

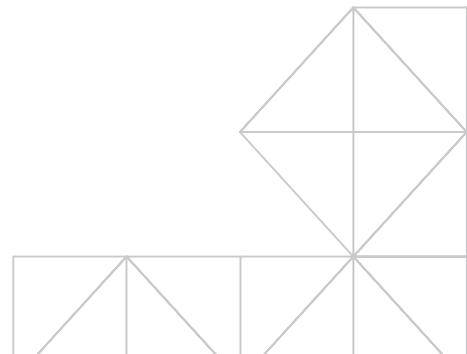
ANNUAL REPORT

2014

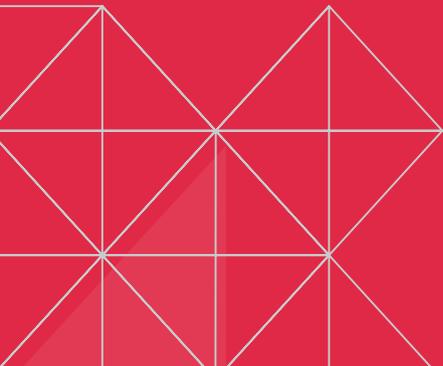


NATIONAL SCIENCE CENTRE
POLAND

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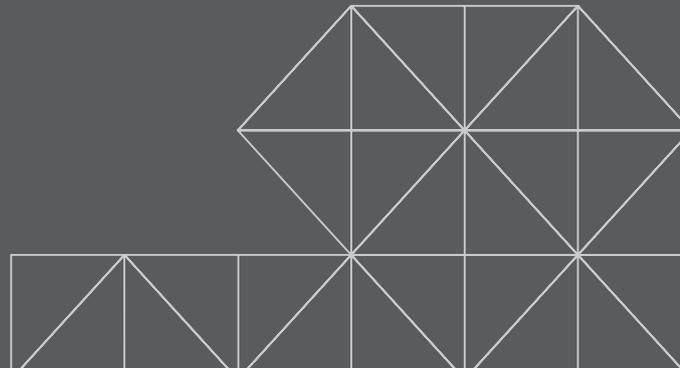
BASIC
RESEARCH
**IS THE ESSENCE
OF ALL SCIENCE**



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ABOUT THE NCN



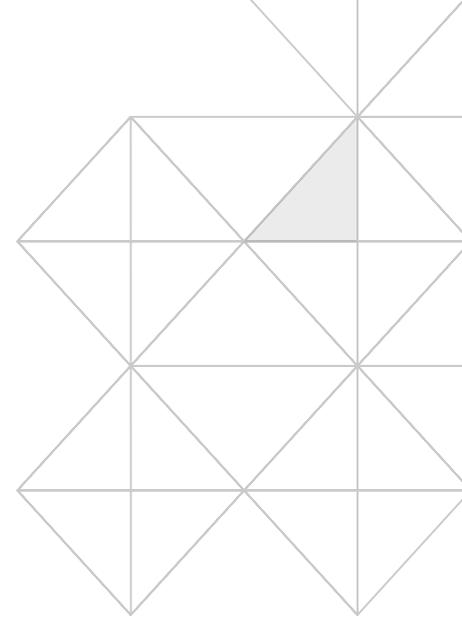
General information about the NCN

The National Science Centre is an executive agency which funds basic research conducted in host institutions in Poland. Basic research is experimental or theoretical endeavours undertaken to gain new knowledge of the foundations of phenomena and observable facts.

The Centre regularly publishes calls for proposals for research projects, fellowships and post doctoral internships. Each researcher, regardless of their age, expertise, degree and field of study, will find a scheme that matches their needs among the NCN's calls.

The high quality of projects selected for funding is ensured by a two-stage, peer review-based procedure of proposal evaluation which takes into account both the value of the research idea and the applicant's research achievements. The Centre also monitors the progress of research projects financed under its funding schemes through the review and examination of annual project reports and on-site visits to research centres which carry out the projects.

Moreover, the NCN fosters international cooperation, provides inspiration and monitors basic research funding from non-state sources, as well as disseminates information on calls for proposals among researchers.



MISSION

Improving the quality of research in Poland by means of a competition-based system of funding opportunities, thereby furthering the advancement of Polish research throughout the world.

OBJECTIVES

- Financing the best projects in the area of basic research.
- Supporting researchers at the outset of their career.
- Supporting researchers wanting to establish new research teams, including interdisciplinary endeavours capable of competing on the global stage.
- Creating new employment opportunities in research projects.
- Engaging in international cooperation in research.

YEAR HIGHLIGHTS

2014

19 FEBRUARY

Memorandum of understanding between the NCN and DFG

The National Science Centre has signed a memorandum of understanding with the German Research Foundation (Deutsche Forschungsgemeinschaft, DFG) in order to organise a joint Polish-German call for research projects in the field of Arts, Humanities and Social Sciences.

8-9 APRIL

NCN Open Days

Lublin hosted the second NCN Open Days. Every year the event is organised in a different academic centre in order to offer researchers an opportunity to meet with NCN employees, ask questions about the NCN calls for proposals and project support, as well as contribute to a wide debate on the research funding system in Poland.

20 MAY

Science Europe General Assembly

Krakow held a General Assembly of Science Europe – an association of over 50 organisations and research institutions which either fund or conduct research in Europe, including the NCN.

10 JUNE

TANGO results

The NCN published the results of the first stage of the TANGO call which is intended for projects striving to implement basic research results in economic and social practice. The call was organised jointly by the NCN and the National Centre for Research and Development (NCBR).

12 SEPTEMBER

First edition of BEETHOVEN

The first edition of the BEETHOVEN call for proposals, organised jointly with the German Research Foundation (DFG), was launched. The call provides funding for Polish-German teams pursuing research in the field of Arts, Humanities and Social Sciences.

9 NOVEMBER

NCN Award

The 2014 NCN Award recognises outstanding academic achievements in basic research. The projects have to be carried out within a Polish research centre and achievements should be endorsed by publications affiliated in a Polish research centre as well. Professors Janusz Bujnicki, Michał Horodecki and Marcin Miłkowski were 2014 NCN Award laureates.

2014 was a year of refining call procedures and reinforcing the standing of the NCN on the international stage.

The NCN entered into cooperation with the German Research Foundation (DFG) which finances research projects across all fields of research. The outcome of this cooperation was the launch of the first joint BEETHOVEN call for proposals in September. The scheme provides funding for Polish-German research projects in the field of Arts, Humanities and Social Sciences. Thanks to this initiative, researchers working on both sides of the Oder have been given an opportunity to foster cooperation with their close neighbours.

On the NCN's initiative, a working session of the General Assembly of Science Europe took place in Krakow where a new SE President was elected. It was the first meeting since the founding of the organisation that hadn't been held in Brussels. In recognition of the NCN's role, its Director was elected a member of the Governing Board of Science Europe in November 2014.

The NCN Council strives for regulation of rules governing research funding provided by the NCN. In 2014 the Council worked on changes in establishing remuneration in NCN grants which would give Principal Investigators more flexibility on remuneration-based decisions. The Council also developed new rules on budgets in NCN projects, as well as reduced the number of formal requirements necessary to apply for NCN funding.

The NCN Director

The National Science Centre is managed by a director selected by the NCN Council in an open competition process. The NCN Director is appointed by the Minister of Science and Higher Education. In 2014 this position was held by professor Andrzej Jajszczyk. Since March 2015 the role has been taken over by professor Zbigniew Błocki. The Director acts as NCN's representative, oversees the completion of NCN tasks and its financial management. The Director is authorised to act as an independent legal representative on behalf of NCN.

The NCN Director appointed two deputies: Justyna Woźniakowska (since June 2011) and dr Tomasz Bzukała (since September 2014).

The NCN Council

The National Science Centre Council consists of distinguished researchers representing different academic fields. The Council sets out priority basic research areas that match the Polish state development strategy, specifies call regulations, allocates funding, publishes calls for doctoral scholarships and post-doctoral internships. The Council also selects members of the Expert Teams who are responsible for research proposal evaluations.

Since December 2014 the Council is composed of new members appointed by the Minister of Science and Higher Education following an open recruitment process. The role of the Chair of the NCN Council has once again been granted to professor Michał Karoński who was elected for this position during the first session of the new term of the NCN Council.

NCN COUNCIL IN 2014

prof. Michał Karoński – CHAIR



ARTS, HUMANITIES AND SOCIAL SCIENCES

prof. Maciej Grochowski
prof. Janina Józwiak
prof. Ireneusz Kamiński
prof. Małgorzata Kossowska
prof. Teresa Malecka
prof. Wojciech Nowakowski
rev. prof. Andrzej Szostek
prof. Wojciech Tygielski



PHYSICAL SCIENCES AND ENGINEERING

prof. Zbigniew Błocki (until 3 March 2015)
prof. Bożena Czerny (until 15 December 2014)
prof. Elżbieta Frąckowiak
prof. Janusz Janeczek
prof. Henryk Kozłowski
prof. Michał Malinowski
prof. Andrzej Sobolewski (from 16 December 2014)
prof. Jacek Tejchman-Konarzewski
prof. Marek Żukowski



LIFE SCIENCES

prof. Jerzy Chudek (from 16 December 2014)
prof. Jakub Gołąb (until 15 December 2014)
prof. Artur Jarmołowski (from 16 December 2014)
prof. Krzysztof Józwiak
prof. Sergiusz Józwiak
prof. Leszek Kaczmarek
prof. Jan Kotwica (from 16 December 2014)
prof. Tomasz Motyl (until 15 December 2014)
prof. Krzysztof Nowak
prof. Adam Torbicki (until 15 December 2014)
prof. Maciej Wołowicz

The NCN office

The NCN office handles the administrative and financial affairs of the National Science Centre. It consists of several departments and teams responsible for day-to-day processing of calls for proposals and organising meetings of the Expert Teams. Employees who deal with the administrative and financial processing of projects are the first point of contact for applicants and grantees. Moreover, the office manages grant agreements for execution and financing of research projects, oversees projects in progress, disseminates information on calls organised by the NCN, as well as initiates international cooperation on research funding.

The NCN Coordinators

Coordinators work within a specific area of study and are responsible for organising the work of Expert Teams, as well as conducting calls for research proposals.

They ensure that calls are handled in an appropriate, impartial and reliable manner. Coordinators must hold at least a doctoral degree and are selected via an open competition. They work in the National Science Centre in three teams: Arts, Humanities and Social Sciences; Physical Sciences and Engineering; Life Sciences.

Coordinators are also responsible for the dissemination of information on calls among academia, formal analysis of complex applications and evaluation of the reliability and impartiality of the peer review process. Coordinators also cooperate with the NCN Council on current research policy.

NCN COUNCIL

DIRECTOR

DEPUTY DIRECTOR

DEPUTY DIRECTOR

**COORDINATORS FOR ARTS,
HUMANITIES AND SOCIAL
SCIENCES**

**COORDINATORS FOR
PHYSICAL SCIENCES
AND ENGINEERING**

**COORDINATORS
FOR LIFE SCIENCES**

**RESEARCH PROJECTS
ADMINISTRATION
DEPARTMENT**

Art, Humanities and Social
Sciences

Physical Sciences
and Engineering

Life Sciences

Experts' Documentation
Handling Team

**EUROPEAN FUNDS
DEPARTMENT**

**INTERNATIONAL
COOPERATION TEAM**

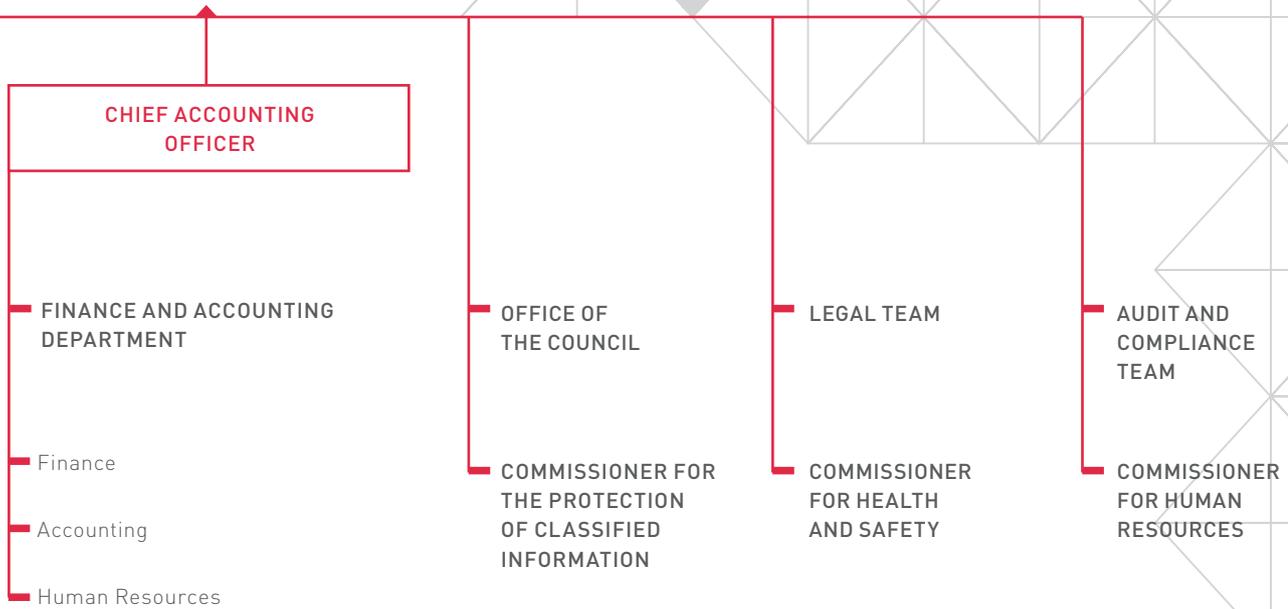
**PROGRAMME ANALYSIS
AND EVALUATION**

**COMPETITION AND STATE
AID OFFICER**

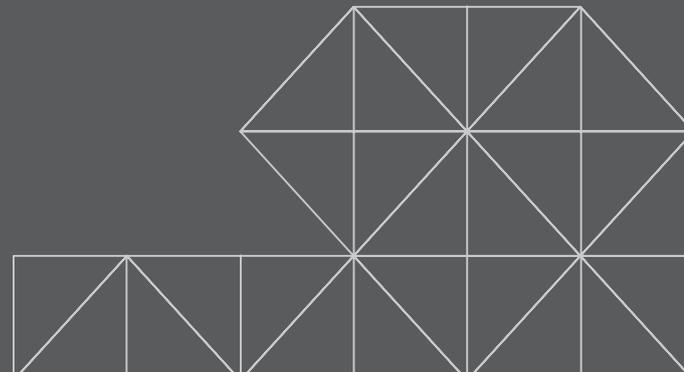
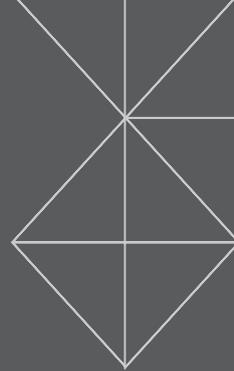
**ADMINISTRATION
DEPARTMENT**

IT TEAM

NCN Structure



EXECUTION OF NCN TASKS IN 2014



NCN in numbers

12



CALLS ANNOUNCED

3



INTERNATIONAL
CALLS ANNOUNCED

13



CONCLUDED CALLS*

1,804



PROJECTS AWARDED
FUNDING

180M



CA. € 180 M
ALLOCATED FOR
RESEARCH PROJECTS

16%**



SUCCESS RATE

* including 1st stage of TANGO

** percentage of proposals that were awarded funding

NCN CALLS

PRE-DOCTORAL RESEARCHERS

PRELUDIUM

researchers without doctorate
(academic affiliation not required)

ETIUDA

PhD candidates with a commenced
registration and conferment
procedure for a doctoral degree

POST-DOC RESEARCHERS

SONATA

emerging researchers with up to
5 years since the award of PhD

SONATA BIS

researchers with a PhD obtained
between 2 and 12 years prior to
submitting the proposal

FUGA

researchers with a PhD
obtained within 5 years prior
to submitting the proposal

ADVANCED RESEARCHERS

TANGO

researchers wanting to apply the
results of basic research

MAESTRO

advanced researchers conducting
pioneering research

SYMFONIA

eminent researchers running
cross-domain projects

OPEN TO ALL RESEARCHERS IRRESPECTIVE OF THEIR RESEARCH EXPERIENCE

OPUS

a wide range of researchers at every
stage of their research career

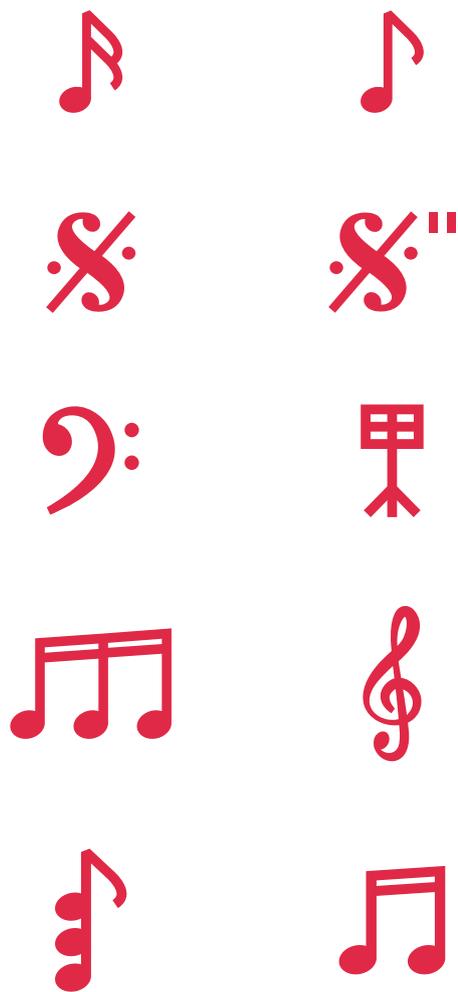
HARMONIA

researchers wanting to carry out
projects in international cooperation

NCN Calls

The National Science Centre finances basic research carried out in the form of research projects, PhD scholarships and postdoctoral internships. Calls are announced every three months. The NCN offers ten funding schemes which take into account the varied needs of academia ranging from researchers at the outset of their career to the most prominent academics. Furthermore, the NCN, in cooperation with foreign partners, jointly announces international calls such as BEETHOVEN published with the German Research Foundation (DFG). The best research proposals are awarded funding whose Principal Investigators and team members possess the necessary research experience as well as facilities required to carry out the project.

In 2014, the NCN developed a new POLONEZ funding scheme aimed at researchers coming from abroad and wanting to do research in Poland. The programme received funding within the Marie Skłodowska-Curie Actions COFUND scheme and the first call for proposals will be launched in autumn 2015. Research projects in every discipline of research defined in the National Science Centre panels are eligible for funding.



OPUS

Research proposals submitted under this funding scheme may include the purchase or construction of necessary research equipment. It is intended for a wide range of applicants, irrespective of their research experience. Projects are carried out individually by a Principal Investigator or a research team composed of a Principal Investigator and any number of researchers.

SONATA

Targeted at emerging researchers with a doctoral degree. This funding opportunity hopes to support Principal Investigators to embark on an innovative basic research project using modern research facilities and/or methodology. Researchers within five years of the award of their doctoral degree are eligible to apply.

SONATA BIS

This funding scheme gives researchers the incentive to build a new research team run by academics with a doctoral degree or academic title within two to twelve years since their PhD award. This scheme is primarily addressed to associate professors and professors. SONATA BIS supports the creation of teams which conduct the most innovative research projects.

PRELUDIUM

Aimed at pre-doctoral researchers starting their career in research. Projects carried out within the PRELUDIUM scheme last from one to three years and are executed with the assistance of a supervisor. Research financed under this scheme does not have to be related to the applicant's PhD dissertation.

MAESTRO

Designed for advanced researchers wanting to conduct pioneering research, including interdisciplinary research important for the development of science. Projects within this funding scheme should surpass the current state of knowledge, lead to the creation of new paradigms, or forge pathways to new frontiers in the field. Researchers with at least a doctoral degree, at least five publications in renowned academic journals in the past ten years and those who have managed to complete at least two research projects selected through a call for proposals procedure are eligible to apply.

HARMONIA

Aimed at applicants wanting to carry out international projects which are not co-financed from foreign sources. Research proposals may include projects conducted directly in cooperation with foreign partners as part of international programmes and initiatives or using large-scale international research infrastructure. The purchase of research equipment is not allowed under this scheme.

TANGO

Open to projects that plan to put into economic and social application the results of basic research showing significant innovative potential. Eligible to apply are Principal Investigators or investigators in projects in basic research awarded funding under national or international calls, or researchers who have acted as main researchers/supervisors/scientific tutors upon the consent of the Principal Investigator. TANGO is a joint initiative of the National Science Centre and the National Centre for Research and Development (NCBR), designed to support research institutions and universities in commercialising their research output such as innovative technologies, products and services and foster cooperation between academia and industry.

SYMFONIA

Funding opportunity for cross-domain research projects targeted at outstanding academics whose work is of the highest quality and boldly go beyond current frontiers of knowledge and open new perspectives in research. Projects submitted under this funding scheme are expected to carry out basic research in collaboration with teams or individual partners. Proposals aiming to make progress in more than one discipline and not only tap into the achievements of one discipline will be given preference.

ETIUDA

This funding opportunity is addressed to doctoral candidates. Awardees receive a scholarship covering the time needed to prepare their PhD dissertation, i.e. from six to twelve months. They should also plan a research stay abroad lasting from three to six months which will be funded solely by the NCN. The awardee is obliged to obtain their doctoral degree within twelve months of completing the scholarship, but not earlier than six months since the commencement of the funding.

FUGA

This postdoctoral research opportunity is targeted at individuals at the outset of their academic careers who are within five years of the award of their PhDs or who will have been awarded one by the end of June of the given year. The scheme hopes to facilitate mobility of Polish researchers between different institutions in Poland and encourage the exchange of scientific ideas. The scholarship is financed by the NCN and needs to be conducted outside the region where they have been employed or have actually worked in the last two years and, at the same time, outside the province of the researcher's home institution.

NCN Panels

NZ – LIFE SCIENCES



- 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** Applied life sciences and biotechnology

HS – ARTS, HUMANITIES AND SOCIAL SCIENCES



- HS1** Fundamental questions of human existence and the nature of reality
- HS2** Cultures and cultural production
- HS3** The study of the human past
- HS4** Individuals, institutions, markets
- HS5** Law, political studies, regional and social policies
- HS6** Human nature and human society

ST – PHYSICAL SCIENCES AND ENGINEERING

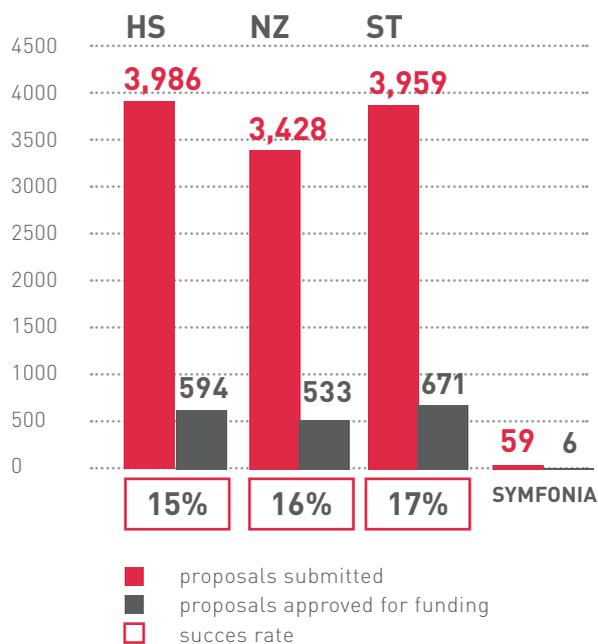


- ST1** Mathematics
- ST2** Fundamental constituents of matter
- ST3** Condensed matter physics
- ST4** Physical and analytical chemical sciences
- ST5** Materials and synthesis
- ST6** Computer science and informatics
- ST7** System and telecommunication engineering
- ST8** Products and processes engineering
- ST9** Astronomy and space research
- ST10** Earth system sciences

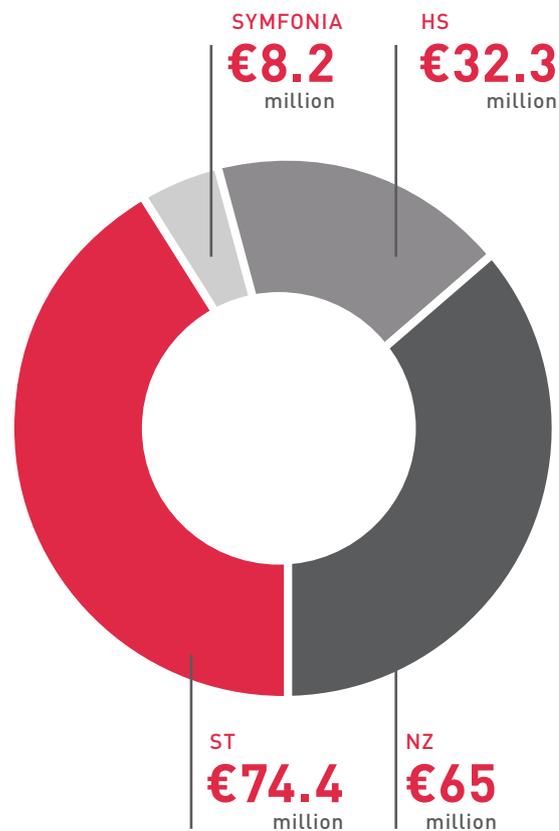
Funding of research projects, fellowships and scholarships

Under the calls concluded in 2014, excluding TANGO, 11,432 applications were submitted totalling ca. € 1.16 billion, out of which 1,804 were awarded funding ca. € 180 million.

Chart: Number of proposals submitted and grants awarded* in calls concluded in 2014 by research domain, including success rate**



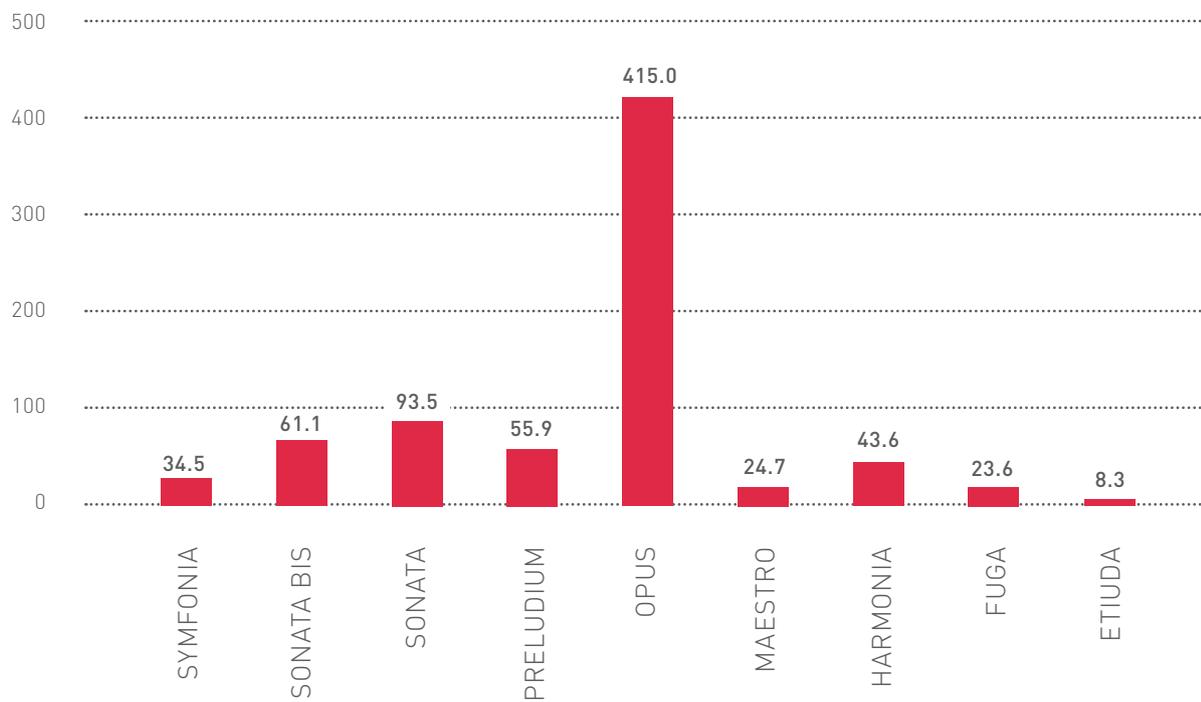
Resources awarded under funding schemes concluded in 2014, by research area*



* Data does not include the TANGO funding scheme.

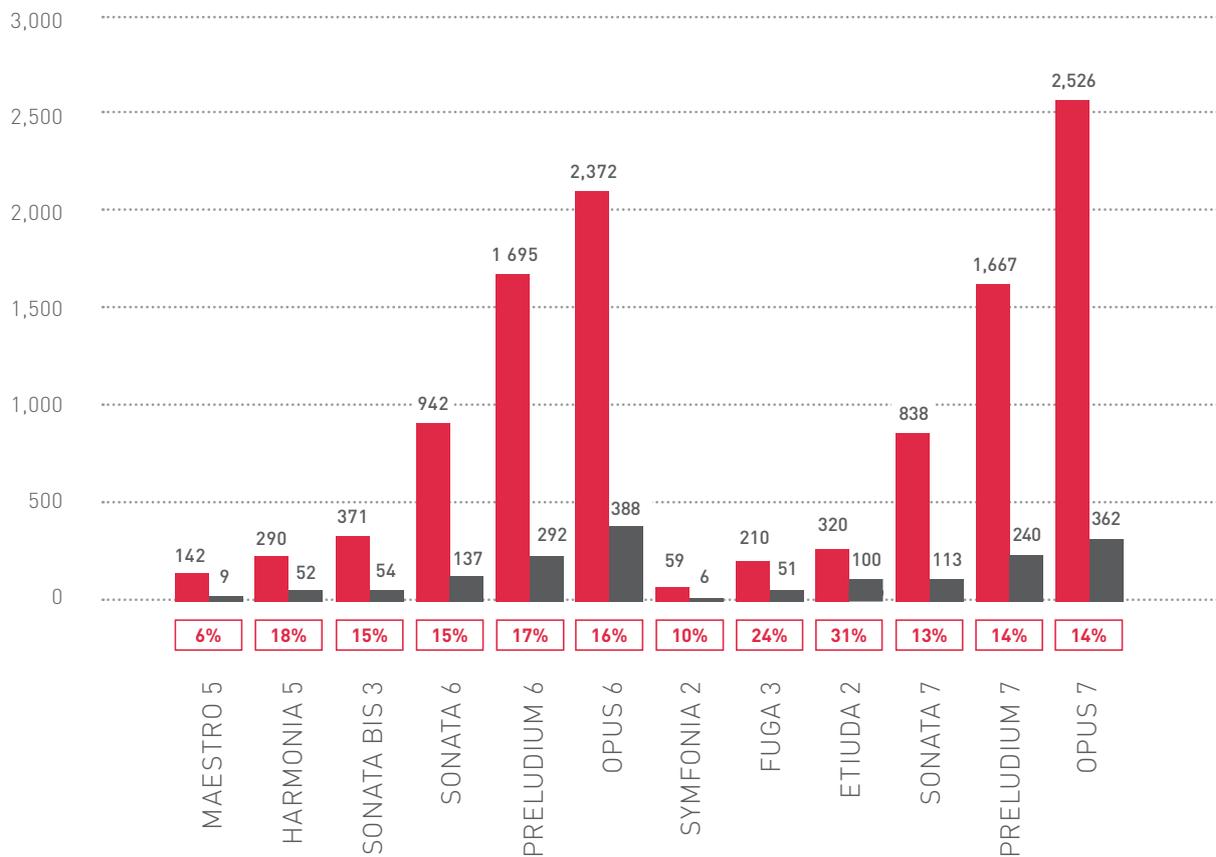
** Success rate is the percentage of proposals that were awarded funding; it is calculated as the ratio of the number of proposals awarded to the number of proposals submitted.

Resources awarded under funding schemes concluded in 2014, by call type



Number of proposals submitted and grants awarded in calls concluded in 2014, by call type, including success rate*

■ number of proposals submitted
 ■ grants awarded
 □ success rate



*Success rate is the percentage of proposals that were awarded funding; it is calculated as the ratio of the number of proposals awarded to the number of proposals submitted.

Best performing Polish Host Institutions

Host Institution	Total funding (€)	No. of grants	No. of proposals submitted	Success rate*
Jagiellonian University in Kraków	18,906,617	190	927	20%
University of Warsaw	16,692,631	202	789	26%
Adam Mickiewicz University in Poznań	10,443,679	104	614	17%
University of Wrocław	6,600,164	73	328	22%
Wrocław University of Technology	5,931,284	46	251	18%
AGH University of Science and Technology	4,671,303	48	297	16%
Warsaw University of Technology	4,266,357	44	275	16%
Institute of Organic Chemistry, Polish Academy of Sciences	3,532,837	18	27	67%
University of Lodz	3,521,876	46	279	16%
Institute of Bioorganic Chemistry, Polish Academy of Sciences	3,383,716	11	41	27%
Medical University of Warsaw	3,373,118	24	154	16%
Nicolaus Copernicus University	3,270,666	49	300	16%
The University of Gdańsk	3,221,404	37	261	14%
Institute of Biochemistry and Biophysics, Polish Academy of Sciences	2,977,081	21	81	26%
Institute of Pharmacology, Polish Academy of Sciences	2,976,477	19	43	44%
The International Institute of Molecular and Cell Biology	2,788,430	6	14	43%
Nencki Institute of Experimental Biology, Polish Academy of Sciences	2,697,563	20	82	24%
Silesian University of Technology	2,571,908	22	251	9%

Best performing Polish Host Institutions

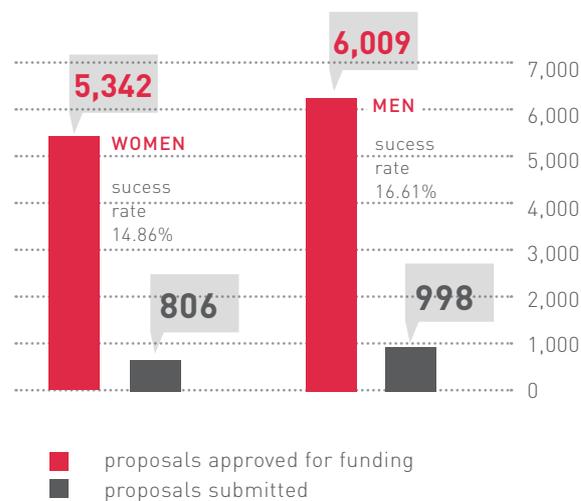
Above is the 2014 ranking list of host institutions awarded funding over € 2.37 million. The indisputable leaders are the University of Warsaw with 202 proposals that were awarded funding and Jagiellonian University in Kraków with 190 projects. Taking into account the amount of funding awarded Jagiellonian University in Kraków tops the list. Adam Mickiewicz University in Poznań ranks third among top beneficiaries with 104 grants followed by the University of Wrocław with 73. Nicolaus Copernicus University in Toruń with 49 grants comes next followed by AGH University of Science and Technology in sixth place (48 grants) and the University of Łódź ranked jointly seventh with Wrocław University of Technology (46 grants each).

The success rate presented in the table signifies the ratio of projects that qualified for funding compared to the projects submitted. Among the beneficiaries who were awarded more than € 2.37 million, the best success rate was as high as 67% and was recorded by the Institute of Organic Chemistry, Polish Academy of Sciences. The second highest success rate (44%) was enjoyed by the Institute of Pharmacology, Polish Academy of Sciences followed by the International Institute of Molecular and Cell Biology with a 43% success rate. Among universities, the University of Warsaw came first with 26% of proposals being awarded funding followed by the University of Wrocław and Jagiellonian University in Kraków scoring 26% and 20% respectively.

NCN grantees

In 2014, proposals submitted by women accounted for 46% of the total. The success rate was slightly lower among women than men and amounted to 14.86% and 16.61% respectively. Of the projects approved for funding, 55% had male and 45% – female Principal Investigators.

Share of female and male Principal Investigators in proposals submitted



Early Career Researchers

High on the list of NCN duties is to support the growth of researchers at the pre-doctoral and doctoral level. The NCN earmarks no less than 20% of its overall funding for this purpose. In line with the legal act on science funding, young researchers are defined as beneficiaries below 35 years of age. Half of all proposals awarded funding were granted to young researchers.



24%

of the overall funding grant under NCN calls concluded in 2014 was allocated to research projects, internships and scholarships of young researchers



48%

of all proposals were submitted by young researchers below 35 years of age



50%

of all proposals awarded funding were submitted by young researchers below 35 years of age

TANGO call figures

As part of the TANGO call announced on 16th December 2013, the NCN received 210 proposals totalling nearly € 44.3 million. In line with the call regulations, initial proposals submitted in the first stage of TANGO are evaluated by the NCN Expert Team and then, in stage two, by an Expert Team in the Polish National Centre for Research and Development (NCBR). 79 projects amounting to over € 18 million passed the first stage.

TANGO call results were published by the NCBR on 4th February 2015. In the first ever TANGO call, nearly € 9 million of funding will be granted to the 48 top projects out of 210 submitted.

Research domain	Number of proposals approved for funding	Value of proposals approved for funding (€)	Success rate
HS	3	715,047	13%
NZ	7	2,110,530	15%
ST	38	8,633,593	28%
Total	48	11,459,170	23%

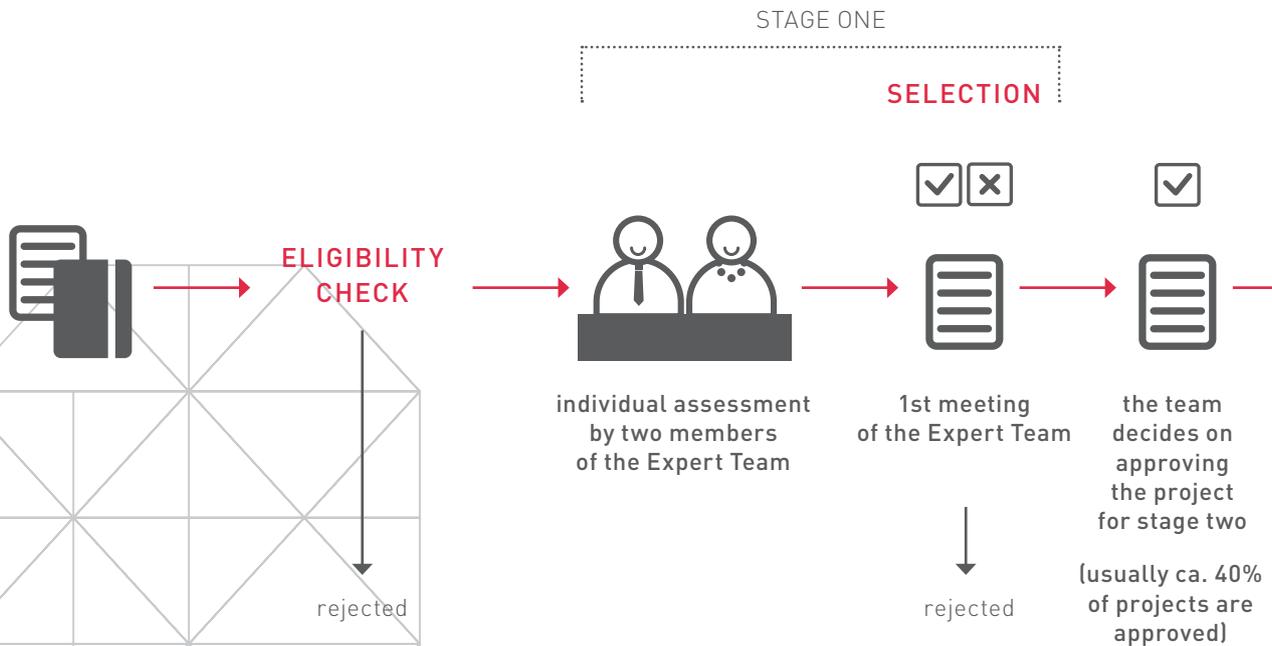
Proposal evaluation

In order to select the very best proposals, the NCN employs an evaluation procedure based on a two-stage peer review procedure. The NCN Council adopted a general rule of taking into account, in carefully considered proportion, both the quality of the proposal and the achievements of the researchers. The evaluation 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 – proposals are evaluated by External Reviewers, including foreign-based ones, whose reviews are discussed by the Expert Teams during the second panel session. External Reviewers are selected by coordinators, based on the recommendations of the Expert Teams. The final evaluation score for individual proposals and drawing up a final ranking list of projects approved for funding is in the hands of the Expert Teams. In some calls, an interview is organised at the second stage of evaluation.

PROPOSAL EVALUATION PROCESS



STAGE TWO



**FINAL LIST
OF QUALIFIED
PROPOSALS**

**SIGNING OF THE GRANT
AGREEMENT**

ETIUDA, FUGA,
SYMFONIA
interview

OPUS, PRELUDIUM,
SONATA, SONATA BIS,
MAESTRO, HARMONIA,
SYMFONIA

OPUS, PRELUDIUM,
SONATA, SONATA BIS,
MAESTRO, HARMONIA,
SYMFONIA

individual assessment
by External Reviewers,
including foreign-based
reviewers



2nd meeting
of the Expert Team

ca. 16% qualified
for funding

RESULTS



↓
rejected

Experts

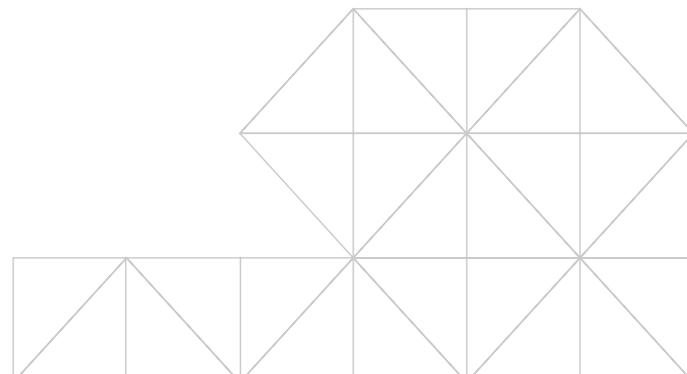
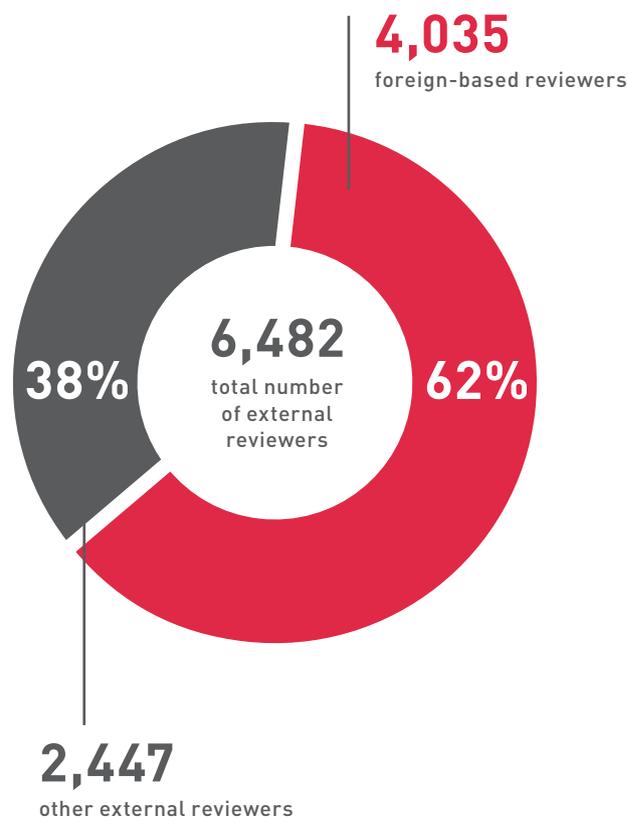
In 2014 there were 1,308 experts in 95 Expert Teams. Proposals were evaluated as per specific research domain: HS – 29 teams, NZ – 28, ST – 36 and by two interdisciplinary Expert Teams appointed to evaluate proposals in SYMFONIA 2 and TANGO calls.

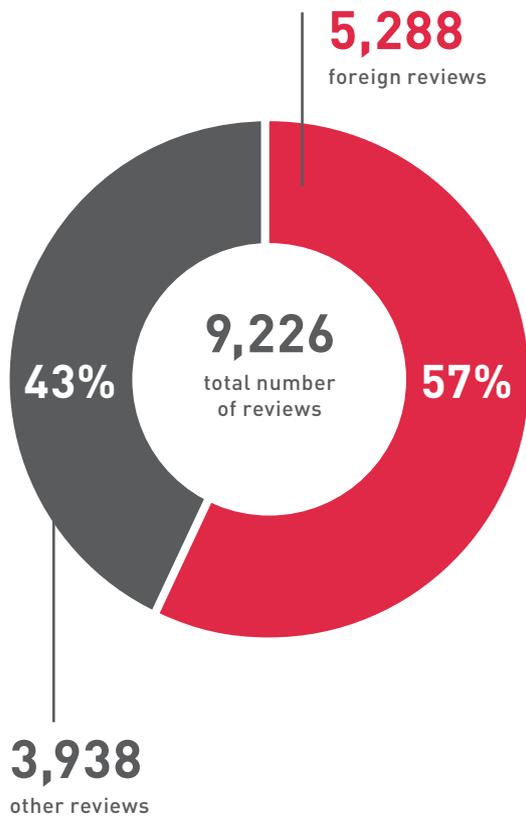
The number of experts as per specific research domain is as follows:

-  **HS** – 284 experts
-  **NZ** – 308 experts
-  **ST** – 365 experts
-  **SYMFONIA** – 10 experts
-  **TANGO** – 18 experts

The second stage of evaluation was carried out by 6,482 External Reviewers who contributed 9,226 reviews. 62% of them were foreign-based reviewers, who contributed 5,288 reviews accounting for 57% of the total number carried out.

Number of External Reviewers vs. number of reviews they contributed in 2014

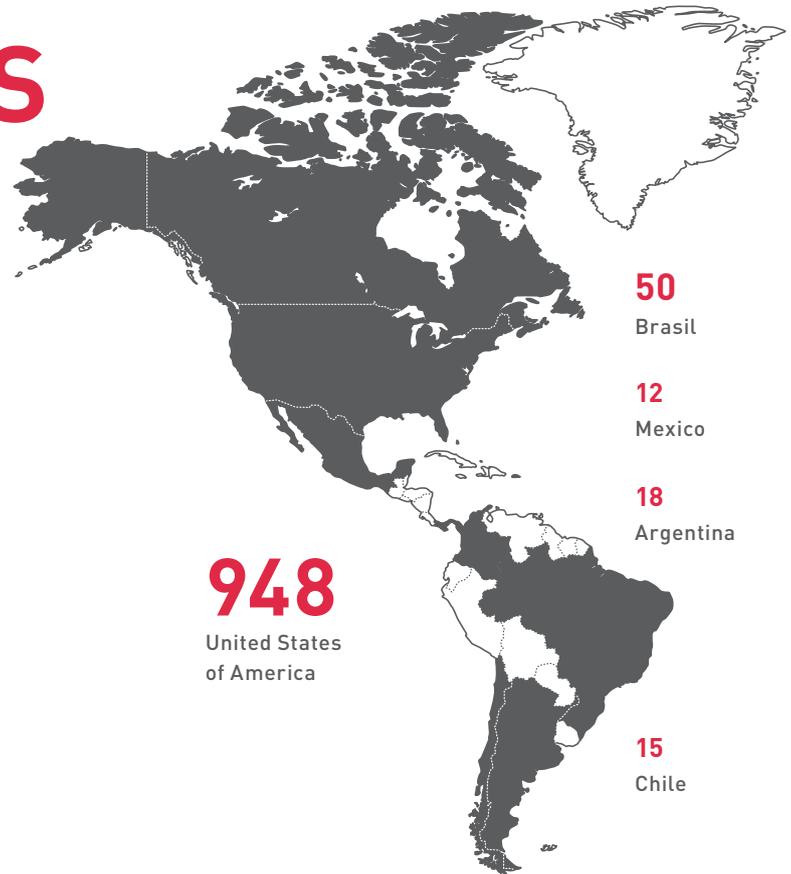




FOREIGN-BASED EXTERNAL REVIEWERS

160

Canada



Croatia	9	Qatar	1
Luxemburg	6	Vietnam	1
Egypt	5	Saudi Arabia	1
Malaysia	5	Macao	1
Latvia	4	Kuwait	1
Iceland	4	United Arab Emirates	1
Thailand	3	Bosnia and Herzegovina	1
Iran (Islamic Republic of Iran)	3	Cyprus	1
Pakistan	3	Kosovo	1
Colombia	3		
Malta	2		

554

Great Britain

508

Germany

349

France

140

The Netherlands

28

Norway

54

Finland

48

Denmark

142

Belgium

85

Sweden

159

The Czech Republic

84

Slovakia

27

Slovenia

75

Switzerland

70

Hungary

358

Italy

57

Greece

33

Bulgaria

12

Republic of South Africa

84

Austria

330

Spain

82

Portugal

48

The Russian Federation

35

Ireland

15

New Zealand

45

Romania

25

Ukraine

25

Lithuania

21

Turkey

41

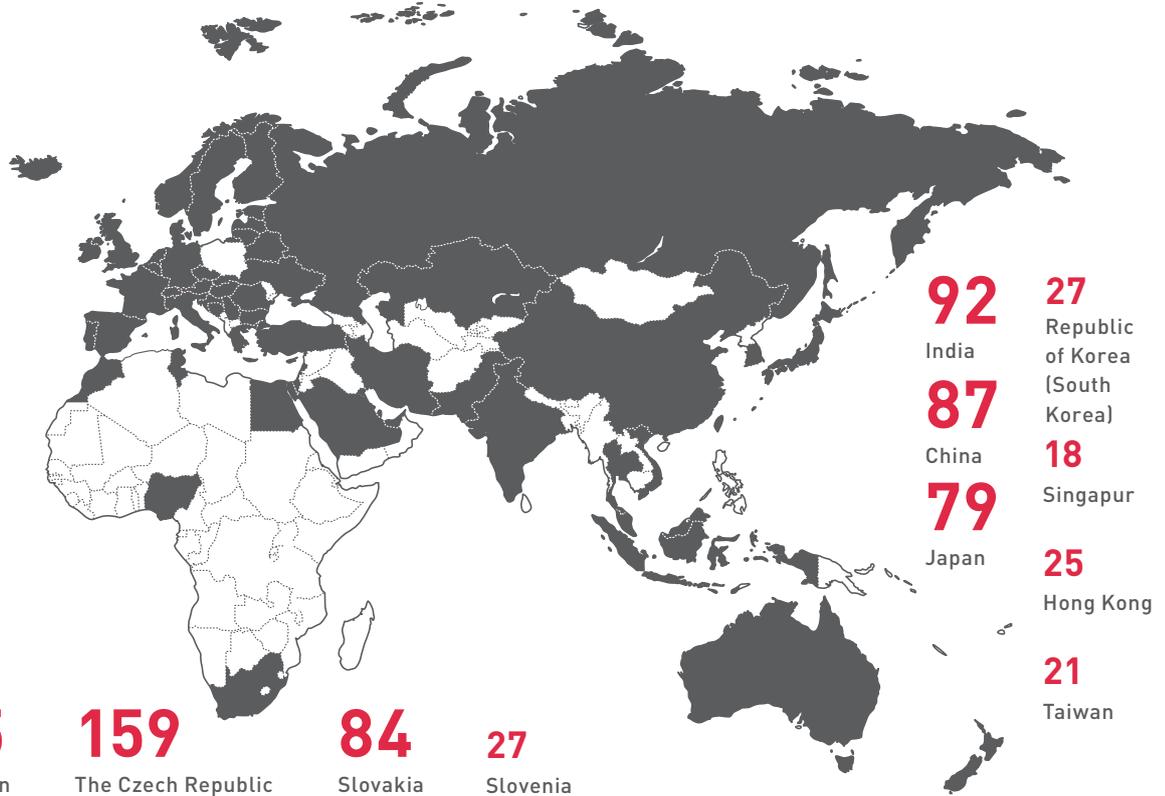
Israel

13

Estonia

15

Serbia



92

India

87

China

79

Japan

27

Republic of Korea (South Korea)

18

Singapur

25

Hong Kong

21

Taiwan

118

Australia

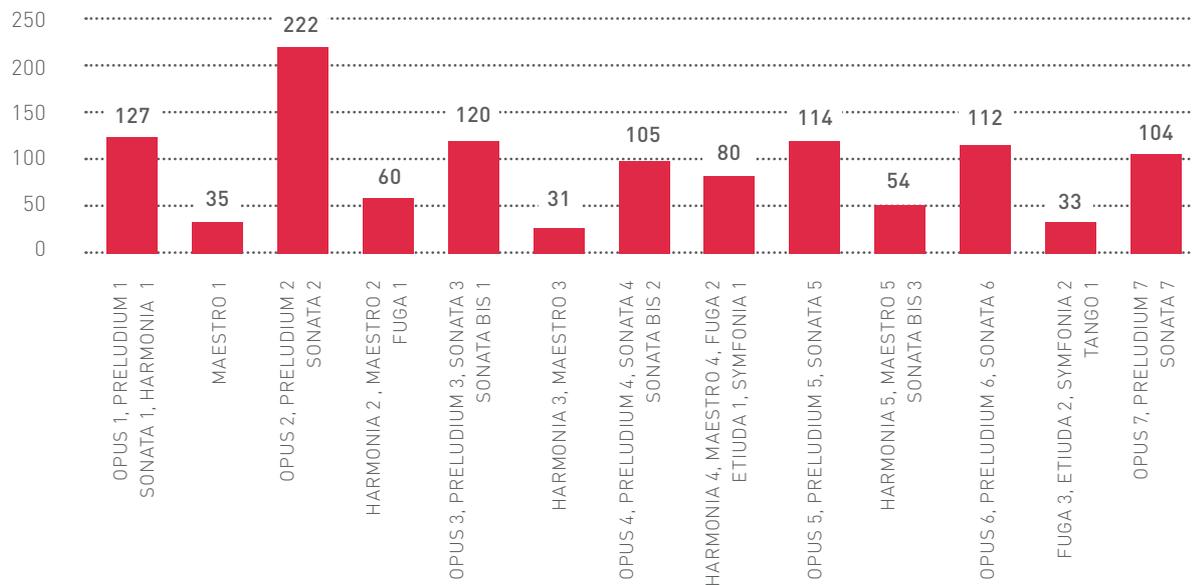
NCN Evaluation Review Committee

Applicants can appeal the NCN Director's decision within 14 days following receipt of the decision. Complaints are handled by the Evaluation Review Committee who are appointed by the NCN Council.

Between 2011-2014:

- **1,200** appeals received
- **1,153** appeals were investigated by the committee by the end of 2014
- **24** projects were granted funding which amounted to € 1.23 million
- **142** additional reviews were commissioned in 76 cases
- **41** cases the Director's decision was repealed and an application was sent for reevaluation

Number of appeals regarding the NCN Director's decision between 2011 and 2014



Monitoring of research projects

The NCN also monitors research projects, internships and fellowships, as well as expenditure within the allocated funds. The monitoring capacity covers the evaluation of periodical and annual reports and on-site visits to Host Institutions. The NCN Director is authorised to suspend or terminate funding of projects in the case of irregularities. Verification and assessment of reports includes checking whether the project has been properly carried out from both a formal and financial point of view. The procedure also involves verification of the project against its academic merits.

Project progress reports

In 2014 NCN experts assessed the following reports:

- annual and final reports of postdoctoral, supervision research projects, as well as non-cofinanced international projects passed on to the NCN for processing by the Ministry of Science and Higher Education
- annual and interim reports of research projects approved for funding as part of NCN calls.

In 2014, the annual and final reports of projects handed over to the NCN for processing by the Polish Ministry of Science and Higher Education were evaluated by Permanent Expert Teams. Moreover, the teams evaluated 75 interim reports from the first stage of SONATA 1 projects. The NCN's administrative staff constantly monitored day-to-day project progress via formal examinations of annual, interim and final reports.

Projects which passed all stages of the evaluation process and were deemed to be properly executed and settled were subject to the approval of the NCN Director upon an endorsement by the NCN Council.

In 2014 the NCN assessed:

- **4,818** final reports out of which, upon the NCN Director's approval, 2,167 were closed;
- **5,728** annual reports subject to formal verification only.

On-site visits

Another monitoring tool is the authority of the NCN to conduct on-site visits to ensure that the project is executed in compliance with the contract. The inspections are carried out by the Audit and Compliance Team of the National Science Centre and are based on an annual plan. Grants are selected for audits based on risk analysis factors involved in their execution. Information on possible hazards and warning signs related to funded projects are collected and passed on by the staff of the Research Projects Administration Department, the Finance and Accounting Department and NCN Coordinators. The procedure also allows for a random selection of projects to be audited to complement the inspection plan. Project inspection can also happen on an ad hoc basis. It is usually initiated as a result of information about irregular grant execution and usually has a precisely defined scope. The inspection team is always composed of a staff member from the Audit and Compliance Team and, depending on the inspection plan and scope, a financial and/or academic expert.

In 2014, eleven projects were inspected. No irregularities were found in four cases, two centres were obliged to return the funding and one inspection was still ongoing at the end of the year; in the remaining ones some irregularities were found.

International Cooperation

It is one of the foremost objectives of the National Science Centre to significantly support research conducted by Polish researchers in cooperation with partners from abroad. In order to enable the exchange of Polish scholars and encourage them to cooperate with their peers from abroad, the NCN takes part in the ERA-NET consortia and Joint Programming Initiatives (JPI). Networks such as ERA-NET and JPI, combining the efforts of European and national funding agencies, launch calls for proposals for international research projects carried out by teams of researchers from at least three different countries involved in the network. Furthermore, NCN initiates bilateral cooperation with research funding agencies in Europe and beyond.

The NCN's international cooperation in 2014

Name	Scope
HERA	Humanities
NORFACE	Social Sciences
BEETHOVEN	Arts, Humanities and Social Sciences
ERA-NET on Smart Urban Futures	Urban Studies
Infect-ERA	Infectious Diseases
BiodivERsA	Biodiversity
JPND	Neurodegenerative Diseases
JPI HDHL	Healthy Nutrition
JPI-EC-AMR	Antimicrobial Resistance
CHIST-ERA	Information and Communication Technologies
Quant-ERA	Quantum Technologies

HS – ARTS, HUMANITIES AND SOCIAL SCIENCES

HERA (*Humanities in the European Research Area*) is a network of 22 partner institutions supporting research in the area of Humanities in Europe. In 2014, the NCN signed a participation statement in the Uses of the Past call which was announced in January 2015.

NORFACE consortium (*New Opportunities for Research Funding Agency Co-operation in Europe*) supports research in the area of Social Sciences. In the 2014 call *Welfare State Futures*, funding was granted to a project entitled *European Welfare Systems in Times of Mobility* with the participation of dr Paweł Kaczmarczyk from the University of Warsaw.

In September 2014, in cooperation with Deutsche Forschungsgemeinschaft (DFG), a German research funding agency, the NCN launched a pilot **BEETHOVEN** call for Polish and German research projects from the area of Arts, Humanities and Social Sciences. The NCN received 96 proposals under this call and the outcome of the proposal evaluation is planned for 2015.

The NCN also got involved in working on **ERA-NET on Smart Urban Futures** which supports urban studies research projects. This initiative works on an international call for proposals entitled *Smart Urban Futures*.

NZ – LIFE SCIENCES

Infect-ERA (*ERA-NET on human infectious diseases*) is a consortium whose mission is to support academic research in the field of infectious diseases. A call was launched in 2014 covering the following two research questions: 1) *Assess the role of commensal flora in homeostasis and microbe's pathogenicity, and elucidate how commensal organisms or probiotics can be used to prevent or treat infections;* 2) *Development and application of new techniques to investigate the initial steps of the infection process.*

In 2014 the NCN signed a declaration on participation in the **BiodivERsA** (*Consolidating the European Research Area on biodiversity and ecosystem services*) consortium which was founded in order to fund research devoted to biodiversity. A call for proposals will be launched in the first half of 2015.

The National Science Centre got involved in the actions of an international initiative **JPND** (*EU Joint Programme – Neurodegenerative Disease Research*) which supports research on neurodegenerative disease looking into the causes of illnesses such as Alzheimer's or motor neuron disease which with increasing intensity affects an aging European society. In 2014 the call for proposals procedure entitled *Cross-Disease Analysis of Pathways related to Neurodegenerative Diseases* was concluded. Prof. Marek Cieplak from the Institute of Physics of the Polish Academy of Sciences was among the awardees with his project *Identification and structural characterization of the primordial cytotoxic conformers of the amyloidogenic cascade: Ideal prevention /diagnostic/therapeutic targets in neurodegeneration.*

In 2014 the NCN joined an initiative on healthy diet research – **JPI HDHL** (*Joint Programming Initiative: A Healthy Diet for a Healthy Life*). The consortium announced two calls in March 2015 in the following fields: 1) *Intestinal microbiomics and* 2) *Nutrition & cognitive function*.

In 2014 the International Cooperation Committee of the NCN Council endorsed the NCN's accession to the **JPI-EC-AMR: ERA-NET COFUND** on Antimicrobial Resistance. This international network is planning a call for proposals in the area of antimicrobial resistance.

ST – PHYSICAL SCIENCES AND ENGINEERING

In 2014 the NCN continued its participation in **CHIST-ERA** (*European Coordinated Research on Long-term Challenges in Information and Communication Sciences & Technologies*). The objective of this network is to support research in the field of ICT. Professor Piotr Bała from the University of Warsaw, a project coordinator for Heterogenous Parallel and Distributed Computing in Java research, was awarded a grant as a result of a 2013 call. In October 2014 the consortium launched another call for proposals in the field of *Resilient Trustworthy Cyber-Physical Systems (RTCPS)* and *Human Language Understanding: Grounding Language Learning (HLU)*.

Quant-ERA (ERA-NET COFUND on Quantum Technologies) is an initiative of ERA-NET COFUND type in the field of quantum technologies. The NCN, in cooperation with Polish academia, coordinates efforts aimed at the construction of a partner institution network in the area of quantum technologies. In 2014 the NCN conducted preliminary discussions with the European Commission and obtained the endorsement

of thirteen European research funding agencies who signed a letter of intent supporting the initiative.

SCIENCE EUROPE

In 2014 the NCN took part in **SCIENCE EUROPE**, an association of over 50 organisations and research institutions which fund academic research. The objective of SE is, first of all, to strengthen the European Research Area by fostering cooperation between member institutions. On 20th May, a working session of the General Assembly of Science Europe took place in Krakow. Moreover, on 20th November, Andrzej Jajszczyk, the NCN Director, was elected a member of the Governing Board of Science Europe by General Assembly.

Communications and events

2014 saw continued efforts to disseminate information about calls announced by the NCN aimed at reinforcing the NCN's image as an institution which puts particular attention on research quality.

NCN Open Days 2014

The NCN Open Days is a mobile event. It takes place in a different Polish academic centre each year. Lublin hosted the 2014 NCN Open Days. This year, as part of the event, the administrative staff of research centres took part in workshop sessions; three meetings for NCN applicants were held and the NCN Council convened jointly with university rectors and research centre directors to discuss research funding in Poland.

The NCN call awardees presentation also took place in Lublin where eight researchers from all over Poland presented their NCN-funded projects to the audience. The Open Days were also an opportunity to showcase photographs from eleven projects funded as a result of NCN calls. Part of the exhibition is permanently shown in the NCN office. Call laureates were also presented in an NCN calendar for 2015, as well as on the NCN's website.

2014 NCN Award

On 9th October 2014, for the second time, the NCN Award for young researchers was granted in the following three categories: Arts, Humanities and Social Sciences (HS), Life Sciences (NZ) and Physical Sciences and Engineering (ST). The distinction recognises outstanding academic achievements in basic research carried out within a Polish research centre. The awardees achievements should be endorsed by publications affiliated in a Polish research centre as well. The Award is granted by the National Science Centre and is funded by enterprises involved in supporting research. The 2014 NCN Award in the HS research domain was the company Meble Vox Sp. z o.o. Sp. j. In the ST research domain the Award was funded by EDF Polska S.A., while in NZ – Adamed Sp. z o.o.

NCN Award laureates



In the area of Life Sciences, the Award was conferred on professor Janusz Bujnicki from the International Institute of Molecular and Cell Biology in Warsaw. He was awarded for designing innovative bioinformatic methods for the research of RNA-protein complexes, and for determining the structure and mechanics of the human enzymes responsible for synthesis of RNA.



Prof. Marcin Miłkowski from the Institute of Philosophy and Sociology, Polish Academy of Sciences was the 2014 awardee in the field of Arts, Humanities and Social Sciences for putting forward an original version of the computational theory of the mind, which he discusses in *Explaining the computational mind*, a book published by MIT Press.



In Physical Sciences and Engineering, the Award was given to professor Michał Horodecki from the Faculty of Mathematics, Physics and Informatics, University of Gdańsk, for his discovery of the quantum state of bound entanglement and for his investigations into the non-additiveness of quantum channels' capacity.

Budget and accounts in 2014

NCN Budget

The budget of the NCN in 2014 amounted to ca. € 209.5 million, out of which grant subsidies for financing research projects surpassed more than € 199 million. The operating expenses subsidy totalled € 9.54 million and the investment subsidy totalled ca. € 0.83 million. The NCN drew on 99.94% of the grant subsidy for its statutory tasks – including funding research projects.

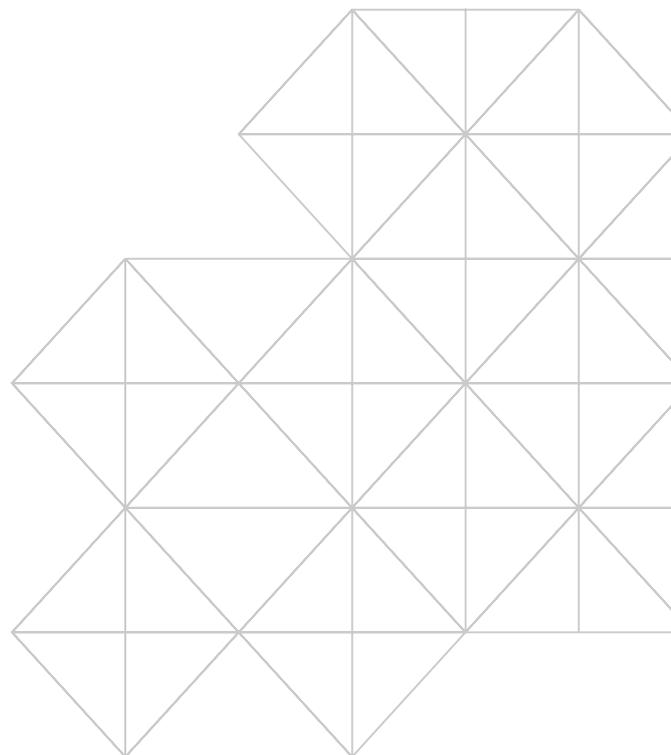
The NCN effectively used resources granted by the state budget for handling day-to-day activities. To cover the operating expenses, 72.84% of subsidy was used. Due to the fact that the planned purchase and modernisation of a building for the NCN's seat did not come to fruition, only 20.73% of the investment subsidy was utilised.

2014 NCN Budget (in thousands €)

Subsidies	Financial plan 2014	Resources expended	% of plan accomplished*
total	209,472	206,092	98.39%
operating expenses	9,550	6,956	72.84%
grant subsidy**	199,087	198,963	99.94%
investment subsidy	836	173	20.73%
European Union funding	11.8	11.8	100%

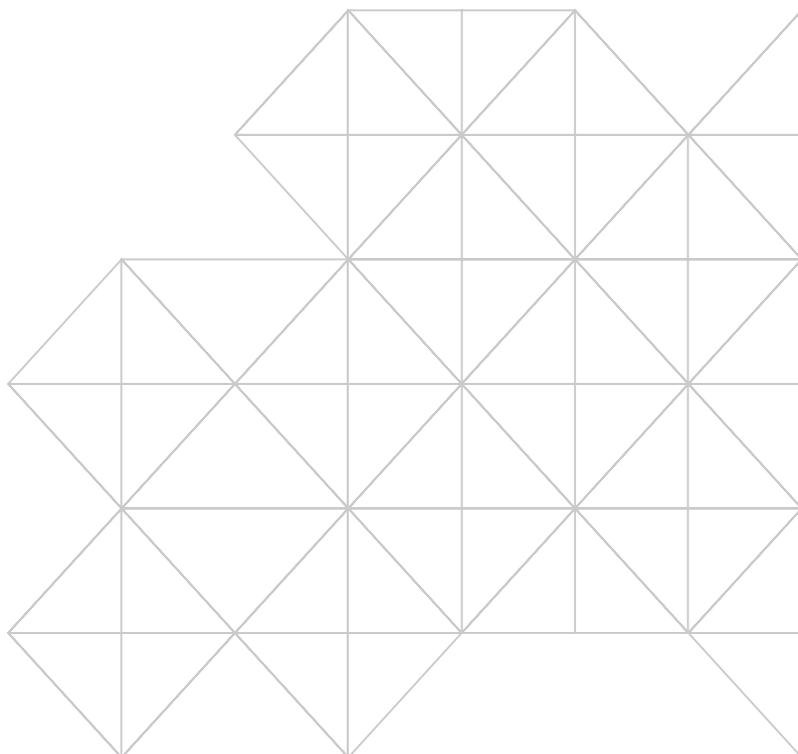
* Accomplishment of plan expressed in % calculated for non-rounded figures

** taking into account unused project funds returned by some host institutions, later then reused by the NCN



Resources expended by the NCN from the grant subsidy for the fulfilment of NCN duties in 2014: (in €, rounded to a full number)

198,963,144	Resources expended in NCN calls in 2014
95,747,361	OPUS
16,635,239	PRELUDIUM
23,984,484	SONATA
9,597,410	SONATA BIS
15,566,717	HARMONIA
21,708,663	MAESTRO
3,773,399	FUGA
2,041,457	ETIUDA
3,858,112	SYMFONIA
133,538	ASPERA
52,750	JPI CULTURAL HERITAGE
24,403	CHIST-ERA
51,707	Membership fees
4,368,088	Research projects carried out as part of calls 39-40
1,419,814	Non-co-financed international projects



In 2014 the National Science Centre awarded ca. € 199 million on basic research funding. Over € 198.7 million was allocated as a result of NCN calls. Other, occasional calls launched within international cooperation and membership fees generated expenditure amounting to € 0.24 million in 2014.

Summary

11,432



**RESEARCH
PROPOSALS
RECEIVED***

1,804



GRANTS AWARDED

6,956,141



**EURO
OPERATIONS OF THE
OFFICE (INCLUDING
EVALUATION COSTS)**

120



**FTES
STAFF EXPRESSED
IN FULL-TIME
EQUIVALENTS**

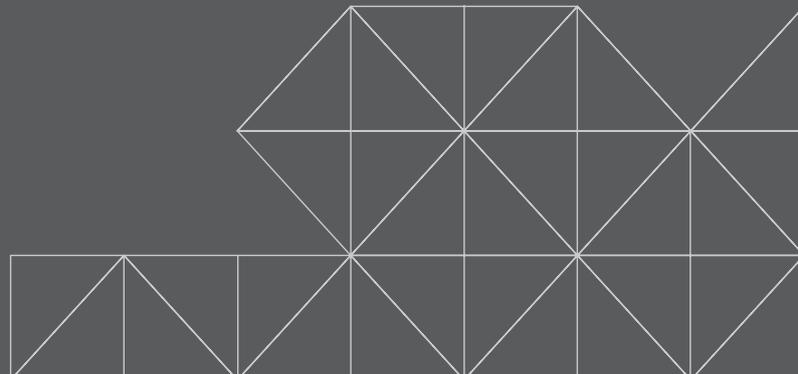
1,771,166



**EURO
NCN STAFF
REMUNERATION**

* figures refer to NCN calls concluded in 2014
** as a percentage of spending in 2014

RESEARCH STORIES





HERA

Cultural Encounters,
results in September 2013

Music migrations in the early modern age: the meeting of the European East, West and South

Polish Principal Investigators:

dr hab. Barbara Przybyszewska-Jarmińska,
PhD, Professor at the Institute of Art of the Polish
Academy of Sciences in Warsaw

Professor Alina Źórawska-Witkowska,
PhD, University of Warsaw

Partners:

prof. dr Vjera Katalinić, PhD (project manager),
Croatian Academy of Sciences and Arts, Zagreb,
Croatia

Junior Professor Gesa zur Nieden PhD,
Johannes Gutenberg University Mainz, Germany

Martin Albrecht-Hohmaier, PhD,
Berlin-Brandenburg Academy of Sciences and
Humanities, Germany

Metoda Kokole, PhD, Slovenian Academy
of Sciences and Arts, Ljubljana, Slovenia

In early modern times, the universality of the language of music facilitated (and still does today) the migration of musicians travelling across Europe. As they moved from one place to another, they changed patrons and environments (linguistic, cultural or religious), met other musicians, learned new musical repertoires and were influenced by local performance practices. As a result of these musical "encounters", musicians and their music mutually influenced each other, their works (including such aspects as composition techniques, musical forms and genres) and performance styles. In addition, the meetings influenced the development of the theory of music and musical education, the way music circulated (in manuscript or printed form), the construction of instruments, writing librettos, artistic management, choreography and set designs of opera and ballet performances, the establishment of music-related institutions, music criticism, etc.

The participants in the project, which covers the period between the 17th and 18th century, have gathered many years of experience in the field of studying the migration of

musicians in the countries they represent. Moreover, they have authored numerous books and articles (including lexicons of musicians), as well as sheet-music editions of works by migrant composers written under the patronage of rulers, magnates, ecclesiastical bodies, municipal councils, or in connection with the activities of various music institutions in their new places of residence.

One of the main objectives of the project is to accumulate available information about migrant musicians (this broadly defined term covers the following categories: composers, vocal and instrumental performers, dancers, theorists of music, authors writing on music, librettists, music copyists, printers and publishers, instrument manufacturers, distributors of music materials and instruments, impresarios, preceptors of music, ensembles, operatic troupes, opera and ballet performance managers, set designers and choreographers). Our aim is also to expand our knowledge by conducting research in more than 70 archives and libraries in over 30 cities throughout 13 countries (Austria, Belarus, Croatia, Finland, France, the Netherlands, Germany, Poland, Portugal, Russia, Slovenia, Sweden and Italy).

The research tasks will also include entering the accumulated body of information into an already existing database on the website of the German Historical Institute in Rome – part of a system created by the Brandenburg Academy of Sciences within the framework of a project financed by the German Research Foundation. The following data will be included: first name and family name (diverse variants possible), date and place of birth, information about parents, education, origin, profession, affiliation with various circles (a court, religious congregation, city, theatre, concert venue, etc.), travels (des-

tinations, dates, encounters with other personages from the world of music, compositions/performances composed/written/copied/published/performed, instruments played, etc.). Once the project has been completed, the database will be available to everyone.

The project participants will also create a network reflecting our knowledge of migrant musicians who used to work in the territories of Croatia, Germany, Poland and Slovenia, taking into account their travels in other European countries and indicating the musicians and other important individuals they (may have) met on the way. Following the research conducted within the framework of the project, the network of musical and cultural connections between the most vibrant European centres of music and culture in the early modern period will be completed with links to milieus, places and regions that have been ignored or poorly researched up to now.

The research project will result in a range of academic papers and book publications. Also, the research results will be published in the form of composition scores of migrant composers and will be used for live performances or showcased during the conferences.

Polish participants:

Barbara Przybyszewska-Jarmińska, PhD, Professor at the Institute of Art of the Polish Academy of Sciences (PAN), musicologist, Head of the Department of Musicology of the Institute of Arts of PAN, Editor-in-Chief of the series *Monumenta Musicae in Polonia*. Publications: *Kasper Förster junior. Tekst i muzyka w dialogach biblijnych* [*Kasper Förster the Younger. Text and Music in Biblical Dialogues*], Warsaw 1997; *The Baroque, part I: 1595–1696* [*The History of Music in Poland, vol. III/1*], Warsaw 2002, the Polish edition: *Barok, część*

pierwsza: 1595–1696 [*Historia Muzyki Polskiej, t. III/1*], Warsaw 2006; *Muzyczne dwory polskich Wazów* [*The Music Courts of the Polish Vasas*], Warsaw 2007; *Muzyka pod patronatem polskich Wazów. Marcin Mielczewski* [*Music Under the Patronage of the Polish Vasas. Marcin Mielczewski*], Warsaw 2011, and numerous editions of works by composers linked to the courts of the Polish Vasas. Recently published: *Asprilio Pacelli, Sacrae cantiones, Monumenta Musicae in Polonia*, Warsaw 2012.

Professor Alina Żórawska-Witkowska, PhD, musicologist, Head of the Division of General History of Music at the Institute of Musicology of the University of Warsaw, Deputy Dean for Students' Affairs of the Faculty of History of the University of Warsaw. Published the following books: *Muzyczne podróże królewiczów polskich* [*Musical Journeys of Polish Crown Princes*], Warsaw 1992; *Muzyka na dworze i w teatrze Stanisława Augusta* [*Music at the Court and in the Theatre of King Stanisław August*], Warsaw 1995; *Muzyka na dworze Augusta II w Warszawie* [*Music at the Warsaw Court of Augustus II*], Warsaw 1997; *Muzyka na polskim dworze Augusta III* [*Music at the Polish Court of Augustus III. Part I*], Lublin 2012. In addition, she has authored many articles on the history of music in Poland, concerning mostly the 18th, but also the 17th and 19th centuries. She was a member of the research group *Italian Opera in Central Europe 1614–1780*, established within the framework of the project *Musical Life in Europe 1600–1900*. Circulations, Institutions, Representation of the European Science Foundation. Currently she participates in the European Network for Baroque Cultural Heritage research project (ENBaCH) supported by the European Commission.

Aneta Markuszewska, PhD, musicologist, employed at the Institute of Musicology of the University of Warsaw (the Division of General History of Music) and harpsichordist. Published the book *Festa i muzyka na dworze Marii Kazimiery Sobieskiej w Rzymie (1699–1714)* [*Festa and Music at the Court of Queen Consort Marie Casimire in Rome (1699–1714)*], Warsaw 2012. Additionally, she is the author of articles on the Italian music of the 17th and 18th centuries. Currently she participates in the European Network for Baroque Cultural Heritage research project (ENBaCH) supported by the European Commission.



FUGA 3

Results published on 24th June 2014
Panel: NZ8

**Influence of individual habitat selection
during the colonisation of new areas on
genetic population structure**

Principal Investigator:

Dr Robert Mysłajek

Institute of Genetics and Biotechnology,
Faculty of Biology, University of Warsaw

After reaching sexual maturity, most animals leave their natal habitat to look for a mate to reproduce with and to explore new areas suitable for raising offspring. For many years, researchers have been trying to identify the habitat selection strategies in the animal world. Natal habitat preference induction has been suggested as one possible underlying mechanism. According to this hypothesis, animals settle in environments similar to those they were born and raised in.

Studying animal habitat preferences during dispersion is not an easy task. It requires scientists to evaluate the properties of the environment in relation to the presence of particular individuals, as well as to pinpoint their exact place of origin. Modern genetic techniques enable scientists to determine the degree of consanguinity between individuals on the basis of non-invasive DNA sampling, performed without the animal being caught. This project draws on such techniques which combine ecology and genetics.

The model species used in the project is the grey wolf – *Canis lupus*. The species is well-suited for testing the natal habitat preference induction hypothesis as it is capable of travelling across large distances and its offspring remains in the family group for a relatively long time. This influences its experience of the characteristics of a particular habitat. Wolves are social animals which live in family groups consisting of one reproducing couple and its offspring. They mainly inhabit densely wooded territories with a small share of urban areas and a sparse road network. However, they are much more conservative as regards the selection of breeding locations. Due to intensive hunting, in the 20th century wolves were pushed out of most of their refuges

located to the west of the Vistula River, but their numbers have survived in the north-eastern part of the country and in the Carpathian Mountains. After being subject to protection schemes, they have gradually begun returning to western Poland. This ongoing process provides an excellent opportunity to study the habitat selection preferences of the wolves which colonise the vast and diverse woodlands of this region.

Understanding the mechanisms behind habitat preference may be essential for the identification of factors influencing the genetic diversity of animal populations. The research project will also yield better insight into animal dispersal patterns and help assess the possibility of restoring certain functions of the ecosystem thanks to animal species which recolonise areas from which they have previously been pushed out by man. It will therefore be easier to plan possible reintroduction efforts involving rare and endangered species.

Dr Robert Mysłajek studied at the Faculty of Forestry of the Agricultural College (currently the University of Agriculture) in Krakow and at the Faculty of Biochemistry, Biophysics and Biotechnology of Jagiellonian University. He has honed his research skills during numerous scholarships and study visits in France, Germany and the USA. He was awarded his doctoral degree in biological sciences at the Institute of Environmental Protection of the Polish Academy of Sciences in Krakow. He currently works as an Assistant Professor at the Institute of Genetics and Biotechnology of the University of Warsaw. He is the author of numerous scientific papers published in high-ranking periodicals, including the prestigious *Science* journal. He is a winner of the "Populariser of Science" (Popularyzator nauki) competition organised by the Polish Press Agency and the Ministry of Science and Higher Education.



PRELUDIUM 2

Results published on 30th May 2012
Panel: NZ9

Monitoring of microbial structures in soils contaminated with crude oil derivatives and inoculated with hydrocarbon-degrading bacteria strains producing biosurfactants

Principal Investigator:
Magdalena Pacwa-Plóciniczak, M.Sc.
University of Silesia in Katowice

The research conducted as part of the project will focus on monitoring changes to autochthonous microbial structures present in soil contaminated with crude oil derivatives, sampled in the vicinity of the Czechowice-Dziedzice refinery and biologically treated. For many years, the study site has been used to store hydrocarbon-rich acid tar waste from the oil refining process. The contamination of soil with such substances is an especially serious problem as they are toxic, mutagenic and very difficult to dissolve in water. Bioaugmentation is a promising bioremediation method for such soil. It consists of increasing the degradation activity of the soil by inoculating it with selected isolated microbial strains or consortia. The strains used in the study have degrading properties, as well as the ability to produce surface active agents (biosurfactants). These increase the bioavailability of hydrocarbons, making it easier for microorganisms to absorb and decompose them.

Although extensive research is being conducted on the use of bioaugmentation techniques to purify soil contaminated with crude oil derivatives, little is known about the interactions between the bacterial strains introduced into the soil and the autochthonous microflora. Therefore, the project aims to identify the impact of newly introduced bacterial strains on the autochthonous microbial structures present in soil contaminated with crude oil derivatives. Moreover, the project is also intended to evaluate the survival rates of the introduced strains and their ability to compete with the autochthonous flora for both space and nutrients.

All analyses will be performed using methods recognised as the most reproducible and credible techniques applicable to studies of the biodiversity and activity of soil microorgan-

isms. They include phospholipid fatty acid (PLFA) profiling and denaturing gradient gel electrophoresis (DGGE) of amplified sections of genes encoding 16S rRNA, alkane hydroxylases and the alpha subunit of PAH-ring-hydroxylating dioxygenases. Other techniques of similar nature will also be applied, such as real-time polymerase chain reaction (PCR), in which selected genes will be amplified to enable the research team to determine the overall amount of bacteria and the amount of bacteria capable of breaking down aliphatic and aromatic hydrocarbons. The BIOLOG technique will be used to assess the functional activity of the soil. Methods with diverse resolution levels will be applied in order to assess whether the inoculants trigger any changes in the structure and activity of the investigated bacterial systems, what such changes consist of and whether they occur on a long or short-term scale.

Magdalena Pacwa-Płociniczak, M.Sc. is a Ph.D. student at the Faculty of Biology and Environmental Protection of the University of Silesia. She holds scholarships funded under the "University as a Partner for the Knowledge-Based Economy" scheme and under the DoktoRIS programme, co-financed by the European Social Fund. She has co-authored three research papers published in international scientific journals. Her research interests include environmental biotechnology, with a special emphasis on microbial production of biosurfactants, their use for the bioremediation of contaminated soil and the application of modern techniques in studies focusing on the biodiversity of soil microbes.



SONATA 5

Results published on 5th November 2013
Panel: HS 1

**An avatar's perspective – the philosophical
and aesthetic possibilities of video games**

Principal Investigator:

dr Marta Kania

University of Lower Silesia

Imagine that you suddenly find yourself in the middle of a strange city and you must find a way to warn its residents of impending danger. How far will you go? Imagine that you are afraid of heights and the only way to save the Library of Alexandria is to climb up one building after another. Imagine being able to experience that. Imagine being able to act, feel the emotions and make instant decisions which will determine the failure or success of your mission. This, and much more, is what computer games enable you to do. They also let players experience philosophically challenging and aesthetically interesting situations. This is especially possible in video games where the player controls an avatar. That is why I focus on such games in my research project.

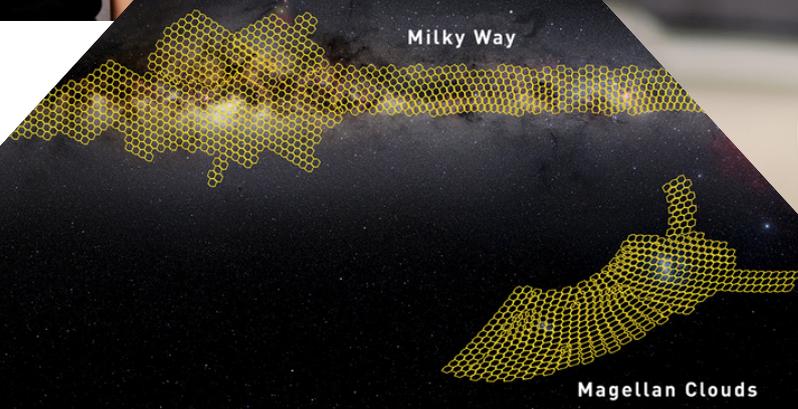
Just as philosophical concepts work within a certain tradition, an avatar, as a perspective on experiencing and learning about the surrounding reality, works inside a specific game. An avatar becomes the player's "glasses", which cannot be taken off without stepping out of the game. By engaging the player's senses, the avatar becomes a vehicle for the most detailed descriptions of the situation perceived from a specific perspective. It allows you to act and experience a particular point of view along with its consequences – who will you side with in the conflict created in the game? Will you walk through the forest as Little Red Riding Hood or as the wolf? How does the choice you are faced with by game developers influence your perception of the situation?

In order to transmit a specific perspective, understanding or perception of reality, game developers must first understand it themselves. What is the world like from the perspective of the character they are working on? Why is it the way it is? How does that influence the choices they have?

Such philosophical questions uncover additional aspects of the perspective, making it evolve and become more profoundly understandable. Only with this knowledge may game developers start working on the character and thus open this perspective up to players. Therefore, when trying to answer the question about the philosophical dimension of video games, I look not only at the finished product, but also at its development, i.e. descriptions of the game creation process and their theoretical analyses. At the same time, I try to find out if and how game development may be a way to philosophically analyse a particular situation, problem or perspective.

The game development process, as well as finished video games, may be like laboratories where problems, also philosophical ones, are tested and analysed, where specific reflections are provoked or where motivation to act is found. Video games combine technology with art. Thus, they reflect and shape mind-sets, needs and beliefs. By critically analysing video games, we can learn a lot about how they impact us, what values are presented in the digital world and upheld by the characters, as well as how video games can become a tool for philosophical thinking.

Marta Matylda Kania a Ph.D. in philosophy specialising in aesthetics. In her research, she focuses on the creative pursuits of the imagination, blending philosophy and literature with an analysis of independent computer games. She is working on the project in cooperation with the University of Lower Silesia. She has recently published a book entitled: *Żywoty wyobraźni. O wyobrażaniu i przeobrażaniu (The Elements of the Imagination. On imagination and transformation, Universitas, Krakow 2014)*. She is interested in video game development and sound effect production.



OPUS 2

Results published on 30th May 2012
Panel: ST9

Identification and analysis of binary star systems in the OGLE project

Principal Investigator:

prof. Igor Soszyński

University of Warsaw, Faculty of Physics, Astronomical Observatory of the University of Warsaw

A team of astronomers from the University of Warsaw, headed by Professor Andrzej Udalski, is implementing the largest space observation project in the world intended to detect and study star variability. The project entitled the Optical Gravitational Lensing Experiment (OGLE) was launched in 1992 and has been conducted ever since without interruption. It relies on the 1.3 meter Warsaw Telescope located in the Chilean Andes, one of the best places in the world to conduct astronomical observations. OGLE's observation capacity has been gradually enhanced over time and the scientists can now regularly monitor the brightness of more than a billion stars in the most interesting sections of the sky, i.e. the central zone, within the disk of the Milky Way and in the nearby galaxies: the Large and Small Magellanic Cloud.

OGLE's key milestones include the discovery of ca. 50 extrasolar planets (including the first rogue planets which are not part of any star system), studies of dark matter using gravitational microlensing techniques and the discovery of planetoids on the outskirts of the Solar System. The sky surveys carried out as part of the Polish project have also led to the discovery of the largest number of variable stars, i.e. stars with fluctuating brightness, in history. So far, scientists have identified several thousand variable stars across the sky – the vast majority of these have been discovered by the OGLE team.

The objective of the project entitled *Identification and analysis of binary star systems in the OGLE project* is to scour the vast OGLE databases in search of stars whose brightness fluctuations are related to their binary nature. It has long been known that at least 30% of all stars belong to binary or multiple star systems. Their brightness may fluctuate if the stars temporarily eclipse each other (eclipsing systems), if they are deformed due to the

gravitational pull of another element of the system (rotating ellipsoidal variables), if light is reflected off a hot star (reflection effect) or as a result of processes caused by the flow of matter between both stars (cataclysmic variable stars). Binary star systems have a range of applications in astrophysics. They are the only ones enabling direct measurements of the mass of their constituents. They also make it possible to precisely measure the dimensions, temperature, absolute brightness and age of the stars. Additionally they are used as accurate measures of distance in our galaxy and beyond, thus making the distance scale in the Universe more precise. The main result of the research project will be a greater number of binary stars known to science. Astronomers will be able to study at least one hundred thousand previously unknown binary systems of all types. Research plans also include a series of analyses of the identified stars, e.g. using them for precise measurements of the distance to nearby galaxies, to study the relationship between the period and the brightness of close binary systems, to find and analyse pulsating stars which make up part of multiple star systems, to study binary stars with the shortest orbital periods, to search for systems about to merge or to analyse explosions in cataclysmic variable stars.

Prof. Igor Soszyński is an astrophysicist at the Astronomic Observatory of the University of Warsaw and a member of the OGLE team. From 2004 to 2006 he held a postdoctoral position at Concepción University in Chile. His research interests revolve around various types of variable stars. He is the author of the largest catalogue of variable stars in the history of astronomy. His most remarkable scientific accomplishments include the discovery of several previously unknown types of pulsating stars, detailed studies of the statistical properties of variable red giants and the discovery of numerous cases of pulsating stars which belong to eclipsing binary systems.



MAESTRO 4

Results published on 2nd July 2013
Panel: ST10

Devonian deep-sea environments as a key to understanding global ecosystem perturbations

Principal Investigator:

Prof. Grzegorz Racki

University of Silesia in Katowice

Devonian deep-sea environments as a key to understanding global ecosystem perturbations is a geological research project focusing on the Devonian period (418 to 369 million years ago), which stands out in the history of the Earth due to ground-breaking changes in the marine and terrestrial biosphere and numerous biodiversity crises which occurred at that time. In order to better understand the root causes of these global perturbations related to dynamically evolving climate, it is essential to extend the scope of ongoing research beyond the best known maritime environments of the time, i.e. warm areas of shallow water shelves in the subtropical zone.

Interdisciplinary research has been planned, including stratigraphic, paleoecological and geochemical studies to investigate the record of selected global events in poorly known maritime zones, including the deep-water zone and, partially, the cold climate zone in ten selected regions (including Siberia, China, South America and Australia). Such global-scale analytical work worth ca. € 710,000 is instrumental to improving our understanding of the circumstances surrounding great extinctions in our geological history, but it is also relevant to the current debate about future changes in the ecosystem. In accordance with the general principle that *you cannot understand the present or forecast the future without a profound understanding of the past*, the universal significance of the project is reflected by the planned thorough analyses of how current biocenoses react to ongoing environmental changes, such as the acidification of sea water in the context of the deteriorating greenhouse effect.

The project will be implemented with the participation of 17 mostly young research fellows of the University of Silesia, with broad support from other Polish institutions (the Institute

of Paleobiology and Institute of Geological Sciences of the Polish Academy of Sciences and the Adam Mickiewicz University) and contributions from international partners under the auspices of the UNESCO-affiliated international Subcommission on Devonian Stratigraphy (SDS). The unique research material and analytical data which we intend to collect in the process will translate into the globally leading role of Polish research centres in studies focusing on this period in the history of the Earth. It will give rise to new research projects, as well as contribute to future Ph.D. dissertations and major publications. The international contacts and unique field experience gained by young researchers cannot be overestimated considering their future career outlook. Three research positions will be created as part of the project, i.e. a position for the Principal Investigator, a postdoctoral researcher and a Ph.D. student. The results obtained from the study will be published as a database available on a dedicated website.

Prof. Grzegorz Racki Is a full professor at the Faculty of Earth Sciences of the University of Silesia in Katowice. He graduated in geology from the University of Warsaw in 1976. From 2006 to 2010 he was Head of the Institute for Paleobiology of the Polish Academy of Sciences in Warsaw. He represents Poland as a titular member of the international Subcommission on Devonian Stratigraphy. He has also been appointed member of the Academic Good Practice Team of the Ministry of Science and Higher Education. He is author and co-author of almost 100 publications, including a monograph published in 2005 in the prestigious Elsevier series. His research interests focus on global ecological disasters in the history of the Earth (see <http://gu.us.edu.pl/node/272371>).

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