



COPERNICUS  
SCIENCE CENTRE

**Our mission is to encourage personal engagement in discovering and understanding the world, as well as taking responsibility for the changes occurring around us.**

**Annual Report 2012**



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# Our mission is to encourage personal engagement in discovering and understanding the world, as well as taking responsibility for the changes occurring around us.

**This was the second year of activity of the Copernicus Science Centre. It was a subsequent success in terms of attendance, with a record-breaking number of 1 279 416 people, the majority of whom were satisfied with their visit. We have a reputation as one of the most innovative centres in the world, a benchmark for many institutions in Poland, in the East and in the West. We became an initiator of social debates on important social issues and encouraged innovative educational solutions.**

The Copernicus Science Centre has undeniably achieved success. We are proud of it. And we are looking forward to the challenges the future may hold.

Within two years since the opening of the Centre, we have gained knowledge about our visitors and learned better understanding of the social needs that we can respond to. This enabled us to define our goals in our strategic plan for the years 2013–2015.

Why did we decide to put our new mission statement on the cover of the publication summarising a year of our activity? Because this single statement seems to be the best summary of all changes that our Centre underwent.

Learning and discovering the world of nature as well as the products of human civilisation are not only the privileges of childhood. In the Copernicus Science Centre, our visitors, including adults, once again discover that learning is a fascinating adventure that we can enjoy through our entire life.

What is more, in a world in which IT resources double at a time shorter than a year, in the era of unpredictable technological and social changes, the ability to acquire knowledge on one's own creativity, involvement and being open to new ways of thinking, are becoming crucial skills. It is these abilities that enable us to be optimistic about the future in spite of the financial crisis that Europe is struggling with nowadays. They help to understand the world that surrounds us and to achieve personal success in it.

We strongly believe – and we can support our conviction with numerous examples – that the world will not change for the better without science. It is due to its exploits that we can enjoy a longer life and better health, take care of the environment, have access to almost limitless IT resources or communicate over a long distance.

Whether we use this potential wisely, depends only on us as individuals and a community. That is why we want to build a society that will believe in the power of science and education and will feel responsible for positive changes. The encouragement to involvement in those matters is our response to the European crisis of trust and the Polish problem of low level of social funds.

When reading the annual report describing the activity of the Copernicus Science Centre in 2012, please remember about our objectives. We hope we have managed to convince you that it is worth joining our community. We are looking forward to meeting you!

– Robert Firmhofer, Director



## Visitors and opinions

**People – our visitors – are at the heart of the Copernicus Science Centre. It is for them that we exist, develop and search for new solutions. In the first two years of operation, we had over two million visits. That was over three times more than we hoped for in our wildest expectations. In spite of the universal complaints about the contemporary world, the crisis of values and a recession of interests – we see a huge potential, energy, courage, and impulse to keep learning and willingness to introduce changes. This is not a daydream. We are creative and wilful ourselves. And such are the people who visit us. Apparently, similarities attract each other...**

On workdays the Copernicus Science Centre is full of school children. We are also visited by teachers who take part in workshops, seminars and meetings focusing on active teaching methods. We have the feeling that we have become seeds of change in Polish education. Yet the circle of people interested in CSC is not limited to the educational environment. It also includes scientists, educators, learners, media, business and innovators, decision-makers, artists, parents, seniors and pensioners.

General level of satisfaction with the visit remains high. A huge majority of visitors stated that a visit to the Centre helps in the

independent discovery of the world and causes a greater interest in science. Almost two-thirds of questioned people declared an increase in knowledge after the visit to the Centre.

**The two-millionth visitor entered the Copernicus Science Centre on 25 September 2012.**

We planned several special events on this occasion. We hid treasure among the exhibits, which could be found with the help of a special map. During workshops, we proved that music is everywhere, and a kilogram of carrots is enough to... create a brass band. On that day, visitors to the Centre were able to write their suggestions for new actions, changes and improvements to our institution on the barrier of the Foucault pendulum.

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**1 279 416** people

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**904 664** people visited our exhibitions

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**220 032** people visited the Heavens of Copernicus

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**2500–3000** people visited our exhibitions per day



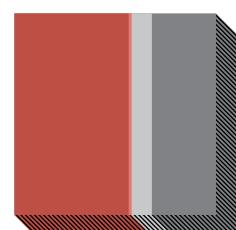
## Visitors and opinions

**It is the only place I know in Poland where science becomes art, and art becomes science.**

Quote originate from the CSC's guest book.

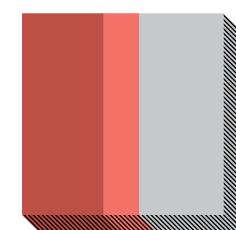
### Education levels of our visitors

- 56,7% – primary / middle school
- 1,4% – vocational
- 10,1% – secondary / post-secondary
- 31,9% – higher



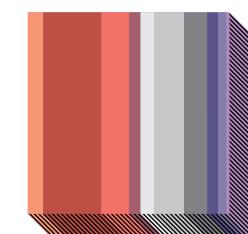
### Visitors by region (individual visitors and tourist groups)

- 40,5% – Warsaw
- 17,5% – Mazowsze (region surrounding Warsaw)
- 42% – other voivodeships



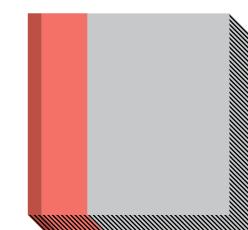
### Visitors by age

- 7,6% – 0–6
- 28,9% – 7–12
- 13,7% – 13–16
- 5,7% – 17–19
- 6,9% – 20–25
- 14,7% – 26–35
- 11,4% – 36–45
- 5,5% – 46–55
- 4,1% – 56–65
- 1,5% – over 65 years old



### Visitors by region (school groups)

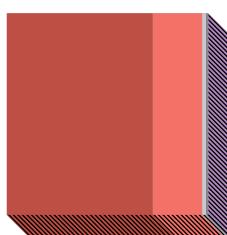
- 6,9% – Warsaw
- 22,6% – Mazowsze (region surrounding Warsaw)
- 70,5% – other voivodeships



These are opinions of our visitors. The survey was conducted on people aged 15 and over.

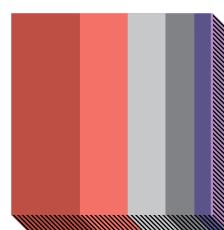
Are you generally pleased with your visit to the Copernicus Science Centre?

- 72,4% – yes, definitely
- 24,5% – yes
- 2% – neither yes or no
- 0,8% – not really
- 0,3% – definitely not



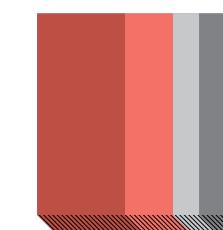
### Are you more interested in science now than before the visit?

- 34% – yes
- 23,7% – yes, definitely
- 18,8% – neither yes or no
- 14,2% – not really
- 8,2% – definitely not
- 1,2% – I don't know / it's hard to judge



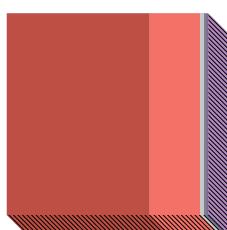
### Did your knowledge in the area of any field of science increase due to your visit to the Copernicus Science Centre?

- 43,6% – yes
- 23,8% – yes, definitely
- 13% – neither yes or no
- 11,9% – not really
- 6,8% – definitely not
- 0,8% – I don't know / it's hard to judge



### Do you agree that the Copernicus Science Centre helps to explore the world on one's own?

- 70,7% – yes
- 25,1% – yes, definitely
- 2% – not really
- 1,3% – neither yes or no
- 0,5% – definitely not
- 0,3% – I don't know / it's hard to judge



## Exhibitions

**A change in the Centre's mission involves a change in focus from the transfer of knowledge to the development of skills. This has become a programme indicator for all our activities. We design them in such a manner that they could contribute to the development of active, considerate citizens with courage to undertake new challenges, open minds and readiness to experiment. This is also our goal when we improve the already existing exhibitions and design entirely new ones.**

In the year 2012, we focused on a thorough evaluation of the exhibitions. We tried to find out what provokes our visitors to visit them, in what way they use the exhibits, how they profit from the visit to an exhibition, what needs it satisfies and what is missing. We conducted a broad and meticulous survey not only among the direct recipients, but also among our employees (especially the animators employed on exhibition sites).

We described the process of exhibition creation; we drew conclusions from the mistakes we had made; we developed a catalogue of best practices and recommendations for future exhibition authors. We subjected the existing exhibits to a critical analysis comparing them with newly created standards. We checked to what extent they will contribute to the goals that we want to achieve. We found out which of them are in line with our new approach, and which will have to be substituted or modified considerably in the near future.

We are happy that our exhibitions are still very popular. The most frequently visited exhibitions in 2012 included the Roots of Civilisation, On the Move and the Humans and the Environment. The composition of average grades for individual exhibitions remains unchanged. All exhibitions are awarded a "strong four" (on the scale of 0 to 5). Just like

in the previous year, Buzzz! is the favourite exhibition.

In 2012, we carried out a pilot programme of "makers" type of activities, that is workshop-type of activities intertwined in the space of the exhibitions. Furthermore, we tested short scientific shows for the audience. These types of actions are important elements that diversify and enrich the experience in the exhibitions and will be probably permanently incorporated into the Centre's programme.

This year, we included in our offer three temporary exhibitions on different subjects and making use of different means of expression. These exhibitions are described in subsequent chapters in more details.



In comparison to the last year's results, in 2012 the attendance rates in the Robotic Theatre decreased, while the percentage of people who visited the RE: generation exhibition increased by 10%.

**Which exhibitions have you visited today?**

**92,3%**  
Roots of Civilisation

**90,8%**  
Humans and the Environment

**90,2%**  
On the Move

**66,4%**  
Light Zone

**57,4%**  
RE: generation

**17,3%**  
Robotic Theatre

**14,8%**  
Buzzz!

**What is your evaluation, in general, of each of the exhibitions you have visited today?**

**The following exhibitions were considered "definitely interesting":**

**77,9%**  
Buzzz!

**65,4%**  
On the Move

**62%**  
RE: generation

**59,8%**  
Humans and the Environment

**58,8%**  
Robotic Theatre

**51,8%**  
Light Zone

**43,2%**  
Roots of Civilisation



In December 2012, we began testing (with audience involvement) new space within the Centre – the High-Voltage Theatre. It includes plasma exhibits and minishows with Van de Graaff generator. The official opening of the High-Voltage Theatre takes place in March 2013.

## Temporary exhibitions

### Crude life

**Specific life forms, the inhabitants of incubators and Petri dishes who used to be an integral part of a body – now cannot survive on their own. Who are they? What are they? Where does the border between the living and non-living, born and artificially conceived lie? We invited artists to the Centre who had contributed with their works to the establishment of bio art.**

Bio art (also referred to as genetic art) uses various life forms as artistic material. The works of our guests refer to such topics as bioethics, genetic engineering and biotechnology. They raise the question of both possibilities

and dangers related to contemporary science. The works are created with the use of cultivated living tissues. The exhibition included ten retrospective projects.

#### Exhibition authors:

##### Oron Catts & Ionat Zurr.

In 1996, they initiated together the Tissue Culture & Art project, as a part of which they began to create art with the use of tissue technologies. In 2000, they were co-founders of SymbioticA – an arts laboratory focusing on research and education, and an institution enabling joint research of artists and scientists – as a part of the School of Anatomy, Physiology and Human Biology at the University of Western Australia.

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**Duration:**  
**3 June 2012 – 24 June 2012**

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The exhibition was a part of GENesis – the Centre's project focusing on biotechnology.

The exposition was prepared together with the Laznia Centre for Contemporary Art in Gdańsk.



A frog steak was created as part of the "Disembodied Cuisine" project in Nantes in France. It took the artists nearly one and a half months to cultivate a five-centimetre-long piece of frog meat from the muscles of a tadpole. The tadpole – after its transformation into an adult frog – swam in an aquarium placed between the banqueters who ate the meat, and was released to a pond in a botanic garden after the meal. The visitors to the exhibition were presented a multimedia documentation of the project.



"The Pig Wings Project" demonstrates the effects of work on the cells of pig bones. The cells were multiplied in such a way that they acquired a form that resembled bat, bird and insect wings.

**On the previous page:**  
The Tissue Culture & Art Project  
(Oron Catts & Ionat Zurr)  
**The Remains of Disembodied Cuisine, 2003**

**On the present page:**  
The Tissue Culture & Art Project  
(Oron Catts & Ionat Zurr)  
**Pig Wings 2011,**  
**The Pig Wings Project, 2000–2002**

## Temporary exhibitions

### Distant Place

The Copernicus Science Centre consists not only of science exhibits. This time we made use of a classic form – photography. We wanted to present an exceptional image of the Vistula River, our closest neighbour. The "Distant Place" exhibition was composed of five stories about the contemporary image of a river in the centre of a city. The opening of the exhibition was also the opening of Pavilion 512 – an open air gallery and a new exhibition space of the Copernicus Science Centre.



A photo publication accompanying the exhibition (designed by Anna Nałęcka) entitled "Miejsce odległe/Distant Place" was a huge success. It was not only one of the best books in the year 2012 according to the prestigious Photo-eye magazine, but was also awarded a special jury distinction at the 22nd Month of Photography in Bratislava.

The Vistula is a magical place, a refuge to some, and a gutter, a landfill, an area for discarded people and objects to others. It can be viewed in many different ways, which we possibly managed to show in our photos. We all saw five completely different spaces.  
– Sputnik Photos

#### Exhibition authors:

Photographers from the Sputnik Photos association: **Agnieszka Rayss, Jan Brykczyński, Michał Luczak, Rafał Milach and Adam Pańczuk**. Sputnik Photos is an international cooperative established by photojournalists from Eastern and Central Europe. Their photos have been published among others by Time, Newsweek, Stern, The Sunday Times Magazine, The New York Times, Le Monde. The members of the association have won awards in such press photography competitions as World Press Photo, Pictures of the Year International and Canon AFJ Female Photojournalist Award.

#### Duration:

**5 July – 9 September 2012**



## Temporary exhibitions

### Good Vibrations!

**It evokes emotions, may have a therapeutic influence on our whole body; it enhances our creativity, and our brain loves it already in the prenatal life. What is it? Music. It is music that became the theme of our last temporary exhibition in 2012.**

The exhibition was composed of nineteen interactive exhibits that made it possible to discover the mysteries of sound physics and human hearing. While playing



them, visitors learned about the diversity of sound tones and the various methods of their production. Does a sound wave tickle? How many tones are embedded in a bathroom tile? The exhibits included a huge blast machine which blew air enabling playing plastic bottles. It was also possible to sample, sing like a robot or play a siren. Visitors were able to hear such unobvious and normally silent objects as an egg slicer or an ice-cream stick.

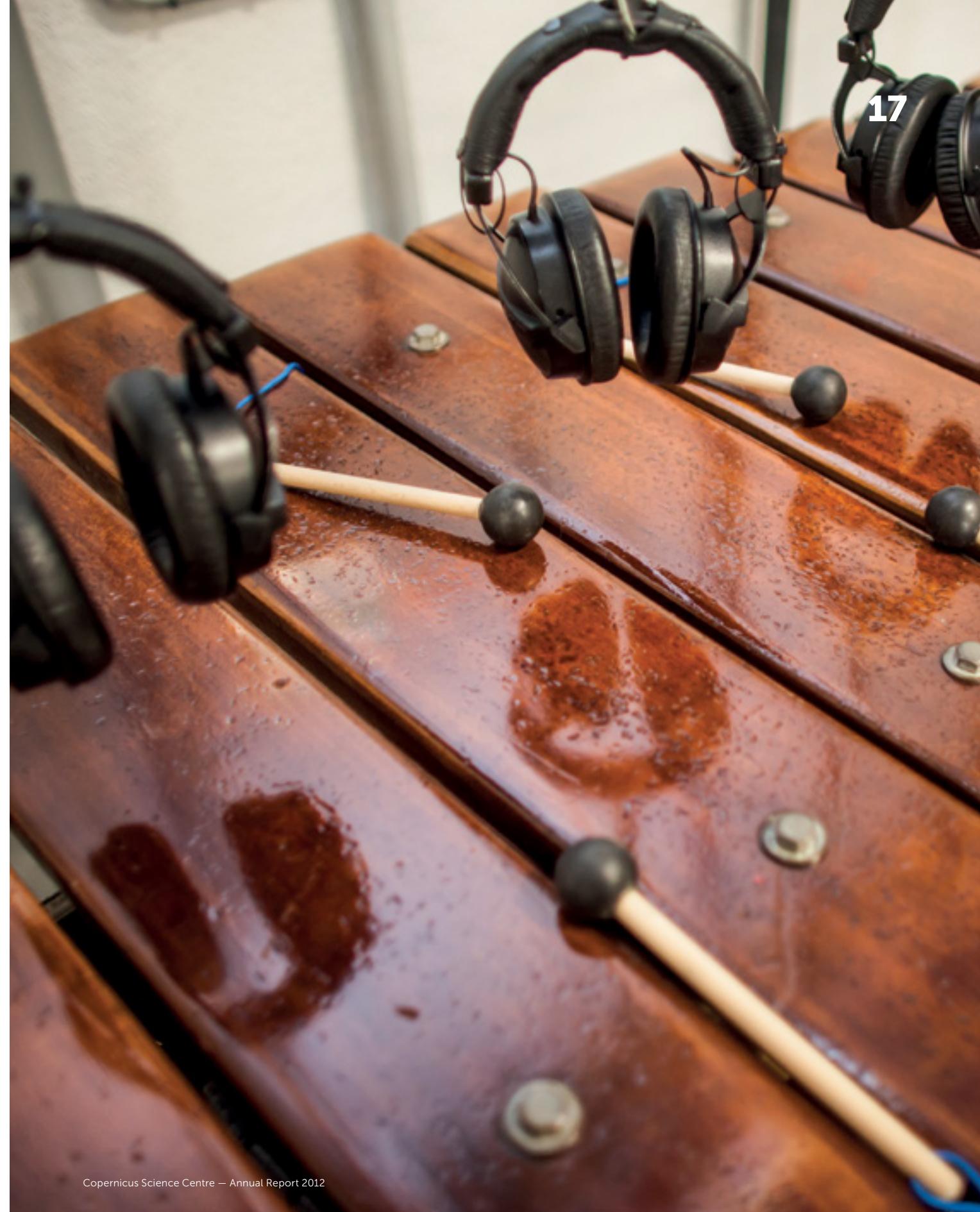
#### Exhibition author:

Michael Bradke, German musician and pedagogue, the initiator and founder of Mobile Music Museum in Düsseldorf. For twenty years, he has been collecting and developing musical objects in his institution – he has visited the whole world with his original expositions and collection. He makes use of music production in social rehabilitation initiatives and youth education.

#### Duration:

**2 October 2012 – 27 March 2013**

On the occasion of "Good Vibrations!" a special visiting route was marked in the Centre's permanent exhibition. It consisted of 17 stops and led through thematic exhibits related to sounds, hearing and music.



## Laboratories

**The offer of the Centre's laboratories (of chemistry, physics, biology and the robotics workshop) relates quite closely to the traditional division of school subjects. Yet pursuant to our interdisciplinary philosophy, the content presented during the classes often combines several perspectives. Nevertheless, classes are held in the labs not only for the sake of admiring the complexity of science disciplines and satisfaction at a self-conducted experiment. They are also training in cause and effect thinking, conclusion drawing and team work.**

The first full year of operation of our laboratories turned out to be a huge success. In particular the classes for lower and upper secondary school groups held during weekdays (Thursday to Friday) enjoyed constant interest. During the classes students worked in small teams (usually pairs). They were provided with theoretical information; they conducted experiments on their own and

wrote down the results in the prepared log books. The participants not only acquired and solidified their knowledge and new skills, but also familiarised themselves with state-of-the-art equipment. All laboratories have been designed and equipped like real laboratories in research institutions. On weekends, laboratories were open to individual visitors. During the Summer in the Discovery Park, we organised free outdoor classes.

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### Chemistry laboratory:

**7** class scenarios

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**5145** participants

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### Biology laboratory:

**7** class scenarios

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**4670** participants

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### Physics laboratory:

**6** class scenarios

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**5097** participants

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### Robotics workshop:

**5** class scenarios

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**3022** participants

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**17 934** people took part in laboratory classes





## The Heavens of Copernicus Planetarium



Exclusive Partner  
of the Planetarium

**Heavens of Copernicus attracts our visitors like a magnet. It is a place that compels us to stop our rush and consider our place in the outer space. A place gathering astronomy enthusiasts that can attract crowds of people camping in sleeping bags in the Centre's park in a cold night during sky observations. Say, for the sake of observing together the transit of Venus – a phenomenon that is not to reoccur during our lives.**

Through our actions, we want to fascinate the audience, show them that we are a part of the Universe. The presenters of the Heavens of Copernicus ensure that the shows have something we care about a lot – interactivity. Running each show live, they adjust it depending on the audience reaction, respond to questions and include information about the most recent news in the field of astronomy.



On 23 June 2012, **the premiere of the 3D stereo display system** took place during a live show "Life 3D live". The 3D system ensures perfect broadcast. The image of the Universe becomes more natural and involving, and the show transfers knowledge even more efficiently. "Life 3D

The planetarium is a versatile place which, apart from science, presents innovative artistic actions (on the occasion of the transit of Venus we hosted the Kielce Dance Theatre; in 2013 we plan to introduce a series of starry night concerts and music shows accompanied by our laser system).

### Events:

Where does the black heart of the Universe beat, what love stories are hidden in winter constellations and why addressing your loved one "my little star" has a deep astronomic meaning? On 14 February, St. Valentine's Day, we organised special live shows **Constellation: Love**. A date under the stars was highly popular – it was attended by 410 people.

On 18 March, on the occasion of the **International Day of Planetariums**, the employees of

several Polish planetariums met in the Heavens of Copernicus. The feast was celebrated by astronomers, physicists, graphic designers, computer engineers, educators and astronomy enthusiasts. On that day, we made the planetarium available to our guests and invited them to conduct shows. Most shows were conducted live; all of them were free of charge.

**Children's Day** in the Heavens of Copernicus (1 June) was celebrated with the premiere of a show for the youngest children (aged 3–5) "Frank the Hare and the Stellar Adventure". Presenters take small visitors do the forest where they search for animals that can also be found in the sky disguised in the form of constellations.

The show prepared by our production studio was nominated to an award in the competition for

the most developmental initiative for children Stoneczniki 2012, organised by the web portal Czas Dzieci. On the occasion of **Saint Nicholas Day** (6 December), we presented a new version of the show, this time tracking down animals in the snow and looking for them in the winter sky.

The sky above our heads enables us to observe something more than just the Moon and the planets. Within the range of telescopes – even in the city – there are nebulas, galaxies and star clusters. **Astronomical observations** in the Discovery Park were highly popular. Crowds of Warsaw inhabitants came to count stars together or admire a Perseid meteor shower. A permanent group of astronomy enthusiasts has already formed during night observations (open to all people interested). The observations of the Sun (3 June), Night of Planets (15 June), July

observations of Jupiter and August meteor shower were attended by almost 700 people.

Our visitors are able to come to the planetarium even at such an ungodly hour as 6.45 a.m. We watched together a **live broadcast from the NASA Mission Control Centre** of the landing of the Curiosity Rover on Mars. The event (on 6 August) was attended by 160 people, and the broadcast was accompanied by a commentary of a Heavens of Copernicus presenter.

We also decided to celebrate the **end of the world** forecasted to fall on 21 December. On that day, our visitors could learn to write dates with the use of Maya calendar, find out whether they forecasted any events following 21 December 2012, learn about other ends of the world in pop culture and find out how fire-fighters would cope with

them. The meeting's highlight was the lecture of Professor Maciej Konacki from the Nicolaus Copernicus Astronomical Centre of the Polish Academy of Sciences about the ends of the world that occur in various parts of the Universe each day. Well... The event was a failure – the world still exists. In the future we will try to do better if we can. Armageddon was celebrated by 200 people.

The Heavens of Copernicus was visited by **220 032** spectators.

live" was prepared by our **production studio**. Currently, works on our first film production in the full-dome technology are in progress. The "Dream to fly 3D" movie will be a scientific and at the same time a poetic story about the history of flying. The first show is planned for 2013.



Copernicus Science Centre – Annual Report 2012

The night of 5 June 2012 was a real astronomy feast. The transit of Venus, that is the passage of Venus visible against the solar disc, is a phenomenon that can be observed again only by the future generations (in over a hundred years!). Astronomy enthusiasts were invited to a dance show of the Kielce Dance Theatre and a movie marathon. We connected by a satellite with the other hemisphere in order to watch the transit in other countries on our

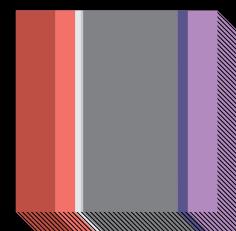
screens. And even though the Sun disappointed us by hiding behind a thick layer of clouds, the sky enthusiasts did not despair – several dozen people stayed with us the whole night, while others joined us next to the planetarium at 4 a.m. to watch the invisible journey of Venus against the solar disk and eat a luncheon on the grass together. The transit observation was attended by nearly 1000 people.

# I love the Planetarium. The shows are amazing and so engrossing that you are tempted to experience it once again.

Quote originate from the CSC's guest book.

## Our viewers

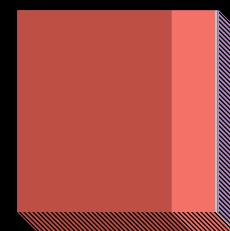
- 19,6% – adult visitors
- 9,8% – children
- 2,9% – students
- 1,2% – seniors
- 46,8% – school groups
- 5% – tourist groups
- 14,7% – families



These are opinions of our  
viewers. The survey was  
conducted on people aged  
15 and over.

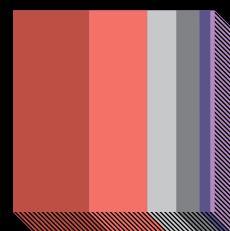
## In general, are you satisfied with your visit to the planetarium?

- 76,6% – yes, definitely
- 21,5% – yes
- 0,9% – neither yes or no
- 0,5% – not really
- 0,5% – definitely not



## Are you more interested in sci- ence now than before the visit?

- 37,8% – yes
- 28,8% – yes, definitely
- 14,4% – neither yes or no
- 11,3% – not really
- 5,4% – definitely not
- 2,3% – I don't know / it's hard  
to decide
- 0,5% – definitely not



Film ranking according to our  
adult audience (at the scale of  
0 to 5)

**4,7**  
*Origins of Life*

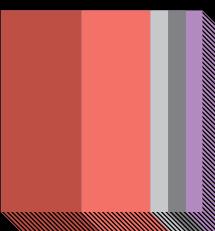
**4,6**  
*We Are Astronomers,*  
*One World, One Sky,*  
*Earth, Moon and Sun,*  
*The Sky above Warsaw* (live show  
conducted by the presenters of  
the Heavens of Copernicus)

**4,5**  
*Galileo. The Power of the*  
*Telescope,*  
*Black Holes – Journey into the*  
*Unknown*

**4,3**  
*Tales of the Maya Skies*

Did your knowledge in the  
area of any field of science  
increase due to your visit to the  
planetarium?

- 40,1% – yes
- 34,1% – yes, definitely
- 8,8% – neither yes or no
- 8,8% – not really
- 7,8% – definitely not



## Events

# GENesis

**The GENesis project was a series of events taking place over a few months focusing on cloning, genetically modified organisms and tissue cultivation. How do they change our life, law, ethical standards? What is their impact on the culture? It was the first such comprehensive action of the Copernicus Science Centre focusing above all on social dialogue. We raised controversial questions that divide the society. We set ourselves the task to hold a discussion based of facts and reliable studies instead of emotions and prejudice. We presented all arguments for and against, talked about science, enabled our audience to interact with the experts.**



### Events:

On 23 February, we began the GENesis project with a sheep walk (with real sheep) and a **lecture of Professor Keith Campbell** open to the public.

We wanted **young people to meet** with a distinguished scientist. The discussion with Professor Campbell (on 24 February) was attended by 150 students and biology teachers from secondary schools in Warsaw. One element of the debate consisted in a discussion game focusing on cloning and related ethical dilemmas.

**Living library** was a form of views exchange, which enabled free and direct discussion of scientists and the public. Six experts, each of them in a separate room, delivered mini lectures and answered emerging questions. Participants could change rooms freely and talk about cloning in all scientific and cultural contexts. The role of "interactive books" was played by a lawyer, a bioethician, a biologist, a doctor,



a science fiction writer and an expert on mass culture. Professor Keith Campbell acted as a special guest of the Living library. The event (on 25 February) was attended by 350 people.

Xplore Health is a European project coordinated by the Parc Cientific de Barcelona. Its aim is to enhance social awareness of the current state of scientific research in areas related to health, its ethical, legal and social dimension. Within Xplore Health, we opened our laboratories to groups of teenagers and adults. The class "**Create a genetically modified bacterium**" was attended by over 130 people.

**GMO: commentary.** What we fear most is the unknown. According to **sociological research commissioned by the Copernicus Science Centre**, **66% of Poles say that they know next to nothing about genetically modified organisms.** GMO may be feared or protested against. On the other hand, it may be supported and popularised. But above all, one needs to know



what it is. On 22 March, all visitors to the Copernicus Science Centre familiarised themselves with facts and phenomena related to the genetic modification of organisms and heard opinions of Polish specialists representing different attitudes towards GMO. The meeting was attended by practitioners carrying out biotechnological research on everyday basis: Doctor Sławomir Sowa, Assistant Professor Katarzyna Lisowska, Professor Stefan Malepszy, as well as sociologist Doctor Piotr Stankiewicz. The scientists commented on the most recent developments and raised the most burning questions, as well as answered questions from the audience.

**GMO experimental stations** were a happening aimed at familiarising the inhabitants of Warsaw with the most basic information about genetically modified organisms, facilitating further acquisition of knowledge and popularising the GENesis project. At special experimental stations located in two busy spots in the city, we carried out strip tests on the presence of genetic modification in seeds. The happening took place on 26 March. It was attended by nearly a thousand people. We recreated the event on 22 April in the RE: generation exhibition in the Centre.

At a **Scientific café about GMO**, we decided to reverse roles and change the pattern of classical

discussion. The experts we invited (scientists – practitioners, dealing with GMO on everyday basis) prepared problems and questions for participants, asking them to share their knowledge and views. The meeting entitled "Everything you wanted to know about GMO, but had nobody to ask" was held on 26 April and was attended by 60 people. The discussion was organised with the help of experts related to the Warsaw Science Festival.

Not only experts but also the audience were able to participate in a **Speakers' Duel** on a stage, with a microphone, taking a few minutes to share their opinions, fears and ideas. We talked about the future of biotechnology, its development, chances and fears related to it. **Professor Mark Post**, a bioengineer from the Maastricht University in Netherlands, who only a few years ago dealt with reconstruction surgery, was a special guest of the meeting. Currently (owing to his knowledge in the area of multiplication of selected tissues, above all muscles, in a laboratory), he has moved to the production of meat in laboratory environment. He decided that this way he may bring more benefit to the world and contribute to solving the problems of hunger, lack of energy, water and even global warming. The Speakers' Duel was held on 2 June and was attended by nearly 100 people.

**Sheep and the City** was a series of eight workshops for children aged 1–3. Classes inspired with the adventures of Dolly the Sheep, developed hearing, sight and touch. The workshop enjoyed record-breaking popularity. Tickets were out within less than twenty seconds from the moment of opening the booking. The workshops were attended by 80 children.

The GENesis series included also **workshops with the "Biotechnology" experimental toolkit** for teachers. More details on the subject can be found on page 50.

The events were accompanied by a temporary exhibition "**Crude life**". More details on the subject can be found on page 12.

**Duration:**  
**23 February 2012 – 2 June 2012**





## ***Recipe for a sheep, without the use of a ram***

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**Preparation time:**

less than 200 days

**Ingredients:**

- three sheep
- culture medium for cell cultivation
- good quality grass for sheep
- microscope
- micromanipulator
- incubator for the cultivation of mammal cells
- electroporator

**Preparation:**

Take two identical sheep. Set one aside for later use, draw an ovum from the second one and delicately remove its nucleus with genetic material. Next, take an entirely different sheep, and draw an epithelial cell from its udder. Do not remove the nucleus. Preserve the genetic material for the new sheep.

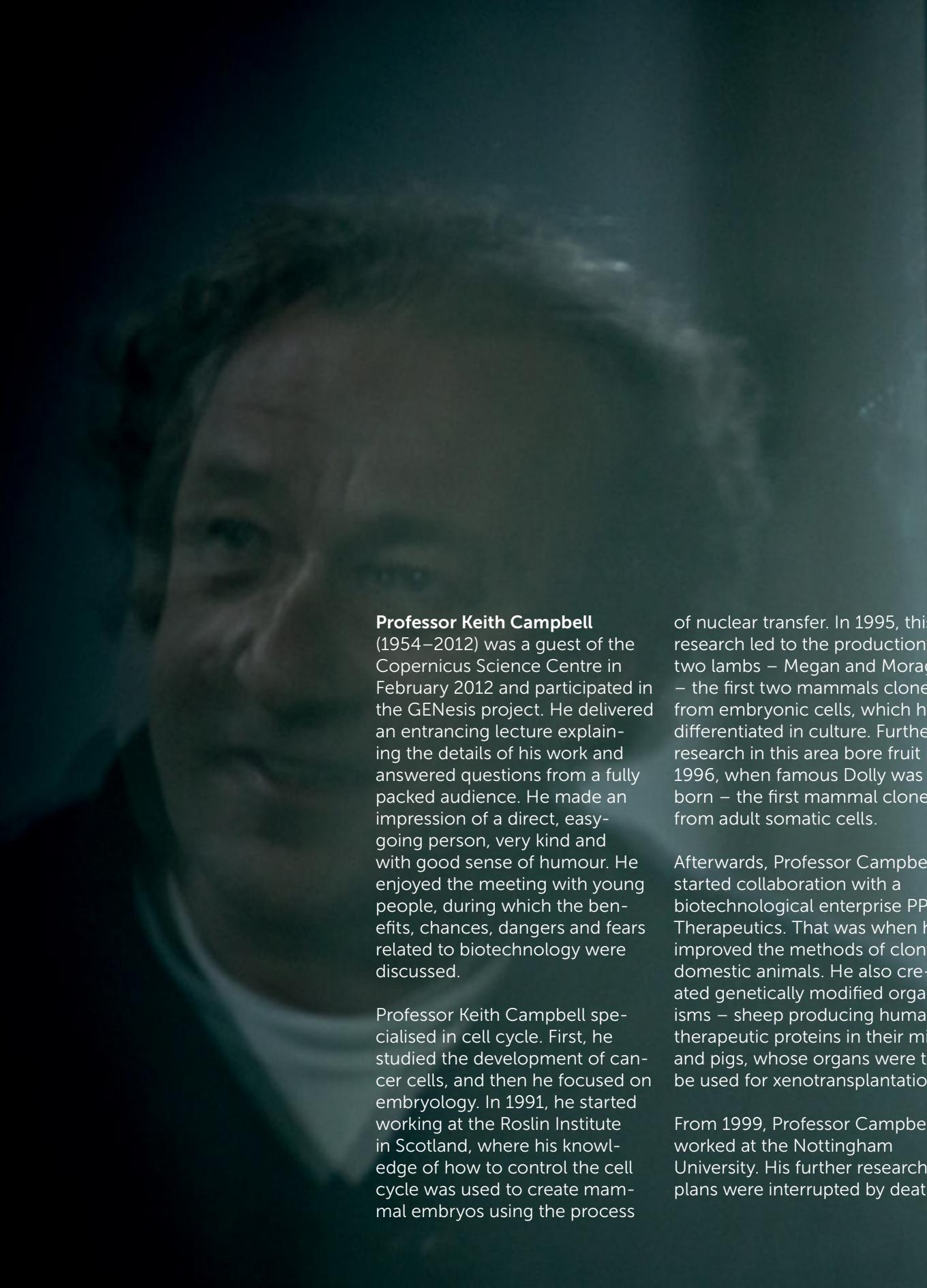
Place both cells next to each other and join them using an electric impulse. Grow the resulting cell for a week until it divides into ca. a hundred cells.

Now take the sheep that was set aside and place the newly grown embryo in the uterus. Wait one hundred forty-eight days. Assist at birth. It's ready!

Finally, name the new sheep **Dolly** and announce the rest of the world that you have managed to clone a mammal from an adult somatic cell using the process of nuclear transfer.

**Recipe authors:**

Professor Keith Campbell and Professor Ian Wilmut from Roslin Institute in Scotland

**Professor Keith Campbell**

(1954–2012) was a guest of the Copernicus Science Centre in February 2012 and participated in the GENesis project. He delivered an entrancing lecture explaining the details of his work and answered questions from a fully packed audience. He made an impression of a direct, easy-going person, very kind and with good sense of humour. He enjoyed the meeting with young people, during which the benefits, chances, dangers and fears related to biotechnology were discussed.

Professor Keith Campbell specialised in cell cycle. First, he studied the development of cancer cells, and then he focused on embryology. In 1991, he started working at the Roslin Institute in Scotland, where his knowledge of how to control the cell cycle was used to create mammal embryos using the process

of nuclear transfer. In 1995, this research led to the production of two lambs – Megan and Morag – the first two mammals cloned from embryonic cells, which had differentiated in culture. Further research in this area bore fruit in 1996, when famous Dolly was born – the first mammal cloned from adult somatic cells.

Afterwards, Professor Campbell started collaboration with a biotechnological enterprise PPL Therapeutics. That was when he improved the methods of cloning domestic animals. He also created genetically modified organisms – sheep producing human therapeutic proteins in their milk and pigs, whose organs were to be used for xenotransplantation.

From 1999, Professor Campbell worked at the Nottingham University. His further research plans were interrupted by death.



## FameLab

**FameLab was developed at the Cheltenham Science Festival in 2004 and soon became one of the world's leading competitions related to science communication. It is held in over 20 countries and is addressed to young scientists specialising in natural science, exact science, technology, agriculture and medicine. In 2012, the Copernicus Science Centre together with the British Council organised the first finals of this competition in our country. Poles entranced the experts and the public. Also the international audience.**

"If you can't explain it to a six year old, you don't understand it yourself", Albert Einstein once said. In short, in FameLab we are looking for a common language. Understandable communication between scientists and the rest of the world is the basic idea of the competition. Participants have three minutes to tell about the scientific research they carry out. They are only limited by their imagination (the rules prohibit the use of any multimedia aids; one can only use props carried onto the stage by oneself).

Scientific correctness, the ability to explain complex scientific problems and charisma are what counts here.

As many as 82 scientists applied to the first edition of Polish FameLab. Twenty-five proceeded to the next stage (which took place on 3 March 2012), and ten made it to the finals. The finals took place during the Night of Museums on 19 May 2012.

**The participants were evaluated by a jury composed of:**

**Irena Cieślińska** – science communicator, editor of several popular science magazines, Deputy Director of the Copernicus Science Centre,

**Konrad Bajer**, Ph.D. – senior doctor lecturer of physical sciences, a member of the Programme Council of the Copernicus Science Centre,

**Jacek Wasilewski**, Ph.D. – media and rhetorics specialist,

**Piotr Najsztub** – journalist.

Paper is the most resistant means of preserving information. What a controversial argument, especially in the era of digitalisation and triumph of electronic

media... But it is this statement that won in the first Polish edition of FameLab. Its author – **Monika Koperska** – won the hearts of the jury (taking the first place during national finals) and the audience (Audience Award and Sponsor's Award). Our finalist was also successful in the international finals in Great Britain, where she finished second!

The winner of the first Polish edition of the FameLab competition, deals with conservation chemistry. She likes calling herself a "spectrometrist". First, she makes objects age, so that she can later examine their nature with a spectrometer and use obtained knowledge to conserve objects that have aged in a natural way. She presides over a post-graduate student's association at the Jagiellonian University in Cracow.

The BMW company acted as a partner of the FameLab 2012 competition and funded the Sponsor's Award.

Science is the key to solving major social problems: climate change, obesity, AIDS or the energy crisis. That is why we are looking not only for new, charismatic personalities in the world of science who can inform or make people interested. We are also looking for enthusiasts and role models. For researchers that are able to inspire the next generations of people who could introduce great, important changes for the humankind. It is worth taking care of the appeal and prestige of the profession of the scientist. We will all profit from it.

– Professor Mark Lythgoe,  
Director of the Cheltenham Science Festival



## Przemiany Festival

**A theatre show on an isle at the Vistula. Previously unpublished recordings of poet Miron Białoszewski. Customised furniture and installations which make it possible to touch words (literally). Concerts, film previews, intergenerational projects, visual arts and new technologies. The Copernicus Science Centre went downtown again in order to change, activate, challenge stereotypes and join people with different views.**

The festival was inspired by the transformation of the Powiśle district in Warsaw, where we moved in two years ago. It became a part of our identity, but naturally we also take part

in its transformation. This year, Przemiany Festival (meaning: "Transformations") focused on humans and their place in the dynamically developing world. The main themes were: city, localness, neighbourhood, communication between people and their changing interrelations. On the one hand, we wanted to implement projects in our vicinity. On the other hand, we wanted to go beyond Warsaw and emphasise that the concept of the festival is a part of a greater whole: world's tendencies of thinking about metropolia, humans and participation in culture. We invited local organisations and initiatives to collaborate in the creation of Przemiany. Admission to all events was free of charge.

This year's Przemiany Festival was opened on 1 September by **Port Miron**. It was an interdisciplinary



project (directed by Paweł Passini and Hanna Nowak-Radziejowska) and an original tale about Polish poet Miron Białoszewski and his Warsaw. An auditorium accessible only via a bridge or a boat. A stage on the river. Four actors. City panorama reflected in water. Musicians playing live. Street noise. The show combines art and reality as equal partners. The starting point were yet unpublished recordings of poems and excerpts from poet's diaries prepared for his blind friend, Jadwiga Stańczakowa. Port Miron consisted also of installations set in the undergrounds of the Copernicus Science Centre. Denis Kolokol and Daniel Moński created a zone of architectonic sound, in which words could be touched like any other real being – as well as transformed, matched, modified and combined in space with others. A tangible experience of describing the world.

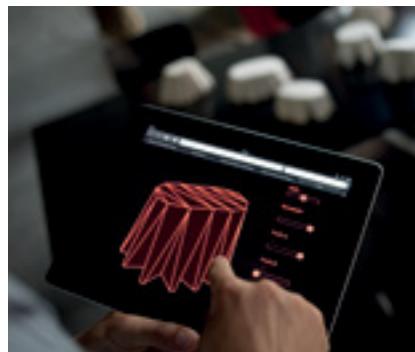
**6x6 Project.** A meeting of six designers and six craftsmen. It was an offer of an unusual walk in the Powiśle district through traditional craftsmen workshops transformed for the purpose of the festival into mini galleries. Designers worked in a shoemaking, carpenter, turner, glazier and tailor workshops and a linen press enterprise. They were inspired by local myths and stories of the workshops and their owners.

**Beach Project** was a picnic created together with senior citizens. We conducted workshops focusing on a senior-friendly city, and the zone of outdoor games was a perfect opportunity to bridge the generation gap. On the premises of the Centre's park, we played games together that used to dominate Polish streets and patios: elastic, cymburgaj and hopscotch.

The **Make a piece of furniture for Przemiany** action made it possible to experience so called mass customisation, which is a new designing trend. It combines two contradictions: the customisation of a product, characteristic of craftsman work, and mass production. The participants of the Festival could design chairs on their own using a simple Internet application. The most interesting ones were produced by a special core cutter and became a part of the scenic design of Przemiany.

**Identi\_TY** was an original review of short Polish animations related to the themes of identity, loneliness, exclusion, gender and human relations. Presented movies included world famous productions such as: *Millhaven* by Bartek Kulas, *Tango* by Zbigniew Rybczyński, *Refreny* by Violetta Sowa (with music by Leszek Możdżer), *Danny Boy* by Marek Sobecki, *Był sobie król* by Tytus Majerski (with compositions by Maria Peszek), *Chick* by Michał Soch, *Hobby* by Daniel Szczechur and *The Animated History of Poland* by Tomasz Bagiński.

We exercised our brains during the **Vistula Flows** project. Participants divided into teams tried to find answers to different problems: from crime mysteries to philosophic questions.



The roof of the planetarium was arranged into a **music stage**. Every day visitors could listen to DJ sets performed by well-known artists in this unusual place. The Festival's highlight and finale was **Sonic Fiction**, an all night concert performed by experimental musicians from the whole world who use laptops, synthesisers and audio transformers to play music.

**Duration:**  
**1–9 September 2012**



## Science: It's a girl thing!

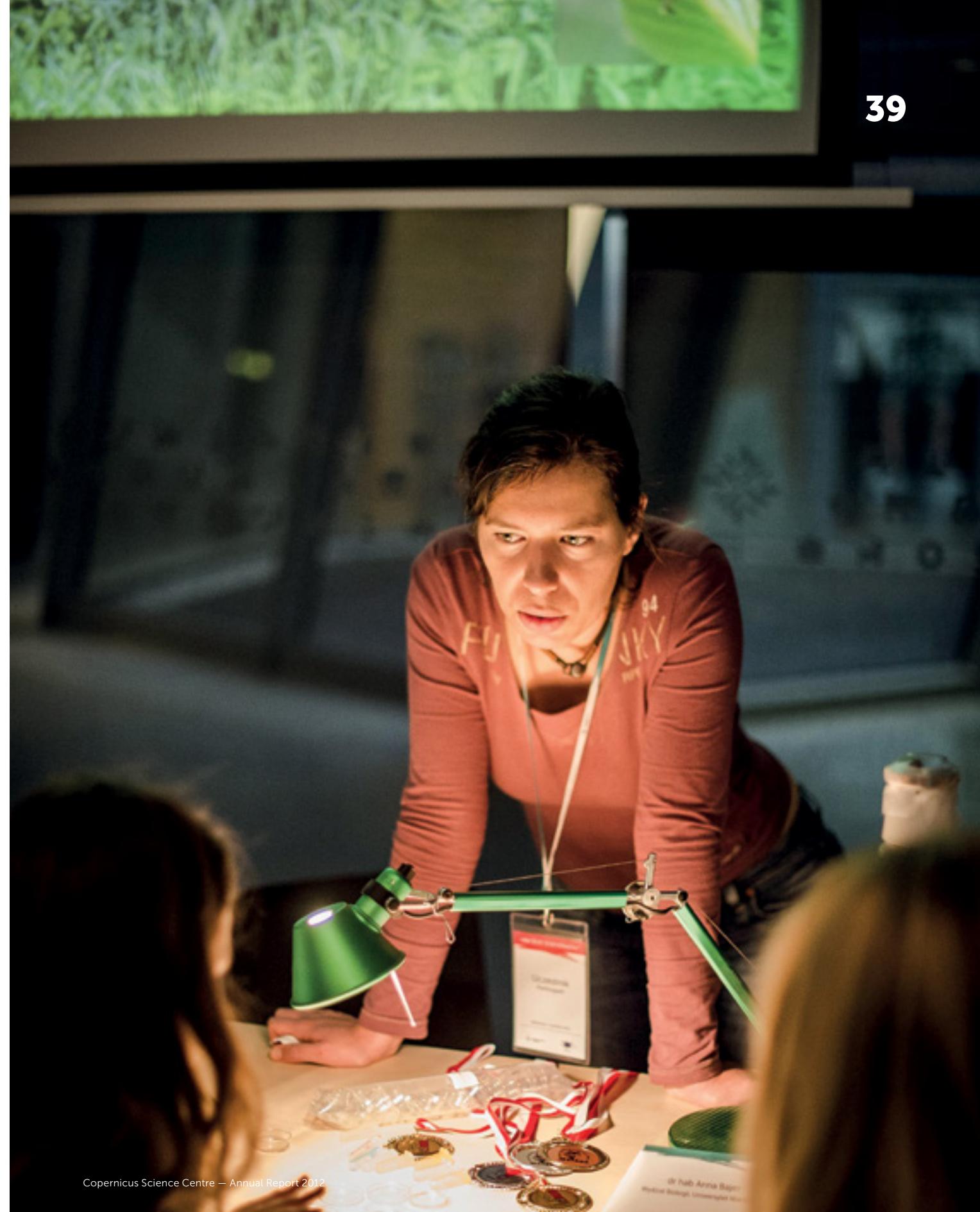
As one of the 27 members states of the European Union, Poland takes part in a three-year-long campaign organised by the European Commission "Science: It's a girl thing!". It is intended to enhance the interest of girls in science and to encourage women to pursue a career in science.

According to statistics, young people usually make crucial decisions regarding their future profession at the age of 13 to 17. That is the stage at which they will either choose science or

give up on it. On 5 December a girl's attack was launched in the Copernicus Science Centre. A feast of oestrogen. We proved that science is not only for old, noble men wearing glasses. We challenged stereotypes about the traditional division of career paths into typically male and female. The female representatives of the world of science met during workshops with students from secondary schools in the Mazowieckie Voivodeship. A lecture was delivered by professor Anja Anderson, Danish astrophysicist from Niels Bohr Institute. A speech was also delivered by Monika Koperska – the finalist of the international FameLab competition for scientists.

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Women constitute **over a half** of the students' population in the European Union and **45%** of all doctorate students, but only **1/3** work as scientists



## Science Picnic

**One day in a year when research institutes, universities, laboratories and workshops become deserted. Scientists appear before normal people, real audience, and explain complex scientific problems in an interesting, charismatic and inspiring way. How much we need one another, and how great is the people's need to experiment and discover the world is shown by the crowds that gather each year on the occasion of the Science Picnic – Europe's largest outdoor science-popularisation event.**

The 16th Science Picnic of the Polish Radio and the Copernicus Science Centre, on 12 May 2012, was held at the Marshal Edward Rydz-Śmigły Park in Warsaw.

As usual, the Science Picnic provided a perfect opportunity to present science and its communicators to a broader audience. **This time the main theme was energy.** It was so comprehensive that both an engineer and a specialist in humanities could identify with it. The audience could unleash a thunder storm, feel on their own hand the energy generated during explosive synthesis of water and watch a simulation of a flood disaster. In the tent of the Copernicus Science Centre, we built windmills and

a torch powered by a magnet; we learned to strike fire and played a game about photosynthesis. The stage was taken by Mark Lewney, alias Doctor Rock, with an unparalleled guitar concert during which the audience listened to an unusual lecture about the theory of superstrings and the beginning of the Universe. After this dose of energetic music and physics, Neil Kelso showed how to walk or even embark on a space journey without moving at all. Kari Byron, a science communicator known from *MythBusters*, was the star of this year's Picnic.

In 2012, the organisational structure of the Picnic changed. Currently it is composed of the Management Board, an Honorary Committee as an advisory body of the **Management Board**, a Programme Team and an Organisational Team. The

Management Board responsible for the Picnic was composed of Andrzej Siezieniewski, the President of the Polish Radio Management Board, and Robert Firmhofer, the Director of the Copernicus Science Centre. The Honorary Committee, whose composition will change each year according to the theme of the event, is chaired by Professor Łukasz Turski from the Centre for Theoretical Physics of the Polish Academy of Sciences, the initiator of the Science Picnic and the Chairman of the Programme Council of CSC. In 2012, the Honorary Committee

was composed of distinguished professors: Zygmunt Kolenda, Maciej Sadowski, Bogusław Smólski, Kazimierz Wójs, and Professor Barbara Kurdycka – the Minister of Science and Higher Education. Assistant Professor Konrad Bajer from the Institute of Geophysics of the University of Warsaw became the head of the Programme Team, whose task was to evaluate the content of shows and exhibitions presented during the Science Picnic. **The Organisational Team** is lead by Iwona Maksymowicz (CSC) and composed of the representatives of the Polish Radio and the Copernicus Science Centre.

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**90 000** visitors

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Nearly **200** institutions from 17 different countries

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**4** ha large area of the Picnic

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**89%** of respondents declared their will to participate in the next picnic

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Nearly **80%** of respondents said that the shows during the Picnic convinced them that science is interesting (**83.1%** of people) and that the society needs it (**77.2%** of people)

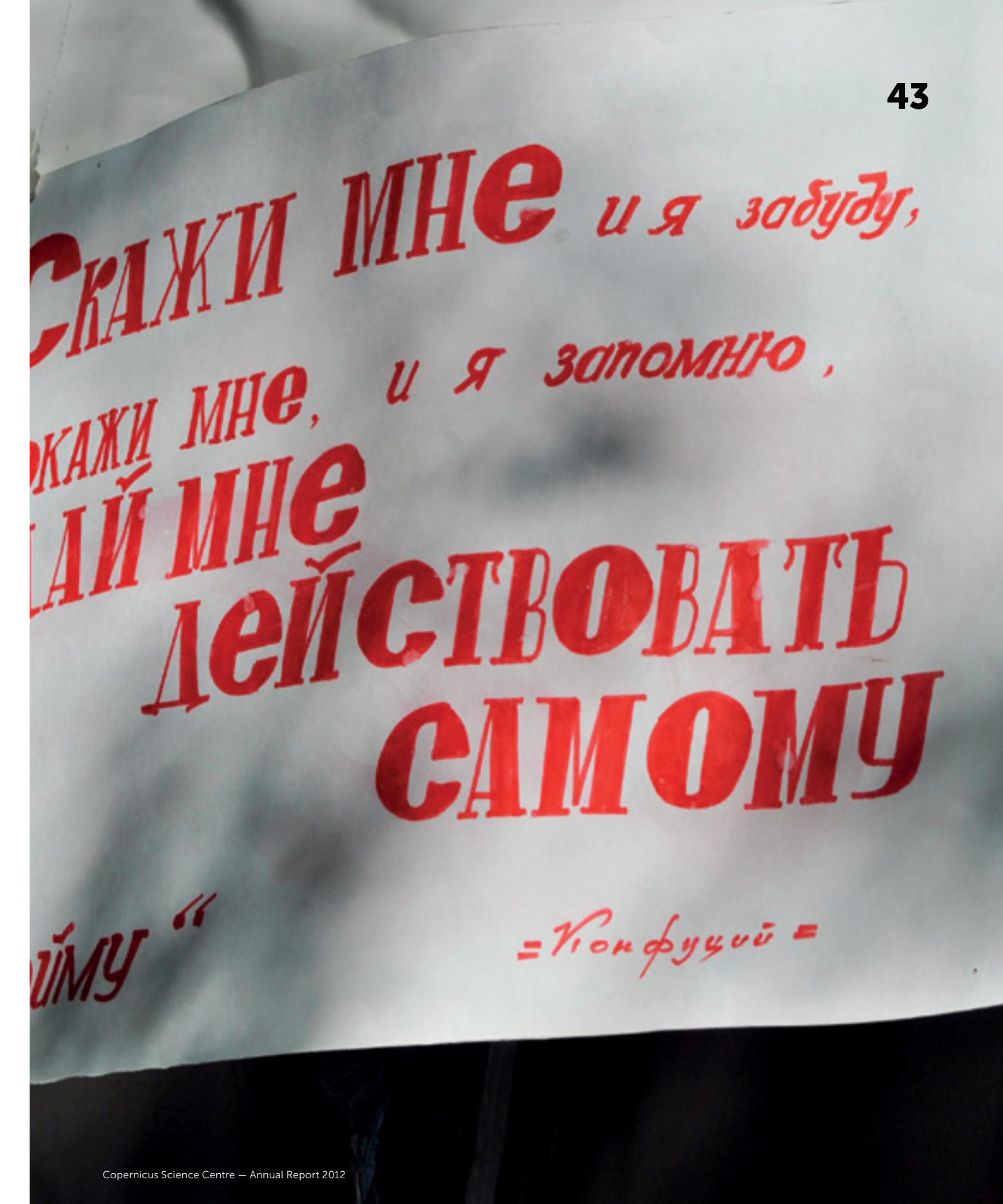


## Science Picnic abroad

Last year, Young Explorers' Club were founded in Georgia, Russia and Belarus. This strengthened our conviction that the concept of experimenting is universal and international. We are pleased that the Science Picnic has joined the group of goods for export. It became a brand of its own, and an increasing number of foreign partners recognise the Picnic as a model and ask us for guidance in the organisation of this type of events. We share our know-how and help in the organisational process. This year's achievements of our friends from Georgia and Croatia show that the Science Picnic is a reliable recipe for success.

The first Croatian Science Picnic was held on **16 September**, in the Boćarski dom city park **in Zagreb**. More than twenty tents and the stage were occupied above all by students from research clubs, scientists and science communicators known to Croatian public. A nearby café hosted the shows of TEDxZagreb. The Picnic was visited by ca. five thousand people. We travelled to Zagreb with a show about pressure, and held a series of meetings with people involved in the creation of the first science centre in Croatia.

The first Georgian Science Picnic was held on **29 September** in **Tbilisi**. Nearly fifty tents were pitched in the Vake park. They were occupied by scientists representing various fields of science – from archaeology to physics. The team from the Copernicus Science Centre took two tents and was besieged with visitors. Animations at our stand had no end, and the show about pressure presented on the stage was received by the Georgian audience with enthusiasm. In spite of electoral fever (presidential election was in progress then), ca. five thousand people turned up. The picnic turned out to be a huge success of its organisers from the Ilia Chavchadze University and all people working in the tents – renowned scientists, doctoral students and two Georgian Young Explorers' Club.



### Other events

**The Copernicus Science Centre is visited by people of all ages: from the youngest children to seniors. We design our offer so that everyone can find something for oneself. We act according to our mission, raising curiosity, emotions and interest in science. People compelled to think in patterns and to give conventional answers often cease to wonder about the functioning of the world. We encourage departing from beaten tracks.**

During the **Weekend for the Very Adult** (21 and 22 January), we proved together with seniors that science and curiosity do not ask about the age. On the occasion of Grandmother's and Grandfather's Day, people aged 66 and over were granted a free entrance to the Copernicus Science Centre. We prepared workshops entitled "Sensual" conducted by Wzorowo project

group (participants' task was to create an object that influences the senses, e.g. a massaging device), we offered exhibition sightseeing with an animator or on one's own, a visit to the Robotic Theatre, and encouraged seniors to attend a lecture of a gerontologist on "How to take care of oneself in winter". In 2012, we were visited by over 2600 seniors.

We invited 10 people from different parts of Poland, who qualified on the basis of submitted works (entries were accepted till the end of February), to attend **free designing workshops "Focus on the Sun"**. Participants included architecture and design students. They worked in five teams with the objective to develop an educational toy that would somehow refer to the Sun. It was an unusual meeting of young authors and employees of the Copernicus Science Centre: from designers, exhibition originators to constructors and the best specialists in our well-equipped

workshop. Prototypes of exhibits created during the workshops will be presented during next year's Interaction – Integration conference.

**Football Culture Festival: ETNO 2012** was established in order to experience Euro 2012 championship in a conscious, thoughtful and creative manner. We decided to observe the phenomenon of football fever from a cultural angle. The festival was prepared in collaboration with the enthusiasts of cinematography, cultural anthropology and football united in Animacja Foundation, who developed the concept of this undertaking and acquired several movies inspired by football that have been awarded at international festivals. The programme included also meetings with ethnologists, an international football design competition and workshops focusing on the construction of paper football players prepared especially for ETNO by Tougui, a famous designer. The festival took place from 14 to



17 June and was organised owing to subsidies from the funds of the Capital City of Warsaw.

Second year in a row, we invited people to celebrate **Summer in the Park** together. On all weekends in July and August, exceptional meetings with nature, art and science took place in the Discovery Park. We organised classes focusing on four elements in open air laboratories of the Copernicus Science Centre; we encouraged people to take part in drawing workshops, tai-chi and Pilates classes; we watched stars through a telescope; we listened to music, lent books, deck chair and simply had some rest. All activities and classes were free of charge. In 2012, the offer of the Summer in the Park was enjoyed by over 3000 people.

**Tristes Tropiques, or Summer Cinema.** The title of this year's movie series was inspired by the title of one of the most important essays in the 20th century by French anthropologist Claude



Lévi-Strauss. We watched other cultures and raised questions about the beginning of humankind, the need for rituals, initiation, taboo, myths and gender of culture. Movie shows were preceded by meetings and talks with distinguished specialists in the area of cultural anthropology and ethnology. Just like in the previous year, admission to film previews was free of charge. The open air cinema was located in the Discovery Park, and in bad weather we moved inside the building. The weekly shows were presented from July to August. In 2012, 8 movies were watched by nearly 2500 spectators.

We entered the **16th Science Festival** (organised on 22–33 September) dancing along, and all the meetings were dominated by music. We began with the Silent Chemical Disco, for the sake of which for one night we turned into a club full of... chemical elements. Party participants inspired by the Periodic Table were disguised as chemical elements, and partied listening to

DJ sets in cordless headsets. We organised a series of meetings focusing on music and its relations to philosophy and mathematics. We checked in what way music can influence our mood and what a radio play is like behind the scenes. We offered Michael Bradke's music show entitled "Sounding Numbers Show". Our guest proved with his own hands, feet and voice that we hold music in ourselves. With the youngest participants, we created instruments out of... carrots; we looked for sounds in a resonance box and in Tibetan bowls. In 2012, ca. 2000 people took part in the Science Festival.

**Family Workshops** are very popular classes designed for children aged 5–8 and their carers, who conduct experiments, test and look for answers to difficult questions together. This year we provided five topics. We thought about why we cry while peeling an onion, and why dough rises when yeast is added. Where does water in pipes and electric power in sockets come from? We also

tracked dinosaurs. After the end of the classes, participants took home materials with information that not only supplemented what had been said during the workshops, but also enabled them to conduct subsequent experiments at home. In 2012, there were 4895 participants (including 2459 adults and 2436 children).

Our travelling exhibition **Experiment!** consists of over twenty exhibits constructed entirely by the Centre's workshop. In 2011 Experiment! was included in the commercial offer, but it still carries out programme tasks (5 free journeys a year). The exhibition travelled 35 times. It was visited by nearly 30 000 people.

#### We took part in:

**Winter in the City and Summer in the City** (in January, July and August), when we distributed 3600 free admission tickets for children in total;



**the Night of Museums** (19 May), when we made our exhibitions and laboratory classes available free of charge. A nightly visit to the Copernicus Science Centre was even more exciting due to telescope sky observations from the patio in front of the planetarium. In the Heavens of Copernicus itself, visitors could watch the spring version of the show entitled Sky above Warsaw. To those who preferred staying at home we offered a live broadcast of the selection of a science superstar, i.e. the final of the FameLab competition. During the Night of Museums, the Copernicus Science Centre was visited by 3500 people, and





### For teacher and educators

**Cooperation with the educational environment is one of the priorities of our activity. We want the Copernicus Science Centre to be an inspiring place for teachers and educators. We strive to meet the needs and listen to the suggestions that we learn about. We do not oppose the school practice, but try to complement it, creating space that favours experience, the development of independence, imagination and interests. Our two-year-long collaboration with teachers has already shown how much we can do together.**

**Teachers' Afternoons with Copernicus** are a programme of regular meetings addressed in particular to those teachers who have yet not visited the Centre, but would like to familiarise themselves with our offer, watch our exhibitions free of charge, talk to the animators and our employees, as well as discuss with each other the options that are made available to them owing to the visit to the Copernicus Science Centre. During meetings, we present not only the exhibitions, but also selected parts of our offer, including workshops, conferences and other educational measures. In 2012, there

were 33 Teachers' Afternoons with Copernicus attended by 641 participants from all parts of Poland. As many as 89.9% of them declared their interest in subsequent meetings with teachers. As many as 83.6% decided to use the knowledge and skills acquired in the Centre in their work.

During the **Workshops in the exhibition space**, animators help participants to familiarise themselves with selected exhibits and create own educational materials which allow for embedding a visit in the Centre in school curriculum. Thus, teachers play an active part in the establishment of good practices of using the Centre's offer that serve not only the workshop participants, but also everybody else who wants to come to the Centre with their protégées. Depending on the workshop edition, classes are addressed to all teachers in general (without distinct divisions according to school subjects or levels) or to specific groups (e.g. kindergarten teachers, teachers of technical subjects, teachers of natural science in lower secondary schools etc.). In 2012, ten workshops were organised: for kindergarten teachers (1), early school education teachers (1), teachers of vocational subjects (1), humanities (1), mathematics (4), workshops about the brain (1), physics and music workshops

on the premises of the "Good Vibrations!" temporary exhibition (1). Workshops were attended by 235 teachers.

#### Workshops with educational toolkit.

The Copernicus Science Centre prepares educational toolkits (so called boxes) that support teaching at different levels of education. A toolkit usually contains from ten to twenty elements that may be combined in different ways to conduct experiments, demonstrations or run classes. Naturally, the toolkits are addressed to students, but their direct beneficiaries are teachers from the school that receives a box. It is designed in a way that enables its usage by teachers of different subjects; not only teachers of natural science, physics or chemistry, but also mathematics and history. Activities within a toolkit usually share one common idea, one theme. Toolkits are always accompanied with workshops organised by the Copernicus Science Centre that enable teachers to familiarise themselves with the content of the box. Participants practice independent performance of exercises and work on their own ideas for the use of the toolkit. Within the GENesis series, we prepared a special "Biotechnology" toolkit. Our accessories made it possible to grow flowers by means of aeroponics (that is without water and soil), prepare synthetic caviar, or try the oldest biotechnological



processes used to produce cheese and ginger beer. In 2012, free workshops with educational toolkit were attended by 199 teachers from lower and upper secondary schools.

#### 1st Festival of Young Scientists E(x)plory

was to support young Polish scientists in the implementation of innovative scientific projects and their promotion abroad. Another objective was to promote companies based on innovative technologies and to enable them collaboration with young talents. The festival was co-organised by the High Tech Foundation, the Polish Children's Fund and the Copernicus Science Centre supported by Strategic Partners: Intel and the Orange Foundation. During the festival, school and university students presented their research projects, and the authors of the most interesting ones were honoured with prizes. The finalists will represent Poland at the 24th EU Contest for Young Scientists – EUCYS. It is the most demanding and the most prestigious contest of this type in the world. The festival was also attended by the ambassadors of our Centre. We were visited by Young Explorer Clubs from all over Poland. The first E (x) plory Festival was held from 17 to 18 March 2012.

How should we teach astronomy? How can we encourage young people to take interest

in this field of science? This was the subject of this year's **Summer Seminar of Wars and Sawa** organised for the second time by the Copernicus Science Centre and the Warsaw Centre for Socio-Educational Innovation and Training (WCIES).

The Wars and Sawa programme is a scheme for the support of talented children initiated by the Educational Department of the capital city of Warsaw. The Centre was visited by 150 leaders of the programme – teachers from lower and upper secondary schools. The meeting was opened with a lecture of astrophysicist Stanisław Bajtlik entitled: "Is there life beyond Earth". Teachers watched shows in the planetarium and took part in a discussion panel "Close encounters of the third kind – what can we learn from astronomy". Summer seminar of Wars and Sawa was held on 18 May 2012.

#### 1st Holiday Mathematics Academy

was the first edition of the joint undertaking of the Copernicus Science Centre and the Warsaw Centre for Socio-Educational Innovation and Training (WCIES) for the teachers of mathematics from primary, lower and upper secondary schools in Warsaw. It provided a unique occasion for a creative meeting of teachers and scientists. The programme included lectures delivered by: Professor Łukasz Turski, Professor Marek Kordos and Professor Wacław

Zawadowski. During workshops, teachers looked for mathematics among the exhibits of the Copernicus Science Centre. The 1st Holiday Mathematics Academy was held from 2 to 4 July 2012.

**450 881** group tickets were sold

**75%** of groups visiting us are school trips

#### School trips breakdown:

**55,6%**  
groups from primary school

**31,9%**  
groups from lower secondary school

**12,5%**  
groups from upper secondary school

**2294** teachers attended our workshops, meetings and conferences

### Show and Tell Conference

We are a perfect place to exchange experiences and opinions, discuss and experiment. To think in a new way. Also about school. Teacher-related activities in the Copernicus Science Centre reach their climax in the national conference "Show and Tell". It is held each year at the end of August, and each edition focuses on a different important topic in the area of education. We meet at workshops, discussion panels, scientific shows and lectures delivered by distinguished scientists. We are pleased that the group of teachers involved is bigger each year, and the Copernicus Science Centre is viewed as a friendly place that lets participants speak their mind freely.

It is estimated that the world's IT resources currently double at a time shorter than a year. We live in the era of dynamic changes, with extremely advanced knowledge and technological development. How can we adjust the educational model to contemporary reality? Is a change in the school system enforced, or does it originate from the bottom-up needs of the educational environment? Can modifications be

introduced in a fluent manner, or are they revolutionary by nature? How does the role of the teacher redefine in the view of changes? **It was the change that was the theme of this year's "Show and Tell" conference.**

Lectures were delivered by distinguished scientists: Professor Łukasz A. Turski and Professor Tomasz Szkudlarek. Participants took part in discussion sessions focusing on the collaboration of schools with non-governmental organisations, the functioning of IT in schools and its impact on the quality of education. We discussed the consequences and opportunities related to the drop in the birth rate, and looked at the development of informal education, out of school education and home-schooling. The conference programme included also psychology workshops and creative thinking workshops, shows in the planetarium, a performance in the Robotic Theatre, a visit to exhibitions and classes in the Centre's laboratories.

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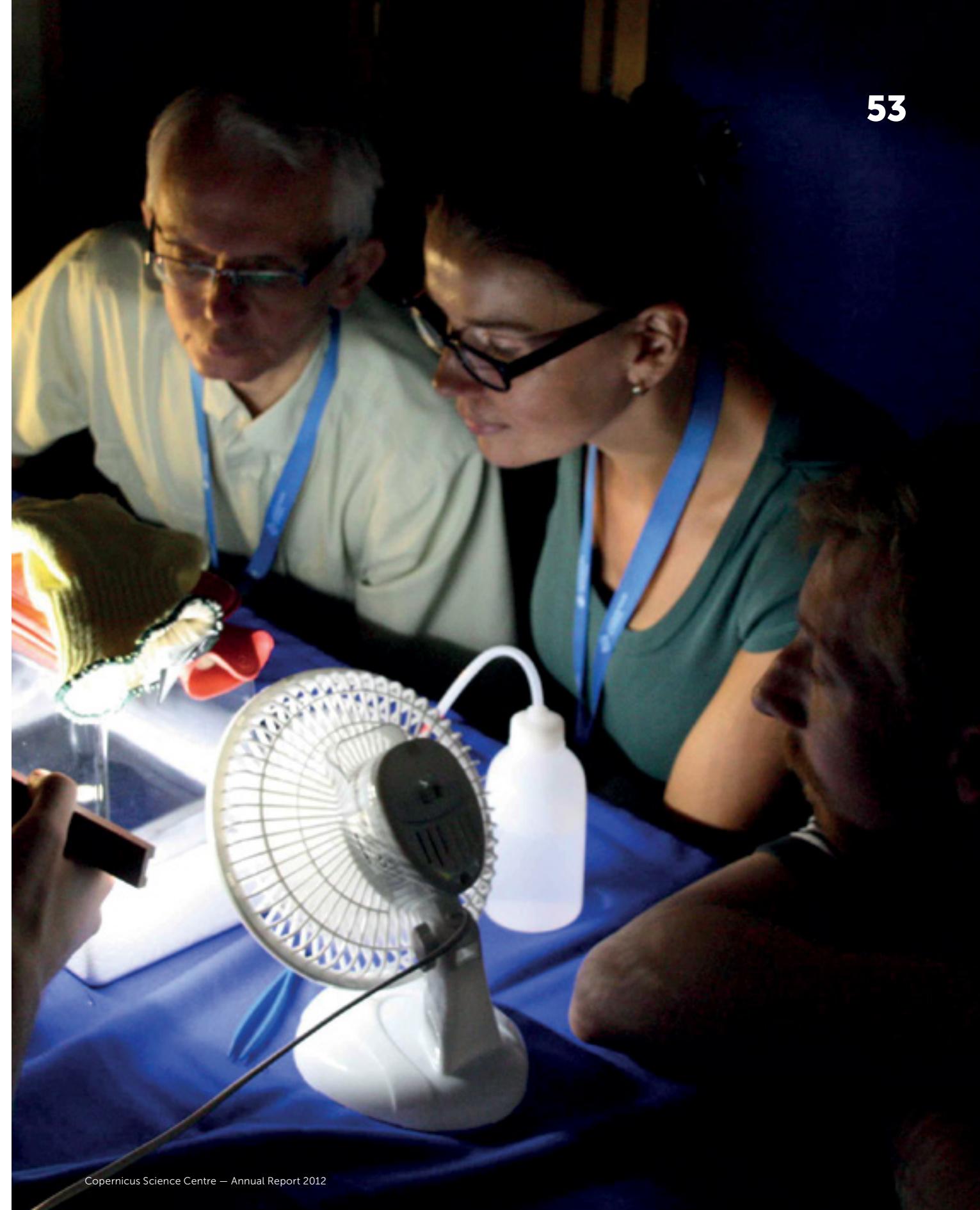
**Duration:**  
**24–25 August 2012**

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**223** participants

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Discussion panels were attended by representatives of **20** institutions and organisations from the governmental and non-governmental sector.



### Young Explorers' Club Program

**Science is above all the ability to doubt and pose questions. To not accept anything on trust, verify, challenge and not be afraid of failure. These are the crucial traits of a researcher. That is the concept that the Copernicus Science Centre is based on. That is what we developed our exhibitions for. But our philosophy can also be implemented without expensive equipment, tools and reagents. The existence of Young Explorers' Club proves that it is possible to experiment everywhere, and that curiosity is a state of mind.**

The Young Explorers' Club program coordinated by the Copernicus Science Centre is addressed to children and young people of all ages. It used to be a Polish national program, but is now an international one (we already have clubs in Georgia, Russia and Belarus). Supervised by teachers and educators, young explorers conduct experiments and scientific research. The approach in which no readily available answers are provided, but instead participants are encouraged to think independently,

is crucial. It is not an easy task because it requires from an adult to abandon the role of an expert and to let the protégées make mistakes.

In clubs, one can verify various hypotheses since the research method does not know the concept of mistake. Explorers may use a database with reliable experiment scenarios, exchange ideas and organise joint projects. We organise workshops focusing on the methodology of Young Explorers' Club for people interested in establishing them on a regular basis. This year, stationary training sessions were attended by 370 people, and 170 others could attend workshops outside of our headquarters. We are delighted that the number of YEC grows each year. In 2012, as many as 61 new clubs were founded (their number increased from 125 to 186)!

For the first time in the history of the program, we met with such a big group of club leaders from Poland and abroad. The goal of the **1st International YEC Forum** was to exchange experiences, establish contacts between clubs and facilitate the development of local networks and initiatives. The forum was opened officially by Miroslaw Sielatycki, Polish Vice-Minister of Education. The opening lecture ("Not only mind: Science as a means to develop personality") was delivered by **Doctor Oved Kedem** from

Weizmann Institute of Science in Israel. Participants attended discussions about future plans and workshops designed to improve the ability to work with teenagers in an active manner. They visited our exhibitions, planetarium and the Robotic Theatre. The forum was attended by 82 leaders from Poland and 8 from Georgia, Belarus and Russia. A 15-people Georgian Young Explorer Club from the Variani village situated at the border with Osetia was our special guest. Children (together with their peers from Warsaw) took part in workshops and conducted scientific experiments together with the visitors to the Copernicus Science Centre.

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**Duration:**  
**11–12 October 2012**

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Since May 2012, the Young Explorers' Club program receives subsidies from the Polish-American Freedom Foundation, with which we signed a Partner Agreement on 18 June 2012. It is a declaration of intent on the part of CSC that it will develop the methodology and program of Young Explorers' Club and promote it in Poland and abroad, and a declaration of intent on the part of PAFF that it will support the Centre financially in the execution of these tasks on a regular basis. Both parties decided to carry out joint initiatives concerning the implementation of the YEC program, acknowledging each other as official partners.





**Inspiring and supporting local and regional initiatives, as well as establishing a network of entities collaborating with the Copernicus Science Centre are one of our strategic objectives. We have the reputation of being one of the most interesting and most innovative centres in the world. This year also showed that we have become a benchmark for others. It is a great honour to us, but also a huge responsibility. The authors of currently created science centres and other educational institutions, representatives of local governments and universities consult us, and we treat it as our duty to share our knowledge and experience. We are an active participant of the world movement of science centres (e.g. as a member of the European Network of Science Centres and Museums ECSITE), and we try to build bridges between the East and West European circles. In 2012 we hosted visits from Poland, Russia, Belarus, Ukraine but also from Sweden, Finland, Germany, Croatia.**

### Interaction – Integration

The conference serves as a meeting of people dealing with science communication in Poland, above all the authors of science centres, interactive exhibitions and planetariums. The conference serves to define the social role of science centres, to exchange experiences and

implement joint projects in the field of modern education. The participants of the 4th Interaction – Integration included the representatives of the already existing institutions, currently developed centres and enthusiasts of science communication who are still striving to establish new facilities. They represented cultural institutions, non-governmental organisations, companies and local governments. This year, meeting participants exchanged experiences related to the collaboration of science centres with teachers, sponsors and local media. They visited exhibitions, assessed interactive exhibits and took part in a show in the Heavens of Copernicus planetarium. A discussion about the principles of establishing an organisation of Polish science centres was an important point on the conference agenda. The participants familiarised themselves with suggested objectives of such an association and its possible legal framework. An initiating committee was selected, whose task will be to specify the objectives and principles of operation of the organisation. At the opening of the conference, Professor Barbara Kudrycka, the Minister of Science and Higher Education, announced the development of a Ministry tender for the financing of science centres in Poland. The meeting (held from 7 to 8 March) was attended by 150 people from 31 cities in Poland.

### A study visit from Russia

A dozen museologists from Russia paid us a study visit (from 11 to 17 May). They included representatives of the State Darwin Museum in Moscow, as well as the employees of local natural science museums from the most distant parts of Siberia. During seven days, our guests attended the Science Picnic, Family Workshops and watched shows presented by animators. They also took part in workshops focusing on exhibition designing and working with the use of Young Explorers' Club methods. We prepared slideshows for them concerning our everyday work: from marketing and sponsoring, to operational and administration activity and collaboration with the media. The visit was an important event in the development of collaboration between the Copernicus Science Centre and the environment of Russian museums and science centres. Its outcome was the establishment of the first Russian Young Explorer Club with the Museum of Industrial History of Petrozavodsk, and the fact that the representatives of the Dinosaur Museum from Blagoveshchensk and of the science centre that is currently under construction in Troitsk near Moscow will make an appearance at the next year's Science Picnic in Warsaw.

### Georgian visit

In September, we hosted seven Georgian scientists and science communicators in cooperation with the Partners Polska Foundation as a part of a project entitled: "Scientists and teachers. Polish-Georgian collaboration for the development of education in Georgia". The aim of the training was to support its participants in the development of activity increasing young people's interest in natural science.

### European projects that we take part in:

**KiCS (Knowledge Incubation in Innovation and Creation for Science)** is a three-year-long programme financed by the European Commission and implemented by the European Network of Science Centres and Museums ECSITE. Incubators will be established in 9 European cities. They will be created by science centres, institutions of higher education, non-governmental institutions, art galleries and associations. Each of these institutions will deal with different issues. The theme covered by the Copernicus Science Centre is Healthy City – we will design projects aimed at enhancing the quality of life of the inhabitants of Warsaw. In 2013, we plan workshops entitled: "Warsaw health resort".

Synthetic biology is a rapidly developing field of science that deals with designing and creating artificial biological systems modelled on natural ones. This allows for the production of new medicine, materials or biofuels. In 2012, we joined the European project **RRI In Synthetic Biology (Responsible Research and Innovation in Synthetic Biology)**.

The **PLACES project (Platform of Local Authorities and Communicators Engaged in Science)** is a platform for European cities, centres and museums of science and technology and other organisers of scientific events with experience in the area of science communication. The project is supported by a consortium of several European organisations acting in the field of science communication headed by ECSITE and EUSCEA. The

aim of the project is to create, gather and develop best practices concerning actions in the field of science communication and to disseminate them in other European cities. The outcome of the undertaking is envisaged to be the model of a European City of Scientific Culture – a science-friendly city. The project includes ca. 90 cities and regions from 34 countries (in Poland: Warsaw, Białystok and Wrocław). The Copernicus Science Centre takes part in PLACES, creating a local network with two partners from Warsaw: the capital city of Warsaw and the Science Festival.

**"Science: It's a girl thing!"** is a three-year-long campaign carried out by the European Commission. More details on the subject can be found on page 38.



## On the local and international stage

The Copernicus Science Centre is an active participant in an international science centre movement. Director Robert Firmhofer as President of ECSITE, the European Network of Science Centres and Museums represents Europe in the International Program Committee of 7th Science Centre World Summit.

Our Director is a representative of the global science centers movement in numerous interviews, meetings and conferences in Poland and all around the world.



## Sponsors

**Our collaboration with sponsors is a unique combination of business innovation with the authority of the Copernicus Science Centre in the area of education and science communication. Companies get involved in our measures related to the development of the exhibitions, programmes and workshops for visitors. The largest companies on the Polish market not only support the Centre financially, but also create with us elements of curricular activities, providing knowledge, ideas and technology for joint projects. Also this year, we have managed to develop interesting actions with our sponsors.**

With our Strategic Partner, company **Samsung Electronics Polska**, which has supported us from the very beginning of our activity in the headquarters, we organised Robotics Day, and at the opening of the "Good Vibrations!" exhibition, we listened to a unique concert performed on tablets, which was prepared by Samsung.

The Heavens of Copernicus planetarium has been supported from the very beginning by Exclusive Partner: **PKO Bank Polski**, which co-finances the production of shows for the planetarium.

With another of our Supporting Partners – **Plus** – we developed a guide to the Copernicus Science Centre (in the form of an application for mobile phones), and with a second Partner – the **RWE company**, we designed a project for schools based on an educational toolkit with ideas for experiments concerning energy. With the **BASF company**, we develop the programme of the chemistry laboratory, and twice a year we organise workshops focusing on health topics in our exhibitions with **Polpharma**.

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### Strategic Partner



### Supporting Partners



The planetarium is supported by



Exclusive Partner of the chemistry laboratory



Exhibition Partners



Our mission is to support major cultural institutions in Poland – museums and art centers. By providing opportunities offered by the new technologies and combine them with the traditions and heritage of Polish culture, Samsung supports the presentation of art in an unusual way and builds the image of modern and involved in the lives of consumers brand, as well as meets the new expectations of their customers. Samsung works with the Copernicus Science Centre since its opening in November 2010. Big number of visitors and huge interest in the Centre demonstrate desire to explore the science in a new, surprising and close to the visitor's way.

– Daniel Chung, President of Samsung Electronics Polska



The activity of the Copernicus Conference Centre is closely related to the mission and values of the Copernicus Science Centre. Our contractors include institutions and companies characterised by passion, the courage to think and the sense of responsibility.

We are pleased that our clients are so satisfied with our professional organisation and involvement that they want to come back to us, and our schedule is 100% full. We have become a prestigious place for the organisation of numerous important political, economic, scientific, technological and social events.

## Selected events in 2012:

Polish-French Economic Forum (visited by **François Hollande**, the President of France)

Innovative Economy Congress

Inauguration of the Polish-Norwegian Research Programme

Official signing of the agreement between the Government of the Republic of Poland and the **European Space Agency** on Poland joining the ESA

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CSR tradeshow organised by the Responsible Business Forum

Meetings with presidents of Chinese and Polish institutions of higher education and representatives of the world of science

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In 2012, as many as **128** commercial events were held

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attended by **21 100** people



The media presents Copernicus Science Centre as an attractive and active area of education, inspiration and leisure. CSC has a well-established image of an expert institution acting for the popularisation of science and research.

This year our employees often commented interesting science phenomena (in particular in the area of astronomy and physics). Publications devoted to the Copernicus Science Centre appeared in national, Warsaw and local media in other regions. They included newspaper and Internet articles, TV and radio broadcasts. A vast majority of publications were favourable.

We also reached our recipients via Internet. We informed the audience of our activity on an on-going basis, broadcasted important events live and wrote about science. We were also active on facebook.com and youtube.com social networking sites. The number of fans of our main Facebook profile increased this year by nearly 20 000.

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**9000** publications in the media

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**1 279 212** site visits at [www.kopernik.org.pl](http://www.kopernik.org.pl)

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**192 970** site visits at [www.niebokopernika.pl](http://www.niebokopernika.pl)

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**30 260** site visits on FameLab web site

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**45 910** fans of the Copernicus Science Centre on Facebook

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**7402** fans of the Heavens of Copernicus planetarium on Facebook



## Awards

**Officer's Cross of the Order of Polonia Restituta** for Robert Firmhofer, the Director of the Copernicus Science Centre "for outstanding merits in the popularisation of science in Poland and abroad, for the support of international science cooperation"

The title of the **Friend of School 2012** for the Copernicus Science Centre awarded by the Ministry of National Education and the "Głos Nauczycielski" magazine

**The Award of the Minister of Culture and National Heritage** for the Copernicus Science Centre for the best facility for cultural purposes in the second edition of the "Life in architecture" competition that honours the most interesting Polish buildings constructed in the years 2000–2012

**Parents' Award** for Family Workshops awarded in the competition honouring the most developmental initiative for children Słoneczniki 2012 organised by the Czas Dzieci web portal

That's the spirit I would like to see in the whole of Europe. The spirit of involvement in science, innovation and research. The spirit of keeping Europe in the lead in the area in which we can actually achieve greater advantage in our effort to increase our competitiveness.

José Barroso – President of the European Commission

It is a really surprising place, an amazing source of inspiration. I could wander around it, laugh and learn for hours. Congratulations! Let's collaborate to make this world a better place for all living creatures.

Jane Goodall – the icon of ecology, foremost expert on chimpanzee behaviour, social activist and UN Messenger of Peace

It's a fantastic place that is difficult to leave. Really interesting and well-considered. In Japan, we have a problem with attracting teenagers to science centres. They prefer going to commercial centres. In the Copernicus Science Centre, it is entirely different. A separate exhibition has been designed especially for them. They can find out here that science doesn't have to be boring.

Mamoru Mohri – former astronaut, currently the Director of the National Museum of Emerging Science and Innovation in Tokio

**Children-and parents-friendly place** – a distinction for the Copernicus Science Centre awarded by the MaMa Foundation

The title of **Top Communal Investment 2012** for the Copernicus Science Centre in a poll of the portalsamorządowy.pl web site and PTWP Group, the organiser of the European Economic Congress in Katowice

For children, it is a perfect place to learn, for adults – a challenging IQ test.

Sandra Saakashwili – Georgian First Lady

I would like to thank all people in the Copernicus Science Centre for their hospitality, and I wish you all luck and success in the future. The Centre is a marvellous place.

Keith Campbell – biotechnologist, creator of Dolly, the sheep

A wonderful place, a temple of science available to all. One leaves it with hope and certainty that the future generations have a place where at the beginning of their school education they can encounter real science. It is a pleasure for us to take part in this intellectual adventure.

Katarzyna Chałasińska-Macukow – former Rector of the University of Warsaw

In every museum in Poland you are followed by its employees, who make sure that you don't touch anything. In CSC you are followed in order to make sure that you try everything out.

Jacek (27 years old)

Quotes originate from the CSC's guest book and conversations with visitors.



# Our Team

**The Copernicus Science Centre is bubbling with life. Apart from mathematical physicists, we employ art historians. Apart from epigenetics specialists – designers, specialists in the Polish language and culture studies. Our views, convictions and skills clash. We share passion and involvement. This leads to a creative atmosphere, provides a favourable environment for creativity and unconventional solutions. This clash of ideas brings new concepts to life.**

This year, we continued our series of non-professional initiatives. Each month, animators and employees meet at informal "factual tea". Each meeting focuses on a separate scientific problem presented by our exhibits. Each week, choir rehearsals take place. Our first public performance (at the opening of the musical exhibition "Good Vibrations!") was received with huge enthusiasm.



In 2012, we increased employment by 25.83 FTE (from 195.5 FTE at the end of 2011 to 221.33 FTE at the end of 2012). We signed 225 annual contracts with animators selected in the recruitment process carried out in the first quarter of the year. Our team was enlarged by 149 animators who cooperated with us before and 76 new ones.

## Management of the Copernicus Science Centre

**Robert Firmhofer** – Director

**Jolanta Brzywczyczy** – Deputy Director, Chief Accountant

**Irena Cieślińska** – Deputy Director

**Przemysław Wielowiejski** – Deputy Director

## Programme Council

The Programme Council is an advisory arm of the Director of the Copernicus Science Centre; its main task is overseeing the implementation of the Centre's main strategic aims and activities. The Council includes representatives of cultural, artistic, scientific and teaching institutions, and is elected every six years.

**Professor Łukasz Turski** – Chairman of the Council

**Professor Aleksander Bursche** – Deputy Chairman of the Council

**Professor Jerzy Axer**

**Assistant Professor Konrad Bajer**

**Irena Cieślińska**

**Professor Magdalena Fikus**

**Professor Maciej Geller**

**Assistant Professor Dariusz Jemielniak**

**Professor Krzysztof Konarzewski**

**Maria Mach**

**Professor Henryk Skarżyński**

**Professor Tadeusz Skośkiewicz**

**Hanna Wróblewska**

## The Copernicus Science Centre is a cultural institution.

Its organisers are:

**The Capital City of Warsaw,**  
**The Polish Minister of Science and Higher Education,**  
**The Polish Minister of National Education**

## Legal basis

Agreement from 1.06.2005 on establishing a joint cultural institution named Copernicus Science Centre, with annexes dated 21.06.2006 and 26.07.2010

Granted the status of a cultural institution on 1.06.2005, with amendments dated 21.06.2006 and 26.07.2010

The Polish Act of 25.10.1991 on organizing and implementing cultural activities.

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## Organisers



MIASTO  
STOŁECZNE  
WARSZAWA



Ministerstwo Nauki  
i Szkolnictwa Wyższego

MINISTERSTWO  
EDUKACJI  
NARODOWEJ



## Supporting Partners

## Strategic Partner

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