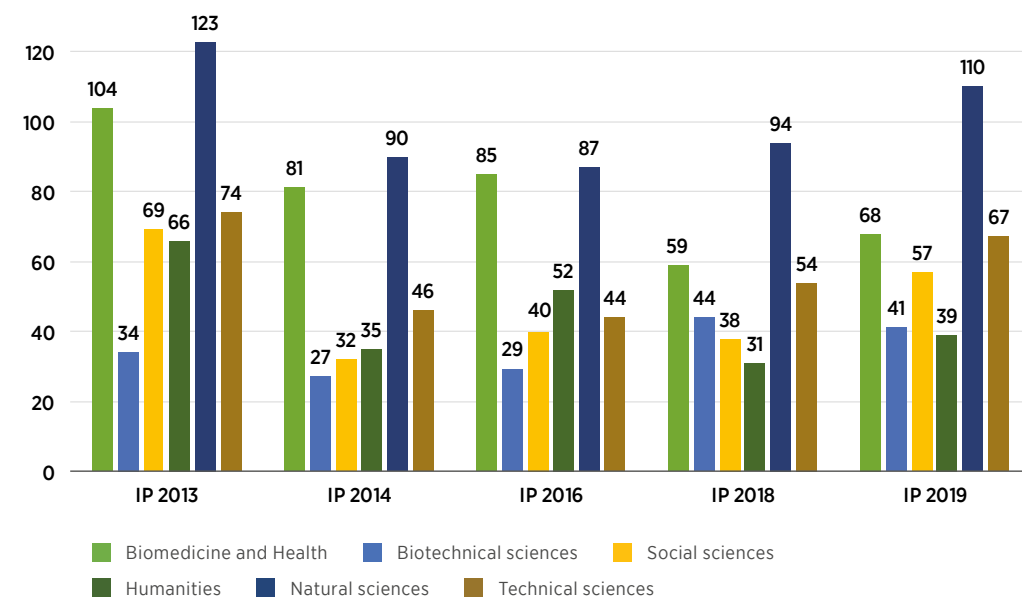
The relation between the number of submitted and funded projects, as presented in Figure 11, is not uniform in all scientific areas. No scientific area registered a pass rate above 50%. The lowest pass rate is registered in the area of Biotechnical sciences (18.75%).

**COMPARISON OF THE NUMBER OF SUBMITTED AND FUNDED PROJECTS THROUGH CALLS PUBLISHED BETWEEN 2013 AND 2019**

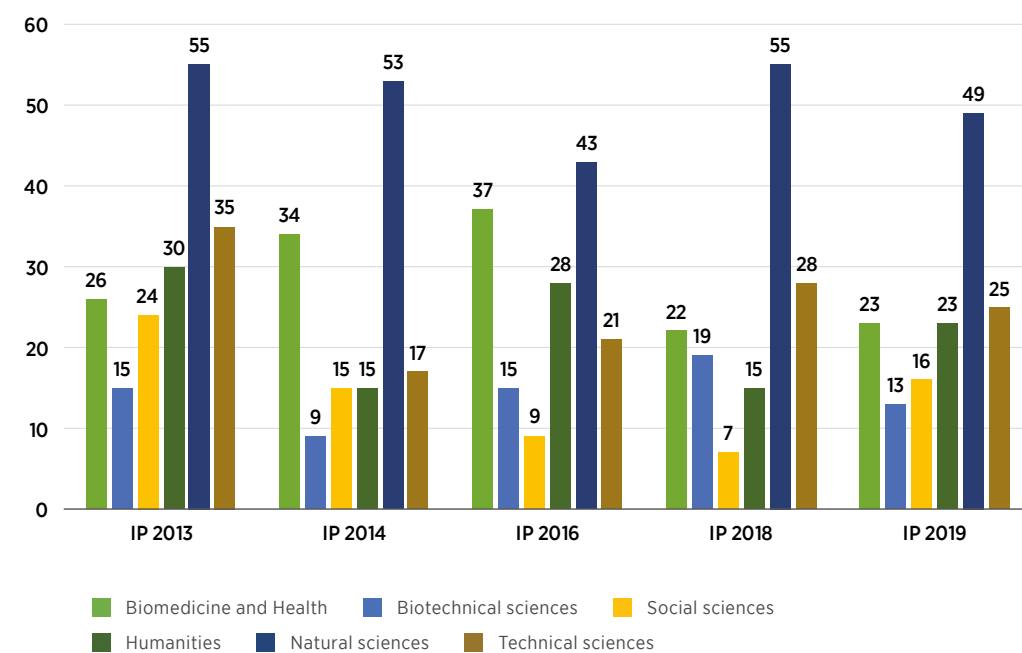
Figure 12 shows the number of project proposals submitted to calls within the programme “Research Projects” in the period between 2013 and 2019, broken down by scientific area.

The highest number of project proposals submitted to every call in this period came from the Natural sciences. Naturally, the largest number of projects are funded in this area of science as well (Figure 13). Applications from Biomedicine and Health and Technical sciences are next in the ranking. 2019 saw a substantial increase in the number of applications from Social sciences, following their relatively low numbers at the 2014, 2016 and 2018 calls. The number of applications in Biotechnical sciences and Humanities has not varied much between 2014 and now.





**Figure 12.** Submitted project proposals to calls IP-11-2013, IP-09-2014, IP-05-2016, IP-01-2018 and IP-04-2019 per scientific area



**Figure 13.** Funded projects through calls IP-11-2013, IP-09-2014, IP-05-2016, IP-01-2018 and IP-04-2019

The number of applications is congruent with the number of funded projects, as presented in Figure 13. The highest number of funded projects is registered in the area of Natural sciences, followed by Technical sciences and Biomedicine and Health. Comparing the number of submitted and funded projects in figures 12 and 13, one can see a higher pass rate in the Humanities and a low pass rate in the Social sciences. The Foundation pays special attention to these data and analyses them with both the researchers and evaluation panel members.



**PROGRAMME OF SUPPORTING RESEARCH AND DEVELOPMENT ACTIVITIES IN THE AREA OF CLIMATE CHANGE (PKP-2016-06)**

**ABOUT THE PROGRAMME**

The Government of the Republic of Croatia, at its 264<sup>th</sup> session, held on 5 November 2015, adopted the Decision on Launching the Programme of Supporting Research and Development Activities in the Area of Climate Change for 2015-2016. The financial resources for the implementation of this Programme have been secured through the Environmental Protection and Energy Efficiency Fund. The Programme is implemented by the Croatian Science Foundation. The goal of the Programme is to support research and developmental activities in the field of climate change mitigation and adaptation. By encouraging the Croatian scientific community to take a more active part in solving nationally relevant problems related to climate change and measures associated with it, with a special focus on sustainable energy and cooperation between different sectors, additional emphasis is placed on the development of a sustainable society.

The Call was published on 1 April 2016, with the closing date set on 4 July 2016. The overall budget of the Call: up to HRK 17,000,000.00. Available funding per project: between HRK 500,000.00 and 2,000,000.00 Project implementation period: 1-2 years.

**CALL**

A total of **37 project proposals** were submitted to the Call. The priority thematic areas were defined in the Plan of Utilization of financial resources obtained by the sale of emission units through public auction between 2014 and 2016 (Official Gazette 140/14) and key strategic documents, all in accordance with current national priorities in the field of climate change. Pursuant to the Plan of Utilization as adopted by the Government, the call need not cover all thematic areas defined; rather, the priorities shall be defined by the Programme Steering Committee. Pursuant to this, the Call was open for six priority thematic areas.

Based on the results of the evaluation and recommendations of the evaluation panels and taking into account the funds available within the Call, the Foundation’s Board approved **ten projects for funding** in the total amount of HRK 15,129,599.72.

**USE OF FUNDS**

The implementation of projects is evaluated on a periodic basis. The evaluation serves as the basis to the Foundation’s Board for adopting a decision on further funding and resumption of the project. If the periodic financial reports show that all funds have not been spent in the subject project period (unspent funds), these funds are reduced from the amount of the following instalment disbursed by the Foundation. If the approved funds are spent in a non-dedicated manner or in violation of the Grant Agreement, the Principal Investigator is obliged to return the inappropriately committed funds within 60 days.

The Grant Agreements for the Call “Programme of Supporting Research and Development Activities in the Area of Climate Change” define the rates and dynamics of disbursement of project funds in four instalments, the first three of which have been set at 30% of the contracted amount, while the final instalment will be calculated on the basis of the remaining funds, but not exceeding 10% of the funds contracted for any individual project.

The first quarter of 2019, following the evaluation of second periodic reports, saw the disbursement of the third instalment for all ten funded projects in the amount of HRK 4,375,476.30. Final reports for financed projects were submitted in 2019 and December 2019 saw the disbursement of the final instalment for seven projects in the amount of HRK 755,348.52, while one project was required to return HRK 35,258.71.

The whole Programme is expected to be wound up in 2020.



PARTNERSHIP IN RESEARCH

ABOUT THE PROGRAMME

The aim of the Programme “Partnership in Research” is to support research partnerships between public universities or public scientific institutes in Croatia (hereinafter: public institution) and extra-budgetary sources (i.e. not financed from the State Budget) from Croatia or from abroad (private companies, local administration units, foreign foundations and agencies for funding research, foreign scientific organisations etc.). The Programme is intended to provide support to scientific research that is able to enhance the development of new and existing enterprises and attract representatives of partner organizations that would be able to substantially contribute to the economic, technological and social development of the Republic of Croatia.

The specific objective of the Programme is to implement research conducted in partnership in order to: conduct research with potential for having a visible and relevant economic or social impact, enhance the link between Croatian public scientific institutions and the economy, enable the transfer of knowledge and connect with the users of research results.

The Call was published on 27 April 2018, with two closing dates, set for 02 July and 03 December 2018 respectively.

The overall budget of the Call (the Foundation’s funding): up to HRK 15,000,000.00. The Foundation shall annually award between HRK 200,000.00 and 500,000.00 per project, while the maximum amount awarded to each project may not exceed HRK 1,500,000.00. Project implementation period: 2-3 years.

Partner institution should provide at least 50% of co-funding (in case several partners take part in the project, they should jointly provide 50% of the total project value).

CALL FOR PROPOSALS

The first Call for Proposals, with the deadline of 02 July 2018, saw only one application submitted, which was rejected after the first evaluation round. Hence, no project proposals were recommended for funding in the subject Call.

The second Call for Proposals, with the deadline of 03 December 2018, saw five applications submitted. Based on the results of the evaluation and

recommendations of the evaluation panels and taking into account the funds available within the Call, the Foundation’s Board approved two projects for funding.

USE OF FUNDS

The implementation of projects is evaluated on a periodic basis. The evaluation serves as the basis to the Foundation’s Board for adopting a decision on further funding and resumption of the project. If the periodic financial reports show that all funds have not been spent in the subject project period (unspent funds), these funds are reduced from the amount of the following instalment disbursed by the Foundation. If the approved funds are spent in a non-dedicated manner or in violation of the Grant Agreement, the Principal Investigator is obliged to return the inappropriately committed funds within 60 days.

A total of HRK 1,501,700.00 was disbursed for the two calls opened in 2018.





YOUNG RESEARCHERS’ CAREER DEVELOPMENT PROJECT – TRAINING NEW DOCTORAL STUDENTS

One of the Foundation’s strategic goals is funding career development of young researchers. The Foundation’s Strategic Plan anticipates between 200 and 250 new doctoral students being funded every year, depending on the available funds from the State Budget, in order to reach the intended number of 1,000 doctoral students under the Foundation’s grant system.

The aim of the Project is to support the employment of young researchers in early stages of their career development (at post-graduate level) in the science and higher education system. The funding of doctoral students’ salaries is divided into two periods, each in the duration of two years. The first period includes doctoral studies and registration of the topic of the doctoral thesis. Positive evaluation of achieved results is a precondition to continue funding for the next two years, during which the young scientist will finalise their doctoral thesis. The final aim is producing a doctoral dissertation and adopting knowledge regarding basic postulates of scientific work and research.

Funding includes annual doctoral students’ gross II salary, including costs of transport to and from work and other expenditures for employed students. The Foundation transfers the funds into the account of the institution at which the mentor is employed and with which the doctoral student has signed the work contract, while the institution pays monthly salary to the doctoral student.

CALL DOK-2018-01, FUNDED FROM THE EUROPEAN SOCIAL FUND

To ensure sustainability of such a funding model, the Foundation opened two calls funded from two different sources in 2018. One generation of young researchers is funded from the **European Social Fund (ESF)** within the Operational Programme 10.II.3. Improving Conditions for Croatian Researchers with co-funding from the State Budget of the Republic of Croatia, while another generation is funded exclusively from the State Budget.

RESULTS OF DOCTORAL STUDENTS’ WORK IN 2019

The majority of employment contracts with doctoral students were concluded by the end of 2018, while the remaining six were signed in 2019, bringing the total number of ESF-funded doctoral students in 2019 to 163. Figure 14

shows the overall trend of employment rates of ESF-funded doctoral students throughout 2019. The second quarter saw an increase in their numbers, while Q3 and Q4 saw a decrease with four doctoral students changing positions, bringing the total number down to 159.

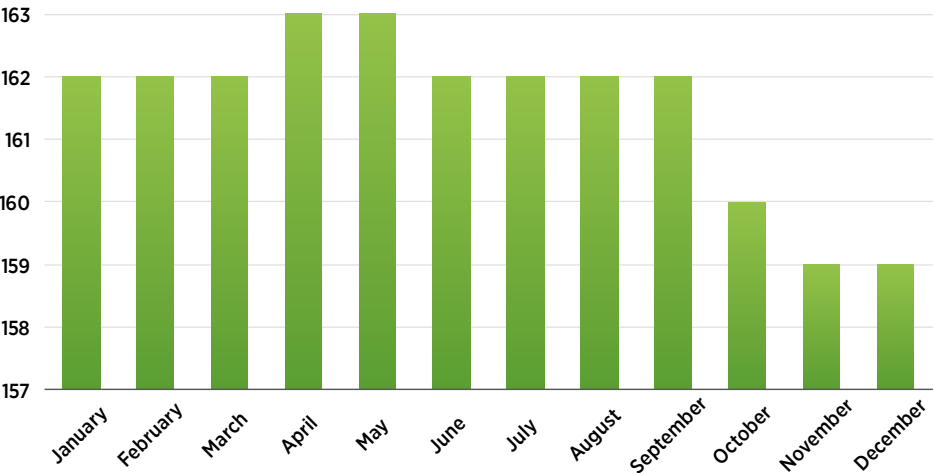


Figure 14. Trend of employment rates of ESF-funded doctoral students in 2019

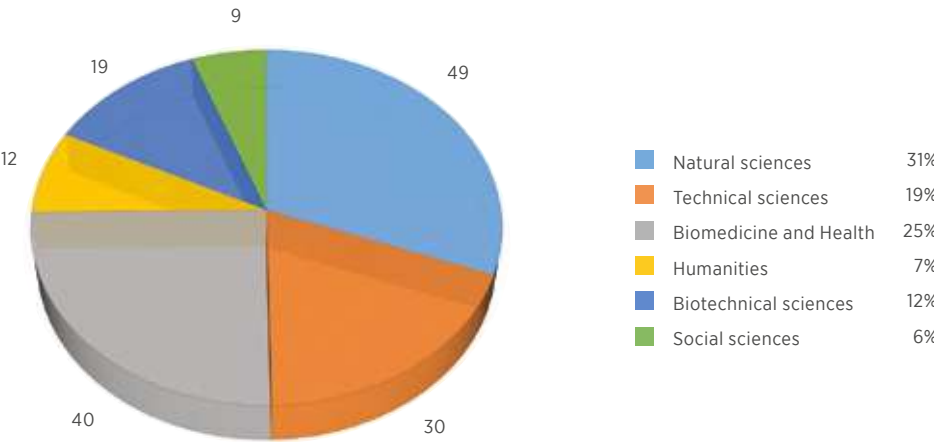


Figure 15. Overview of employed ESF-funded doctoral students per scientific area, December

Figure 15 shows the number of ESF-funded doctoral students per scientific area in relation to their total number, which equalled 159 in December 2019. It

is evident that the largest number of doctoral students were employed in the Natural sciences, followed by Biomedicine and Health and Technical sciences. The fewest doctoral students were employed in the Social sciences, which is in line with data from the Foundation's other funding programmes.

The monitoring procedure entails the evaluation of doctoral students' progress reports. Mentors and doctoral students are obliged to submit the first periodic report on the doctoral student's progress after 18 months. Doctoral student's progress reports are an essential source of information to the Foundation regarding the doctoral student's progress, their achievements in both their doctoral studies and their research within the mentor's project. Since the doctoral students' employment contracts were concluded in 2018 and early 2019, the submission of their first periodic reports is expected in early 2020. The evaluation results for these reports will be presented in the 2020 Annual Report.

**CALL DOK-2018-09, FUNDED FROM THE STATE BUDGET**

The Call "Young Researchers' Career Development Project – Training New Doctoral Students" was opened in June 2018 with the call deadline set for September; a total of 183 applications of candidates for mentors were submitted. One application did not meet the administrative criteria, while all other applications were referred to evaluation. Out of 183 candidates for mentors, 156 applicants are Principal Investigators or team members of projects funded by the Foundation, 21 are involved with international projects, while 6 are engaged in centres of excellence.

**EVALUATION OF APPLICATIONS**

Criteria for the evaluation of candidates for mentors include their scientific activity (publications, patents, international cooperation etc.), mentorship experience, detailed plan for doctoral student's academic research career, financial plan for the costs of training and doctoral student's research work and the support of the institution with clearly elaborated elements. Evaluation results were published in December 2018, after all approved mentors and the heads of their institutions had been notified of the results. A total of **175 mentors** were approved for funding.

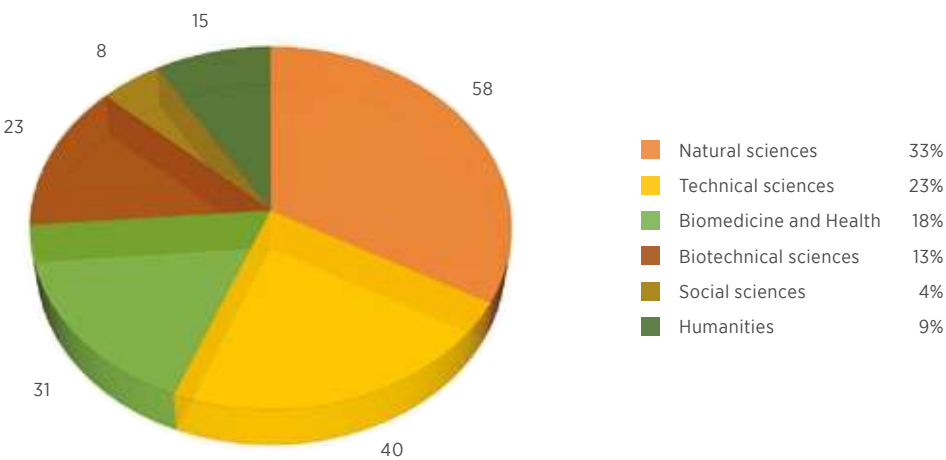


Figure 16. Number of funded mentors per scientific area

Figure 16 shows project applications approved for funding, broken down by scientific area. As in previous years, the highest number of funded doctoral students are in Natural sciences, 58 (or 33.1%), and the lowest from Social sciences, 8 or 4.4% of the total.

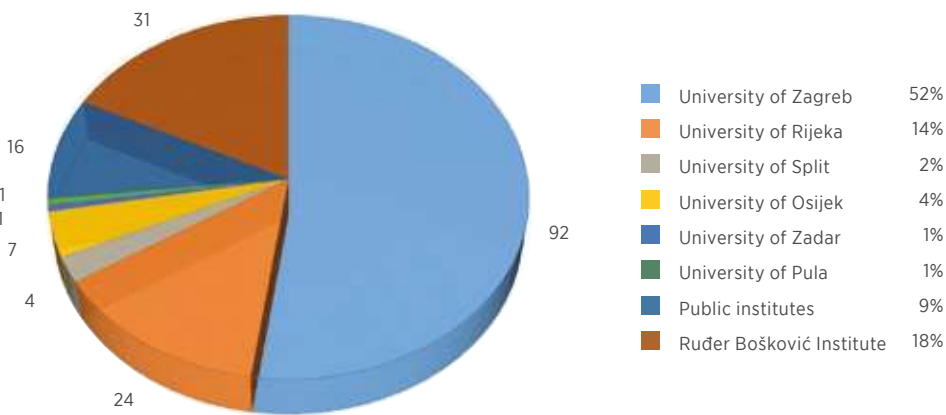


Figure 17. Number of funded mentors per institution

The distribution of applications by institutions is presented in Figure 17, with data for Ruđer Bošković Institute being presented separately from other public institutes. As in the case of previous calls, the highest number of funded doctoral students are located at the University of Zagreb (52.3%).

“UNITY THROUGH KNOWLEDGE” FUND (UKF)

In 2007, the Ministry of Science and Education, on behalf of the Government of the Republic of Croatia, launched the” Unity through Knowledge Fund” (UKF), whose mission was to unite the scientific and expert potential in Croatia with the diaspora for the purpose of building a knowledge-based society.

The UKF’s mission is realised through the following objectives:

- The Fund encourages basic and applied scientific research that creates new knowledge and exhibits potential to compete on an international level;
- The Fund supports projects that directly and indirectly strengthen the Croatian economy and transform it into a knowledge-based economy;
- The Fund supports all initiatives that contribute to the development of the scientific system in Croatia through collaboration with the diaspora.

Since 2013, the financial resources for the Fund’s activities have been secured from the World Bank Loan No. 8258-HR through the Second Science and Technology Project (STP II). STP II is an extension of the previous Science and Technology Project (STP I), financed from the World Bank Loan No. 7320-HR, which was successfully completed on 31 May 2011.

The objectives of STP-II are supporting the Republic of Croatia in the absorption of EU funds in the area of research and innovation by strengthening capacities of selected organisations in the public sector and in the development of several research projects from the public and private sectors, including the development of research groups that can qualify for funding from ESI Funds.

In February 2014, the Croatian Science Foundation assumed the implementation of the Fund’s programmes by concluding the Agreement on Transferring the Implementation of the Fund’s Programmes and the

Amendment to the Loan Agreement No. 8258-HR on 25 February 2015, thus becoming the beneficiary of the World Bank Loan.

Two Committees have been founded for the purpose of implementation and management of the STP II project, supported by the UKF Secretariat.

The Steering Committee is in charge of establishing the Fund’s strategy, communication, proposing specific programs, controlling the quality of the evaluation process and assessing the compliance of project applications with the Fund’s goals and is in charge of final evaluations and approvals of projects. The Steering Committee was nominated by the Approval Committee, upon recommendation by the Ministry of Science and Education in July 2014.

The Approval Committee (the Board of the Foundation) is in charge of final approval of the specific programs and final evaluations of the programme.

The UKF Secretariat is the executive office of the UKF in charge of operational activities such as promotion of the Programme, business and financial planning, proposing UKF working strategy to the SC, selection of peer reviewers, monitoring implementation of approved projects, etc.

PROJECTS FUNDED THROUGH THE “RESEARCH COOPERABILITY” PROGRAMME, GRANT “MY FIRST COLLABORATION”

March 2019 saw the completion of **12 projects** funded through the “Research Cooperability” Programme, grant “My First Collaboration”, which were implemented for a period of 15 months. Following their completion, final scientific and financial evaluation was conducted, resulting in 11 projects meeting their contractual obligations.

The “My First Collaboration” grant enabled young scientists at the post-doctoral level to establish collaboration with Croatian scientists living abroad to increase their professional experience and develop a career in science or the economy. In the period from October 2017 to March 2019, the Fund disbursed **HRK 3,520,491**, of which HRK 3,020,047 were used. Apart from the Fund’s resources, the beneficiaries collected another **HRK 1,059,012 from other sources**, which represents 35% of the total amount of the resources disbursed by the Fund. The non-expended funds after the conclusion of this programme and the funds secured through redistribution within the third STP II restructuring were both used for contracting projects submitted to the “Connectivity” Programme.



**CALL AND PROJECTS FUNDED THROUGH THE “CONNECTIVITY” PROGRAMME, GRANT “GAINING EXPERIENCE”**

The evaluation of project proposals submitted to the call “Gaining Experience” within the “Connectivity” Programme, which was opened from 20 November 2018 to 01 February 2019, was completed in March 2019, resulting in the conclusion of 21 grant agreements. This grant provided excellent scientists and experts from Croatia with the opportunity to visit the best research centres abroad to establish cooperation and gain new skills necessary for improving science and technology in the country. Apart from one project that was terminated immediately upon signing, **20 projects** were contracted in the amount of **HRK 769,719**. The duration of the visits was between 31 days and 6 months and the ultimate date of return was December 2019. Parts of unspent funds were returned to the Fund in 2019, while other projects will return their funds after the approval of their final reports in January 2020.

Total amount of resources invested by the Fund in these projects equal **HRK 716,408**. Additional funds for the implementation of this Programme in the amount of **HRK 685,446 (95.6%)** have been secured by projects themselves; international research-performing organizations that hosted the young researchers contributed with **HRK 590,627**, Croatian public research institutions provided **HRK 89,819**, while the Croatian private sector invested **HRK 5,000**.

**EVALUATION OF THE SECOND SCIENCE AND TECHNOLOGY PROJECT (STPII)**

2019 saw the contracting and start of activities for evaluating the results and effect of the Second Science and Technology Project, including the Fund’s results and effects. The service was contracted by the Ministry of Science and Education and the service will be supplied by the Institute of Economics, Zagreb.

The objective of the evaluation is to assess the achievement of general and specific objectives of STP-II after six years of implementation (31 July 2013 to 31 April 2020) as well as the efficiency and effectiveness of the programmes, including the programmes implemented by the Fund, and other measures executed through STP-II.

Apart from the planned analysis of all documents, official data and electronic databases and the collected project results, the evaluation also included survey and interviews with beneficiaries and applicants who failed to receive a grant from the Fund (*evaluation of counterfactual effect*).

The study will be published in 2020, while the data presented below was collected through the project’s annual reporting obligation.

In the period between October 2013 and end-2019, a total of **59 projects** were initiated and completed within the programmes “Cooperability”, “Young Researchers and Professionals” and “Connectivity”. The projects saw the collaboration of **448 scientists** from 28 scientific institutions in Croatia and 73 research-performing organizations abroad as well as 19 partners from the private sector, which co-financed the projects in the total amount of HRK 14.23 million, or 39.6% of the **HRK 35.76 million** invested into the projects by the Fund.



# INTERNATIONAL COLLABORATION

International collaboration is one of the crucial factors that guarantees and improves the quality of scientific institutions. Therefore, one of the Foundation's goals is to enhance its international collaboration, i.e. the internationalisation of its activities and programmes.

## SCIENCE EUROPE

Science Europe is a Brussels-based organization established in 2011 which gathers European organizations that fund scientific research and institutions that implement research. The Organization's goal is to promote common interests of all member institutions and support the members in their efforts to advance scientific research in Europe, taking into account the interests and opinions of scientists from all European systems. The Organisation is managed by the General Assembly, composed of high-level representatives from member organisations (Chairs, Directors-General and similar).

Membership may be granted to organisations that fund or conduct research. Member status is approved by the General Assembly upon recommendation of the Membership Council. Only independent organisations with significant state budget for scientific research that are able to influence the development of their national scientific system may be elected as members. Science Europe currently counts 36 member organisations from 27 different countries, with the Croatian Science Foundation being a member since 2013.

The Croatian Science Foundation participates in the Working Group for preparing the framework for the Multilateral Lead Agency (MLA) Agreement, which presented the MLA Agreement and the accompanying Implementation Guidelines. The objective of the MLA Agreement is to replace the existing package of bilateral agreements with the Lead Agency concept, thus enabling research teams that collaborate on the international level to attract funds from several national sources without the need to apply separately to calls of several organizations.

The Croatian Science Foundation also participates in the High Level Policy Network (HLPN), engaged by the Governing Board of Science Europe to



examine all possible strategies and mechanisms for additional support for cross-border cooperation in Europe. Topics of the HLPN's separate thematic meetings in 2019 included collaboration opportunities with Japan, China, North America (USA and Canada) and the new proposal of the "European Partnerships" Programme.

## THE FOUNDATION'S PARTICIPATION IN THE WORKING GROUP OF THE MLA AGREEMENT

18 organizations are part of the MLA Working Group (*FWF Der Wissenschaftsfonds - FWF, Austria; Fonds Wetenschappelijk Onderzoek - FWO, Belgium; Fund for Scientific Research - FNRS, Belgium; Croatian Science Foundation - HRZZ, Croatia; Grant Agency of the Czech Republic - GAČR, Czech Republic; SUOMEN AKATEMIA - AKA, Finland; Agence nationale de la recherche - ANR, France; Deutsche Forschungsgemeinschaft - DFG, Germany; Science Foundation Ireland - SFI, Ireland; Fonds National de la Recherche - FNR, Luxembourg; The Research Council of Norway - RCN, Norway; Narodowe Centrum Nauki - NCN, Poland; Fundação para a Ciência e a Tecnologia - FCT, Portugal; Javna agencija za raziskovalno dejavnost Republike Slovenije - ARSS, Slovenia; Forskningsrådet för miljö, areella näringar och samhällsbyggande - Formas, Sweden; Swiss National Science Foundation - SNSF, Switzerland; Nederlandse Organisatie voor Wetenschappelijk Onderzoek - NWO, Netherland; United Kingdom Research and Innovation - UKRI, United Kingdom*).

The Foundation has been part of the MLA Working Group since 2017. The Working Group drafted the MLA Agreement and the accompanying Implementation Guidelines in 2019, which are expected to be signed in 2020 and implemented in 2021.

MLA Agreement signatory parties undertake to accept the evaluation and grant award procedure of the other signatories. The MLA Agreement and the Guidelines also regulate the specific procedures for receiving project proposals by two or more applicants.

The Croatian Science Foundation and the Swiss National Science Foundation were the first two organizations to adopt the MLA Agreement and the accompanying Guidelines (152<sup>nd</sup> Board session, held on 28 November 2019). As preparation for collaboration through the MLA Agreement, in late 2019 the

Foundation initiated talks with SNSF for preparing a bilateral call in the second half of 2020.

The MLA Agreement will enable Croatian researchers to better connect and expand joint research and contribute to the long-term goal of the Foundation – to foster a wide range of research and development activities, programs and scientific organizational structures that would better integrate Croatian scientists into the European Research Area (ERA). Joining ERA enables scientists to enhance inter-institutional, cross-sectoral and international mobility, coordinate funding of research in European countries and regions and stronger connection between the scientific and economic area not bounded by national borders. The Foundation, through its programs and activities, will endeavour to encourage the affiliation and integration of Croatian science into the European Research Area.

## SWISS-CROATIAN COOPERATION PROGRAMME

The Framework Agreement between the Swiss Federal Council and the Government of the Republic of Croatia concerning the implementation of the Swiss-Croatian Cooperation Programme to reduce economic and social disparities within the enlarged European Union was signed in June 2015. Through this program, a grant in the amount of CHF 45 million was provided for Croatia for projects to be implemented in the period from 2016 to 2024. The Framework Agreement was ratified by the Croatian Parliament in December 2016 and came into force on 9 January 2017. The Croatian Science Foundation implements two programmes funded from the grant concerned.

### CROATIAN-SWISS RESEARCH PROGRAMME (CSRP)

The Croatian-Swiss Research Programme 2017-2023 (CSRP) is one of the projects envisaged by the Framework Agreement, implemented by the Croatian Science Foundation in cooperation with the Swiss National Science Foundation (SNSF). The Programme provides funding for research projects implemented jointly by Croatian and Swiss scientists. The value of the programme is **CHF 4.67 million**, with Croatian co-funding provided in the amount of **CHF 0.67 million**.

Out of **11 projects approved for funding**, eight will be implemented at the University of Zagreb, one at the University of Rijeka and two at public institutes. During the previous year, these projects saw eight doctoral students, four post-doctoral researchers, three expert associates and one research assistant employed. One international conference was held and 41 international collaborations were materialised (14 with Switzerland, 15 with Croatia, 3 with United Kingdom, 2 with Ukraine and the USA and 1 with Belgium, France, Netherlands, Israel and Slovakia respectively).

### PROMOTING EXCELLENCE IN HIGHER EDUCATION (TTP-2018-07)

The “Promoting Excellence in Higher Education – Tenure Track Pilot Programme” (TTPP) represents joint collaboration of the Croatian Science Foundation, Ministry of Science and Education and *École polytechnique fédérale de Lausanne* (EPFL), for the preparation of the tenure track model for the development of careers of excellent young researchers in Croatia. This programme is funded from the Framework Agreement, in the amount of **CHF 4.7 million**, with Croatian co-funding in the amount of **CHF 0.7 million**.





The goal of the programme is to offer young and talented researchers the possibility of long-term career in Croatia. Three research groups are funded in the framework of the Programme, whereby the selected Principal Investigators are offered the possibility to conduct visionary research and establish foundations for a new generation of scientists in research areas important for Croatia. The duration of funded projects is 5 years.

The Call was open from 3 April to 3 July 2018 for the following areas: Biomedicine and Health, Biotechnical sciences, Technical sciences and Natural sciences as well as interdisciplinary proposals. Eligible applicants to the Call included scientists in early stages of their careers (maximum seven years from obtaining their doctoral degrees) who did not hold a permanent position at Croatian scientific institutions.

20 project proposals were successfully submitted by the Call deadline. The overview of submitted project proposals by scientific area and institution was presented in the Foundation's 2018 Annual Report. International peer review was conducted between July and end-September, resulting in six project proposals accepted for funding. Due to the funds available, financial negotiations were initiated with four projects, while two proposals were placed on the reserve list. During the financial negotiations, conducted in early 2019, one project was administratively rejected, while two potential Principal Investigators subsequently withdrew their applications. The financial negotiations resulted in grant agreements being signed for **three projects**, two in Physics and one in Biology (all three projects are presented on pp. 102-105).



## RESEARCH PROJECTS – SLOVENIAN-CROATIAN BILATERAL PROJECTS (IPS-2020-01)

Pursuant to the Bilateral Collaboration Agreement between the Slovenian Research Agency (ARRS) and the Croatian Science Foundation (HRZZ), on 13 December 2019 the Croatian Science Foundation published the Call for co-funding the Croatian part of Slovenian-Croatian joint research projects. The Slovenian-Croatian joint research project shall comprise of a Slovenian and a Croatian research team, headed by the Slovenian Principal Investigator.

The general objective is enhancement of international research collaboration and inclusion of Croatian scientists (researchers) into Slovenian-Croatian joint research projects.

Specific objectives include:

- Creating new knowledge with the ultimate aim of strengthening the Croatian economy and social welfare;
- Encouraging the establishment of connections between researchers and the creation of recognisable research groups that deal with internationally and/or nationally significant issues, whose Principal Investigators are prominent scientists with internationally recognized achievements;
- Creating scientific research groups that can be competitive at the international level and scientists who are capable of mentoring a new generation of young researchers;
- Developing the Croatian scientific research potential.

The Slovenian Principal Investigator, in collaboration with their Croatian partner, prepares a project proposal and submits it to the Call published by ARRS. The project proposals should contain a joint scientific description of the project and indicate the individual scientific contribution of the Slovenian and Croatian scientists. The Slovenian and Croatian parts of the joint research project should be closely connected and complementary, while the scientific contribution of both sides should be clearly elaborated, visible and transparent.

The Foundation will finance projects positively evaluated and accepted for funding by ARRS, provided that ARRS funds the Slovenian part of the project, all

in line with the available budget funds. The overall annual budget for the Call in 2020 equals HRK 10,000,000.00. Each project may receive funding in the amount between HRK 1,000,000.00 and 1,500,000.00, or, in case of projects in the Social sciences and Humanities, between HRK 600,000.00 and 900,000.00.

**COOPERATION PROGRAMME WITH CROATIAN SCIENTISTS IN DIASPORA “RESEARCH COOPERABILITY” (PZS-2019-02)**

The Cooperation Programme with Croatian Scientists in Diaspora “Research Cooperability” provides for the implementation of joint research projects until 31 May 2023 at the latest and recruitment of at least two full-time young researchers per project.

The aim of the “Research Cooperability“ Programme is the transfer of knowledge and attracting investments into the Croatian science and technology system, and indirectly into the economy as well, through collaboration between Croatian-based scientists and scientists of Croatian nationality or origin who live and work abroad. Such collaboration would enhance the networking potential of Croatian scientists in Croatia and the diaspora, with special emphasis on career development of early-career researchers. Furthermore, it should enhance the competencies of Croatian scientists for their participation in international calls.

**SUBMITTED PROJECT PROPOSALS**

A total of **75 project proposals** were submitted. Figures below show the distribution of submitted project proposals per scientific area (Figure 18) and institutions (Figure 19).

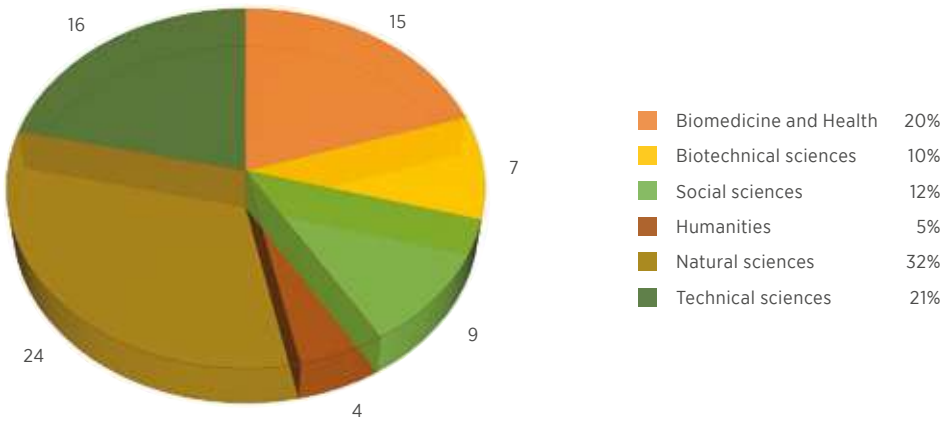


Figure 18. Overview of submitted project proposals per scientific area

32% of applications were submitted in the area of Natural sciences, 21% in Technical sciences, 20% in Biomedicine and Health, 12% in Social sciences, 9% in Biotechnical sciences and 5% in the Humanities.

The highest number of applications arrived from the University of Zagreb (36) and the Ruđer Bošković Institute (16).

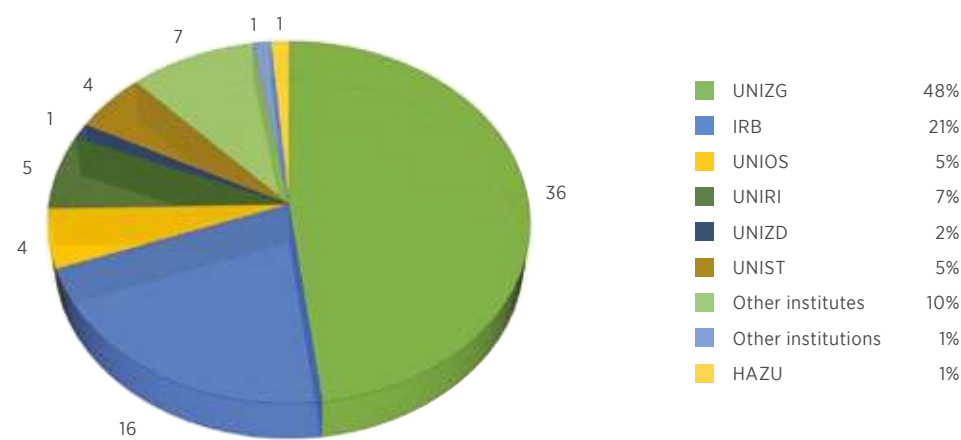


Figure 19. Overview of submitted project proposals per institution

**FUNDING IN BRIEF:**

- This Call is financed from the European Social Fund as part of Specific Objective 10.ii.3. Improving the environment for Croatian researchers within the Operational Programme Efficient Human Resources 2014-2020 and co-funded from the State Budget of the Republic of Croatia.
- The total funds committed for the Programme “Scientific Collaboration” equal HRK 42,500,000.00.
- Each research project can receive funding in the amount of between HRK 1,000,000.00 and 2,200,000.00.

**Administrative check** – Administrative check of all submitted project proposals began after the Call closing date. The administrative check included a review of the submitted documentation by following the administrative check protocol. 74 project proposals (98.67%) passed the administrative check and were referred to the evaluation procedure. One project proposal did not pass the administrative check.

**Steering Committee** – The Steering Committee of the Programme examined the project proposals that passed the administrative check and distributed them among nine evaluation panels.

**Evaluation panels (first round of evaluation)** – The evaluation panels checked the project proposals assigned to them and nominated peer reviewers.

**Second round of evaluation** – Reviewers assessed project proposals according to the criteria outlined in the Evaluation Form. Each project proposal needed to obtain two reviews, which are delivered to the applicants upon completion of the entire evaluation procedure, together with the notification on the evaluation results.

**Final panel evaluation** – After the peer review, the evaluation panels conducted final evaluation of project proposals that obtained two positive reviews. Final evaluation involves examination of the received reviews, evaluation of the projects’ financial and work plans, and discussion about ethical issues, followed by ranking of project proposals that are recommended for funding. Ranking lists are generated automatically by adding up the points from both reviews.

**Steering Committee – final evaluation** – The Steering Committee read all the reviews, the panels’ final evaluations and the work and financial plans of project proposals that obtained positive reviews and wrote their final recommendations to the Foundation’s Board.

**Adoption of recommendation for funding** – Based on the evaluation results, the Board adopted a decision on opening financial negotiations with top-ranked project proposals in each panel. The financial negotiations were concluded with **23 projects accepted for funding**.

**Start of project implementation** – The implementation of 12 funded projects started on 01 October 2019, eight commenced on 01 November 2019 while three were expected to commence on 01 January 2020.

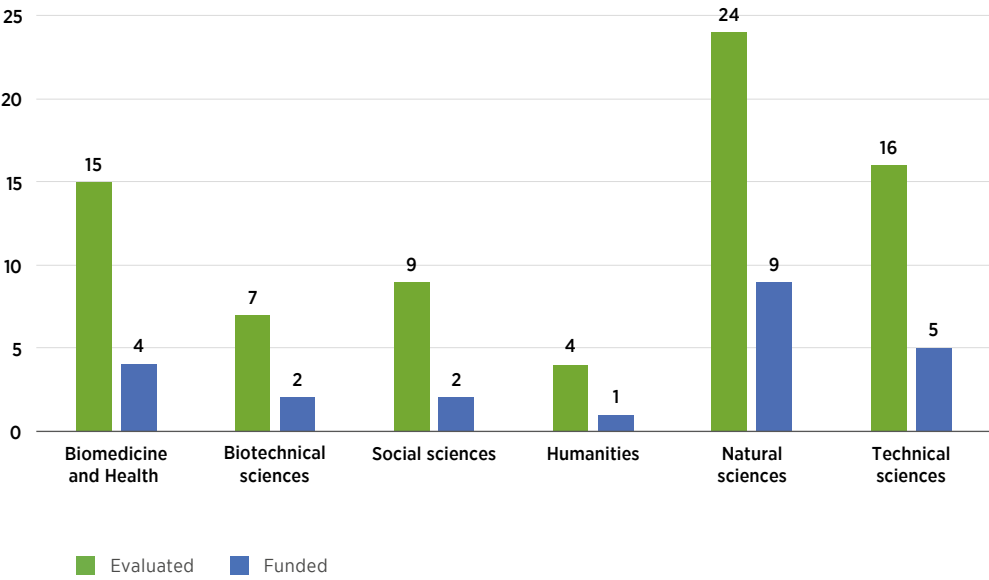


Figure 20. Overview of the evaluation results from the Call PZS-02-2019 per scientific area





As shown in Figure 21, the largest number of funded projects are implemented at the University of Zagreb (12), followed by Ruđer Bošković Institute (5).

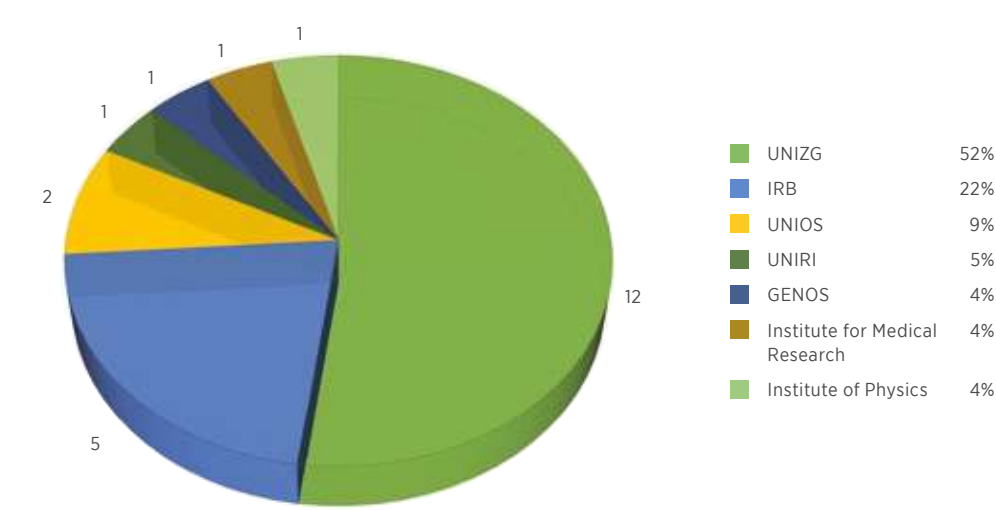


Figure 21. Overview of funded projects per institution



**SUPPORT TO RESEARCHERS FOR APPLYING TO EUROPEAN RESEARCH COUNCIL PROGRAMMES (ERC-2019-10)**

The European Research Council (ERC) expressed its support to the Croatian Science Foundation for setting up a visiting fellowship programme to fund potential candidates for ERC’s calls to visit teams of ongoing projects funded by the ERC.

This Programme supports Croatian researchers (Visiting Researcher) in setting up collaboration with Principal Investigators of European Research Council



(ERC) projects with the aim of gaining experience and preparing their own proposal for ERC calls. The ultimate objective of the Programme is for the Visiting Researcher to submit their own project proposal to the next ERC Programme Call (Starting Grant, Consolidator Grant, Advanced Grant or Synergy Grant) available after the visit. If the application is not accepted for funding, the candidate has to apply to the next available Call.

Through this programme, the Foundation financed a three-month visit of Assoc. Prof. Jasenka Gudelj, PhD, from the Faculty of Humanities and Social Sciences at the University of Zagreb to the University of Udine in early 2018, where she was hosted by Professor Angela Nuovo, Principal Investigator of ERC project “*The Early Modern Book Trade: An Evidence-based Reconstruction of the Economic and Juridical Framework of the European Book Market*”. In late 2019, it was revealed that Assoc. Prof. Jasenka Gudelj, PhD, was awarded the prestigious ERC Consolidator Grant in the amount of almost EUR 2 million for her project “*Architectural Culture of the Early Modern Eastern Adriatic*” (AdriArchCult).

In September 2019, the Foundation published the fourth Call “Support to Researchers for Applying to ERC programmes”. **Two applications** were submitted and funds were awarded to both researchers, one in the interdisciplinary area of science, and the other in Technical sciences.

**ERA-NET COFUND IN QUANTUM TECHNOLOGIES CALL FOR PROPOSALS (QUANTERA-2019-02)**

The Croatian Science Foundation has been a member of the QuantERA consortium (ERA-NET Cofund in Quantum Technologies) since 2018. The consortium is a network of **32 national/regional organisation for funding research from 25 countries** funding international research projects in the field of quantum technology. The Consortium is co-funded from the EU’s Horizon 2020 programme.

The goal of QuantERA is spreading scientific excellence in the European Research Area with special emphasis on the participation of research groups from new EU member states. At the first QuantERA Call, published in 2017, 26 excellent international projects were funded in the total amount of 32 million EUR, of which 70% include research teams from the new Member States.

The Croatian Science Foundation participated for the first time in the second Call (Quanterra Call 2019), published in November 2018, thus enabling participation of Croatian scientists. The financial resources provided by research funding organizations that joined the QuantERA 2019 Call enabled the funding of 12 excellent international projects in quantum technologies in the amount of more than EUR 13 million.



**BLUEBIO ERA-NET COFUND PROJECT IN BLUE BIOECONOMY - UNLOCKING THE POTENTIAL OF AQUATIC BIORESOURCES**

The BlueBio Network (ERA-NET Cofund in Blue Bioeconomy) is made up of **28 partners from 17 European countries** (Belgium, Denmark, Estonia, Finland, Croatia, Germany, Greece, Ireland, Iceland, Italy, Malta, Norway, Portugal, Romania, Spain and Sweden), whose objective is to secure sustainable and competitive blue economy in Europe. In addition, the aim is to develop knowledge on value chains in blue bioeconomy, encouraging the application of research results, innovations and demonstrations of bioproducts in production through a multi-shareholder approach. The BlueBio Project shall contribute to the production of safe, nutritious and quality bioproducts and services. The BlueBio Project intends to publish calls whose aim will be to attract projects that explore the use and added value of aquatic biomass in integrated value chains, from primary production via processing to the ultimate production of innovative products and services in the area of bioeconomy.

The Croatian Science Foundation joined the consortium in 2019. The next Call is planned to be published in mid-2020, to which Croatian scientists will be eligible to apply.



**TRANS-ATLANTIC PLATFORM (T-AP)**

In late 2019, the Croatian Science Foundation expressed its interest to join the international collaboration entitled the Trans-Atlantic Platform (T-AP). T-AP supports collaboration in the area of Humanities and Social sciences between public national research funding organizations in countries of South America, North America and Europe, and includes support to research collaboration and the adoption of policies aimed at 21<sup>st</sup>-century research needs. The objective of T-AP is strengthening the capacities of research funding organizations and researchers for joining transnational dialogue and collaboration. The platform acts in such a manner that common challenges are defined and the culture of collaboration in Social sciences and Humanities is promoted. Furthermore, it enables networks within Social sciences and Humanities to be created and all participants are enabled to connect with other disciplines. T-AP also strives to raise awareness of the role played by Social sciences and Humanities in facing challenges of the 21<sup>st</sup> century.

T-AP deals with two types of activities:

- implements joint calls for proposals in areas with high potential for international collaboration;
- collaborates on the alignment of policies and practices in order to facilitate international collaboration in Social sciences and Humanities.

The third Call for Proposals within this programme is expected to be published in 2021, which opens the door for Croatian scientists to apply.





RESULTS OF FUNDED PROJECTS

The relevant project results in 2019 include 1,182 scientific papers published by researchers and research teams funded by the Foundation in international peer-reviewed journals, some of which have been published in the most prestigious scientific journals.

PROJECT EVALUATION DATA

631 project proposals evaluated  
2585 international peer reviewers involved  
154 Croatian experts contributed to the work of 12 evaluation panels for IP and UIP calls  
30 experts contributed to the work of 9 evaluation panels for PZS Call  
209 projects accepted for funding

PROJECT MONITORING DATA

605 projects monitored  
494 periodic reports processed  
578 report evaluators (Croatian scientists)  
Marks awarded to the reports of financed projects in 2019 :  
A (Excellent progress) – 50 % of projects  
B (Good progress) – 44 % of projects  
C (Satisfactory progress) – 6 % of projects  
D (Unsatisfactory progress) – 0 % of projects

PROJECT RESULTS

1182 peer-reviewed papers published, of which  
1099 published journal articles  
83 articles in press  
134 book chapters  
35 books  
957 peer-reviewed conference abstracts  
256 peer-reviewed conference papers  
28 doctoral theses  
297 Master theses





# GENDER EQUALITY IN THE RESEARCH SECTOR

Despite modest, but visible progress in the previous years, gender equality in the research sector remains a major challenge for the whole scientific community. In line with this, the promotion of women at all levels of academia became a priority in the action plans of many national and international science funding organizations. Even though the number of female scientists grew, genuine gender equality is yet to be achieved as women are still underrepresented in many research areas.

The Croatian Science Foundation sought to distribute the evaluation of project proposals to gender-balanced panels. Figure 22 shows the composition of evaluation panels in terms of their gender structure. The share of female evaluation panel members equals 47.5%. This less-than-equal distribution is due to the on-going domination of male scientists in technical disciplines.

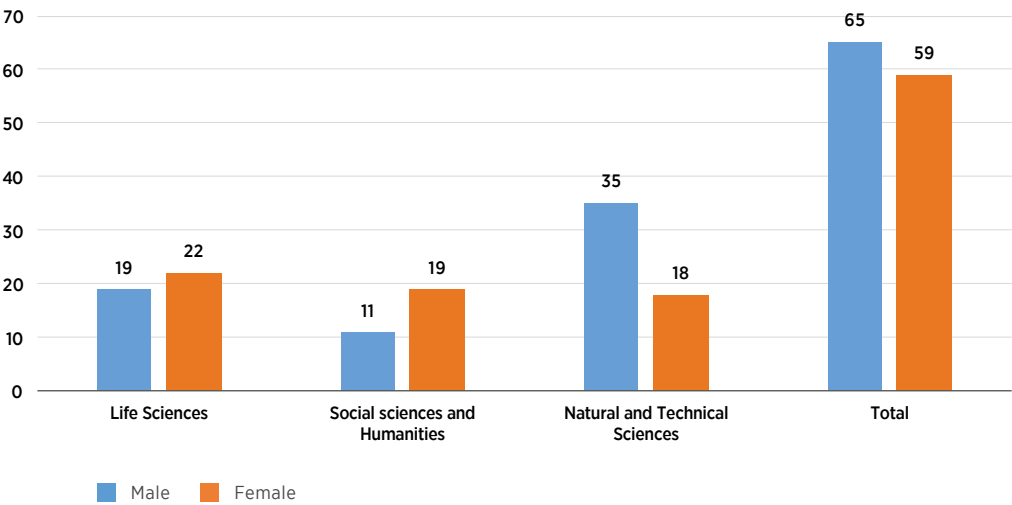


Figure 22. Composition of evaluation panels by gender (m/f)

The Foundation’s priority has always been ensuring equality of all researchers, regardless of their gender, age, research area or home organization. The gender structure of Principal Investigators of the Foundation’s projects shows that we are headed in the right direction as the balance is clearly visible.

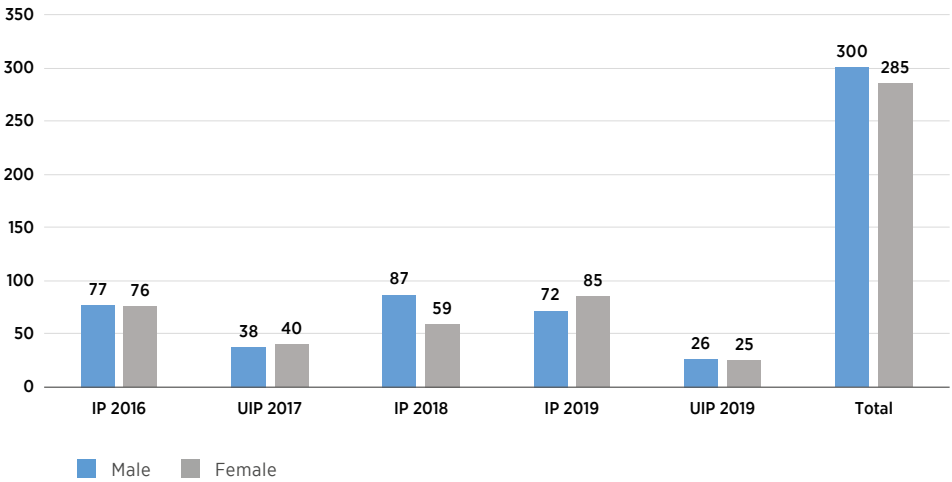


Figure 23. Overview of the number of Principal Investigators of Research and Installation Research Projects per gender and call

As seen in Figure 23, the gender distribution of PIs of Research and Installation projects is almost balanced. A slight imbalance is visible in the 2018 Call, when male researchers slightly dominated, but this was reverted at the 2019 Call, when the number of female researchers was higher. More specifically, the total number of projects funded through the 2016 Call “Research Projects” equals 153, with 76 projects being managed by female PIs (49.7%). 2017 saw the opening of the Call “Installation Research Projects”, through which 78 projects are funded, 40 of which have female PIs (51%). The 2018 Call “Research Projects” registered a slight drop in the number of funded projects managed by female PIs (40%). In 2019, calls “Research Projects” and “Installation Research Projects” were published simultaneously. A total of 110 female scientists (53%) are funded through both calls. If we were to observe the calls individually, 85 female scientists (54%) are funded through the Research Projects Call and 25 (49%) through the Installation Research Projects Call.



2019 CALLS “RESEARCH PROJECTS” AND “INSTALLATION RESEARCH PROJECTS”

Figure 24 shows a detailed gender distribution of all applicants, separately for the Research Projects (IP) and Installation Research Projects (UIP) calls opened in 2019. As seen in the figure, the gender structure is very balanced.

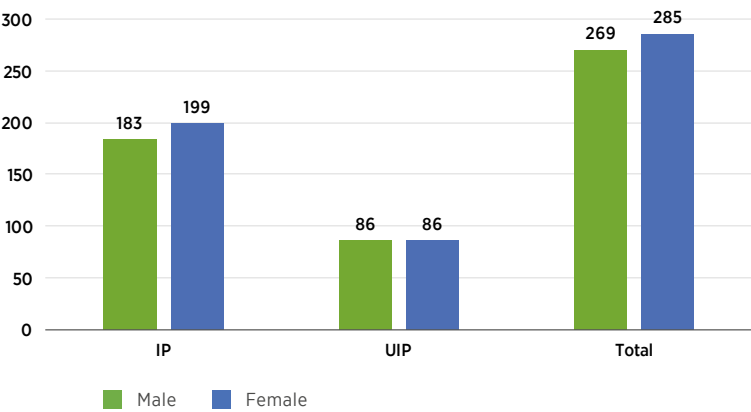


Figure 24. Number of applicants to the calls IP-2019-04 and UIP-2019-04 by gender

Due to the larger number of contracted projects as shown in Figure 24, female scientists were also more successful considering the amount of contracted funds, due to being awarded almost HRK 9 million more than their male colleagues (Table 1).

	Male	Female
IP-2019-04	HRK 63,475,003.14	HRK 72,530,858.71
UIP-2019-04	HRK 38,159,113.41	HRK 38,100,094.00
Total	HRK 101,634,114.55	HRK 110,630,952.71

Table 1. Total value of contracted projects (m/f)

If we consider the gender distribution of PIs of Research Projects from the Call IP-2019-04 divided by scientific areas (Figure 25), we can see that female

scientists dominate all areas of science except Technical sciences, whereas in Natural sciences the numbers are equal. These findings are not surprising as the 2017 Statistical Yearbook of the Republic of Croatia shows a large representation of female scientists in the research community (55% of new PhDs and 48% of full- or part-time researchers were women).

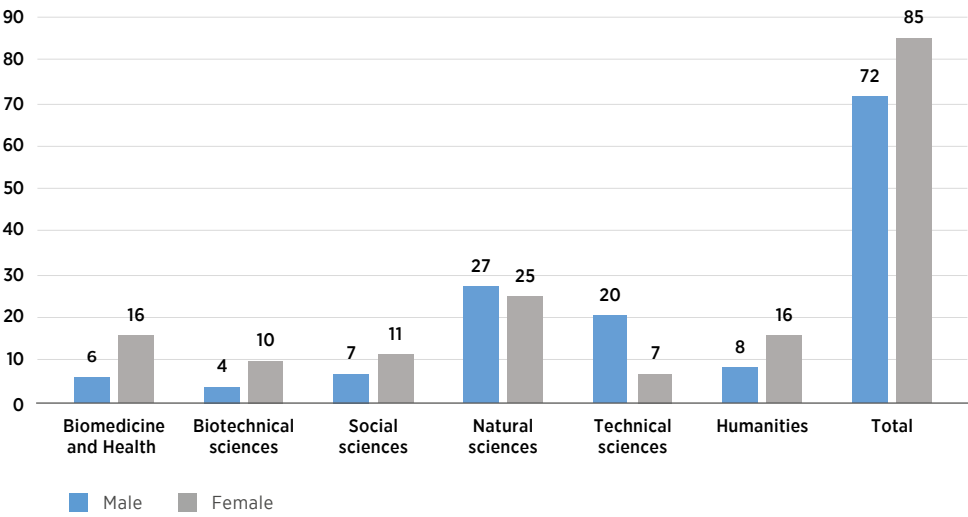


Figure 25. Number of Principal Investigators per scientific area (m/f)

COOPERATION PROGRAMME WITH CROATIAN SCIENTISTS IN DIASPORA “RESEARCH COOPERABILITY” (PZS-2019-02)

The Research Cooperability Programme saw female scientists submitting a slightly larger number of project proposals, but following international peer review, their male colleagues registered a higher success rate (56.5%) (Figures 26 and 27).

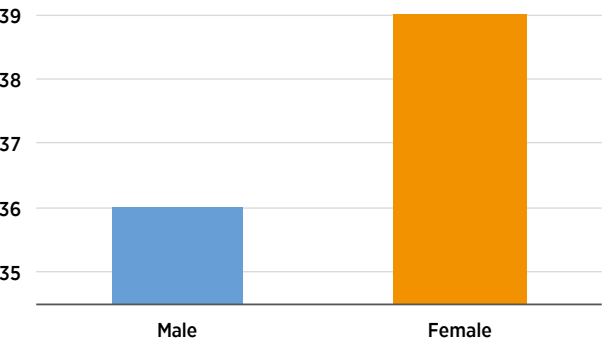


Figure 26. Number of applicants per gender, PZS-2019-02

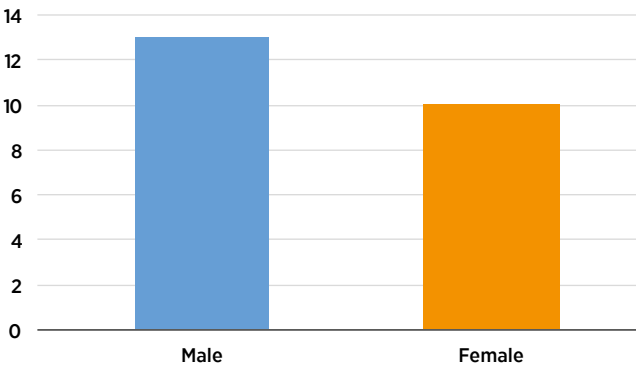


Figure 27. Number of contracted projects per gender, PZS-2019-02

However, if we observe their distribution by scientific areas, we can see that the differences are so small (especially considering the small sample size) that we can safely designate this gender distribution as equal.

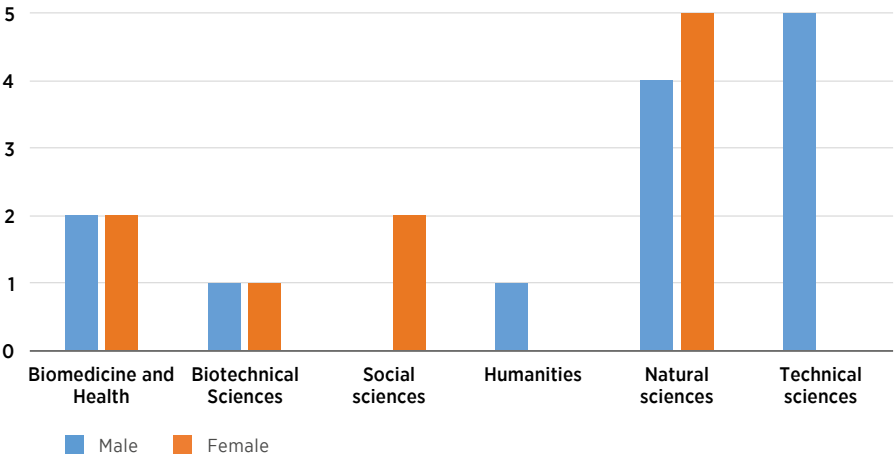


Figure 28. Number of Principal Investigators per scientific area, PZS-2019-02 (m/f)

The gender distribution of peer reviewers engaged in the evaluation of the “Research Collaboration” Call, presented in Figure 29, shows an interesting pattern, as female scientists make up 42% of reviewers.

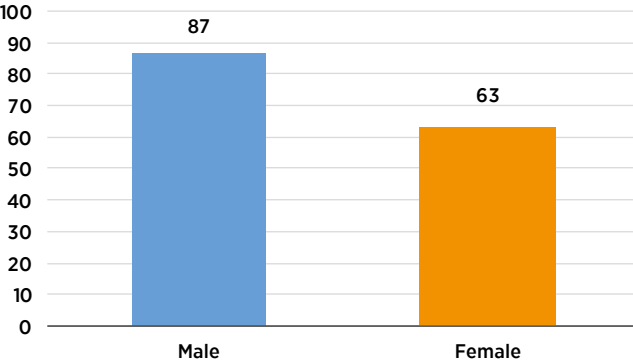


Figure 29. Structure of peer reviewers by gender, Call PZS-2019-02

CROATIAN- SWISS RESEARCH PROGRAMME 2017-2023 (CSRP)

The gender distribution of Principal Investigators funded through the Croatian-Swiss Research Programme is very balanced (Figure 30) as well as the contracted amount (Table 2).

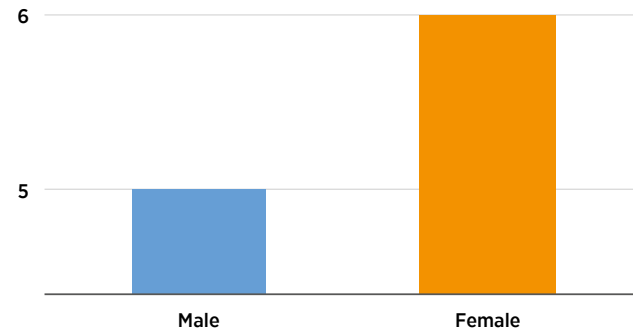


Figure 30. Distribution of Principal Investigators by gender, Call CSRP-2018-01

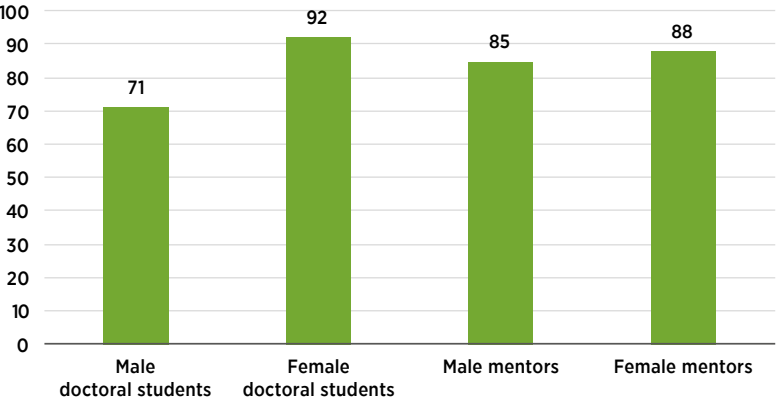
Table 2. Total value of contracted projects, Call CSRP-2018-01 (m/f)

Total	Male	Female
HRK 3,730,532.66	HRK 1,652,175.89	HRK 1,725,262.63



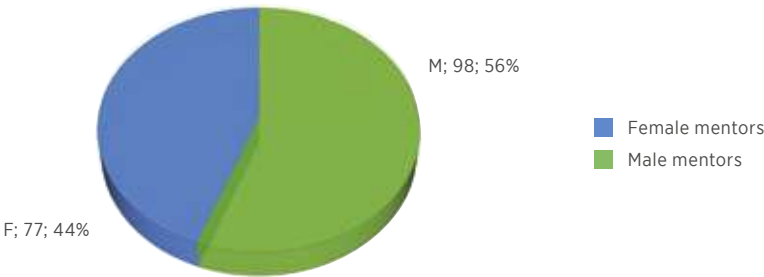
YOUNG RESEARCHERS' CAREER DEVELOPMENT PROJECT – TRAINING  
NEW DOCTORAL STUDENTS

**Call DOK-2018-01:** Figure 31 shows gender distribution of doctoral students employed at the DOK-2018-01 Call and their mentors. Female doctoral students dominate with 56.3% of all doctoral students employed.

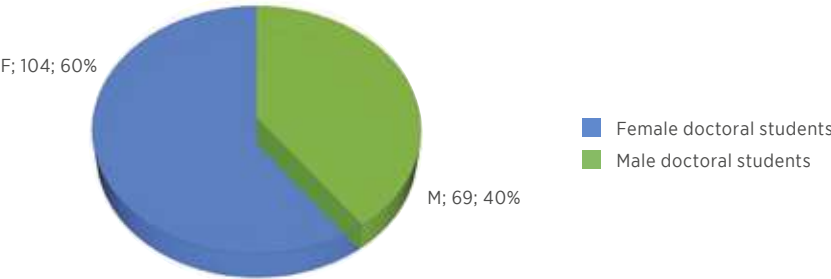


**Figure 31.** Gender distribution of mentors and doctoral students, Call DOK-2018-01

**Call DOK-2018-09:** Figures 32 and 33, showing the gender distribution of mentors and doctoral students, also reveal an interesting pattern; among a total of 175 mentors, the majority are male (56%), whereas doctoral students show a reverse pattern – 60.1% of all young researchers employed through the Call DOK-2018-09 (173) are female.



**Figure 32.** Gender distribution of mentors, Call DOK-2018-09



**Figure 33.** Gender distribution of employed doctoral students, Call DOK-2018-09



## ***THE FOUNDATION'S PROJECTS***

In order to bring the research work closer to the scientific and general public and to ensure the presentation of the most interesting and successful projects funded by the Foundation, the Foundation's website contains a special page entitled "Research Stories". These research stories were written in popular scientific style for presenting the project to the general public. Each research story introduces the Principal Investigator, research team and the project itself, together with photographs related to the research topic and work of the research team.

Below we present some of the successful national projects.

PROJECT: APPLICATION OF COCOA HUSK  
IN PRODUCTION OF CHOCOLATE AND  
CHOCOLATE-LIKE PRODUCTS (COCOCHOCO)

Principal Investigator: **Associate Professor Đurđica Ačkar, PhD**  
Institution: Josip Juraj Strossmayer University in Osijek,  
Faculty of Food Technology Osijek  
Call: Installation Research Projects, May 2017



The general objective of the proposed research is to explore the potential for applying cocoa husk (extracted upon roasting) in the enrichment of chocolate and similar products with polyphenols and fibre, solving the problem of its disposal as a side product in chocolate production with a large environmental impact. Cocoa husk is coarser than nibs, so cold plasma will be used in an attempt to enhance its grinding. High fibre content in the husk can increase product viscosity, which is a problem for chocolate mass so its impact on rheological properties and texture of the products will be addressed and tried to be optimised.

In addition to the high content of nutritionally valuable compounds, cocoa husk can be a source of microbiological contamination, as its high protein content can cause an increase of acrylamide (AA) and hydroxymethylfurfural (HMF) formation, while fat in the husk contain free fatty acids that can decrease product stability. These problems will be considered in the research as well, including the effect of cocoa husk addition on product safety.

The project is expected to results in new products with a better nutritional value, aimed at consumers of all age groups, which would improve their nutritional status without changing their nutrition habits.

PROJECT: NK CELLS IN PATHOGENESIS OF  
CONGENITAL CYTOMEGALOVIRUS INFECTION  
(NKCONCMV)

Principal Investigator: **Assistant Professor Ilija Brizić, PhD, MD**  
Institution: University of Rijeka, Faculty of Medicine  
Call: Research projects, January 2018

Congenital human cytomegalovirus (HCMV) is a herpes virus infecting the majority of the world’s population. Even though it is relatively harmless to healthy individuals, it can be extremely dangerous for people whose immune systems have been compromised (e.g. in organ transplants) or not yet developed (foetuses and newborns). The focus of this research is HCMV infection before birth (*in utero*) or during birth (congenital infection).

Even though relatively unknown to the public, it is the primary cause of long-term neurodevelopmental sequelae, including mental retardation, microcephaly and sensorineural hearing loss. Natural killer (NK) cells play an important role in control of CMV infection, and adaptive features of NK cells in response to CMV infection are recently being increasingly recognized. However, the extent to which congenital CMV infection affects and shapes NK-cell mediated immunity is largely unknown. To address this issue, we will use MCMV infected newborn mice and follow the impact of infection on the maturation and functional properties of NK cells.

The goal of this project is to characterize functional, phenotypic and transcriptional changes in NK cells following perinatal MCMV infection. Furthermore, the goal is to characterize the factors and mechanisms that induce NK cell exhaustion and to determine if NK cell exhaustion can be prevented or reverted. In addition, in the proposed study we will determine the role of NK cells in MCMV control and virus induced pathology in newborn mice.





The project entails collaboration with several international research groups from the USA and Germany as well as clinical centres in Zagreb and Rijeka. The proposed research is an important step towards better understanding of pathogenesis of congenital CMV infection, but will as well contribute to better understanding of NK cell biology in general, in pathological conditions in particular.

**PROJECT: ENHANCEMENT OF CROATIAN FOREST ECOSYSTEM SERVICES THROUGH ASSESSMENT OF FUNGAL DIVERSITY BASED ON DNA BARCODING (FORFUNGI DNA)**

Principal Investigator: **Armin Mešić, PhD**

Institution: *Ruđer Bošković Institute*

Call: *Research projects, January 2018*

Ecosystem services are the ecological characteristics, functions, or ecosystem processes that contribute to human wellbeing. Conservation of the overall biodiversity in forests has a strong positive effect on the enhancement of forest ecosystem services. Croatia is distinguished by the great biodiversity due to its position on the dividing line between Continental, Mediterranean, Pannonian and Alpine biogeographical regions.

Forests are the most complex terrestrial ecosystems and the most important habitat for fungi. Fungi play key ecological roles in forests and are necessary for forest health and existence. About 37% of the total land area of the Republic of Croatia is covered by forests. Human over-exploitation of natural resources and the geographical position of Croatia in the climate change hot-spot area make biodiversity of its forests highly endangered. Fungi are by far the least studied group of organisms in Croatia with only 25% of species recorded so far out of the total estimated number (20,000). The main project aim is to study fungal biodiversity of Croatian forests through the DNA barcoding methods and to analyse its impact on forest ecosystem services. The project will result in the addition of fungal DNA sequences to international bioinformatics databases for a number of species that are not represented in these bases to date. All DNA barcoded species in this project will be categorised in trophic groups

(pathogens, saprotrophs, and mycorrhizal species) and the intensity of their impact on the forest ecosystem services will be assessed.

The project results will have great potential for different applications in forestry, food industry, pharmacy and nature conservation. Application of DNA fungal barcodes will be especially important in forestry for relatively fast and accurate identification, control, and suppression of plant pathogens, whose activity is enhanced by extreme and adverse climate conditions.

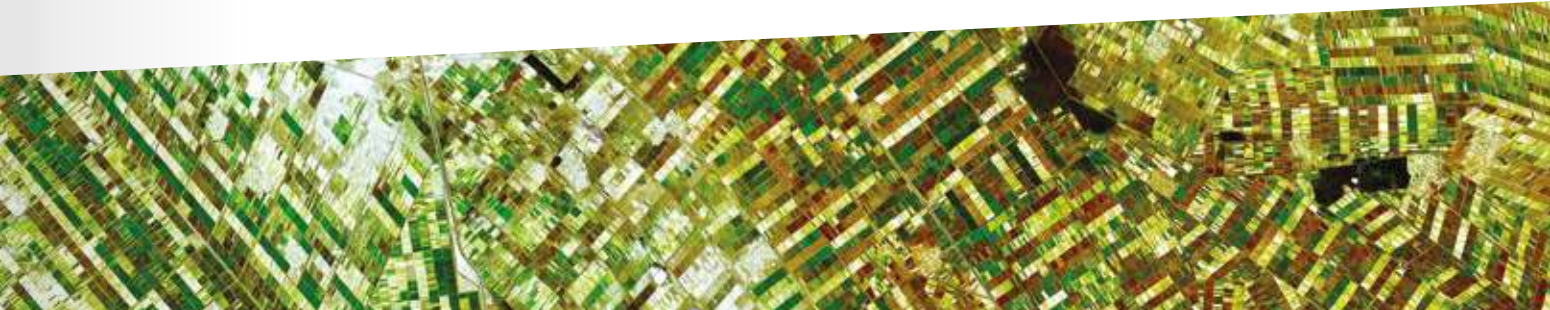


*Fruiting body of the species Mollisia endocrystallina, whose first-ever scientific descriptions and publications were made through this project.*



*Fruiting body of the species Psilocybe fimetaria, whose first-ever discovery in Croatia was made through this project.*

This is an interdisciplinary project in the area of Biotechnical and Natural sciences, with collaboration of 14 scientists (10 Croatian and 4 international – Czech Republic, Spain and Slovenia). The project also includes several young researchers who are writing their doctoral theses or doing post-doctoral research.



**PROJECT: EXPLORING GUT MICROBIOME  
EQUILIBRIUM – MICROEQUILIBRIUM**

*Principal Investigator: Associate Professor Antonio Starčević, PhD*  
*Institution: Faculty of Food Technology and Biotechnology, University of Zagreb*  
*Call: Research projects, June 2016*

The gut microbiome represents an incredibly complex network of microbes interacting with each other, which plays an important role in digestion and immune response processes. Its influence on the secretion of endocrine glands and on the central nervous system is also relevant. Numerous scientific papers have led us to realize that under normal circumstances the microbiome has a balanced composition, the so-called “enterotype”. The disturbance of this balance can be associated both with the cause and effect of various diseases. One of the most important direct influences on this balance is certainly nutrition. The relationship between the microbiome and obesity has recently been demonstrated. We can influence gut microbiome by using antibiotics, prebiotics and faecal transplants.



Within the MicroEquilibrium project, we try to establish and maintain a balance of microorganisms, similar to the one that exists in the large intestine. We try to achieve this by standardizing the nutrient base modelled on the macro- and micro-nutrient composition present in the large intestine, and by using donor faeces that have a dual role as inoculum and as control of the success of in vitro cultivation.

In such an established model, we examine the impact of the combination of probiotics, prebiotics and patented food supplements on the change in the equilibrium with the aim of moving toward an enterotype characteristic of the phenotype of a medically desirable

BMI. Therefore, in this project we try to explore the possibility of a targeted impact on the balance of the intestinal microbiome with the aim of directing it towards the desired outcome, i.e. to a healthy body mass index.

This research follows our previous project financed by the European Social Fund: Monitoring biodynamics of mixed cultures using a newly developed fingerprint method (<http://biodinamik.pbf.hr/>).

**PROJECT: POSSIBILITIES FOR  
REINDUSTRIALIZATION OF THE CROATIAN  
ECONOMY – REINDUCE**

*Principal Investigator: Associate Professor Nebojša Stojčić, PhD*  
*Institution: University of Dubrovnik*  
*Call: Research projects, June 2016*

Between January 2017 and January 2020, scientists from the Department of Economics and Business Economics of the University of Dubrovnik and the Institute of Economics in Zagreb conducted the project “Possibilities for reindustrialisation of the Croatian economy – REINDUCE” with the support of the Foundation. The research analysed the patterns of industrial development, the sustainability of the existing model of industrialisation and the challenges of digital transformation in Central European countries (CEE region) with special emphasis on Croatia.

The findings brought into question the effectiveness of former economic policies based on attracting foreign investment and integration into the production chains of existing industries through low added-value activities. Building innovation capacities in the upcoming industries offers these countries greater opportunities for sustainable growth in conditions of negative demographic trends, emigration and automation.

As basic preconditions for achieving this goal, the survey identified the suppression of corruption and the construction of a stable tax and legal environment. The construction of national innovation systems in Croatia and CEE countries will also depend on investments in scientific research infrastructure, incentives for business networking, supply-demand innovation policies and



fostering cooperation in the development and commercialisation of innovation.

The project activities were continuously communicated in the national media, and its results were presented through five invited presentations at conferences in Croatia and abroad. According to the Croatian Scientific Bibliography, even before its completion, the project ranked first on the list of projects financed by the Foundation in the field of Economics.

The project’s qualitative achievements promoted Croatian economic science. Some of the results were published in the prestigious and oldest European economic journal *European Economic Review* as the first survey by Croatian scientists to appear in this journal in 30 years. The project resulted in the first research by Croatian scientists published in the world’s leading regional economic journal *Regional studies*.

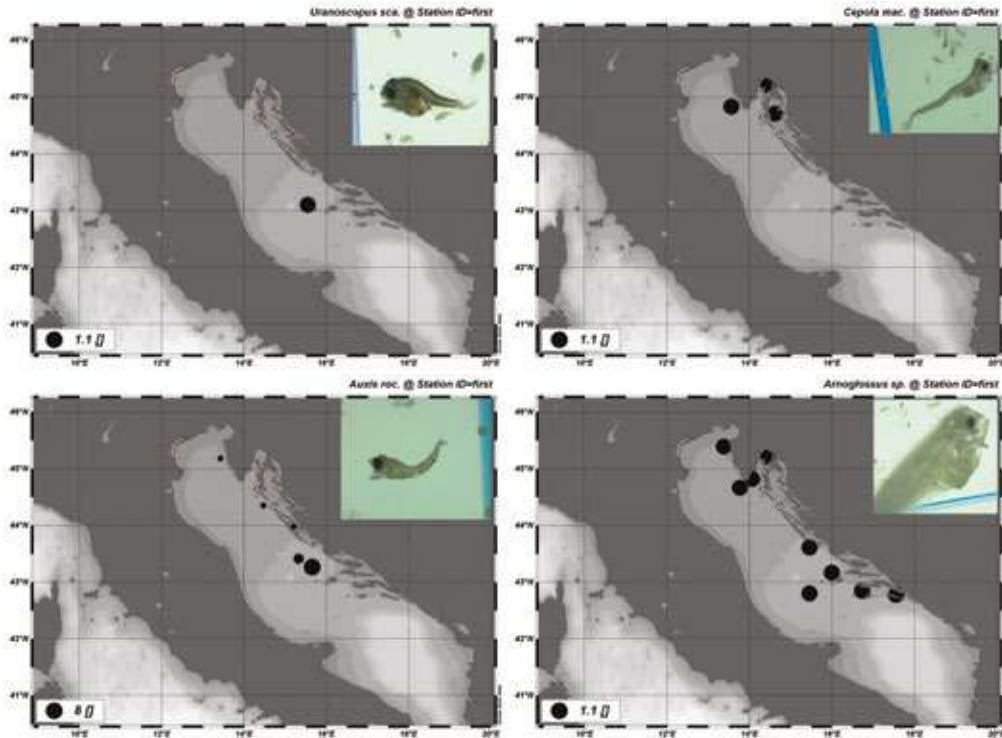
**PROJECT: EXPLORATION OF ECOLOGICALLY SENSITIVE AREAS WITH SPECIAL EMPHASIS ON GROWTH, DEVELOPMENT AND PROTECTION OF COMMERCIALY IMPORTANT MARITIME ORGANISMS (ESAMAR)**

*Principal Investigator: Barbara Zorica, PhD*  
*Institution: Institute of Oceanography and Fisheries , Split*  
*Call: Research projects, January 2018*

This research project is aimed at reaching new scientific findings as well as revising the knowledge gained so far regarding the biology, ecology and spawning/growth areas of Adriatic demersal and pelagic exploited species.

The long-term sustainable state of biological and renewable resources of the Adriatic Sea, such as numerous species of fish, crustaceans and cephalopods, depends on both the intensity of exploitation and the intensity of recruitment of each species. The success of recruitment depends on a number of abiotic and biotic factors characterized by ecologically sensitive habitats (spawning/growth areas). Identifying environmentally sensitive habitats of commercially important species in the Adriatic, describing the state of populations and communities in them, as well as defining basic ecological parameters are crucial for their successful growth and development.

The project would define spawning and growth areas of important demersal and pelagic species of the Adriatic Sea. On the basis of the gathered results, adequate protection measures will be proposed which should ensure the long-term stability and conservation of living marine resources, taking into account the integrity of the ecosystem as a whole and the socio-economic aspects of fishing industry. Taking into account all potential beneficiaries of the results (Directorate for Fisheries, fishermen), we are of the opinion that the proposed research is extremely important for successful harmonisation of the Republic of Croatia with the Common Fisheries Policy of the EU.





**PROJECT: ART AND THE STATE IN CROATIA  
FROM THE ENLIGHTENMENT TO THE PRESENT**

*Principal Investigator: **Professor Dragan Damjanović, PhD***  
*Institution: Faculty of Humanities and Social Sciences, University of Zagreb*  
*Call: Research projects, January 2018*

This project aims to explore various influences of the state regime on art production and interpretation of artworks and artistic heritage from the late 18<sup>th</sup> century to the present day. Since the Croatian cultural and political space in the period in question formed part of different states (Austro-Hungarian Empire, First and Second Yugoslavia, Independent State of Croatia, Kingdom of Italy), the project researchers will attempt to show the degree and nature of the impact the state-based bodies exerted on artistic production and cultural and educational policies related to visual arts (caricature, painting, drawing, sculpture, architecture, graphic art). Croatian art will be contextualized with artistic developments in the neighbouring countries or the areas of political association with Croatia, due to which the implementation of the project entails numerous field research (urban space, museums, libraries, archives).

In terms of its goals, the project is divided into two major groups of activities – research on the impact of the state on different areas of artistic production through commissions, grants and censorship, and the impacts on the process of artistic heritage production and care and on formal and informal education in the field of visual arts. In addition to the Principal Investigator, the project includes 14 researchers (2 doctoral students and 6 postdoctoral researchers) for whom this project presents an opportunity for academic career development. By engaging researchers from heritage institutions (museums and conservation departments), the project contributes to the promotion of inter-institutional cooperation and ensures multidimensional views on intricate relationships between art and the state.

Project results have already been published in journals and monographs, while research team members participated in several conferences. Topics that the



projects deals with can attract a great deal of public attention, primarily through exhibitions prepared by research team members. S. Bulimbašić co-organised an exhibition on the 100<sup>th</sup> anniversary of the establishment of Yugoslavia, F. Dulibić elaborated on a political poster at the exhibition of Andrija Maurović's works, Z. Maković handled the wartime oeuvre of Vladimir Becić, while D. Damjanović is preparing an exhibition on Hungarian-Croatian architectural connections.



*Coat-of-arms on top of the Croatian National Theatre building, taken as the project's visual.*



In the following pages, we present projects implemented through the **Promoting Excellence in Higher Education – Tenure Track Pilot Program**, all of which were launched in 2019.

**PROJECT: EXOTIC NUCLEAR STRUCTURE AND DYNAMICS, EXONSD**

Principal Investigator: **Kosuke Nomura, PhD**  
Institution: University of Zagreb, Faculty of Science



The main aim of this project is to establish a world-leading, independent research group conducting frontier research in the quest for the structure and dynamics of atomic nuclei. The research activities of the new group will unify the cutting-edge methods of theoretical nuclear physics, mathematical modelling of complex systems and advanced scientific computing.

The atomic nucleus is a self-organised many-body quantum system of protons and neutrons. Nowadays it has become possible to access extremely short-lived (exotic) nuclei through experiments using radioactive-ion beams. The study of exotic nuclei helps deepen our understanding of the origin of matter, test fundamental symmetries in nature, and even allows practical applications. Key questions addressed by experimental programs will also require developing advanced theoretical methods, often coupled to innovative and high-performance computer simulation techniques that also finds applications in other areas of science. The central idea of ExoNSD is to develop a novel consistent theory framework based on the nuclear energy density functional and algebraic theory. The theoretical method will be originally developed by the PI and his team, and provides unprecedented opportunity to study exotic nuclei that are being extensively investigated at experiments all over the world, but

that are beyond reach of any other theoretical approach.

The focus of the research will be on the exotic shapes and decay spectroscopy in nuclei far from the beta stability line, induced fission dynamics in super-heavy elements, modelling astrophysical processes, fundamental physics at low energy (i.e., neutrino-less double-beta decay and CP violation), and trans-disciplinary applications in nuclear chemistry.

ExoNSD also includes activities to promote the project in the scientific community, to support the dissemination and publications of results, to initiate new collaborations, and to strengthen the integration of Croatian science within the European Research Area. The project activities further include teaching advanced courses at the Faculty of Science, outreach, and attaining external funding.

**PROJECT: EVOLUTION IN THE DARK, EVODARK**

Principal Investigator: **Helena Bilandžija, PhD**  
Institution: Ruđer Bošković Institute

How organisms adapt to the environment and generate novel phenotypes are fundamental questions in biology. Cave-adapted animals offer outstanding opportunities to answer these questions because the cave ecosystem is relatively simple in which novel phenotypes evolved convergently in different phyla, while surface dwelling relatives resembling the ancestral form are available for comparative studies.

In this project, we will integrate molecular, cellular, and organismal approaches to 1) explore the effect of the environment and 2) investigate the molecular origin of a major evolutionary adaptation.

1. By exposing closely related surface relatives to constant darkness in controlled laboratory conditions we can identify the adaptations in the cave forms that evolved due to the lack of light – the major feature of caves. The PI’s previous research on





the fish *Astyanax mexicanus* showed that traits considered as cave adaptations (e.g. metabolism, stress response) can be induced by exposing the surface form to darkness.

We propose to investigate: i) the molecular mechanisms that underlie these phenotypic changes in *Astyanax* surface fish when exposed to constant darkness and ii) whether darkness would induce similar changes in closely related surface relatives of cave adapted invertebrates (arthropods, planaria).

2. One of the hallmarks of cave adaptations is the loss of pigmentation, present almost ubiquitously in all groups regardless of the type of pigment they synthesize. My previous research identified a relevant molecular change in multiple cave animals with melanin pigmentation, and that natural selection as opposed to drift is likely involved.

The specific genes and mutations involved in the loss of melanine are yet to be discovered, and nothing is known about the mechanism of other pigments that are lost in cave animals. Therefore, I propose to investigate the molecular and evolutionary mechanisms of ommochrome and porphyrin loss in cave adapted arthropods and planaria.

Insights from these studies would provide new understanding of the mechanisms of convergent evolution and the genetic origin of novel phenotypes.



**PROJECT: MINING THE VARIABLE SKY, MVS**

Principal Investigator: **Lovro Palaversa, PhD**

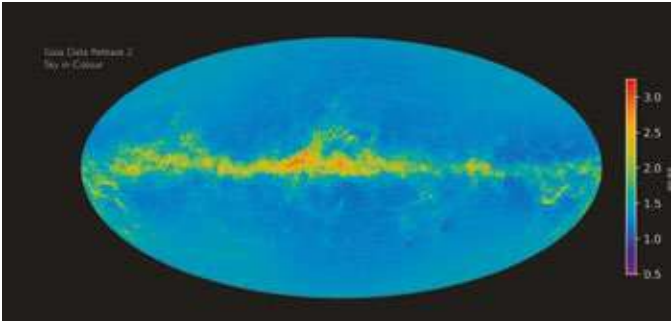
Institution: *Ruđer Bošković Institute*

The aim of the “Mining the Variable Sky” project is to establish an independent research group that will study the history of the Galaxy and the physics driving the variability of astrophysical sources through the application of machine learning techniques. The proposed project is fully aligned to the Ruđer Bošković Institute’s (RBI) strategy of developing a regional centre for astronomy and astrophysics. The project would take full advantage of the RBI’s status of an International Contributor to the Large Synoptic Survey Telescope.

The transient and variable sky are still under-explored. Combining the results from surveys across the electromagnetic spectrum allows us to discover and study populations of heretofore unknown transients, for example the mysterious fast radio bursts, or rare transients such as the tidal disruptions of stars by supermassive black holes. Furthermore, time-domain surveys can help in pinpointing the sources of gravitational waves by identifying their electromagnetic counterparts.

In the case of more common transients like the type Ia supernovae, larger samples are required to study the expansion history of the Universe in more detail. It is therefore necessary to develop rapid and reliable classification methods that will optimize the use of the scarce follow-up resources.

Complementary studies of stellar variability, in conjunction with the parallaxes and proper motions provided by the Gaia mission, allow us to precisely and accurately anchor and apply luminosity-based distance estimation methods on galactic to cosmological scales, study stellar evolution and the Milky Way’s history of formation and accretion. Thanks to the publicly available, state-of-the-art Gaia mission archive with 1.7-billion sources, the Galaxy can now be explored in unprecedented detail.





## ***DOCTORAL STUDENTS' RESULTS***

**48 doctoral students** financed through the “Young Researchers’ Career Development Project - Training New Doctoral Students” successfully defended their doctoral theses in 2019. Below we present some of the new PhDs.



**Mentor:** Professor Jasna Hrenović, PhD

**Name of doctoral student:** **Svjetlana Dekić, PhD**

**Institution:** University of Zagreb, Faculty of Science, Department of Biology

**Project** within which the doctoral student implemented their research: **Natural habitat of clinically important *Acinetobacter baumannii* (IP-2014-09-5656)**



**Research summary:** Bacteria *Acinetobacter baumannii* is an opportunistic pathogen that causes infections in immunosuppressed patients. In addition to hospital infections, sporadic outpatient infections have also been reported. In 2017, the World Health Organisation published a list of pathogens for which new treatment methods should be found as soon as possible. The first pathogen on the list is *A. baumannii*, which

is resistant to carbapeneme antibiotics, which are the last line of defence against multi-resistant bacteria. Except in patients, resistant isolates were also found in hospital and municipal waste waters, on wastewater treatment plants, natural watercourses and in soil. Virulence factors (biofilm, pellicule, surface mobility) contribute to the survival of *A. baumannii* in the environment. However, environmental factors that condition the survival of *A. baumannii* in the environment are unknown. The aim of the research is to determine the factors of virulence and the influence of ecological factors on the survival of clinically significant *A. baumannii* bacteria in order to predict the behaviour of this pathogen within and outside the hospital environment. The main results of the research are that *A. baumannii* is able to survive different abiotic conditions in the environment (temperature, pH, O<sub>2</sub> concentration, nutrient availability, drying) as well as biotic interactions with microorganisms (*Escherichia coli* and *Enterococcus faecium*). The results enable predicting the behaviour of this pathogen in the environment and developing advanced methods for removing pathogens from water and soil.

**Mentor:** Associate Professor Zvonimir Galić, PhD

**Name of doctoral student:** **Mitja Ružojčić, PhD**

**Institution:** Faculty of Humanities and Social Science, University of Zagreb

**Project** within which the doctoral student implemented their research: **Implicit personality and work behaviour (UIP-2013-11-6719)**



**Research summary:** During his work through the Young Researchers' Career Development Project, Mitja Ružojčić worked on comparing different methods of measuring implicit personality and investigating mechanisms through which implicit personality influences working behaviour. He conducted his research within the Foundation's project "Implicit personality and work behaviour" within which, together with the project team, he developed and validated innovative measures of personality based on the paradigms of the Conditional Reasoning Test (James and Lebreton, 2012) and the Implicit Association Test (Greenwald

et al., 1998). Unlike self-assessment, this method measures personality by looking at different ways in which individuals interpret social situations and reaction times in the task of categorising stimuli. In his doctoral thesis, Ružojčić focused on implicit aggressiveness and on understanding the processes explaining its impact on working behaviour. Apart from confirming the finding that implicitly aggressive employees are harmful to their organizations and colleagues, he has shown that this relationship can be explained through two mechanisms. One explanation suggests that implicitly aggressive employees are developing worse attitudes towards the organisation to justify their negative behaviour. Another explanation is the inclination to experience anger, which gives an additional incentive to engage in undesirable behaviour. With his doctoral work, Ružojčić once again pointed to the problem of aggressive employees, but also contributed to the validation of tests that could improve the detection of aggressive individuals in jobs where this characteristic is extremely undesirable (e.g. school workers). In addition, he showed that some organisational interventions could limit the negative effects of such employees in the organisation (e.g. improvement of working conditions and fairness of the organisation).



**Mentor:** Professor Ivona Mladineo, PhD

**Name of doctoral student:** Jerko Hrabar, PhD

**Institution:** Institute of Oceanography and Fisheries

**Project** within which the doctoral student implemented their research: **Anisakis spp. Genomic epidemiology (IP-2013-11-5576)**

**Project summary:** In his doctorate, Jerko investigated the histopathological and molecular basis of the immune response of the ultimate (marine mammals) and the model of the random host (rat) in the infection with the zoonotic nematode *Anisakis pegreffii*. Histopathological changes were characterized by classical histopathological analysis and immunofluorescence using a number of immune markers and transmissible electronic microscopy. In order to show the interaction between the pest and the host's immune response, we measured the expression of selected inflammatory markers and miRNA in infected tissues over time in the in vivo experimental rat infection and the total amount of methylated DNA in order to investigate the carcinogenic potential of the nematode's infectious larvae. We proved that chronic mucosal changes in the digestive tract of the final host with pronounced immunopathology did not lead to neoplasms, while in the accidental host a strong local inflammatory response was registered, characterized by neutrophil and macrophage infiltrates and significant expression

of pro-inflammatory cytokines interleukin-1 beta and interleukin-6. With regard to cytokine expression kinetics in infected tissues, the expected development of TH1 responses, later polarised in the direction of TH2 responses, typical of multi-cellular pests, is evident. The expressed miRNA expression indicates a possible early role in regulating the immune response, while the statistically insignificant change in DNA methylation does not exclude the possibility of changes in the methylation of certain genes. Such a holistic approach to the investigation of damage caused by *A. pegreffii* larvae infection has enabled a detailed comparison of the pathogenesis of anisakiasis in evolutionarily close (marine mammals) with the evolutionarily distant (rat) host, revealing possible signs of significant disease development in humans.



**Mentor:** Professor Amir Muzur, PhD

**Name of doctoral student:** Robert Doričić, PhD

**Institution:** University of Rijeka, Faculty of Medicine

**Project** within which the doctoral student implemented their research: **European Bioethics in Action (IP-2013-11-7853)**

**Project summary:** The main goal of the project was to compare the features of mortality in the period from 1960 to 2012 on the areas of the City of Bakar and City of Mali Lošinj. Specific research goals were as follows: a) to classify causes of death in the territory of two local communities according to contemporary classification of diseases and related conditions, b) to determine the characteristics of mortality in the area, c) to determine the characteristics of mortality with regard to the stages of industrial development in the area of the City of Bakar and d) to investigate mortality trends in the City of Bakar and the City of Mali Lošinj.

Taking into account interdisciplinarity of the research, three significantly smaller qualitative investigations have been conducted in this project in addition to quantitative methods suitable for the ecological type of epidemiological study, with the aim of contextualizing the basic research. These included: a) an overview of the evolution of mortality statistics and the legislative framework in the period from 1960 to 2012 in the territory of present-day Republic of Croatia; b) an analysis of primary and secondary archive sources, relevant scientific and expert publications for the area of today's administrative units of cities of Bakar and Mali Lošinj for the period concerned and c) qualitative research on the quality of life on the area of the City of Bakar.

For the first time ever, the implemented project systematically analysed mortality characteristics in the investigated areas during the period concerned. A special contribution of this research is the fact that it enabled the comparison of collected data and creation a modern database for continuous monitoring of qualitative characteristics of mortality of the two surveyed populations in continuity from 1960 onwards, which provides the possibility of further epidemiological investigations and consequently the planning and implementation of public health interventions.





**Mentor:** Professor Mario Vašak, PhD  
**Name of doctoral student:** **Hrvoje Novak, PhD**

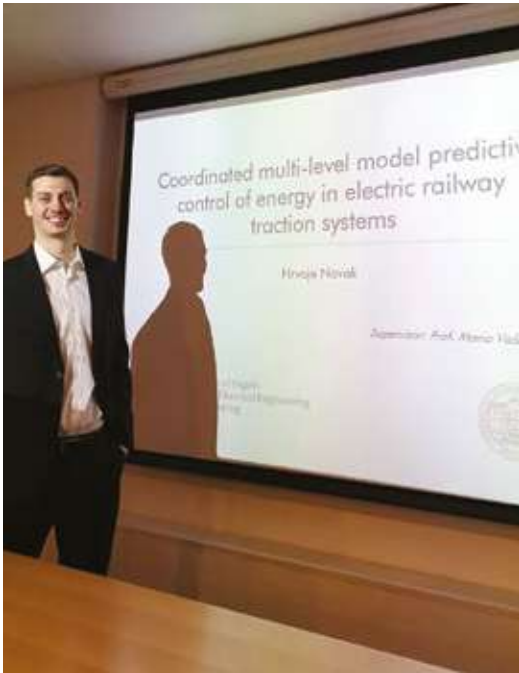
**Institution:** Faculty of Electrical Engineering and Computing, University of Zagreb

**Project** within which the doctoral student implemented their research: **3CON – Control-based Hierarchical Consolidation of Large Consumers for Integration in Smart Grids**

**Project summary:** The doctoral research was aimed at developing a hierarchical system of managing large consumers with the aim of integrating them into advanced power grids. Multi-level model predictive control in railway electric traction systems has been developed, with the introduction of coordination between levels in order to achieve global optimum during the operation of the entire system. At the lower level, the energy consumption of one train travelling between two stations is minimised while at the upper level the operating costs of an electric substation are minimised taking into account the consumption of all powered trains, electrical energy storage systems, variable electricity prices and the requirements of the power grid operator.

The validation of the developed methodology was carried out in a comprehensive study drawn up in coordination with the Industrial Advisory Committee. The results of this study reveal a huge potential for the application of this technology – coordination can save about 45% of energy, i.e. energy costs, compared to the consumption at optimal train driving mode. An extremely motivating additional result is that a large part of these savings refers to the very coordination between trains, i.e. the control algorithm, and not to energy tanks at the electric traction substation. It is important to note that the driving mode resulting from the coordination algorithm does not change the timetable and all conditions of driving comfort are preserved.

The great potential for additional savings and increased operational efficiency stems from the fact that the consumption of electric train systems on the route is thus becoming manageable. This allows for



the possibility that electrified rail transport, with its significant consumption forces, becomes a provider of electricity demand flexibility services, which could also significantly contribute to the decarbonisation of the electricity system on the one hand, and further significantly reduce its own energy costs on the other.

**Mentor:** Associate Professor Klaudija Carović-Stanko, PhD  
**Name of doctoral student:** **Monika Vidak, PhD**

**Institution:** University of Zagreb, Faculty of Agriculture

**Project** within which the doctoral student implemented their research: **Genetic basis of bioactive nutrient content in Croatian common bean landraces (UIP-2013-11-3290)**

**Project summary:** Beans (*Phaseolus vulgaris* L.) are economically the most important and most widespread species of the *Phaseolus* genus, in addition to being the most important grain legume for direct human consumption in the world. Before its domestication, wild *P. vulgaris* had already split into two main centres of origin: Central American and Andic. Beans were domesticated in the New World probably 8,000 to 10,000 years ago from their wild ancestors in the area between northern Mexico and northern Argentina. Both Central American and Asian cultivars spread all over the world. In Croatia, this culture is traditional but neglected and Croatian traditional bean cultivars are at risk of genetic erosion caused by complex socio-economic changes in rural communities.

Most of the production is based on local cultivars grown by small agricultural producers using traditional agricultural techniques. Croatian traditional cultivars are known for their local names, which were mostly obtained according to the colour of the seed shell and mosaic. They are important for the preservation of genetic resistance as well as genetic diversity underlying the cultivation of such cultivars, as they probably contain alleles for local adaptations, disease resilience and tolerance to major climatic deficiencies in the region.

In order to deepen the knowledge about genetic and morphological diversity of Croatian traditional bean



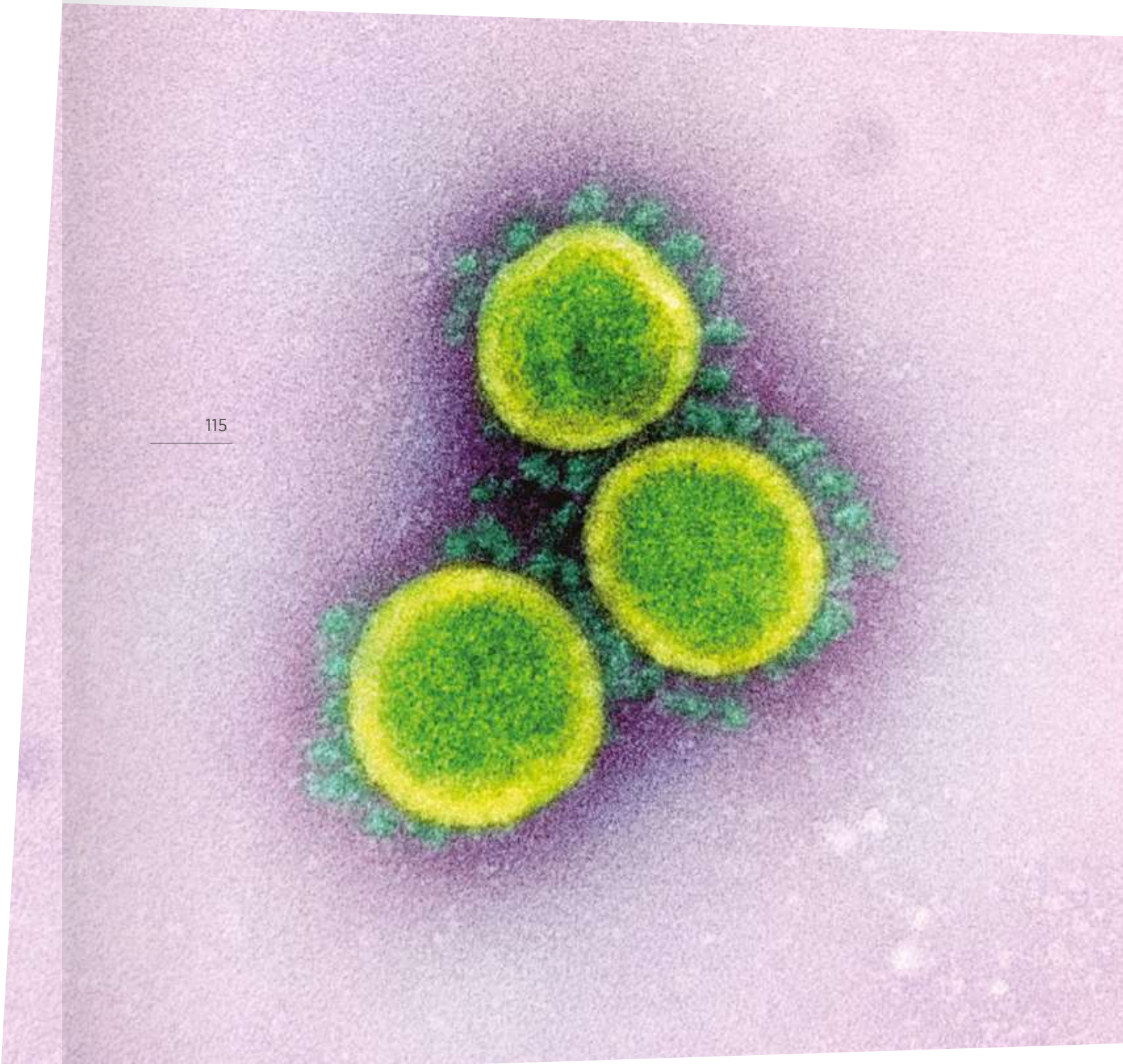


cultivars, an assessment was made based on microsatellite markers, phazoline type and morphological properties; a frivolous collection was also established. Seed samples from 300 traditional bean cultivars were collected from different parts of Croatia where this culture is grown. The collectibles were selected to include the most widespread Croatian traditional cultivars known as e.g. “Trešnjevac”, “Zelenčec” and “Kukuruzar”, which are clearly distinguished by the morphological characteristics of their seeds. After the seed samples were collected, a field experiment was set up in 2014 at the University of Zagreb, Faculty of Agriculture. DNA isolation and genetic analysis were performed at the Laboratory for Molecular Systematics at the Botanical Institute of the Department of Biology of the Faculty of Science at the University of Zagreb.

Finally, the collectibles were classified into 14 morphogenetic subgroups that are classified into three morphogenetic groups depending on their origin and growth habituation: Central American, Andean – high growth habitus and Andean – low growth habitus. Prepared marrow collections will facilitate future research into the diversity of beans by using high permeability phenotyping as well as genotyping by sequencing the new generation. This will enable more efficient preservation of plant genetic resources of Croatian traditional bean cultivars and encourage their use in future breeding programmes.



## ACTIVITIES IN 2019





**SIGNING OF THE MEMORANDUM OF UNDERSTANDING FOR LEAD AGENCY  
PROCEDURE WITH ARRS**

On 18 March 2019, Professor Dario Vretenar, PhD, F.C.A., President of the Foundation’s Board and Professor József Györkös, PhD, Director of the Slovenian Research Agency (*Javna agencija za raziskovalno dejavnost Republike Slovenije*, ARRS) signed a Memorandum of Understanding for Lead Agency Procedure, regulating unilateral management of the evaluation procedure and mutual recognition of evaluation results for bilateral Slovenian-Croatian joint research projects.

This Agreement secures (co-)funding for Slovenian-Croatian research projects through the Lead Agency procedure, which implies that the project proposal assessment process is carried out by one of the organizations. If the project proposal is positively evaluated and proposed for funding by the Lead Agency, the partner organization undertakes to assume its part of the co-funding of the project without additional peer review process due to mutual recognition of the evaluation procedures.

ARRS and the Foundation agreed to alternate in the role of Lead Agency on an annual basis. The Lead Agency role for 2019 was assumed by ARRS and the first Call for Slovenian-Croatian joint research proposals was published on 13 December 2019.



**ADOPTION OF THE MULTILATERAL COOPERATION AGREEMENT**

The Foundation adopted the MLA Agreement and the accompanying Implementation Guidelines at the Board’s 152<sup>nd</sup> session, held on 28 November 2019. MLA Agreement signatory parties will accept the evaluation and grant award procedure of the other signatories. In the framework of the MLA Agreement, i.e. Guidelines for Implementation, specific procedures for the submission of project proposals from two or more applicants are elaborated.

As preparation for collaboration through the MLA Agreement, in late 2019 the Foundation initiated talks with SNSF for preparing a bilateral call in the second half of 2020.

**INFORMATION WORKSHOPS FOR THE “RESEARCH COOPERABILITY”  
PROGRAMME**

The Croatian Science Foundation organised information workshops in Osijek, Rijeka, Split and Zagreb for potential applicants to the Cooperation Programme with Croatian Scientists in Diaspora “Research Cooperability” and representatives of their home organizations. The information workshops were used to present the Research Cooperability Programme and to provide all information and instructions for submitting project proposals and completing the required documentation. The workshops also included a Q&A session.

- Faculty of Civil Engineering, University of Rijeka, 14 January 2019
- Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture, University of Split, 18 January 2019
- University of Zagreb, Great Hall, 21 January 2019
- University of Osijek, 24 January 2019
- University of Zagreb, 28 January 2019

**INFORMATION WORKSHOPS FOR CALLS “RESEARCH PROJECTS 2019” AND  
“INSTALLATION RESEARCH PROJECTS 2019”**

The Croatian Science Foundation organised information workshops for potential applicants to the Calls “Research Projects 2019” and “Installation Research Projects 2019” and representatives of their home organizations. The information workshops were used to present the two programmes and to provide all information and instructions for submitting project proposals and



completing the required documentation. The workshops also included a Q&A session. Presentations were held by Board members, Executive Director, panel members and the Foundation’s employees at the following institutions:

- University of Zagreb, 05 April 2019
- University of Rijeka, 05 April 2019
- University of Osijek, 05 April 2019
- University of Split, 05 April 2019
- Faculty of Organization and Informatics Varaždin, 12 April 2019
- University of Zadar, 12 April 2019
- Croatian Catholic University, 23 April 2019
- Institute for Social Sciences Ivo Pilar, 25 April 2019
- University of Pula, 29 April 2019
- University North, 29 April 2019
- University of Dubrovnik, 30 April 2019

**PRESENTATION CEREMONY OF RESULTS DELIVERED THROUGH THE “YOUNG RESEARCHERS’ CAREER DEVELOPMENT PROJECT- TRAINING NEW DOCTORAL STUDENTS”**

The public ceremony for presenting results delivered through the “Young Researchers’ Career Development Project- Training New Doctoral Students” was held on 08 April 2019 at the University of Zagreb premises.

The opening address at the ceremony was given by the University of Zagreb Rector, Professor Damir Boras, PhD. He highlighted that the University of Zagreb dominates with regard to the number of submitted applications, especially in Natural and Technical sciences and that more applications should be drawn from Social sciences and Humanities. After this, the audience was greeted by the Executive Director of the Croatian Science Foundation Irena Martinović Klarić, PhD, who presented the achievements and results of the “Young Researchers’ Career Development Project – Training New Doctoral Students” from 2014 up to the present. Her presentation focused on the calls implemented in 2018 and announced calls and plans for 2019.



Mile Kvesić, the Foundation’s ESF Grant Coordinator and the ceremony facilitator, presented data on the number of submitted applications and employment contracts concluded with doctoral students through the Young Researchers’ Career Development Project, Call DOK-2018-01 in particular.



After this, Ms Jelena Budak, PhD, from the Institute of Economics in Zagreb, conveyed her experience as mentor of the first generation of doctoral students funded through the “Young Researchers’ Career Development Project – Training New Doctoral Students”. Under her professional mentorship, Mr Vedran Recher, PhD, was awarded his doctoral degree after only 36 months. Dr Recher then described his own experience from the perspective of doctoral student and

thanked the Croatian Science Foundation for funding his education. Another positive example and her experience was also provided by Ms Jelena Dragojević, PhD, who also completed all activities envisaged in her Career Development Plan and acquired a doctoral degree under the mentorship of Tvrtko Smital, PhD.



**VISIT BY PRESIDENT OF CANADIAN RESEARCH COORDINATION COMMISSION**

On 15 May 2019, the Croatian Science Foundation was paid a visit by Mr Ted Hewitt, PhD, President of the Canadian Research Coordination Commission (CRCC). His hosts were the Foundation’s Executive Director Ms Irena Martinović Klarić, PhD, and Head of the Department for Young Researchers Ms Lovorka Barać Lauc, PhD. After both organizations presented their activities, the participants talked about potential collaboration through joint calls, popularization of calls of Canadian foundations in Croatia, participation of Croatian scientists in calls of Canadian foundations and Croatia joining the Trans-Atlantic Platform.



**SINGAPOREAN DELEGATION VISITS CROATIAN SCIENCE FOUNDATION**

On 16 May 2019, the Croatian Science Foundation hosted a meeting with colleagues from Singapore. The purpose of the visit was to exchange experience regarding funding of young researchers and research projects with the aim of identifying collaboration potential in these two areas.

The host of the meeting on behalf of the Croatian Science Foundation was Professor Stipan Jonjić, PhD, MD, the Foundation’s Board member. The meeting was organised upon initiative by Professor Mile Šikić (Faculty of Electrical Engineering and Computing, University of Zagreb), with the assistance of Ms Claire Pan from the *A\*STAR Graduate Academy* and Ms Kristina Kotišćak, Head of the Foundation’s Department for International Programmes and Funds.

Professor Ng Huck Hui, Executive Director of the *A\*STAR Graduate Academy* and *A\*STAR Genome Institute of Singapore* gave a presentation on the scientific system of Singapore, the Institute and Singapore’s international collaboration. The presentation also gave a basic overview of the system of funding young scientists through the A\*STAR Graduate Academy: Singapore International Pre-Graduate Award (SIPGA), A\*STAR Research Attachment Programme (ARAP) and Singapore International Graduate Award (SINGA).

The Croatian Science Foundation’s Board member Professor Dragan Poljak, PhD, held a presentation about the programmes of the Croatian Science Foundation for funding research, while the Head of the Department for Young Researchers Ms Lovorka Barać Lauc, PhD, presented the basic principles of the “Young Researchers’ Career Development Project – Training New Doctoral Students” as well as the

Foundation’s system for evaluating and monitoring scientific projects.





EUROPEAN RESEARCHERS' NIGHT 2019

European Researchers' Night is a Europe-wide initiative implemented with financial support from the European Commission through the EU Framework Programme for Research and Innovation (Horizon 2020). The objective of this initiative is the popularization of science, or to make science and the scientists' work more approachable to the general public, to inspire young people for future careers in research and to introduce European citizens to European and national science policies. European Researchers' Night is traditionally held on the last Friday of September across Europe. European Researchers' Nights 2018 and 2019 in Croatia were organised as part of the project *Techno-Past Techno-Future*, Contract No: 818748. The *Techno-Past Techno-Future: European Researchers' Night* Project was implemented by 18 partners, including all Croatian universities and some of the largest Croatian research institutes, with the Ministry of Science and Education as the Consortium Coordinator. The Croatian Science Foundation also joined the consortium and took part in activities of the European Researchers' Night 2019.

European Researchers' Night 2019 was held on 27 September from 17.00 to 22.00 at several locations in four Croatian cities (Zagreb, Split, Rijeka and Osijek). The programme section organised by the Croatian Science Foundation was set up in the Grič Tunnel in Zagreb. The special feature of this event was that the roles of scientists and presenters were played by children themselves. The Foundation selected several Croatian scientists, who visited several primary schools in Zagreb in June and September and held interesting scientific workshops with the pupils.



The results of those workshops were presented by the children, closely supervised by their teachers and scientific mentors in the Grič Tunnel.

European Researchers' Night 2019 featured the following schools and their scientific mentors:

- **Stenjevec Primary School**, mentored by **Asst. Prof. Sunčica Bosak, PhD** (School of Biology, Faculty of Science, University of Zagreb) and her doctoral student Ms Klara Filek, whose workshop was entitled “The Colourful Microbial World of Plants”
- **Count Janko Drašković Primary School**, mentored by **Assoc. Prof. Dominik Cinčić, PhD** (School of Chemistry, Faculty of Science, University of Zagreb) and his research assistants, with the workshop “Crystals and Crystallization”
- **Prečko Primary School**, mentored by **Mateja Dumbović, PhD** (Faculty of Geodesy/Hvar Observatory), who put on a play “Space Weathermen”
- **Ivan Goran Kovačić Primary School**, mentored by **Ema Horak, PhD** (Ruđer Bošković Institute), whose workshop was entitled “The Glow of Colourful Chemistry”
- **Ksaver Šandor Gjalski Primary School**, mentored by **Prof. Mladen Kučinić, PhD** (School of Biology, Faculty of Science, University of Zagreb) and his doctoral student Ms Dora Hlebec, whose workshop was entitled “From DNA Molecule to Barcode”





- **Davorin Trstenjak Primary School**, mentored by **Asst. Prof. Ana Sović Kržić, PhD** (Faculty of Electrical Engineering and Computing) and her doctoral student Ms Liljana Pushkar, with the workshop “Robot Lost in a Maze”.

More than 1,000 visitors interested in science passed through the tunnel on the night, the majority of them being parents with children, which means that the objective of the event was met in full.

The Croatian Science Foundation provided the scientists and schools with all equipment required for the workshops. In addition, we donated additional science-related school equipment and educational materials to schools who took part in the event.

### RESULTS PRESENTATION CEREMONY FOR THE CALL TENURE TRACK PILOT PROGRAM

On 12 November 2019, the Ministry of Science and Education hosted a public ceremony for presenting results of the call “Promoting Excellence in Higher Education – Tenure Track Pilot Programme” (TTP-2018-07), funded through the Swiss-Croatian Cooperation Programme to Reduce Economic and Social Disparities within the Enlarged European Union.

The ceremony was opened by the Ambassador of the Swiss Confederation to the Republic of Croatia, H.E. Ms. Emilija Georgieva, who emphasized the commitment of the Swiss Confederation to the advancement of the science system in the Republic of Croatia. This was followed by an opening address of Mr Velimir Žunac, State Secretary at the Ministry of Regional Development and EU Funds, which serves as the National Coordination Unit (NCU) for the entire Swiss-Croatian Cooperation Programme. State Secretary at the Ministry of Science and Education Mr Tome Antičić, PhD, emphasised the Ministry’s efforts for introducing the tenure track system into the Croatian higher education system. Executive Director of the Croatian Science Foundation Ms Irena Martinović Klarić, PhD, emphasised the importance of this programme for enhancing the Foundation’s international collaboration potential.

Mr Olivier Küttel, PhD, from *École polytechnique fédérale de Lausanne* (EPFL), as guest of honour at this event, presented the tenure track system in place at EPFL, introduced in 2002, which resulted in more than 60 scientists being

appointed to a permanent tenured position. EPFL acts as the Partner in this Programme and their support in designing this Programme was immense. Dr Küttel’s speech was followed by a presentation by Ms Zrinka Kovarik, PhD, from the Institute for Medical Research and Occupational Health, member of the Evaluation Panel for the Call TTP-2018-07, who presented the project evaluation and selection procedure.

After this, the audience was provided with the opportunity to meet three excellent young scientists whose projects will be funded. They are: Mr Kosuke Nomura, PhD, from the Faculty of Science, University of Zagreb) and Ms Helena Bilandžija, PhD and Mr Lovro Palaversa, PhD, both from the Ruđer Bošković Institute. The three scientists briefly presented their careers and their future projects. The Foundation expects that by 30 April 2024, which is the expected end date of these projects, all of them will produce exceptional scientific results and that their experience will help us model the new tenure system for employing excellent young scientists.



Lovro Palaversa, Helena Bilandžija i Kosuke Nomura; (photographs by: Marko Todorov/CROPIX)

### RESULTS PRESENTATION CEREMONY FOR THE CALL COOPERATION PROGRAMME WITH CROATIAN SCIENTISTS IN DIASPORA “RESEARCH COOPERABILITY”

On 09 December 2019, the Croatian Heritage Foundation hosted a public ceremony for presenting the results of the Call Cooperation Programme with Croatian Scientists in Diaspora “Research Cooperability”. This Programme is financed from the European Social Fund as part of Specific Objective 10.ii.3. Improving the environment for Croatian researchers within the Operational

Programme Efficient Human Resources 2014-2020 and co-funded from the State Budget of the Republic of Croatia.

The ceremony was used to present the activities of the Croatian Science Foundation regarding the collaboration of Croatian scientists and diaspora as well as the activities of the Croatian Heritage Foundation, Central Government Office for Croatians outside the Homeland and the Association of Croatian American Professionals (ACAP), all of which served as the Foundation’s partner in the implementation of this Programme.

Opening addresses were given by the Director of the Croatian Heritage Foundation Mr Mijo Marić, State Secretary at the Central Government Office for Croatians outside the Homeland Mr Zvonko Milas, representative of the Association of Croatian American Professionals (ACAP) Mario Škarica, MD, ACAP President Mr Don Markušić, Deputy President of the Foundation’s Board Professor Dean Ajduković, PhD, Foundation’s Board member Professor Stipan Jonjić, PhD, MD and the Foundation’s Executive Director Ms Irena Martinović Klarić, PhD.

The second part of the programme included brief presentations of the 23 funded projects.



**INFORMATION WORKSHOPS FOR THE CALL “YOUNG RESEARCHERS’ CAREER DEVELOPMENT PROJECT- TRAINING NEW DOCTORAL STUDENTS”**

Information workshops are held whenever a Call within the “Young Researchers’ Career Development Project – Training New Doctoral Students” is open. During these workshops, the Foundation’s employees present the open call. The following workshops were held in relation to the Call DOK-2020-01.

- 29 November 2019 in Osijek, Josip Juraj Strossmayer University building
- 04 December 2019 in Varaždin, University North
- 05 December 2019 in Rijeka, University departments building
- 06 December 2019 in Pula, Faculty of Economics and Tourism “Dr. Mijo Mirković”
- 10 December 2019 in Zagreb, University of Zagreb
- 11 December 2019 in Zadar, University of Zadar
- 12 December 2019 in Split, Faculty of Electrical Engineering, Mechanical Engineering and Naval Architecture





## THE FOUNDATION'S ACTIVITIES IN 2020

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The Foundation continuously develops its procedures and activities to ensure uniform quality of work across individual panels as well as within its own staff. With the Foundation's role becoming stronger and taking over the role of national funder of scientific research and young researchers, our organizational capacities and IT infrastructure will continue to be developed in 2020. We will especially focus on building a new IT platform for project proposal submission and development of additional IT tools to facilitate and accelerate our work and the work of our beneficiaries.

Apart from continuous work on controlling the quality of our procedures and enhancing every step in the evaluation procedure, 2020 is also the year when we need to start designing the new electronic system for monitoring projects and doctoral students in order to make the monitoring process more transparent, more efficient and quicker. The aim is also to achieve a higher level of flexibility in project monitoring, which would facilitate the work of Principal Investigators, while still responsibly monitoring the use of public funds.

In order to make the funded projects, young scientists' researchers as well as our own work more approachable to beneficiaries and the general public, we plan to launch a new website in 2020. The new website will enable scientists and all interested parties to monitor the Foundation's work, science news and the projects funded by the Foundation in a more modern and user-friendly manner. Projects and young researchers will be introduced through research stories, accompanied by photographs in order to promote the research work of Croatian scientists.



**PLAN OF ACTIVITIES IN 2020**

In 2020, the Foundation is planning to open the following calls:

- Research Projects
- Installation Research Projects
- Young Researchers’ Career Development Project – Training New Doctoral Students
- Support to Researchers for Applying to European Research Council Programmes.
- Young Researchers’ Specialization Project – Postdoctoral Research
- Bilateral Research Projects (with the Republic of Slovenia and the Swiss Confederation)
- Multilateral collaboration

**INTERNATIONAL COLLABORATION**

The Foundation has been part of the Multilateral Lead Agency (MLA) Working Group since 2017. The Working Group drafted the MLA Agreement and the accompanying Implementation Guidelines in 2019, which are expected to be signed in 2020 and implemented in 2021. The MLA Agreement will enable Croatian researchers to better connect and expand joint research and contribute to the long-term goal of the Foundation – to foster a wide range of research and development activities, programs and scientific organizational structures that would better integrate Croatian scientists into the European Research Area (ERA).

Joining ERA enables scientists to enhance inter-institutional, cross-sectoral and international mobility, coordinate funding of research in European countries and regions and stronger connection between the scientific and economic area not bounded by national borders. The Foundation, through its programs and activities, will encourage the affiliation and integration of Croatian science into the European Research Area.

Furthermore, the Foundation’s goal is to encourage Croatian scientific institutions, companies in the business field and researchers to harness the potential of the Croatian scientific diaspora and to encourage researchers of Croatian descent abroad to connect with Croatian researchers in the country.

Of particular importance is the potential contribution of the diaspora in the career development of young Croatian researchers (doctoral studies and/or postdoctoral specializations abroad), in the transfer and application of new knowledge and technologies in Croatia.

**DISSEMINATION**

The Foundation will present the objectives of its calls and the application procedure at universities and public institutes. The Foundation’s public presentation activities will intensify in the months preceding the call for project proposals. In addition to public presentations, the Foundation will publish all information related to new programs, as well as the results of ongoing calls, on its website and in the Foundation’s newsletter in electronic form.

Furthermore, we intend to relaunch the series of monthly lectures by renowned Croatian scientists that we organise together with the Croatian Academy of Sciences and Arts, the so-called HAZU-HRZZ Colloquia. These lectures will serve to make interesting scientific topics more approachable to the wider scientific community and all interested parties as well as to present results of scientific projects funded by the Foundation.

In addition to this, we will pay special attention to popularising the work of young researchers funded by the Foundation. The Department for Young Researchers designed a new activity, to be launched in 2020, intended for the promotion of doctoral students employed through the “Young Researchers’ Career Development Project” under the name “PhD Café”. The idea behind these events is for doctoral students to get together in an informal environment. Each event would see several doctoral students giving short presentations about their research. PhD Café in Zagreb will take place on a monthly basis, while we intend to occasionally organise them in other cities where the Foundation’s doctoral students are employed (Rijeka, Split and Osijek).

The background is a solid teal color. On the right side, there is a blurred image of a person's face, showing the eye and part of the nose. In the bottom right corner, there is a blurred image of a pen.

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