



National Science Centre in Poland

Edition: Communications Team

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BASIC RESEARCH IS THE ESSENCE OF ALL SCIENCE

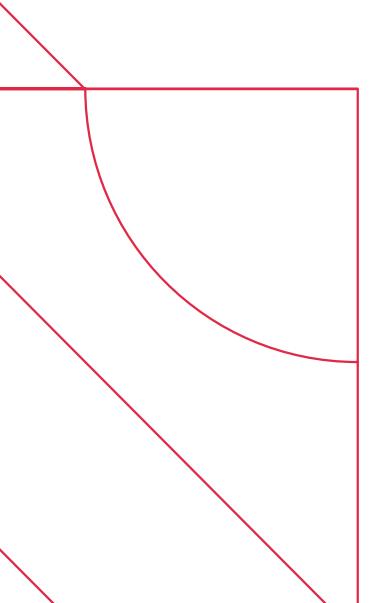
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ABOUT THE NATIONAL SCIENCE CENTRE

GENERAL INFORMATION

We are a government executive agency funding basic research carried out at Polish research entities. Basic research is defined as empirical or theoretical work seeking to expand knowledge of the fundamentals of phenomena and observable facts without any direct commercial use.

We have a rich offer of calls for proposals to fund projects, single research activities, scholarships and post-doc fellowships. Every researcher, regardless of their age, level of achievement, academic degree or title, or field of interest, will find a funding scheme matching their needs.

The funding is awarded to the best proposals, selected in the course of a two-stage peer review. The expert reviewers evaluate both the quality of the research and the applicant's achievements. We monitor the proper implementation of ongoing grants: we accept and verify annual reports on the projects under implementation, and we carry out audits at the units where the research is conducted.

Another area of our activity consists in initiating international cooperation, inspiring funding of basic research from non-state sources, and propagating information on the funding opportunities we launch. Together with the Max Planck Society (MPG) from Germany we have been operating the DIOSCURI programme aimed at establishment of Centres of Scientific Excellence in Poland. We are a co-ordinator of the QuantERA programme – a network of 32 agencies funding scientific research in the field of quantum technologies using funds of the European Union from the Horizon 2020 Programme, and we are also an operator of the "Research" area in the scope of basic research funded by the EEA and Norway Grants.

MISSION

Supporting the development of Polish research on the international arena and leveraging the quality and effectiveness of research through a competitive grant system.



- Funding excellent research projects in basic research.
- Supporting researchers starting their career in research.
- Inspiring the creation of large, interdisciplinary research teams which are able to compete internationally.
- Fostering international cooperation in research.
- Creating new job opportunities in NCN-funded projects.

HIGHLIGHTS 2018

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January

singing a cooperation agreement with the National Centre for Research and Development in the organisation of another edition of the TANGO call

1

April

signing an agreement with the Austrian Science Fund (FWF) on the organisation of a bilateral call for Polish-Austrian research projects in the scope of MOZART basic research

25

April

Bucharest – QuantERA Projects Launch Event

9-10

May

6th Edition of the Open Days of the National Science Centre in Gdańsk

11-12

June

POLONEZ Fellows' Forum – meeting of winners of the National Science Centre prestigious programme for researchers coming from abroad

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June

announcement of the results of DAINA 1 call for Polish-Lithuanian research projects

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September

the National Science Centre joined the cOAlition S and signed the S Plan



September

singing a letter of intent on the establishment of the Central European Science Partnership (CEUS)

October

presentation of the 2018 NCN Award, laureates: Prof. Dr hab. Bartosz Brożek (HS), Dr hab. Joanna Sułkowska (NZ), Dr hab. Piotr Sankowski (ST)

October

22

conclusion of the DIOSCURI 1 call and selection of leaders of the first two Centres of Scientific Excellence in Poland

December

6

announcement of the DIOSCURI 2 call

23

October

signing of the San Francisco Declaration on Research Assessment (DORA) by the NCN Director

21

November

opening of the 2019 QuantERA call

-December

grand opening of the new offices of the National Science Centre at ul. Twardowskiego 16; presentation of nominations to new NCN Council Members and election of Prof. Małgorzata Kossowska as a new Chairwoman of the NCN Council

STRUCTURE

NCN Director

The National Science Centre's executive officer is its director, selected in a competition by the Council of the NCN, and appointed by the Minister of Science and Higher Education. Since March 2015, the role has been performed by Prof. Zbigniew Błocki. The director is the Centre's representative, and is in charge of the Centre's statutory tasks and financial policy. The director acts as a legal representative on behalf of the Centre.

NCN Council

The NCN Council is a policy body consisting of 24 distinguished researchers representing different academic fields. The Council sets priority areas in basic research, decides on the type of programmes and specifies call regulations. Its range of competencies also includes electing members of the expert teams responsible for proposal evaluations.



Term of office: 2016-2018

Term of office: 2018-2020

Prof. Janusz Janeczek – Chair

Arts, Humanities and Social Sciences (HS)

Prof. Krystyna Bartol Prof. Małgorzata Kossowska Prof. Teresa Malecka Assoc. Prof. Oktawian Nawrot Rev. Prof. Andrzej Szostek Prof. Jan Jacek Sztaudynger Prof. Wojciech Tygielski

Physical Sciences and Engineering (ST) 1 Prof. Mikołaj Bojańczyk Prof. Grzegorz Karch Prof. Wojciech Kucewicz Prof. Stanisław Lasocki Prof. Ewa Łokas Prof. Ewa Majchrzak Prof. Ewa Mijowska Prof. Andrzej Sobolewski Prof. Marek Żukowski

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Life Sciences (NZ)

Prof. Jerzy Chudek Prof. Artur Jarmołowski Prof. Krzysztof Jóźwiak Prof. Jan Kotwica Prof. Marta Miączyńska Prof. Krzysztof Nowak Prof. Anetta Undas

Prof. Małgorzata Kossowska - Chair

Arts, Humanities and Social Sciences (HS) Prof. Krystyna Bartol Dr hab. Joanna Golińska-Pilarek Prof. Dariusz Markowski Dr hab. Justyna Olko Prof. Tomasz Szapiro Dr hab. Joanna Wolszczak-Derlacz

Physical Sciences and Engineering (ST)

Prof. Mikołaj Bojańczyk Prof. Grzegorz Karch Prof. Wojciech Kucewicz Prof. Stanisław Lasocki Prof. Ewa Majchrzak Prof. Piotr Migoń Prof Ewa Mijowska Prof. Marek Samoć Prof. Teresa Zielińska

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Life Sciences (NZ)

Prof. Jakub Fichna Prof. Krzysztof Jóźwiak Prof. Jacek Kuźnicki Prof. Barbara Lipińska Prof. Andrzej Sobczak Prof. Anetta Undas Prof. Aneta Wojdyło

NCN Office

The NCN Office is an entity combining the efforts of a number of the NCN's departments and teams. On a day-to-day basis, the Office is responsible for processing calls for proposals and organising meetings for experts at the peer review evaluation stage. Furthermore, the Office provides day-to-day support to the grantees who carry out projects; it manages the process of signing funding agreements, oversees their implementation, initiates international co-operation in the scope of research funding, organises calls under the EEA funds and Norway Grants in co-operation with the Council and coordinators as well as the "Research" Programme Committee and disseminates information on the NCN calls throughout the scientific community.

NCN Structure

The year 2018 saw numerous changes in the organisational structure of the NCN. Three divisions were set up: 1. Organisational, 2. Financial, and 3. Project. Besides the Divisions, there are: Scientific Coordinators, NCN Council Office, Legal Team, Chief Accounting Officer, Classified Information Protection Officer and Data Protection Officer.

NCN Coordinators

The NCN Coordinators are scientific officers responsible for organising and conducting calls for proposals for research projects. Their responsibilities also include evaluation of the impartiality of the peer review process, the eligibility check of proposals submitted within the calls, as well as the promotion of NCN funding programmes in the research community. Coordinators support the NCN Council in developing the research policy. Coordinators work within the NCN in three units: Arts, Humanities and Social Sciences; Life Sciences; and Physical Sciences and Engineering. They are selected by the NCN Council on the basis of competition. Candidates for this position must have at least a PhD.

National Science Centre's Council

NCN Director NCN Deputy Director

Organizational Division

Administration Department

Communications Team

IT Team

Health and Safety Officer

Financial Division

Finance and Accounting Department

Finance Team

Accounting Team

International Programmes Financial Officer

Project Monitoring Department

HR Department

Audit and Compliance Team

Project Division

Research Projects Administration Department

> Arts, Humanities and Social Sciences

Physical Sciences and Engineering

Life Sciences

Proposal Processing Department International Cooperation Department

Evaluation Team

Expert Support Team

Electronic Submission System Team

EEA and Norway Grants Team

Commisioner for State Aid

Coordinators

Office of the NCN Council

Chief Accounting Officer

Legal Team

Protection of Classified Information Officer

Data Protection Officer



NCN PERFORMANCE IN 2018

NCN IN NUMBERS



*success rate is the ratio of the number of the proposals recommended for funding against the number of proposals submitted, expressed as a percentage

NCN FUNDING SCHEMES

We finance basic research conducted as projects, single research activities, scholarships and post-doc fellowships. We publish our calls regularly, four times a year, so that researchers have three months to submit their research proposals. A different mode applies to the MINIATURA call, open once a year, where submissions are allowed on a continuous basis as long as the resources allocated for the programme have not been depleted. The funding schemes on our offer match the diverse needs of the research community, from scholars embarking on their career in research to the most accomplished researchers. The funding is granted to the best research teams, whose principal investigators and members have the required experience and facilities prerequisite to the implementation of their projects. The NCN accepts proposals from all research disciplines on the NCN panels' list.

PRELUDIUM

Call for research projects

- Applicants: researchers beginning their careers, without doctorate
- **Duration:** 12, 24 or 36 months
- **Funding:** PLN 70,000, PLN 140,000 or PLN 210,000 depending on the project's duration
- E Requirements: carried out under mentor's supervision
- Open: twice a year

🕨 ETIUDA

Call for doctoral scholarship proposals

- Applicants: for researchers working on their doctoral dissertations
 - **Duration:** 6 to 12 months + 3 to 6 months of fellowship at a research centre abroad
- **Funding:** PLN 4,500 a month + travel and living allowance paid during the fellowship at a research centre abroad
- Requirements: the grantee must secure the award of their doctorate within 6 to 12 months of the fellowship
- :: **Open:** once a year

C SONATINA

Call for research projects: employment at research institutions, funding to research projects and fellowships abroad

- Applicants: researchers with a doctorate received within 3 years of submitting the proposal or those who will receive the degree by 30 June of the year of the call
- Duration: 24 or 36 months, fellowship at a research centre abroad of 3 to 6 months
- **Funding:** no cap on funding research projects, PLN 12,000 a month during the fellowship abroad + travel allowance
 - **Open:** once a year

🕉 SONATA

Call for research projects: innovative research using stateof-the-art equipment or original methodology

- Applicants: researchers with a doctorate received within 2 to 7 years of submitting the proposal
- **Duration:** 12, 24 or 36 months
- Funding: no cap on funding research projects
- Open: once a year

🛠 " SONATA BIS

Call for research projects: establishing a new research team

- Applicants: researchers who have received their doctorate 5 to 12 years before submitting the proposal
- **Duration:** 36, 48 or 60 months
- **Funding:** no cap on funding research projects
 - Open: once a year

MINIATURA

Call for single research activities instrumental in basic research

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Applicants: researchers with a doctorate received within 12 years of submitting the proposal who have not been grantees

- () of previous NCN calls for proposals
 - Duration: up to 12 months
- **Funding:** PLN 5,000 to PLN 50,000

Open: continuous call, accelerated review process

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UWERTURA

Call for proposals for fellowships at foreign research teams carrying out ERC grants

Applicants: doctoral researchers with full time employment at a research centre, who have carried out, as Principal Investigators, research projects funded by the NCN, and are not European Research Council (ERC) grantees

Duration: 3 to 6 months

Funding: PLN 9,000 to PLN 21,000 monthly depending on the country + travel allowance

Requirements: applying for an ERC grant within 18 months of the fellowship

Open: once a year

MAESTRO

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Call for groundbreaking research projects, including interdisciplinary research, offering a substantial contribution to the advancement of science, seeking to go beyond that which is known which may result in new discoveries

Applicants: advanced researchers with at least 5 publications in renowned journals in the period of 10 years before submitting the proposal, with at least 2 grants in which they acted as Principal Investigator

Duration: 36, 48 or 60 months

Funding: no cap on funding research projects

Requirements: the project's team must include at least one investigator with a doctorate and at least one doctoral candidate **Open:** once a year

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OPUS

Call for research projects, including purchase or construction of research equipment

Applicants: all researchers, regardless of academic degree

Duration: 12, 24 or 36 months

Funding: no cap on funding research projects

Other info: scholarships for young researchers may be granted under the scheme

Open: twice a year

HARMONIA

Call for research projects carried out as international cooperation, without co-financing from foreign funds

Applicants: researchers who want to collaborate with their colleagues from abroad

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Duration: 12, 24 or 36 months

Funding: PLN 500,000 to PLN 1,5 million depending on the project's duration

Open: once a year

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TANGO

Call for implementation projects drawing on results of basic research

Applicants: researchers who have acted as Principal Investigator to a basic research project for at least one year or who have secured written permission of the basic research project's Principal Investigator to develop it under the TANGO scheme

Duration: 3 to 12 months

:::: Funding: PLN 200,000

Continuous call for proposals published once a year by the National Centre for Research and Development

NCN PANELS

m HS – arts, humanities and social sciences

- HS1 Fundamental questions of human existence and the nature of reality HS2 Culture and cultural production
- HS3 The study of the human past
- HS4 Individuals, institutions, markets
- HS5 Norms and governance
- HS6 Human nature and human society

ST - physical sciences and engineering

- ST1 Mathematics
- ST2 Fundamental constituents of matter
- Condensed matter physics ST3
- ST4 Chemistry
- ST5 Materials
- ST6 Computer science and informatics
- ST7 Systems and communication engineering
- ST8 Production and processes engineering
- Astronomy and space science ST9
- **ST10** Earth sciences

NZ – life sciences

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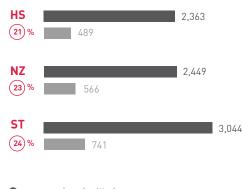
NZ1	Molecular biology, structural biology, biotechnology
NZ2	Genetics, genomics
NZ3	Cellular and developmental biology
NZ4	Biology of tissues, organs and organisms
NZ5	Human and animal noninfectious diseases
NZ6	Human and animal immunology and infection
NZ7	Diagnostic tools, therapies and public health
NZ8	Evolutionary and environmental biology
NZ9	Fundamentals of applied life sciences and biotechnology

FUNDING OF BASIC RESEARCH

In calls published in 2018, we received 11,704 proposals worth in total PLN 5.4 bn.

In calls concluded in 2018, funding was granted to 2,292 projects worth PLN 1.2 bn.

Number of proposals submitted and recommended for funding under the calls concluded in 2018, broken down by discipline group, alongside their respective success rates*



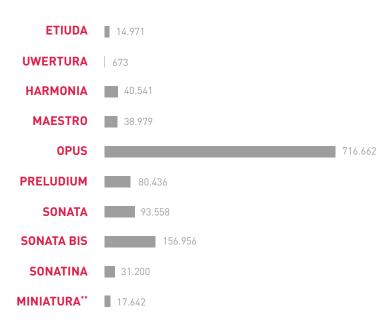
proposals submitted

proposals recommended for funding

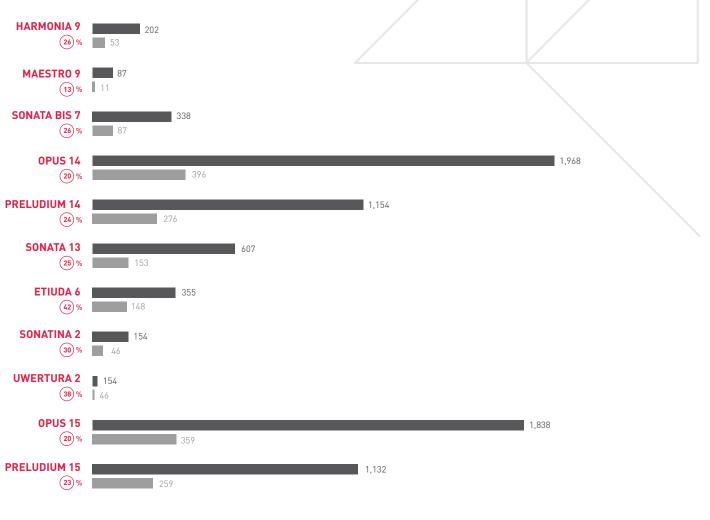
O success rate

*The data does not include the MINIATURA 2 call due to the continuous evaluation of proposals that is being maintained in 2019, which makes it impossible to calculate the actual success rate.

Funding awarded in calls concluded in 2018, broken down by call types (m PLN)



^{**} The call for proposals under the MINIATURA 2 scheme was carried out on a continuous basis between 17 April 2018 and 31 December 2018. The number of projects qualified for funding has been shown as at 21 December 2018 – the publication data of the 7th ranking list together with appeals (the last one in 2018). Number of proposals submitted and recommended for funding under the calls concluded in 2018, broken down by call type, alongside their respective success rates



- proposals submitted
- proposals recommended for funding
- O success rate

LEADERS OF THE NCN CALL RANKINGS IN 2018

The chief beneficiaries of the NCN calls concluded in 2018 were:

- public and non-public high schools (76% of all beneficiaries),
- research institutes of the Polish Academy of Sciences (19%),
- research institutes (4%).

Host Institution	Funding granted (m PLN)	Proposals quali- fied for funding	Numerical success rate
Jagiellonian University	154.748	219	31%
University of Warsaw	120.503	216	34%
Adam Mickiewicz University in Poznań	53.333	100	26%
University of Wrocław	47.994	75	37%
Nencki Institute of Experimental Biology, Polish Academy of Sciences	38.132	38	58%
Nicolaus Copernicus University in Toruń	31.476	57	25%
Wrocław University of Science and Technology	28.628	51	26%
University of Gdańsk	27.985	40	19%
AGH University of Science and Technology	27.425	51	24%
Warsaw University of Technology	26.538	43	23%
University of Silesia in Katowice	21.735	43	23%
Institute of Biochemistry and Biophysics, Polish Academy of Sciences	20.967	21	36%
Gdańsk University of Technology	17.970	32	22%
Institute of Bioorganic Chemistry, Polish Academy of Sciences	16.623	12	35%

Host Institution	Funding granted (m PLN)	Proposals quali- fied for funding	Numerical success rate
SWPS University of Social Sciences and Humanities	16.035	24	23%
Poznan University of Technology	15.540	21	28%
Silesian University of Technology	14.769	22	13%
Medical University of Warsaw	14.538	17	20%
University of Lodz	14.028	38	22%
Medical University of Gdańsk	13.854	15	20%
Institute of Animal Reproduction and Food Research of Polish Academy of Sciences	13.417	10	43%
International Institute of Molecular and Cell Biology in Warsaw	13.403	5	63%
Lodz University of Technology	12.381	31	21%
Institute of Mathematics, Polish Academy of Sciences	10.920	11	65%
Poznań University of Life Sciences	10.813	17	21%
Nicolaus Copernicus Astronomical Centre of the Polish Academy of Sciences	10.397	11	46%
Mossakowski Medical Research Centre, Polish Academy of Sciences	10.184	10	33%

The breakdown presents the ranking list of the research organisations which in 2018 received funding in excess of PLN 10 million. As in previous years, its leaders are Jagiellonian University and the University of Warsaw, with 219 and 216 projects recommended for funding, respectively. In terms of funding, the leader is also Jagiellonian University, while the University of Warsaw is the runner-up in this category as well.

The success rate presented in the table, shows the ratio of proposals recommended for funding against the proposals submitted. Among

the 2018 beneficiaries who secured more than PLN 10 million in funding, the highest success rate was 65% – secured by the Institute of Mathematics, Polish Academy of Sciences (PAS). The second best result (63%) was achieved by the International Institute of Molecular and Cell Biology in Warsaw; third place belonged to the Nencki Institute of Experimental Biology, PAS with a success rate of 58%. The highest ranking universities were the University of Wrocław (37%), the University of Warsaw (34%) and the Jagiellonian University (31%).

PRINCIPAL INVESTIGATORS*

In 2018, proposal submitted by women made up 47% of all applications. They were marginally less successful in applying for funding than their male colleagues; the success rates for the two groups were 21% and 24% respectively. Of the projects awarded funding in 2018, ca 57% had a man as Principal Investigator, whereas women acted as Principal Investigators to 43% of the awarded projects.

The number of proposals submitted and recommended for funding in 2018 broken down by gender of the Principal Investigator:



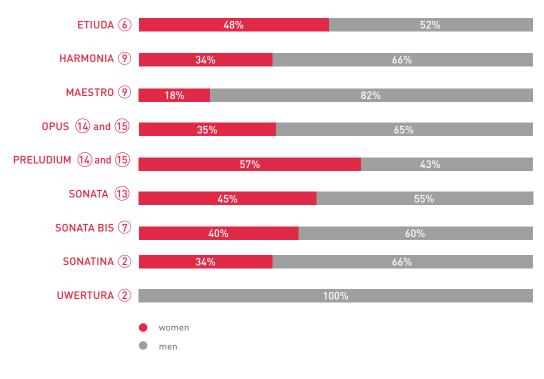
47% 53% 3,608 4,103 Proposals qualified for funding 1,753 43% 57% 760 993 women men

* Gender data based on the applicants' PESEL numbers. The data do not include the POLONEZ programme nor Principal Investigators without a PESEL (foreigners).

The largest percentage of women among the winners was recorded in the PRELUDIUM and ETIUDA calls. Women accounted for 57% of the winners in the two editions of the PRELUDIUM call and for 48% in the ETIUDA call, held in 2018.

The largest percentage of women for whom NCN approved grants was in the MAESTRO call. Out of 11 accepted proposals, women have been principal investigators in 2 projects.

Percentage proportion of men and women among winners of NCN calls held in 2018

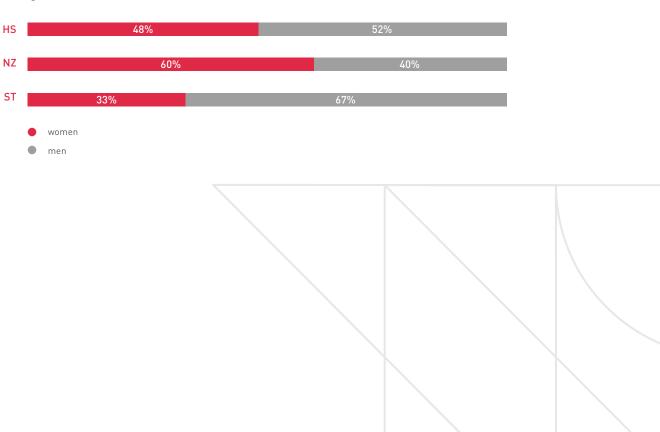


The average amount of awarded funding is PLN 0.58 million for projects whose principal investigators were women and PLN 0.71 million for projects whose principal investigators were men.

Reviewing women's scientific activities within the sectors of Arts, Humanities and Social Sciences (HS), Life Sciences (NZ) and Physical Sciences and Engineering (ST), the following was noted:

- the percentage share of women among the authors of proposals approved for funding was the highest in the NZ group, being 60%,
- similar to previous years, the smallest proportion of women was among winners of calls in the ST group – women were granted about 33% of the grants awarded in the group.

Percentage proportion of women and men in research domains among winners of NCN calls held in 2018



The most active age group in terms of submitted and approved proposals consists of applicants aged between 26 and 35. In NCN's calls held in 2018, 38.7% of submitted proposals and 44.7% of proposals approved for funding were placed by people in that age group.

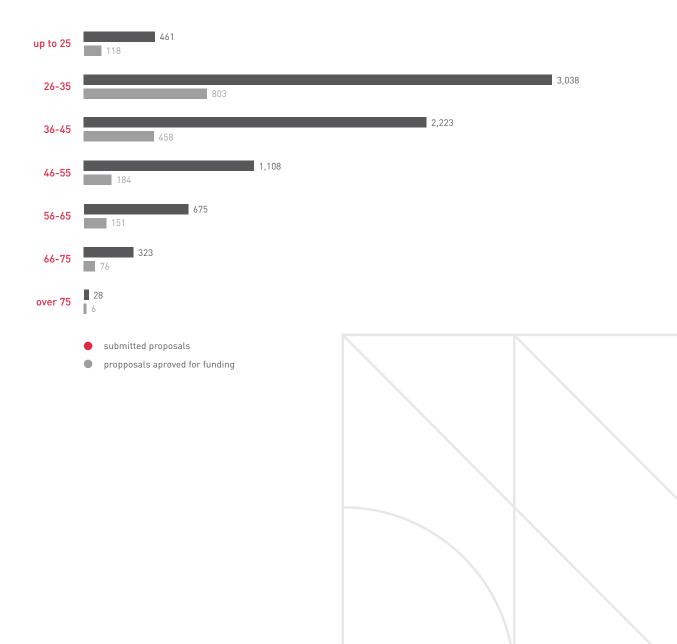
Among applicants and winners there were also people aged over 75 (0.4% among the submitted proposals and 0.3% among the proposals approved for funding).



Number of proposals submitted and approved for funding in 2018 split by applicants' age groups

Age of the applicant (age categories)	Number of proposals submitted	Percentage proportion of a given age category in the number of submitted proposals	Number of proposals approved for funding	Percentage proportion of a given age category in the number of proposals approved for funding
up to 25	461	5.9%	118	6.6%
26-35	3,038	38.7%	803	44.7%
36-45	2,223	28.3%	458	25.5%
46-55	1,108	14.1%	184	10.2%
56-65	675	8.6%	151	8.4%
66-75	323	4.1%	76	4.2%
over 75	28	0.4%	6	0.3%
Total	7,856	100%	1,796	100%

Number of proposals submitted and approved for funding in 2018 split by age groups of the proposal authors



YOUNG RESEARCHERS

We are very serious about supporting young researchers who have not yet earned their PhD or did so within the last 7 years. The PRELUDIUM, SONATINA, SONATA and ETIUDA, where they do not need to compete against more experienced researchers, are specifically designed for this group.

In the calls concluded in 2018:



of the overall amount disbursed on funding research projects under the calls concluded in 2018 constituted the amount allocated for the funding of projects, fellowships and scholarships by researchers at the outset of their career, under the PRELUDIUM, SONATINA, SONATA and ETIUDA schemes



of all proposals received were submitted by young researchers



of the proposals recommended for funding, the Principal Investigator was a young researcher

* Due to there being no data, the percentage estimates do not include the MINIATURA 2 call.

RESEARCH PROPOSALS AND PEER REVIEW

We are committed to funding the best science, and with this in mind, we subject the proposals to a two-stage peer review process. As recommended by the Council of the National Science Centre, evaluation of a proposal involves a balanced assessment of the research project itself and of the achievements of its Principal Investigator and research team.

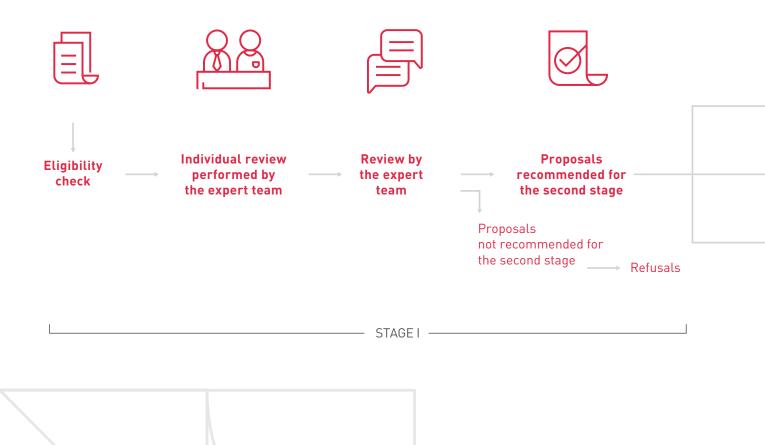
In order to select the very best proposals, the NCN employs an evaluation procedure based on a two-stage peer review procedure. The procedure starts with an admissibility and eligibility check performed by the NCN Coordinators which covers assessing the proposal for completeness and accuracy of submission. The projects are afterwards peer reviewed by members of the NCN Expert Teams (groups of experts selected by the NCN Council among distinguished academics appointed by the NCN Director for the purpose of proposal evaluation) and consists of two stages.

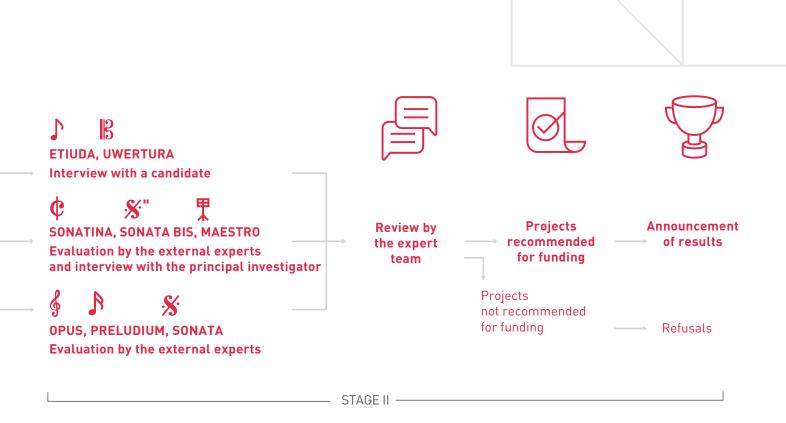
STAGE ONE – the members of the Expert Teams prepare individual assessments of the proposals. Their assessments are a starting point for discussion of the proposals during the first panel session. The decision to reject or approve a proposal for stage two is taken collectively by the team, preceded by a discussion. The Expert Teams prepare a shortlist of proposals to be sent to stage two of the evaluation.

STAGE TWO – may be conducted in one of three ways, depending on the type of call. Proposals submitted in the OPUS, PRELUDIUM and SONATA calls are evaluated by external, often foreign experts, whose reviews are later discussed by the expert team during the second panel session. External experts are nominated by NCN coordinators, based on the recommendations of team members. The second stage of the review process in the SONATINA, SONATA BIS and MAESTRO calls includes an interview. The same is true of the ETIUDA and UWERTURA calls. The ranking list of winners is approved by the expert team.

The procedure (scheme on p. 26–27) applies to most domestic calls from the NCN portfolio, with the exception of MINIATURA, which involves a simplified, one-stage review process. Proposals in international calls are assessed based on separate principles described in dedicated call documents.

PROPOSAL REVIEW SCHEME





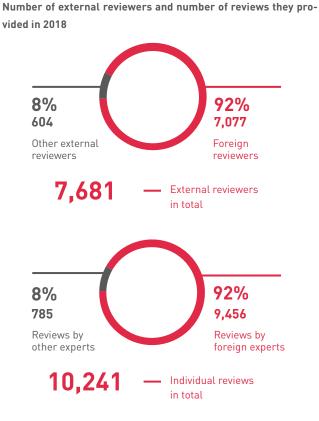
EXPERTS

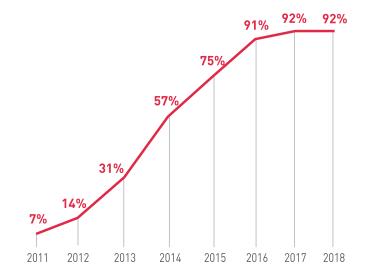
In 2018 as many as 1,359 reviewers were appointed, who assessed a total of 10,930 research proposals in the first stage of evaluation. Interdisciplinary Expert Teams are appointed from among experts representing all research domains (ST, HS and NZ), interdisciplinary – for a given research domain (ST, HS, NZ), whereas panel-specific – dedicated to specific thematic panels (panels: ST 1-10, HS 1-6, NZ 1-9). Each Team may review proposals in one or more calls of a given edition (the term edition refers collectively to all calls for proposals with the same deadline of submission). This means that for a thematic panel, one or more Expert Teams may be appointed. See the table below for more details.

Call publication	Number of Expert Teams	Reviewers in Expert Teams	Proposals reviewed
14 June 2017	 3 interdisciplinary teams for HARMONIA 3 interdisciplinary teams for MAESTRO 3 interdisciplinary teams for SONATA 3 interdisciplinary teams for SONATA BIS 	179	1,169
15 September 2017	32 panel-specific teams for OPUS, PRELUDIUM 3 interdisciplinary teams for DAINA	451	3,280
15 December 2017	 3 interdisciplinary teams for ETIUDA 3 interdisciplinary teams for SONATINA 1 interdisciplinary team for UWERTURA 	90	524
15 March 2018	32 panel-specific teams for OPUS, PRELUDIUM, including 2 teams for HS3, HS4, HS6, ST8, NZ7; 3 teams for ST8	401	2,884
17 April 2018	3 teams for MINIATURA	238	3,073
Total	89	1,359	10,930

In the second stage of peer review, 7,681 external reviewers evaluated 3,370 proposals. 92% of the external reviewers were experts from abroad, who performed 9,456 reviews, i.e. 92% of all reviews done.

Percentage of foreign reviews in the years 2011-2018





Source: NCN Coordinators, based on data from the ZSUN/OSF submission system.

EXTERNAL REVIEWERS IN 2018 BY COUNTRY OF AFFILIATION

26	Croatia
26	Slovenia
26	Taiwan
24	Estonia
24	Mexico
22	Bulgaria
21	Malaysia
19	Latvia
17	Chile
15	South Africa
11	Iran
11	Pakistan
10	Saudi Arabia
10	Egypt
10	United Arab Emirates
9	Luxembourg
	Cyprus
5	71
5 4	Thailand
	51
4	Thailand
4 3	Thailand Belarus
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Montenegro
Kenya
Columbia
Macedonia
Morocco
Peru
Tunisia
Svalbard and Jan Mayen Islands
Bolivia
Brunei
British Indian Ocean Territory
Ecuador
Ghana
Grenada
Yemen
Kazakhstan
Malta
Moldova
Monaco
Mongolia
Puerto Rico
Reunion
Uganda
Ethiopia

1,118 United States

Canada

Australia

Netherlands

India

China

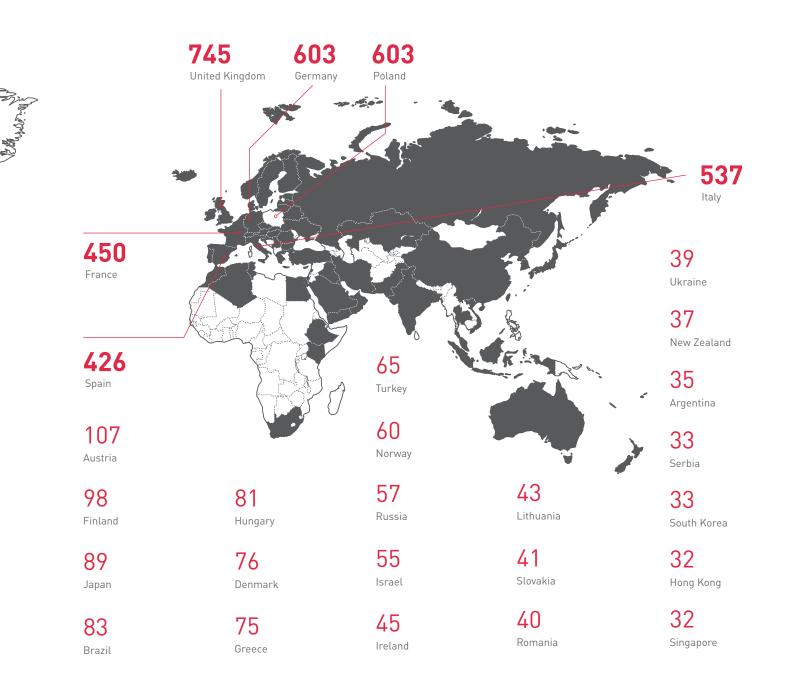
Czech Republic

Portugal

Sweden

Switzerland

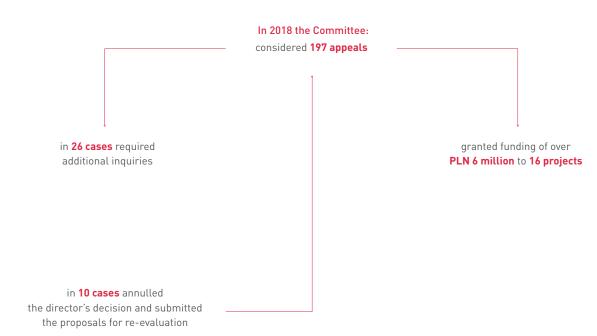
Belgium



NCN APPEAL COMMITTEE



Applicants (institutions or natural persons) may appeal against decisions of the director of the NCN which refuse funding within 14 days of the date of receiving the decision. The appeals are considered by the Appeal Committee, appointed by the Council of the NCN.



SUPERVISING THE RESEARCH

Our tasks include supervising the implementation of research projects, fellowships, scholarships and research activities and the disbursement of the awarded funding. This consists in evaluating interim, annual and final reports on the completion of research projects, on-site audits at grants' host institutions, and in the director's power to suspend or discontinue funding of an improperly implemented project. The procedure of evaluating and verifying the reports consists in examining the implementation of the project for formal and financial correctness, as well as the scientific evaluation of the project's results.

Reports on the projects' completion

In 2018 the NCN's expert reviewers evaluated:

- final reports on the implementation of domestic and international research projects without co-financing from form foreign funds taken over by the Centre from the Ministry of Science and Higher Education (MNiSW),
- interim, annual and final reports on the implementation of research projects granted funding under calls launched by the NCN.

Type of report	Number of evaluated reports
Interim report	3
Annual report – NCN calls	4,786
Final report – NCN calls	2,583
Final report – international projects without co-financing from form foreign funds	2
Final report submitted before 2018 – MNiSW projects	208
TOTAL	7,582

ON-SITE AUDITS

As another tool serving a supervisory function, the Centre may conduct on-site audits to verify the compliance of the project with the funding agreement. The audits are carried out by the Audit and Compliance Team in accordance with an annual audit plan. Our selection of the grants to be examined follows an analysis of risk factors involved in their implementation. Information on possible risks and alarming signals regarding the projects funded is collected and shared by the personnel of the Research Projects Administration Department, Finance and Accounting Department and NCN Coordinators.

The audit plan may, however, be extended to projects selected at random. Audits of such projects may be conducted in an ad-hoc manner. Normally we take this measure when a project is reported to be carried out inappropriately, and such audit is usually limited in scope. The auditing team always comprises an officer of the Audit and Compliance Team and, depending on the programme and scope of the audit, in addition to an officer of the Finance and Accounting Department and an NCN Coordinator.

According to the 2018 plan, the auditing procedure was initiated for 18 research projects funded under our calls and completed for 16 of them. Two audits will be continued in 2019. Furthermore, in 2018 we completed an audit of one project that had been started in the previous year pursuant to an annual plan of audits for 2017 and three ad hoc audits, not included in the plan for 2017, the implementation of which began towards the end of 2017. Additionally, the Audit and Compliance Team started four ad hoc audits of research projects not included in the plan of audits for 2018. One of them was completed during the period, while the other three will be continued in 2019.



INTERNATIONAL COOPERATION

In 2018 we announced 13 international calls: 9 under multilateral co-operation and 4 under bilateral co-operation. We expanded the offer of bilateral calls to include the SHENG call organised jointly with China, we changed the formula of the BEETHOVEN call, and announced, for the second time, the QuantERA and DIOSCURI calls. We also started co-operation with new partners from Austria and Switzerland.

Bilateral cooperation

We announce bilateral calls in co-operation with foreign agencies funding scientific research. Best research projects jointly prepared by Polish and foreign teams are selected pursuant to the rules agreed by co-operating agencies. Each of them provides funding to part of a research project carried out by a team from a given partner country.

SHENG

In 2018 we expanded bilateral co-operation beyond Europe, when on 15 June, we announced together with China the 1st edition of the SHENG call for Polish-Chinese research projects.

🔜 BEETHOVEN CLASSIC and 🗳 BEETHOVEN LIFE

Continuing co-operation with Germany's Deutsche Forschungsgemeinschaft (DFG), in September 2018 we announced the first BEETHOVEN LIFE 1 call focused on life sciences and the 3rd edition of a joint call for research projects within other areas (under the new name of BEETHOVEN CLASSIC). BEETHOVEN LIFE is the first NCN call based on a Lead Agency Procedure, which means that all Polish-German research projects are evaluated by a lead agency (DFG) pursuant to the rules it follows.

🖤 daina

In June 2018 we announced the results of the first DAINA call carried out jointly with the Research Council of Lithuania (RCL). We will jointly co-fund 16 Polish-Lithuanian research projects in all research domains. Polish teams will receive a total of close to PLN 15 million.

New initiatives in cooperation with Austria and Switzerland

The cooperation agreement concluded in April 2018 with the Austrian Science Fund (FWF) made it possible to announce the MOZART call for Polish-Austrian research projects in March 2019.

Pursuant to the agreement concluded with the Swiss National Science Foundation (SNSF) in November 2018, we will announce the ALPHORN call for Polish-Swiss projects in July 2019.

Partner agencies will be responsible for a merit-based evaluation of proposals under both calls.

😻 DIOSCURI

DIOSCURI is an initiative of the Max Planck Society (Max-Planck-Gesellschaft, MPG), the purpose of which is to set up Centres of Scientific Excellence in Poland under the direction of eminent scientist-leaders coming to Poland with the involvement and support of German research institutions. In October 2018, we announced the results of the 1st edition of the call under which two such Centres will be established in the Nencki Institute of Experimental Biology of the Polish Academy of Sciences (PAN). Funding of EUR 1.5 million will be provided for each of them for a period of five years by the German Federal Ministry of Education and Research (BMBF) and the Polish Ministry of Science and Higher Education (MNiSW).

In December 2018, the second call for the establishment of DIOSCURI Centres of Scientific Excellence was launched. A new additional requirement for candidates for PI's is international mobility in their past academic and research career and experience in independently carrying out innovative scientific research.

In December, we organised a meeting in Warsaw on cooperation between science and business, with the participation of POLONEZ grantees, winners of other NCN calls and guests from the Foundation for Polish Science and MSCAA.



Projects funded under the "Horizon 2020" EU Framework Programme for Research and Innovation:

CHIST-ERA III - grant agreement no. 768977; JPCOFUND2 - grant agreement no. 825664; JPI-EC-AMR - grant agreement no. 68105; M-ERA.NET 2 - grant agreement no. 685451; NORFACE Governance - grant agreement no. 822166; The QuantERA - grant agreement no. 731473; POLONEZ - grant agreement no. 665778.

Multilateral cooperation

Every year we also announce multilateral calls carried out jointly with foreign agencies funding research under international networks supporting specific research domains. Under programmes such as ERA-NET Cofund, the budget of calls includes domestic funds and those under the EU Framework Programme Horizon 2020. Other initiatives are financed solely with domestic funds from individual agencies.

International networks in which the NCN participates

Name	Number of organisations	Number of countries	Network supports:
BiodivERsA	35	23	research into environmental protection and sustainable management of biodiversity
CHIST-ERA	25	23	research in the scope of information and communication technologies
EqUIP	20	15 (Europe) + India	European-Indian collaboration in the scope of humanities and social sciences
ERA-CAPS	20	18	research into healthy, safe and sufficient food, plant-based products and sustainable agriculture, forestry and landscape
ForestValue	31	19	research in the scope of forest management; promoting increased inno- vation and competitiveness of the forest-based sector in Europe
HERA	26	25	research in the area of humanities responding to the social, cultural and political challenges of modern Europe
JPI AMR	29	27	research into Antimicrobial Resistance
JPI Urban Europe	25	18	interdisciplinary research projects that respond to the challenges of modern cities and urban areas
JPND	29	24	research aimed at identifying causes of neurodegenerative diseases, early detection of their symptoms and appropriate forms of therapy
M-ERA.NET	43	32	research in the area of material science and material engineering
NORFACE	25	19	research in the area of social sciences (until now devoted, among others, to migration, future of the well-fare state and social inequalities)
Solar-Driven Chemistry	5	5	research in the scope of photochemical processes in solar light

QuantERA (ERA-NET Cofund in Quantum Technologies) – international network co-ordinated by the NCN

QuantERA is the world's largest network of organisations funding science in the area of quantum technologies (32 organisations from 27 countries). It is the first initiative of ERA-NET Cofund in the history of European programmes co-ordinated by one of 13 new EU Member States. The National Science Centre has been awarded a grant of over EUR 11.5 million under the Horizon 2020 to implement it.

Owing to joint support provided by the European Union and membership organisations, QuantERA has so far funded 26 research projects in the area of quantum technologies, of which as many as 9 have engaged researchers from Poland. The launch of the projects selected under the QuantERA Call 2017 taking place in April 2018 in Bucharest was an opportunity for a meeting of co-ordinators of the projects funded, representatives of the agencies that are members of QuantERA, and representatives of scientific community and quantum industry circles.

In 2018 we announced the second call for international research projects covering five areas of research into quantum technologies. It is planned to be concluded in autumn 2019.

Since the launch of the programme, QuantERA has been actively supporting international co-operation in the field of quantum technologies, developing guidelines in the scope of responsible research, and also promoting actions that ensure increased participation of the widening countries in the European Research Area.



Calls announced under multilateral cooperation

Polish scientists in multilateral calls are awarded grants to carry out research projects in collaboration with a few foreign research teams. Institutions announcing a call will jointly evaluate proposals and then they will provide funding to teams from their countries. Such projects are distinguished not only by their high scientific level, but also by collaboration in international consortia which often paves the way for yet further joint projects.

Besides the programmes which were continued in 2018, there were two new initiatives in the area of photochemical processes in the solar light (Solar-Driven Chemistry call) and precision medicine in neurodegenerative diseases (JPcofuND 2 initiative).

Calls for proposals concluded in 2018	
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	Network	Subject	Projects co-financed by the NCN	Partner countries in projects with the participation of Polish researchers	
ARY	BiodivERsA	Scenarios of Biodiversity and Ecosystem Services	1	Denmark, Canada, Norway, United States of America	
INTERDISCIPLINARY	ForestValue	Transforming the global economy from a dependence on fossil and non-renewable raw materials to a sustainable "bio-based economy"	1	France, Germany, Slovenia	
	JPI Urban Europe – China	Sustainable and Liveable Cities and Urban Areas	1	Austria, China	
H	EQUIP	Sustainability, equity, wellbeing and cultural connections	1	Finland, India, Slovenia, Switzerland	
	HERA	Public spaces: culture and integration in Europe	4	Croatia, Denmark, Finland, Spain, Holland, Ireland, Germany, Slovenia, United Kingdom, Italy	
ZN	JPI-EC-AMR	Innovation against antibiotic-resistant bacteria: new targets, compounds and tools. Fundamental and trans- lational research, with the exception of clinical trials	1	Belgium, France, Spain	
ST	CHIST-ERA	Object recognition and manipulation by robots: Data sharing and experiment reproducibility; Big data and process modelling for smart industry	2	Greece, Spain, Romania, Turkey, Italy	
	M-ERA.NET 2	Integrated computational materials engineering; Innovative surfaces, coatings and interfaces for extreme conditions; High performance composites; Multifunc- tional materials; New strategies for health applications; Materials for additive manufacturing industry	2	Belgium, Estonia, Israel, Germany, United States of America	

outto	Network	Subject	Announce- ment	Pre- -proposal submission deadline	Full proposal submission deadline
INTERDISCI- PLINARY	BiodivERsA	Biodiversity and its influence on animal, human and plant health	October 2018	16 Novem- ber 2018	8 February 2019
HS	NORFACE	Democratic governance in a turbulent age	December 2018	19 February 2019	December 2018
ZN	JPI-EC-AMR	Diagnostics and surveillance of antimicrobial resistance: develop- ment of tools, technologies and methods for global use	December 2018	February 2019	June 2019
	JPcofuND 2	Multinational research projects on Personalised Medicine for Neurodegenerative Diseases	January 2019	12 March 2019	January 2019
ST	CHIST-ERA	Analog Computing for Artificial Intelligence; Smart Distribution of Computing in Dynamic Networks	October 2018	15 January 2019	May 2019
	QuantERA	Quantum communication, quantum simulation, quantum com- putation, quantum information sciences, quantum metrology sensing and imaging	November 2018	18 February 2019	
	Solar-Driven Chemistry	International call for applications Chemistry and Process Engineering	December 2018	13 February 2019	July 2019
	M-ERA.NET 2	Materials research and innovation	March 2019	June 2019	November 2019
	CHIST-ERA	Explainable Machine Learning-based Artificial Intelligence; Novel Computational Approaches for Environmental Sustainability	October 2019	January 2020	May 2020

Calls for proposals announced and forecasted

Multilateral cooperation based on the Lead Agency Procedure

We are constantly seeking new forms and directions of international co-operation. To this end, in 2018 with a group of a dozen or so European agencies associated in Science Europe, the NCN participated in intensive preparations to launch a scheme for joint funding of international research projects under the so-called Multilateral Lead Agency Procedure. The first key principle of the procedure is the use of domestic calls carried out by partner agencies to perform merit-based evaluation not only of domestic proposals, but also bilateral and multilateral ones, which compete with domestic ones on an equal footing. The second key principle is trust with respect to the quality of peer-review evaluation among the group of institutions undertaking such collaboration. Thus, projects involving two or more research groups from different countries, under various arrangements, depending on researchers' needs, will be evaluated in one institution only - a "lead agency", competent for one of the teams participating in a given project in the call that constitutes a permanent element of such agency's offer. Other grantors will immediately provide support for projects that have been recommended for funding on the basis of results of merit-based evaluation performed by the lead agency.

The most advanced work on joint funding of projects, while using the above scheme, was conducted throughout 2018 in a group of institutions, including FWF (Austria), GAČR (Czech Republic), ARRS (Slovenia) and the NCN, which established the Central European Science Partnership (CEUS). The agreement will be signed in 2019, and a joint multilateral call for grants has a chance of being launched as early as 2020.

POLONEZ call

In 2018, the Centre continued the POLONEZ programme which has been under way since 2015, the goal of which is to support mobility and the development of experienced scientists by providing them with the possibility of implementing research grants in Polish research institutes and non-university institutions. Development of winners' soft skills and their inter-sectoral activities is also a significant part of the programme. The NCN received EC funds for the programme in the amount of EUR 5.8 million (the total value of the programme is close to EUR 21 million).

In 2018, individual research projects were carried out in Polish research institutes by over 100 successful applicants from all around the world. In March, a training scheme was launched for them conducted in Warsaw by coaches from the UK's CRAC/Vitae from Cambridge, which will continue until the end of 2019.

The POLONEZ Fellows' Forum was held in June 2018 in Kraków. The event was attended by winners of all three editions of the POLONEZ call and also fellows' selected research partners, representatives of MSCA, other Polish agencies funding research (FNP, NCBR, NAWA) and the National Contact Point.

In December, we organised a meeting in Warsaw that primarily focused on issues concerning collaboration of science with business. It was attended not only by fellows of the POLONEZ programme, but also successful applicants of other NCN calls and guests from FNP and MSCAA.

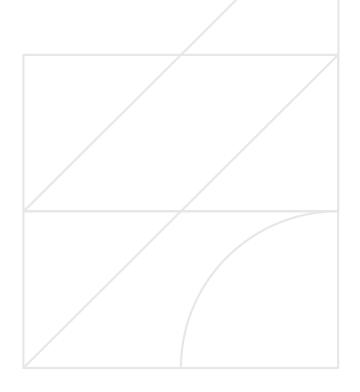
Funds of the European Economic Area and Norway Grants

In 2018, we continued work on the implementation of the Mechanism of the European Economic Area and the Norwegian Financial Mechanism 2014-2021 under the agreement signed in December 2017 between Poland and Iceland, Liechtenstein and Norway. In co-operation with the National Centre for Research and Development, the NCN became an operator of the *Research* programme for the implementation of which EUR 110 million was allocated. In 2018, a concept of the programme was developed which assumed the announcement of three calls funded under the EEA and Norway Grants:

IDEALAB call for interdisciplinary research projects that are a response to important social challenges and which are carried out in co-operation with teams from Norway, Iceland and Liechtenstein,

GRIEG call for research projects carried out by Polish-Norwegian teams,

POLS call for research projects by scientists arriving from abroad and willing to carry out their research in Poland.



PROMOTING OUR WORK

An important section of our efforts is oriented towards disseminating information on our funding opportunities in the research community. In 2018 we worked on that objective through a number of actions at home and abroad. We spread the news of the announced and concluded calls and initiatives joined by the Centre both online and by means of traditional media; we organised and actively participated in a variety of initiatives for improving the publicity reach of science.

The NCN Open Days 2018

In 2018, we organised the Open Days of the National Science Centre for the 6th time. This time, the event was held on 9-10 May in Gdańsk, and we prepared it in collaboration with the Gdańsk University of Technology, University of Gdańsk and the Medical University of Gdańsk. During the NCN Open Days, the following events were held: a press conference, an opening meeting and a Council meeting. In the course of the workshops, researchers could learn how to prepare a good proposal, while administrative staff gained knowledge on providing administrative support to projects funded from NCN funds. An information meeting on EEA funds and the Norway Grants and ERC Grants was also an important item on the agenda of the 2018 NCN Open Days.



NCN 2018 Award

On 10 October 2018, for the sixth time, the Centre named the laureates of its award for young researchers, conferred in three categories: Arts, Humanities and Social Sciences (HS), Life Sciences (NZ) and Physical Sciences and Engineering (ST). Each laureate received PLN 50,000 in recognition of their special research achievements. The award has been established to promote young researchers and advance the science done in Poland. The initiative of the NCN Award seeks cooperation with entrepreneurs who are not indifferent to the question of the growth of science in Poland, and who see that an innovative economy begins with innovative steps in basic research.

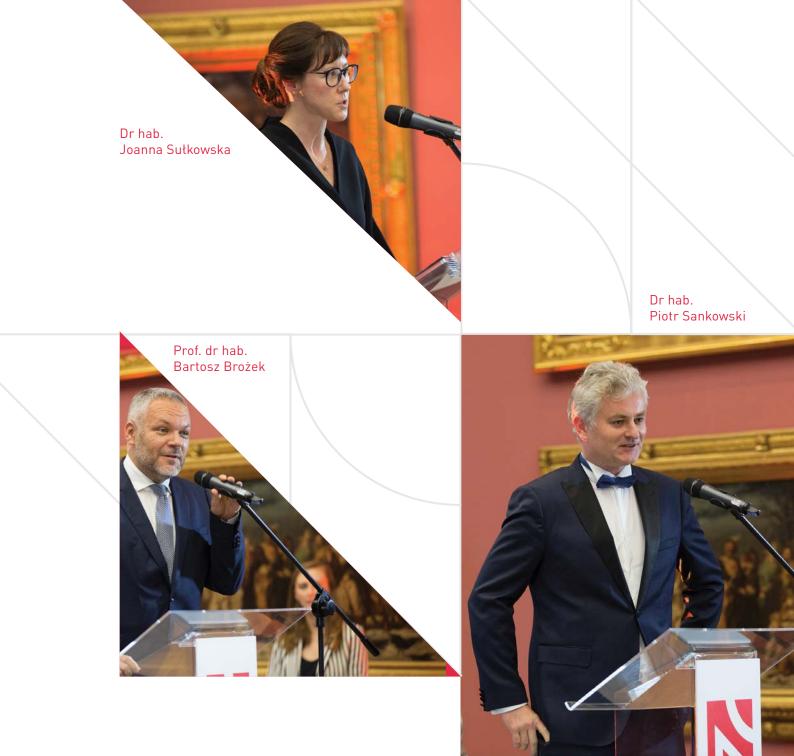
In the field of Arts, Humanities and Social Sciences, the 2018 Award was granted to Prof. Bartosz Brożek of the Faculty of Law and Administration of the Jagiellonian University, for developing an innovative concept of normativity, applicable in law and other normative systems, based on philosophical reasoning and the achievements of cognitive and evolutionary sciences. In the domain of Life Sciences, the Award was conferred on Dr hab. Joanna Sułkowska of the Centre of New Technologies and the Faculty of Chemistry at the University of Warsaw. Her nomination for the Award came in recognition of pushing the boundaries of medical knowledge to develop new drugs – research into the structure and dynamics of proteins with non-trivial topologies. The third laureate, awarded in the field of Physical Sciences and Engineering, was Dr hab. Piotr Sankowski of Institute of Informatics at the University of Warsaw.

Dr hab. Sankowski received the 2018 Award for fundamental results in the area of graph algorithms, especially finding associations in graphs.

The award gala took place on 10 October 2018 at the Gallery of 19th-century Polish Art, the Sukiennice (a branch of the National Museum). Some 200 guests were invited to the ceremony, including a representative of the Ministry of Science and Higher Education, local authorities, the research community and entrepreneurs. The gala was hosted by Grażyna Torbicka. The businesses that funded the award in 2017 were: Jastrzębska Spółka Węglowa, Grupa Adamed and Fundacja KGHM Polska Miedź.

Funders of the NCN Award 2018





Grand opening of the new offices of the National Science Centre and presentation of nominations to new NCN Council members

On 17 December, a grand opening of the new offices of the National Science Centre at ul. Twardowskiego 16 was held in Kraków and attended by Jarosław Gowin, Deputy Prime Minister and Minister of Science and Higher Education. The opening of the NCN's new offices was accompanied by a gala event where nominations were presented to new members of the NCN Council who will act in that capacity in 2018-2022. We bade farewell to the members leaving the Council who, during their years in office, were concerned that the NCN could operate at the highest level possible. The Minister of Science and Higher Education replaced them by appointing twelve outstanding Polish researchers. The gala event was attended by around 150 persons, including representatives of local authorities and scientific community.

Informing the public about the NCN

The mainstay of our public communication is our website (www.ncn. gov.pl), featuring comprehensive information on programmes and all key data concerning the Centre and our activities. The service has its Polish and English version, with data presented in several sections, organised for easy access to content dedicated to applicants, principal investigators and reviewers alike. We also publish additional information, such as: call statistics, job offers, results of analyses, descriptions of projects funded by the NCN and of actions in cooperation with foreign and international bodies, a newsroom compiling materials on the Centre published in the media. On our website we publish, as PDF files, all directives of the Council of the NCN, reports, lists and other documents. In 2018, the number of the website's views reached 1.2 million. We updated the NCN project database (https://projekty.ncn.gov.pl) and added information about publications created as a result of project implementation Information on publications resulting from NCN-funded projects.

On the Centre's Facebook profile, we posted information on the calls and actions of the NCN, information on research projects and scientific news from Poland and abroad. In 2018, the NCN profile had 9,948 followers (fans), which meant that 1,326 were added against the 2017 December figure. We published 126 posts during the year. We also continued running our profile on YouTube where we placed promotional videos and coverage stories. Furthermore, in 2018 we set up an NCN profile on Instagram that is used to

publish photographs. There were 21 photographs published on that profile during the year that related to activities pursued by the NCN, presenting researchers carrying out research funded by the NCN and documenting events organised by the NCN. Apart from actively promoting our work in cyberspace, we printed official publications: brochures and flyer-postcards, the *Annual report 2017* summarising the Centre's activity in 2017, and *Call Statistics 2017* presenting data on numbers of proposals submitted and recommended for funding, broken down by research domains and types of NCN calls. All publications, except *Call Statistics 2017*, were issued in a Polish and an English version.

We made a series of films documenting the activities of the National Science Centre. During the NCN Open Days, we made a documentary on the event, while the gala of the 2017 NCN Award also had a film devoted to it and three videos presenting the laureates' profiles.

NCN in the media

Representatives of the Centre were interviewed by the press, television and radio, and they spoke of the goals and mission of the NCN and the opportunities of funding it provides. They also encouraged researchers to submit their ideas under calls for proposals. We, for our part, sent 23 different press releases. In 2018, the media saw 1,693 contributions dealing with the Centre's activities or referencing it, including 207 posts on social media.

BUDGET

Our budget in 2018 amounted to PLN 1.34 billion including PLN 1.23 billion of specific grant for funding research projects. A specific grant for management and operations amounted to PLN 37 million. We disbursed 99% of the funds received in the specific grant for funding research projects. In covering the costs of management and operations of the Centre, we used 83% of the aid received to that end.



RESEARCH STORIES



Photo by Michał Łepecki. The photo shoot was organized at Fotoplastikon Warszawski, branch of the Warsaw Uprising Museum.

Beginnings of popular culture in Poland from the perspective of transmediality

Principal Investigator:

Dr hab. Mirosław Filiciak, SWPS University of Social Sciences and Humanities

Project title:

History of popular culture in Poland in the first half of the 20th century from the perspective of transmediality

Funding scheme:

SONATA BIS 2, announced on 15 September 2012

Panel: HS 2 The last three decades around the world have brought a number of new monographs devoted to the cultural dimension of early cinema, the high-circulation illustrated press published at the turn of the 19th and the 20th centuries, the phenomenon of department stores, suspense novels, the urban iconosphere and entertainment parks. Not only do they allow us to study the history of mass media, but they also show the cultural dimension of modernization. In Poland, however, new approaches to pre-1989 Polish popular culture have been few and far between, which means that researchers tend to rely on the history of popular culture in Western Europe and the US. However, it is difficult to describe its development in our country without the use of local materials and a theoretical reflection that would take into account the local context.

The purpose of the research project entitled "History of popular culture in Poland in the first half of the 20th century from the perspective of transmediality" was to collect and make available a variety of materials pertinent to the popular culture of the first half of the 20th century, to develop an approach based on contemporary research methodology, but also to revive the Polish tradition of cultural studies and their reflection on popular culture. The project adopted a transmedial perspective, which allowed light to be shed on the relationships between content circulated in different media and placed the pop culture of the period in the context of broader civilizational changes. This entailed a shift away from traditional, trite conceptualizations based on a dichotomy between the high- and the low-brow, which are focused on a narrow section of popular culture that could be subsumed under the scope of traditional disciplines (such as literature or film studies) and study culture in isolation from other areas of social reality. The new perspective also allowed for comparative studies analysing the well-described cultures of other regions of Europe.

The project was conducted by the SWPS University in partnership with researchers from the University of Łódź and the University of Warsaw, and in cooperation with Centrum Cyfrowe. The research team consisted of Dr Hab. Mirosław Filiciak (principal investigator) and Dr Łukasz Biskupski from the SWPS University, Dr Justyna Jaworska and Dr Piotr

Morawski from the University of Warsaw, and Dr Piotr Olkusz, Dr Michał Pabiś-Orzeszyna, Dr Monika Wąsik, and Mgr Monika Rawska from the University of Łódź.

The project included an international workshop entitled "Transmediality in Modern Popular Culture", organized during the NECS – European Network for Cinema and Media Studies 2015 conference. A symposium has also been held dedicated to the "POP-PL Popular Culture in Poland before 1939". Presentations delivered at these events by Polish and foreign experts were published in two issues of "Kultura popularna", an open-access quarterly devoted to cultural studies. Alongside the official project website, the SWPS University launched a number of open online archives hosted on its servers: a "Paper bandits" database, containing a bibliography of Polish pulp fiction published before WWII, a database with scans of all the issues of the "Organ" (an art bimonthly published in the Polish territory between 1910 and 1915), as well as a "Silver Screen" database of sources devoted to the film culture of the interwar period in Poland. Three books were published: a monograph by Łukasz Biskupski, entitled "Kinofilia zaangażowana. Stowarzyszenie miłośników filmu artystycznego "Start" i upowszechnianie kultury filmowej w latach 30 XX w.", a collection "Papierowi bandyci. Wypisy z polskojęzycznych powieści obiegu brukowego do 1939 r." ed. Łukasz Biskupski and Monika Rawska, and an anthology of primary sources, "Teatry dla masowej publiczności" ed. Piotr Olkusz and Monika Wasik. We also handed out awards for the best MA and BA theses devoted to Polish popular culture in the interwar period.

Dr hab. Mirosław Filiciak, prof. SWPS

Cultural scholar, Dean of the Faculty of Social Sciences and Humanities at the SWPS University. His research interests include relations between media and cultural practices, cultural studies theory and media archaeology. He has coordinated numerous research projects, such as "Młodzi i media", "Tajni kulturalni", and "Obiegi kultury". He is the author of the following books: "Wirtualny plac zabaw. Gry sieciowe i przemiany kultury współczesnej" (2006), "Media, wersja beta" (2014), and together with Alek Tarkowski, "Dwa zero. Alfabet nowej kultury inne teksty" (2015).



Photo by Michał Łepecki. The photo was taken at the Art Department of the Lubomirski Princes Museum of the Ossolineum in Wrocław

Johann Christoph Liska's forgotten artworks

Principal Investigator:

Dr Emilia Kłoda, University of Wrocław

Project title:

Johann Christoph Liska's forgotten artworks. The conservator's examination of the Baroque paintings

Funding scheme:

PRELUDIUM 9, announced on 16 March 2015

Panel: HS 2 The project was conducted between 2016 and 2017 at the Institute of Art History of the University of Wrocław. Its primary objective was to study paintings attributed to Johann Christoph Liska (c. 1650–1712). This outstanding Silesian painter learned painting at the workshop of his stepfather, Michael Leopold Willmann, and continued his education in Italy, where he stayed for several years. Upon his return, he worked in what is now the Czech Republic and Silesia, mainly on commissions from the Catholic Church. After Willmann's death, he took over his workshop at the monastery in Lubiąż and completed his commissions. Even though Liska is now recognized as a remarkable painter, no monograph and no systematic catalogue of his works are available. This project has been an important step toward a better understanding of the painter and his oeuvre.

The project focused on seven paintings selected from different stages of Liska's oeuvre, most of which are either unknown or considered mediocre copies of works that have not survived. Four paintings (St. Joseph, St. Mary of Egypt, St. Charles Borromeo and Lamentation of Christ) come from the Czech territory and were commissioned by the Czech monastic circles at the turn of the 17th and the 18th centuries. Three Silesian paintings (Lamentation of Christ, Finding of the Holy Cross and Angel) date back to 1708-1712 when Liska was in charge of Willmann's workshop. The first step was to carry out art historical research into the works of art and their history from creation until now. Subsequently, conservators from Kraków (Marcin Ciba) and Prague (Denisa Cirmaciová) used infrared, ultraviolet and X-ray radiation to analyse the chemical composition and the layer structure of the paintings.

This international cooperation allowed the most important features of Liska's painting technique to be described and his authorship of most of the analysed artworks to be verified. The findings confirmed that the works are similar in terms of the layering of paint and preparation of the underpainting. The differences in the choice of pigments among paintings may mean that the painter worked in two separate workshops: one in Silesia and one in Bohemia. Particularly interesting among the analysed paintings is The Lamentation of Christ from the Church of St. Martin in Tursko near Prague. A radical restoration that involved the replacement of one of the four panels that formed the underpainting is a fascinating example of the changes that the work underwent after creation. The project enabled us to identify a major difference between the painting techniques of Liska and his master Willmann. None of the analysed paintings by Lischka showed any traces of preparatory drawing, which is always found on the canvases of the Lubiąż master. It seems that using infrared light to analyse paintings for the presence of sketches could become the most objective tool for distinguishing the works of Willmann from those of his stepson.

Our findings are an important contribution to the "technical art history" current in contemporary research. The interdisciplinary nature of the project allowed the results to be brought up for discussion among art historians and conservators from Poland and Czech Republic, in an important step toward a more effective protection of our shared cultural heritage. The findings were presented at an international conference in Kutna Hora in November 2017 and published in Czech (Sborník z konference "Arte-fakt") and English (Wiadomości Konserwatorskie). In addition, thanks to the project, a decision was taken to ensure the conservation of Angel from Henryków, and safeguard the deteriorated Lamentation of Christ from Tursko.

Dr Emilia Kłoda

Graduated in art history from the University of Wrocław. In 2017, she defended a PhD dissertation "Johann Christoph Liska – Life and Oeuvre (c. 1650–1712)". Since 2018, she has worked at the Art Department of the Lubomirski Princes Museum at the Ossolineum. She has worked on numerous research projects, e.g. "Wirtualne Muzeum Barokowych Fresków" (2013), whose effects may be admired at www.wirtualnefreski.pl, "Malarstwo Barokowe na Śląsku" (2012–2016) and international digital humanities project "Monuments and Artworks in East Central Europe Research Infrastructure", coordinated by the Herder Institute in Marburg (2016–2017). She has published in Polish and foreign journals ("Biuletyn Historii Sztuki", "Umění" "Journal of Art Historiography"). Her MA thesis on the Baroque painter Jeremias Joseph Knechtel was published as a catalogue for an exhibition organized at Muzeum Miedzi in Legnica.



Photo by Michał Łepecki.

Assessment of eye lens exposure to X-ray radiation in medical staff

Principal Investigator:

Marcin Brodecki, MSc, Nofer Institute of Occupational Medicine

Project title:

Eye lens exposure to X-ray radiation of medical staff as a risk factor for radiation cataract induction

Funding scheme:

PRELUDIUM 5, announced on 15 March 2013

Panel: NZ 7 The eye lens is one of the most radiosensitive tissues in the human body. Excessive exposure to ionizing radiation may induce an acute radiation effect in the form of radiation cataract. In order to minimize these adverse health effects, the value of the annual dose limit established by the International Commission on Radiological Protection (ICRP) has been reduced 150-fold (from 300mSv to 20mSv) over the 35 years since relevant legal regulations were first introduced by the organization. Along with the reduction of the absorbed dose down to the level of 0.5Gy, at which radiation effects are still observed in the eye, the situation has required the development of new dosimetric methods in the field. In accordance with the latest literature reports, dose limit reduction is particularly important, e.g., for staff in procedure rooms, where dose limits may be often exceeded. Because of the nature of X-ray procedures, radiation exposure is determined by many different factors and the risk posed to eye lenses is difficult to assess accurately and fraught with uncertainty.

The purpose of the research project was to reliably assess radiation doses and mechanisms behind high eye lens radiation exposure in staff employed at hemodynamic labs and to correlate these findings with data on annual dose limits associated with the induction of radiation cataract. The analysis of radiation exposure has a considerable impact on the development of individual eve lens dosimetry for the most frequent procedures in radiology and interventional cardiology. The project identified the most important parameters that affect the level of radiation exposure, i.e. the patient size (source of dispersion), the X-ray beam quality, the type of angiographic projection, and the use of personal protection measures (e.g. lead glasses). For example, we were able to obtain the full dosimetric description of radiation spectra emitted from angiographic and intraoperative X-ray machines, and also data on conversion coefficients (Sv/Gy) for operational values *Hp*(3), which are of key importance for correct eye dosimetry. Data obtained by studying the distribution of radiation fields in the vicinity of the eye, taking into account the presence of lead glasses, is extremely

valuable from the point of view of the future design and protective properties. Clinical and phantom measurements conducted in the framework of the project also allowed us to identify the places where dosimeters should be placed in order to reliably assess eye lens exposure. Doses anywhere between 0.01 and 1.20mSv were detected during a single medical procedure, which, considering their large annual number (more than 500), means that the 20mSv dose limit and the accumulated dose representing the cataract induction threshold may be significantly exceeded.

Marcin Brodecki, MSc

Graduated in experimental physics from the Faculty of Physics and Applied Informatics of the University of Łódź (2007), and went on to complete postgraduate studies in medical physics at the Medical University of Łódź, earning the title of specialist awarded by the Medical Examinations Centre (2015). He is currently working on his a doctoral thesis in the Department of Radiological Protection at the Institute of Occupational Medicine in Łódź, where he has headed the Secondary Standard Dosimetric Laboratory since 2013. His research interests centre on issues of radiological protection and the development of methods for detecting radiation in medical applications.



Photo by Michał Łepecki.

Towards the light

Principal Investigator:

Dr Anna Tracewska, Polish Centre for Technology Development

Project title:

Towards the light: unravelling the genetic basis of hereditary retinal diseases in Poland

Funding scheme:

SONATA 10, announced on 15 September 2015 Panel: NZ 2

"I suffer from retinal degeneration. What are my treatment options? Can its progression be stopped? I hear that the disease is hereditary; what is the risk that my child will also get it?" Similar questions abound on social media, online discussion forums and support groups for the blind and the visually impaired. The psychological burden associated with eye disorders, especially degenerative diseases, is enormous. At the moment, unfortunately, Polish ophthalmology has little to offer to such patients. In practice, because of the prohibitive cost of current methods in Poland, individuals with degenerative retinal diseases have no access to genetic testing. In addition, available tests are based on genetic mutations identified in Western populations, which probably do not match the exact genetic profile of Polish patients. Many gene therapies for hereditary retinal diseases (such as Leber's congenital amaurosis (LCA) or Stargardt disease) are being tested in clinical trials around the world, and many more are in the animal testing phase. In order to access these programmes, however, patients need to show evidence of mutation in the specific gene studied in the trial.

Since more than 120 different genes thus far have been associated with (non-syndromic) hereditary retinal diseases, traditional diagnostic approaches are no longer suitable for detecting mutations in all genes. In recent years, a new detection method has revolutionised the diagnostics of hereditary disorders around the world. Known as next-generation sequencing, the technique makes it possible to identify the causative mutation in a given patient owing to the simultaneous analysis of many genes. The research project in question has employed this technology to build a genetic profile of Polish patients suffering from degenerative retinal diseases and to determine the incidence of detected mutations in the Polish population. Statistically, approximately 20% of the patients suffer from retinal diseases whose genetic basis is still unknown. Whenever a causative gene mutation is not found in a given patient, we will look for new genes involved in the disease. The findings of the research project will contribute to the development of an effective and inexpensive diagnostic plan in the future.

Dr Anna Tracewska

Head of the DNA Analysis Lab at the Polish Centre for Technology Development (formerly the Wrocław Research Centre EIT+) since September 2015. In 2008, she completed a PhD programme at the Medical University of Gdańsk under the supervision of Prof. Janusz Limon; her dissertation concerned the genetics of myeloproliferative disorders. In 2010, owing to upheavals in personal life, she started another PhD programme in Nijmegen, the Netherlands, under the supervision of Prof. Frans Cremers and Dr Rob Collin, where she focused on the genetic basis of hereditary retinal disorders. She earned her second doctorate, this time in ophthalmic genetics, in 2014. She has published scientific articles under her maiden name, Siemiatkowska, and her married name, Tracewska-Siemiatkowska; to this day, she has authored and co-authored a total of 24 publications, achieving the h-index of 10. Anna Tracewska has received funding for four projects, the last of which is entitled "Towards the light: unravelling the genetic basis of hereditary retinal diseases in Poland" and aims to determine the genetic profile of patients with genetic retinal diseases, with a view to lowering the diagnostic costs of these disorders in Poland.

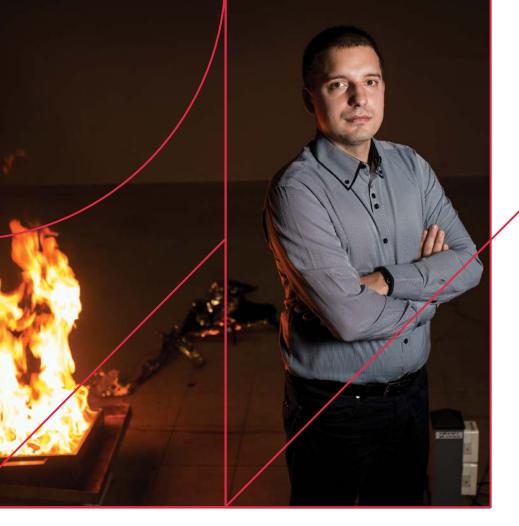


Photo by Michał Łepecki

The fire safety of buildings

Principal Investigator:

Dr inż. Michał Malendowski, Poznan University of Technology

Project title:

Performance-based fire engineering for civil engineering structural design

Funding scheme:

ETIUDA 4, announced on 15 December 2015

Panel: ST 8

The research project investigated structural fire safety in building. The investigation based on an originally-developed integrated computing system that employs fire simulation results to analyse the thermo-mechanical response of the structure. The computing system has been designed to support structural designers in important design decisions.

The cognitive value of the research project resides in its comprehensive view of fire phenomena. Fire safety was assessed based on simulations that relied on three coupled physical models: hydrodynamic, heat flow and structural mechanics. It is contrary to the traditional approach, in which fire safety assessments do not consider the actual impact of the fire, but instead relies on standardized relationship between fire gas temperature and time.

A main part of an integrated computing system is the heat flow model that coupled fire simulations and thermo-mechanical response analyses. The validity of the model was verified experimentally. Both numerical and experimental tests adopted an innovative approach to describing thermal impacts, which relied on the concept of adiabatic surface temperature. An analytical solution to the adiabatic surface thermal equilibrium equation allowed to determine the boundary conditions in thermal analysis and facilitated the correlation of experimental data with the theoretical model.

Applying the newly-developed computing system to the analysis of the mechanical response of an actual building allows to consider a number of physical phenomena that directly affect its condition and cause structural deformations, but which are not taken into account in the traditional approach. This helped boost the cognitive potential of the project and allowed for a more complete analysis, which in turn makes it possible to carry out more accurate safety level assessments.

Dr inż. Michał Malendowski

He graduated from the Faculty of Civil Environmental Engineering of the Poznan University of Technology, where he works as an assistant in the Department of Civil Construction since 2011. He has completed four international research fellowships: at the University of Tampere (Finland), the University of Sheffield (Great Britain), the Technical Research Centre of Finland (VTT), and the R&D Department of Weidlinger Associates, Inc., a New York-based consulting company. The three-month stay in Sheffield was financed within the framework of the ETI-UDA 4 funding scheme. Malendowski's research interests centre on the issues of structural fire safety of buildings. His research aims to include a comprehensive assessment of fire safety, based on the incorporation of physical models in integrated computing systems. He has presented his findings at several dozen, mainly international, conferences. He is an author or co-author of 21 scientific publications, including papers published in indexed journals.



fot. Michał Łepecki

Linguistic descriptors in facial recognition

Principal Investigator:

Dr Paweł Karczmarek, John Paul II Catholic University of Lublin

Project title:

Linguistic descriptors in facial recognition

Funding scheme:

SONATA 7, announced on 17 March 2014

Panel: ST 6 Photo-based facial recognition systems currently attract the attention of researchers all around the world. Their wide appeal no doubt has to do with their multiple applications, as they can be used, e.g. in security systems (for access control), the search for missing or wanted persons, as well as border control. Their development has intensified over the past two decades thanks to the ever wider availability of IT technologies, the ubiquity of surveillance cameras, increased computing power and improvements in data analysis methods, which allow the amount of information processed in digital images to be reduced.

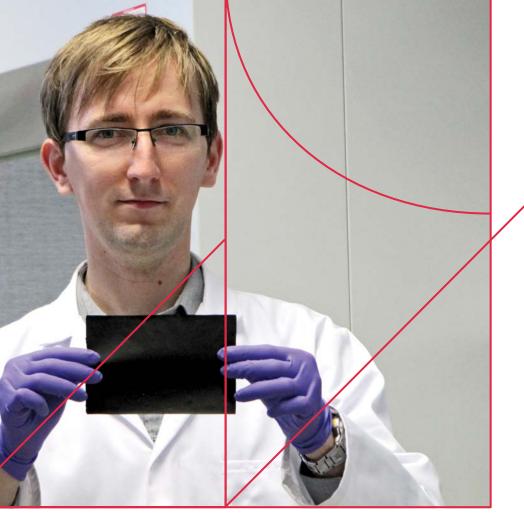
The purpose of the project was to study and develop innovative and original applications of granular computing methods to the biometric classification of people based on digital face images, with a special emphasis on linguistic modelling and linguistic descriptors, as well as local descriptors (Chain Code-Based Local Descriptors). Facial recognition requires highly complex computer techniques, as it needs to take into account a variety of factors that considerably affect the appearance of the human face, such as, to name but a few, the aging process, various natural and unnatural changes in the facial skeleton, face positioning, facial expressions, lighting, covered up parts, and even something as trivial as photo quality. Available recognition methods usually prove quite effective, but, unfortunately, only under nearly ideal test conditions, i.e. when tested with the use of photos gleaned from publicly available databases, in which all faces are lit in a similar way and successive shots of a given person are taken within a short time span. In this context, the research team proposed a theoretical study and implementation of new and original face classification algorithms, based on innovative granular computing methods and enriched with expert knowledge and psychological research on the importance of specific face parts in facial recognition in humans. This additional reliance on human cognitive processes in automatic face recognition was a crucial aspect of the project.

The main outcomes of the project include:

- an effective local descriptor: Chain Code-Based Local Descriptor,
- methods for weighting the importance of individual face parts in the recognition process and describing traits used in classification process with linguistic descriptors and the tools of decision theory, such as AHP,
- a method for setting the optimal function parameters to aggregate the results of classifiers built for different face parts and based on different classification methods,
- an analysis of the effectiveness of different aggregation functions, including the Choquet integral and its generalizations, in the classification process,
- a proposal of graphical interfaces for selected decision theory tools.

Dr Paweł Karczmarek

Graduated in mathematics (with a specialization in informatics) from the John Paul II Catholic University of Lublin in 2005, and between 2005 and 2018, worked at the Department of Mathematics and Informatics of his home institution. In 2010, he defended a PhD in mathematics at the University of Gdańsk and went on to complete a postdoc fellowship at the University of Alberta (2011-2012). He is currently employed as Assistant Professor at the Institute of Computer Science of the Lublin University of Technology. He has authored 36 scientific publications and his research interests include facial recognition, machine learning, soft computing, Granular Computing, decision-making theory and numerical methods.



The wonderland of carbon nanomaterials

Principal Investigator:

Dr hab. inż. Dawid Janas, Silesian University of Technology

Project title:

Fundamentals of electrical properties of chirality-defined carbon nanotube macroassemblies

Funding scheme:

POLONEZ 1, announced on 15 September 2015

Panel: ST 5

The rapid advancement of civilization today involves a quest for new materials that can keep pace with our rising expectations, offering ever new functions or dramatically improving the properties we have already come to take for granted. At the end of the 20th century, the advent of nanotechnology opened a new chapter in science, allowing us to believe we would soon be able to create new solutions to meet these stringent criteria and improve the world as we know it.

A special role in this process is played by carbon nanomaterials, whose rich chemistry allows us to build structures of various shapes, and, as a consequence, radically different properties. Some of the most promising carbon varieties include the so-called carbon nanotubes, which can be pictured as rolled-up layers of carbon commonly known as graphene. The manner in which these layers are rolled up predetermines the nature (metallic or semi-conducting) of the resulting carbon nanotubes. If the carbon atoms are arranged in a certain way, the material will serve as a much better conductor than copper or aluminium (metallic nanotubes) or even compete with silicon as an electronic component (semi-conducting nanotubes).

Unfortunately, the synthesis process produces 30-50 different kinds of carbon nanotubes; these are all uniformly mixed together, creating a black powder with rather unsatisfactory properties. Because of very subtle structural differences between individual carbon nanotubes, whose diameter is 100,000 times smaller than that of the human hair, the challenge of separating these mixtures into individual fractions is one of the main barriers to their implementation in everyday life.

The research project in question has allowed a simple, single-step technique of separating carbon nanotubes into types to be designed, based on the aqueous two-phase extraction method, which has served to purify biological materials since the 19th century. The technique relies on commonly available polymers, surface active agents and chemical compounds (ammonia or hydrazine), which are able, at well-adjusted concentrations, to select for the desired type of carbon nanotubes with great precision (down to the 0.1nm). Importantly, the process does not

require any complex chemical equipment or specialised know-how, which means that the proposed, simple method will allow researchers in various disciplines to conduct in-depth research and thus improve our understanding of the nanoworld.

It is worth noting that chemical purification technologies often represent one of the key process costs. Keeping in mind that the aqueous twophase extraction system was originally designed for use with bioactive compounds, often employed in pharmaceutical processes, the improved efficiency can be expected, in the long run, to help reduce the price of specialised drugs and other fine chemicals.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 665778.

Dr hab. inż. Dawid Janas, prof. PŚ

Graduate of the Faculty of Chemistry at the Silesian University of Technology. Between 2010 and 2016, he worked at the University of Cambridge in Great Britain, where he earned his PhD (2014) and completed a postdoctoral fellowship. In 2016, he was awarded a grant within the POLONEZ funding scheme, which allowed him returning to Poland and embark on independent research into the chemistry of nanomaterials. His current research interests cover material engineering, chemistry and applied physics, with a special emphasis on the use of carbon nanostructures and other low-dimensional materials. In 2018, he completed his habilitation and set up a research team, known as the Functional Nanomaterials Group. He has authored more than 45 scientific publications and coordinated various projects funded by the National Science Centre (NCN), the National Centre for Research and Development (NCBiR), the Ministry of Science and Higher Education (MNiSW) and the Polish National Agency for Academic Exchange (NAWA). He has also held a scholarship for outstanding young researchers.

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