



A bridge to partnership in research

Activities over the FP6 Period 2002-2006

International Association for the Promotion of
co-operation with Scientists from the New
Independent States of the former Soviet Union



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INTAS Activities during the Sixth Framework

INTAS' budget for the period 2003-2006 was approximately **80.9 M€**, of which: 70 M€ funded from the Sixth Framework Programme, 6.6 M€ of financial contributions from co-sponsors in jointly funded activities and 1.34 M€ of contributions from INTAS member states. From this budget:

- **53.3 M€** allowed funding *multilateral partnerships* between research institutes, universities and industry in the Eastern European and Central Asian countries (EECA) and the INTAS member states, implemented mostly in the form of co-operative research projects (420 projects, **52 M€**) and innovation projects (49 projects, **1.3 M€**). Partnerships covered fundamental or applied research in all areas of exact, natural and human sciences;
- **10.7 M€** allowed funding **713 grants** aimed at enabling young scientists to stay part-time in European laboratories and engage this way in international scientific cooperation (*Young Scientist Fellowships*);
- **1.7 M€** allowed supporting additional activities such as: small-scale *infrastructure actions* (11 grants), including an EECA-wide E-library; *Summer Schools* and other training activities (43 grants); *Conferences* via Conference Organisation Grants (48 grants) and Individual Grants for attending conferences (87 grants);
- **0.75 M€** for the organisation of *Scientific policy workshops*;

- **3.1 M€** for the implementation of an *Information Network* aiming to raise awareness, and provide information, advice and training opportunities throughout the EECA countries about the European Research Area (ERA) and the European Union Framework Programme;

- **8.5 M€** for the costs of the Secretariat in Brussels, which were topped-up by in-kind contributions from INTAS members through secondment of National Experts to INTAS.

INTAS continued its approach of developing *tailor-made, targeted programmes and instruments* suited to country-specific needs in post-Soviet science, as well as proposing *flexible co-funding arrangements*, involving partners from both INTAS member countries and EECA partner countries.

The submission of project proposals and individual grant applications was done in the framework of regular calls and the selection by *external, independent peer review* on the basis of scientific quality, mutual benefit & socio-economic relevance.

Identifying excellence remained a paradigm to guide INTAS policies. However, over the years 2005-2006, a more differentiated scientific policy was implemented, both in terms of thematic priorities and in terms of regional needs and capacities, through a combination of top-down and bottom-up approaches. For instance, the organisation of *twelve Workshops* allowed bringing together

Programme

scientists from the INTAS member states and the EECA countries, as well as scientific policy-makers, representatives of major scientific organisations, the European Commission and industry to identify priority research areas and promising fields for East-West co-operation.

Excellence was also reflected in the fact that, through the years, INTAS had the honour of collaborating with top scientists, some of whom have been awarded Nobel Prizes. The latest awardee was Prof. Theodor W. Hänsch from the Max-Planck Institute for Quantum Optics, Garching & Ludwig Maximilians Universität (LMU) in Munich who received the 2005 Nobel Prize for Physics and who had participated in two INTAS-sponsored projects.



Kazakh scientists at an INTAS Info Day in Almaty in January 2005



INTAS' Council of Scientists at work during its Panel 4 Meeting at its 29th CS Meeting on 10-11 March 2005



INTAS' Council of Scientists at work during its 32nd and last meeting on 7th September 2006

Projects in the Spotlight

The following section gives a flavour of the variety of projects funded by INTAS:

Novel giant magnetoresistance cobaltites

About 100 scientists from nine institutes in Belarus, England, France, Germany, Russia, Switzerland, and Ukraine were involved in an interdisciplinary co-operation funded by INTAS with the aim to elucidate the physical properties of a novel class of materials called "cobaltites".

The cobaltites exhibit the phenomenon of "giant magnetoresistance" (GMR), where the electric resistance drops dramatically as a magnetic field is applied. GMR is most usually seen in magnetic multilayered structures, where two magnetic layers are closely separated by a thin spacer layer a few nanometres thick. The occurrence of the GMR effect depends on the ability of the applied magnetic field to switch the relative magnetic orientations of the layers.

As illustrated in *Figure 1*, the structure of two magnetic layers allows electrons in only one spin state to pass through easily if both magnetic layers are aligned, and the electric

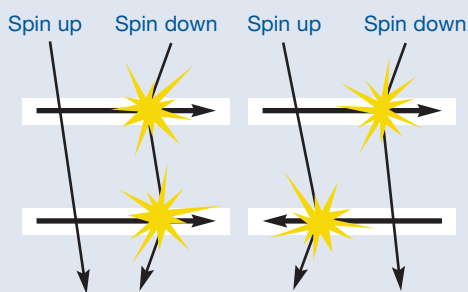


Figure 1: Schematic illustration of the scattering of electrons in magnetic layers

resistance is low. If the magnetic layers are misaligned both spin channels are hindered and the resistance is high. By analogy, consider how fast you can drive without obstacles or heavy traffic on the freeway.

The magnitude of the GMR effect in multilayered structures is limited to about 50% due to imperfections of the layers needing high magnetic fields for alignment. These limitations can be overcome by the cobaltites, which are built up by a perfect, infinite stack of layers with alternating orientation of the magnetisation direction (*Figure 2*).

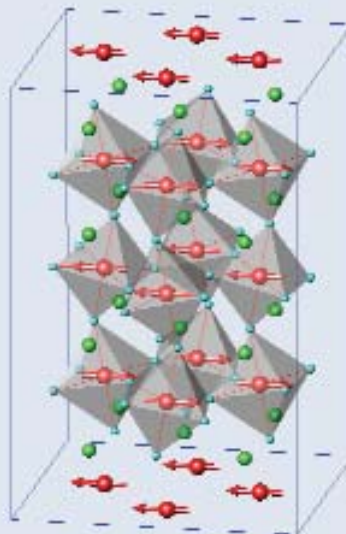


Figure 2: Magnetic structure of the cobaltite compound $RCoO_3$. R = rare-earth (green circles), Co = cobalt (red circles with arrows denoting the magnetic moment), O = oxygen

Within this INTAS project high quality single crystals of cobaltites could be produced. Subsequent investigations of the physical properties resulted in about fifty scientific papers.

Multilayered GMR devices have already seen applications in the computer industry: they allow more data to be packed on computer disks and they are immune to power disruptions and ionising radiation. The cobaltites may contribute to a further miniaturisation of data storage devices. In addition, in geophysical exploration (bore holes, landmines) the sensitivity of conventional electromagnetic induction sensors can be pushed using cobaltite GMR sensors to new levels of sensitivity.

Project 01-278

INTAS Funding: 150.000 €

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*CdSe quantum dots:
physics, advanced technology
& laser applications*

Recent advances in physics and technology of self-organised semiconductor quantum dots have revealed a great variety of novel physical properties and induced novel device applications, such as, extremely low threshold quantum dot lasers.

The INTAS-funded project has allowed gathering top experts in the field from several European and former Soviet Union countries, providing complementary expertise and thus forming a successful consortium. The execution of the project by teams from Belarus, France, Russia and the UK has resulted in the development of an advanced technology allowing fabrication of Cadmium Selenide

(CdSe) quantum dots with improved characteristics, elucidation of different aspects of quantum physics, optimisation of the laser design; both for electron-beam pumped and optically pumped lasers, and evaluation of applicability of the quantum dot structures for the fabrication of compact laser devices.

The results should facilitate better understanding of quantum dot laser physics among the relevant research groups. They are especially important for the future development of Ultra Violet lasers based on such wide band-gap semiconductors as Zinc Oxide (ZnO), Aluminium Gallium Nitride (AlGaN) and diamond.

Another important implication of the end results is related to the compact room temperature green lasers. These results can be applied for the future development of commercial devices, both electron-beam and optically pumped. Green semiconductor lasers can be widely used in different areas: monitoring of the environment, medicine, systems of data display on a large-scale screen in real time, navigation systems and scanning microscopy. Compact electron-beam pumped laser or injection laser blue-green converter can compete in several applications with commonly used solid state and second harmonic lasers emitting in green.

Project 51-5019

INTAS Funding: 104.700 €

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The calculation algorithms to the solution of the problem of synthesis of optimal stabilisation of periodic systems & creating of the packet of applied programmes on the base of MATLAB

Periodic systems are very frequent in nature and also in technical and social sciences. The study of their nature, description and optimal control requires nontrivial theoretical methods and often leads to very difficult problems from the computational point of view. On the other hand, the speed of such computations is crucial, as these methods are widely applied in robotics and other man-machine systems. They are, e.g. closely connected to aeronautics or chemical reactors' control.

The consortium for this project consisted of teams from Azerbaijan, Sweden, Turkey and Ukraine. It focused on the inverse problem of discrete optimal periodic control systems, the problem of safe stabilisation for periodic discrete systems and the synthesis of optimal system stabilisation for periodic continuous systems with respect to output. Besides purely theoretical results, the corresponding algorithms were also developed and implemented in the computational software package MATLAB. As an illustration, the consortium considered the example of synthesis of a reliable regulator providing the stabilisation of a programme mode of movement of the hopping robot. The results enable to design models of different roboting systems and optimal regulators for stabilisers of movement in the oil and gas industry, thus solving

the current question of the economical development in Azerbaijan, namely the possibility to create control systems used for gas and oil processing.

The consortium was a good example of a fruitful cooperation between experts in mathematics, theoretical physics and numerical computation with interesting results both from the theoretical and applications point of view.

Project 77-6902

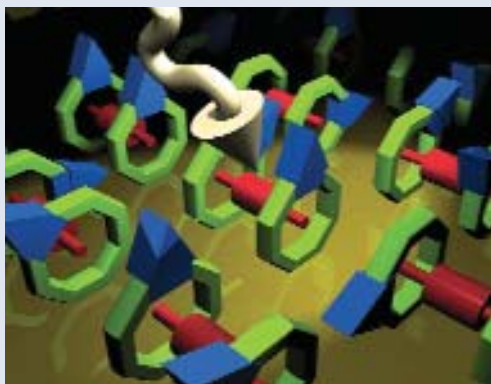
INTAS Funding: 52.700 €

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Polymetallic Cages as Molecular Magnets & Catalysts



This project has investigated new methods for making such compounds, and their applications as novel magnetic materials and oxidation catalysts. Molecular magnets are systems where a permanent magnetisation can

be achieved not through a three-dimensional magnetic ordering, but as a purely one-molecule phenomenon. A **catalyst**, on the other hand, is a compound that allows the acceleration (increase in rate) of a chemical reaction.

The findings cover:

1. New methods of influencing and ultimately controlling the structure of cages;
2. The physical properties of the cages and their unusual magnetic behaviour;
3. The catalytic activity of these new polynuclear cages.

The results of this project are important in understanding the fundamental reactivity of a group of polymetallic compounds. It is also clear that the magnetic molecules being made are perfect for studying fundamental aspects of magnetism, such as spin waves, behaviour at avoided crossings, and fluctuation of total spin.

Exploitation of these results has followed in a further INTAS project (51-4532) which is currently running and leading to very exciting new opportunities in areas such as quantum computing. A quantum computer is any device for computation that makes direct use of distinctively quantum mechanical phenomena to perform operations on data. It is widely believed that if large-scale quantum computers can be built, they will be able to solve certain problems exponentially faster than any classical computer.

The objectives of this new endeavour are to:

1. Discover new methods of influencing and ultimately controlling the structure of cages using novel synthetic procedures;
2. Carry out extended crystallographic characterisation of resulting cages;
3. Examine the physical properties of the cages, looking for unusual magnetic behaviour;
4. Demonstrate catalytic activity for new polynuclear cages;
5. Investigate the influence of nuclearity of polymetallic species on size and properties (i.e., magnetic and catalytic) of nanospecies produced by their thermal decomposition.

For the time being, a series of heterometallic cyclic compounds have been proposed as possible Qubits in quantum computing. A paper to this effect appeared on the front of a major journal in 2005 (see picture on page 8). Measurements of lifetimes of these rings are about to be published and will cause a major impact in the field of quantum information processing.

Part of the success of the project was due to the strong link between Chisinau and Manchester, with very good contributions from Aarhus and Mulheim.

Projects 00-00172 & 51-4532

INTAS Funding: 90.000 € + 184.630 €

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Hard Pipe: Reconstruction of pipe alloys for historic organs

The pipes of historical organs frequently suffer from mechanical damage due to the creep combined with fatigue. A true Baroque organ sound could have only come back to life in the 21st century by developing historically correct lead-tin alloys and implementing them in organ pipes.

By providing the technology to rebuild and create instruments with tailored sound qualities, the organ builders in Europe, especially in the Baltic States, will increase competitiveness in the world market for new instruments and will be uniquely qualified to secure contracts for the restoration of historically valuable organs within the European Union. Achieving



a true Baroque sound requires overcoming significant material science challenges since an organ contains flue and reed pipes constructed of lead-tin alloys.

The project aims to completely reproduce the beautiful warmth and blazing fanfare of Baroque music by developing historically accurate lead-tin alloys. Even though the sound properties of the historic pipe organs differed from region to region because they were constructed from locally available materials, local restoration efforts would be too great an effort for this project.

This project will be carried out effectively and efficiently with the participation of the Baltic State's SME organ builder in conjunction with top quality research institutions from across Europe and the Eastern European and Central Asian (EECA) countries.

Russian and Ukrainian teams will apply their competences obtained in earlier projects in order to diminish the mechanical damage of historical pipes and to improve the casting technology for the production of new pipes (with properties identical to the historical ones), the restoration of old organs and the production of new organs (with sounds similar to that of Baroque organs).

The deliverables include: identifying historically accurate alloy compositions, developing the processes necessary to reproduce historically accurate material properties and, manufacturing alloys for replacement parts for historic pipes as well as for new pipes in reconstruction projects.

Project 100008-8120

INTAS Funding: 110.000 €

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Large-scale genomic variations on the developing & adult neuronal cells of the human brain

The human brain contains about one trillion neural cells. Like all cells in the body (except eggs in women and spermatozoa in men) the normal brain cells contain genetic material in diploid chromosomal complement, this means that all chromosomes (46) are paired (23 pairs).

It is known that in other body tissues chromosomal abnormalities are the most common course of genomic mutations with the frequency of 0.1-2.0% per individual chromosome. Therefore, the human brain may contain several billions of neurons with chromosomal abnormalities. This has not been previously proven because neurons do not divide, and therefore their chromosomes could not be examined by standard cytogenetic techniques.

In this project, chromosomal complement in neuronal cells of the human brain and cultivated human brain tissue was investigated



with modern molecular-cytogenetic techniques (interphase multicolour fluorescence in situ hybridisation, multicolour fluorescence banding, primed in situ labelling), modified and adapted by the collaborating teams from France, Germany and Russia. A significant frequency of aneuploidy (abnormal number of chromosomes in the cell) was found: 0.1-0.8% per individual chromosome in post-mortem adult brain cells, 0.6-4.0% in uncultured embryonic brain cells and 1.3-7.0% in cultured embryonic brain cells.

Chromosomal abnormalities in the brain may be related to neuropsychiatric diseases such as Alzheimer's disease, schizophrenia and other. Recent advances in molecular biology have suggested transplantation of neural stem cells as a possible way of restoring neural function in such patients.

The finding that in-vitro cultivation produces neural stem cells, with relatively high levels of chromosome abnormalities, raises concern about possible unwanted effects of stem cell therapy which would be more harmful than the deterioration caused by the disease itself. Future research in this direction and further development of molecular-cytogenic techniques may lead to a better understanding of the role of chromosomal abnormalities in neuropsychiatric diseases and optimisation of stem cell therapy.

Project 51-4060

INTAS Funding: 166.000 €

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The Medicinal Leech (Hirudo spp.), Famous & Unknown: Taxonomy, Conservation & Medical Applications

The project explores biology, phylogeny (the origin and evolution), and prospects to conserve leeches of the genus *Hirudo*, formerly known under the common name of "Medicinal leech": *H. medicinalis*, *H. verbana* and *H. orientalis* which have recently been identified as three distinct species.

The international consortium comprises four teams: Karazin Kharkiv National University (Ukraine), Moscow State University (Russia), the University of Ljubljana (Slovenia), and the Institute of Ecology (Lithuania).

Several field expeditions will explore distribution of these species in the wild environment in Azerbaijan, Kazakhstan, Russia, Ukraine and Uzbekistan. The leeches will also be cultivated in the laboratory and subjected to a complex study.



The project objectives are to:

1. Analyse evolutionary relationships between these three different *Hirudo* species;
2. Elucidate specific ecological requirements and geographical distribution of these species;
3. Find specific reproductive and developmental differences and test the leeches for inter species hybridisation;
4. Identify proteins in the leeches' saliva that are important for their medicinal use and explore the possibility of obtaining recombinant proteins;
5. Propose a strategy for conservation of the endangered species of the medicinal leech in aquaculture and in the wild.

Project 1000008-8147

INTAS Funding: 135.800 €

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The effect of climate change on the pristine peatland ecosystems & (sub) actual carbon balance of the permafrost boundary zone in Sub-arctic Western Siberia

During the geological era covering the period since the beginning of the recent interglacial (Holocene), terrestrial wetland ecosystems have been a major sink for atmospheric carbon, which is proved by the development of thick peat layers in Northern peatlands. The actual role of pristine peatland in global carbon balance has not been quantified at this time. In particular the sub-arctic peat-

lands, as extensively present in Western Siberia, are white spaces in knowledge of carbon exchange with the atmosphere. Therefore, it is impossible to predict the effects of climate change through changes in summer temperature, permafrost and hydrology on carbon balance of sub-arctic peatlands.

This research project will enable the estimation of the annual carbon balance of sub-arctic peatlands of Western Siberia in key areas by ground flux measurements at the main mire types (wet peatland ecosystem types) and at lakes and rivulets of peatlands.

The point fluxes of mires will be validated with measurements of net primary production and recent carbon accumulation.

The area fluxes will be calculated with geographical information technology (GIS) combined with land unit classification by remote sensing techniques using multi spectral satellite images. These fluxes will then be compared with the results of interpretation of hyper-spectral satellite images on carbon gas concentrations in the lower atmosphere by newly developed information technology.

By the application of dynamic GIS (cellular automates) for modelling (2D) gas transport in the lower atmosphere and the carbon gas concentrations at image pixel size will be calculated from area fluxes interpolated from key areas. This procedure will enhance the possibility to validate the results obtained by remote sensing technology substantially. Validated image interpretation methods will enable the analysis of the variation in time and space of the atmospheric gas concentrations of large sub-arctic areas.

The effects of climate change will be evaluated in the project as predicted by Integrated Pollution Prevention and Control (IPCC) scenarios on the carbon balance of sub-arctic peatlands of Western Siberia.

Project 51-6294

INTAS Funding: 220.000 €

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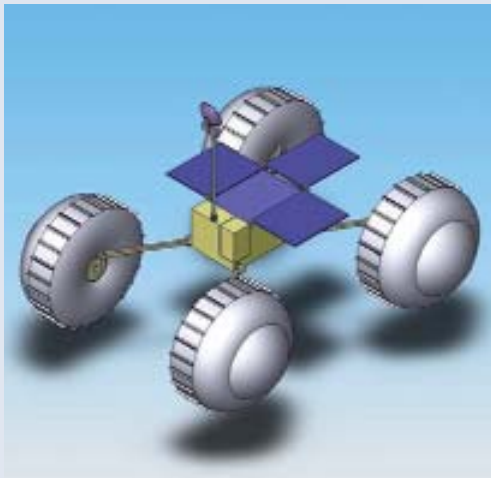
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Innovative Mars exploration rover using inflatable or unfolding wheels

Mars exploration programmes that require surface mobility, such as: geology studies, search for past life or infrastructure deployment for future manned missions; make use of wheeled rovers.

Despite the efforts to optimise the kinematics design, the total mass of the rover and its volume during the launch phase are very constrained, due to the limitations on wheel diameter, thus resulting in moderate ability to overcome obstacles. This limitation can be overlooked by using inflating or unfolding wheels that can reach large diameters and thus present high cross-country ability, and still be compatible with the launching constraints.

It is necessary to review the whole rover operational scenario and equipment design, as well as the payload accommodation since there have been drastic changes in the mechanical design, relative to the conventional rigid wheels.



The objective of the study was to compare a classical rover design with the unfolding version, within the same mission objectives and constraints.

The scientific results achieved included:

1. Development of flexible structures of the mobility system for three Mars rover conceptions allowing the use of the Mars rover's system for deployment mechanisms from the stowed position into the running position;
2. Confirmation of the possibility to use inflatable wheels by preliminary calculations for partial or total amortisation of impacts while landing and during the following rebounds. This allowed to save mass in the shock absorbing subsystem and thus to increase the total mass of the rover for an identical launching mass. Mathematical modelling of the impact allowed illustrating the advantage of a vented airbag;

3. Design of the inflatable wheels' general properties ensuring high cross-country capability;
4. Recommendation to increase the pressure in the tyres when surmounting rocky ridges and turning on-the-spot. The pneumatic system that was designed implemented the control of the pressure in the wheel chambers.

Project 53-4063

INTAS Funding: 107.000 €

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Comparing Societal Integration of Turkish & Related Minorities: Institutional Strategies in INTAS & NIS countries

The project's aim is to identify and compare patterns of societal integration of "old" and "new" ethnic minorities under diverse economic, political and cultural conditions.

The theoretical framework of the study was developed around the polar types of individual/collective and short-term/long-term rationality. Data was collected in two rounds by using the standardised tools.

These concepts were explored using three different tools:

1. Structured interviews with successful representatives of the respective ethnic minority;
2. Analysis of the content of relevant mass media;
3. Monitoring and interpretation of events.

The Final Report will include detailed descriptions of interethnic relations in five countries, explanations of the polar types, achievements and problems of interethnic integration, and will make some suggestions concerning ethnic policies.

Results, impact and benefits of the research:

1. A specific theoretical framework was developed and implemented;
2. Systematic and comparable empirical information was gathered about interethnic situations in Bulgaria, Crimea (Ukraine), Gagauzia (Moldova), Germany (Land Berlin) and Tatarstan (Russia);
3. Young researchers were very much involved, in all national teams, in the preparation and implementation of the project.

The colleagues from the EECA teams were fully involved in the elaboration of the theoretical model and in its implementation. The leaders of the Russian and the Ukrainian teams were responsible for the development of two major tools for the field study, namely the framework for content analysis and monitoring of events.

On-site visits were implemented on both sides, for the coordination of procedures and the control of field studies.

Thanks to the close interaction between EECA and INTAS members, patterns and indicators of interethnic integration have been identified and could be used for the development and implementation of Europe's integration and border policy.

Project 79-7018

INTAS Funding: 100.000 €

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Management of natural resources of two endangered medicinal plants of Armenian flora via soilless & controlled environment production

In recent years a growing demand for herbal remedies and natural products has taken place worldwide, despite the booming production of synthetic substances. At least 25% of medicines currently used worldwide are derived from plants. The demand for medicinal plants is increasing in both developed and developing countries.

At the same time, in the last decades there has been a sharp increase in negative anthropogenic influence on flora. Some rare and endangered herbs are being collected from wild population in increasing volume, for both local use and export, in many regions of the world, including the Caucasian region. The Caucasus is one of the twenty-five richest and most threatened reservoirs of plant and animal life on Earth.

Biodiversity of the Caucasus is decreasing at an alarming rate. One solution to this problem could be cultivation of the plants by hydroponics (soilless culture). Traditional field culture of non-endemic herbs is not always suc-

cessful, as in many cases it is impossible to create the optimal environmental conditions for the high yield growing of plants. In Armenia, due to the favourable climate of the Ararat Valley, the hydroponic installations can be placed in the open air: this is cheap and at the same time suitable for several harvests in a long vegetation period.

For this study, two protected plant species which are widely used in medicine, cosmetics and food industry were selected: Thyme (*Thymus caucasicus* Willd, Lamiaceae) and Sweet flag (*Acorus calamus* L., Araceae). They were cultivated in containers filled with solid support material (gravel, sand, volcanic slag) and artificial water-based nutrient solution that contained a balanced mixture of chemical elements; both in open air (Armenia, Ararat Valley) and climatic chambers (Germany, The Technical University of Munich).

After growing under controlled conditions the plants were harvested and analysed in a chemical laboratory for the content of essential oils, flavonoids, carotenoids and polyphenols. The antioxidative capacity of these agents – the factor particularly important for medicinal use – was tested in a separate dedicated analysis.

It was found that the productivity and quality of the studied herbs essentially depended on the media in which they were grown.



Sweet Flag



Thyme

Project YSF 83-3051
INTAS Funding: 19.800 €
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Over the FP6 period, INTAS has generated various communication possibilities such as workshops, brokerage events and writing competitions, enabling scientists from the EECA countries to exchange their views and opinions and learn from each others experiences.

Workshops & Brokerage Events

Over the last two years, INTAS has organised conferences and workshops on subjects such as the Aral Sea Basin and the South-Caucasus region, aimed at exchanging best practice and creating new contacts.

The International Aral Sea Basin Water and Food Security Conference: "Managing water and food quality and security in Central Asia" (ABWF 2005) focused on the findings of the research carried out by INTAS and other projects in Central Asia, and served to open up the debate on the future of research and development in the region, with a modern approach to integrated, trans-national and interdisciplinary problems that need to be solved. The conference's main purpose was to highlight the global dimensions of the problems in the Aral Sea Basin and to define the scope of the activities.



ABWF 2005

Left to right: Peter Raspor, Willem Van Cotthem, Anatoli Ryabctev & Rien Bos

Linked to the Collaborative Call for Research Project Proposals with South-Caucasian Countries 2006, the main objective of the ***INTAS – South-Caucasus workshops 2006 & 2007*** was to enhance scientific cooperation between INTAS member states' scientists and scientists from the three South-Caucasian countries; Armenia, Azerbaijan and Georgia. More specifically, the 2007 workshop was dedicated to discussing future prospects for scientific cooperation in this region.



INTAS South-Caucasus Workshop 2006

Left to right: Dr. Alain Gérard, Dr. Siyavush Azakov, Dr. Martine Bonin, Dr. Theodore Dolidze & Tigran Arzumanyan

These two events succeeded in creating new links and strengthening existing links among scientists from the three South-Caucasian countries and INTAS' member countries.

Last but not least, INTAS has participated in a range of conferences organised by the European Commission, such as the 2005 Conference on ***Communicating European Research (CER)*** where INTAS organised a roundtable session: "Communicate Internationally with partners from the New Independent States (NIS)". Its purpose was to identify ways to improve communication between the NIS, European scientific communities and media organisations.

Workshops 2005-2007

2005:

26-27 May: Toulouse, France

Mid-Term Review of Collaborative Call with CNES "Tools of space cooperation between EU and NIS: status and perspectives", in collaboration with IAS (Institut Aeronautique et Spatial)

17 June: Chisinau, Moldova

Workshop Collaborative Calls 2005 with Moldova, in collaboration with the Moldova Academy of Sciences

23-24 June & 19-20 September: Strasbourg, France

INTAS-ESF (European Science Foundation)-NATO (North Atlantic Treaty Organisation) joint workshops

10-11 July: Uppsala, Sweden

Thematic Call 2005 for Research Project Proposals in Social and Human Sciences, in collaboration with the Swedish Collegium for Advanced Studies in Social Sciences (SCASSS)

11-12 July: Geneva, Switzerland

Mid-Term Review of Collaborative Call 2003 with CERN

1-4 September: Almaty, Kazakhstan

Final Term Review of Aral Sea Call 2000 "Managing Water and Food Quality and Security in Central Asia", in collaboration with InExCB-Kz (Kazakh NIP) and Media France

2006:

19-21 April: Tbilisi, Georgia

INTAS Workshop 2006 – South-Caucasus: "Scientific Cooperation and Collaborative Call", in collaboration with the Georgian National Science Foundation

10-12 May: Novosibirsk, Russia

INTAS Workshop – SB RAS "Scientific Cooperation and Collaborative Call", in collaboration with the Siberian Branch of the Russian Academy of Sciences

2007:

28-30 March: Tbilisi, Georgia

INTAS Workshop 2007 - South-Caucasus: "Scientific Cooperation and Collaborative Call", in collaboration with the Georgian National Science Foundation

17-18 May: Bratislava, Slovak Republic

INTAS Workshop "Earth Sciences and Environment" 2007, in collaboration with the Comenius University of Bratislava

27-29 June: Tomsk, Russia

INTAS Programmes supporting Young Scientists in the EECA countries and future prospects, in collaboration with Tomsk State University

06-09 September: Kiev, Ukraine

Mid-Term Review of the Thematic Calls 2005 on "Energy Technologies" and "Genomics and Proteomics", in collaboration with the Information Centre in Ukraine-EU S&T Cooperation

Young Scientists Writing Competition

The aim of the four Young Scientists Writing Competitions held between 2001 and 2006 was to encourage young scientists, who were awarded a grant in either, an INTAS fellowship programme or project, to submit an article describing, in an imaginative and concise manner, their research results to a wider non-scientific audience e.g. general public, policy makers, industry and other end-users.

The 1st Prize winner in 2006 was Giorgi Ghvedashvili (Georgia) with his essay on electromagnetic waves: "New Generation Cell Phone Antenna on Guard of Your Health".

The ININ Information Network

In 2000, INTAS set up a network of Information Desks (Info Desks) run by local organisations in the Eastern European and Central Asian (EECA) countries in order to improve the communication flow between INTAS and the scientific communities in the EECA partner countries.

As the European Union's Sixth Framework Programme (FP6) was open for participation to scientists from third countries, the European Commission (EC) turned to INTAS to establish a method whereby the EECA scientific communities would be encouraged to play a greater role in the European Research Area (ERA) and the FP6 calls.

Early in 2003, the INTAS Secretariat was asked to establish an FP6 NIS Information Network (ININ) that would address the EC's request by raising awareness, providing information, advice and training opportunities for ERA and FP6.

Information Points & Contact Points

By the end of 2004, the ININ Network consisted of eight National Information Points (NIPs): Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Ukraine and Uzbekistan, with which INTAS had signed an agreement. In addition, some of the Information Desks established by INTAS since 1994 remained in operation. In early 2005, the agreements with these NIPs were renewed. Later, a new NIP was created in Tajikistan and the ININ Network was extended to Russia with the creation of National Contact Points (NCPs) for the different thematic priorities of the Framework programme: Food, Health, Nanotechnologies, Knowledge

Society, Small and medium enterprises (SMEs), Mobility, Information Technology and Global Change & Environment.

Complementing the creation of thematic NCPs, based in Moscow, INTAS developed Regional Information Points (RIPs) in order to disseminate the information on a larger scale by targeting "remote" locations. At the end of 2005 two RIPs were created in Tomsk and Voronezh, closely followed in early 2006 by Saint Petersburg.

Finally, the set of NIPs/NCPs/RIPs was completed in 2006 by the creation of an NCP in the field of Aeronautics and a new NIP in Georgia.

The ININ initiative was complemented by an agreement with "Poisk", the leading weekly scientific journal in Russia, to publish regular articles about ERA and the FP6, ININ actions and other EU funding opportunities for EECA countries (35 articles were dedicated to FP6 up to the end of 2006).

Information & Training Workshops

In late 2002, INTAS organised a preview workshop in order to inform the participants from the EECA countries about the main elements of INTAS' planned activities in the period up to 2006 and within the context of the FP6.

ININ's first training workshop was launched in March 2003 and served as an occasion to become better acquainted with the strengths and needs of the EECA countries as well as with the possibilities for scientific co-operation within the FP6.

In the course of 2004, the National Information Points (NIPs) and the Continuing Advisors participated in four different types of trainings covering various aspects of the networking activities, held in: Belarus-Moldova-Ukraine, the Central Asian republics, the South-Caucasian republics and Russia.

In 2005, INTAS organised a round table "Communicating Internationally with NIS partners" within the European Commission's Communication European Research (CER) Conference, as well as an ININ training.

Various workshops were organised through the years, enabling Official Contact Persons (OCPs), NIPs, NCPs, RIPs, the Continuing Advisors and the former INTAS Info Desks to get feedback on the results of the FP6 calls, especially with regard to EECA participation, and a preview of the upcoming calls.

In recent years, EECA participants were asked to make presentations on their experiences and activities in working with INTAS, and to communicate the results of the promotion of FP6. They were also informed about targeted activities, the Seventh Framework Programme (FP7), including opportunities for involvement of the EECA scientists, and international cooperation.

In November 2006, the sixth and last ININ information and training workshop took place. A special open discussion was arranged for Russian National Contact Points to exchange views and opinions on the upcoming FP7. Participants were informed

about the prolongation of INTAS' support to the ININ network into 2007 as well as the organisation of several brokerage events as part of the ININ programme.



The 6th ININ Training Workshop, November 2006
Dr. Kamila Magzieva, NIP InExCB-KZ & Prof. Igor Volotovskiy, OCP Belarus



The 6th ININ Training Workshop, November 2006

In general, the participants in this meeting acknowledged the positive impact of the ININ programme over 2003-2006 in helping scientists from the EECA countries to get involved in the FP6 and the ERA. Many participants also stressed that the assets of ININ should be preserved and prolonged through the use of the instruments offered by the FP7.



3rd NCP Training Workshop, May 2006 - CAEFOCC Participants

ININ's Brokerage Events

Throughout the Sixth Framework Programme, the ININ initiative has supported the organisation of several brokerage events, conferences and workshops, mainly in Europe and Russia, giving the opportunity to a great many EECA scientists to be financially supported in order to attend these events.

In 2004, the ININ programme supported two events, one of which was: "*Transforming societies: East-West Strategic Workshop on Social and Human Sciences II*" that took place in Brussels. The workshop's aim was to provide a forum for discussions between scientists from the EU member states, "associated states", and EECA countries about the role of social sciences and humanities in the ERA and to address issues concerning the opening of ERA to EECA countries' Research and Development (R&D) institutions.

In 2005, ININ contributed to the organisation of two more events: "*Diverse dialogues across Europe: Humanities and Social Sciences Research Forum*" that took place in Nicosia, and the "*EU-Russia Symposium and Brokerage Event on Science and Technology (S&T) Collaboration in Biotechnology*" that took place in Moscow. The latter event was aimed at creating a meeting point for participants from science and technology to encourage the development of plans for the participation in the "Fourth Call for Proposals of FP6 in Thematic Priority 5, Food Quality & Safety".

In 2006, six more events were supported, among which: *the Aeronautics Days* in Brussels and Vienna, the *EU-Russia symposium on Food, Agriculture and Biotechnology* in Saint Petersburg, and the *EU-Russia ECCOMAS workshop* in Barcelona.

In February 2007, INTAS co-organised and supported a partnering event: **FP7 Information Event** in collaboration with the European Commission and the National Contact Point "Mobility" in Moscow, Russia.

The meeting which was dedicated to the promotion of the FP7 towards Russian and other EECA scientific communities, sparked great interest and attracted a wide scientific audience.

INTAS Young Scientists Fellowship Programme

General information

In the years 2003-2006 INTAS launched 15 Young Scientist Fellowship (YSF) Calls, through which 713 young scientists from the Eastern European and Central Asian (EECA) countries were supported.

The goal of these calls was to provide incentives for EECA young scientists (under 35 years of age) to remain in science and to enable them to carry out a two-year research project in an EECA scientific institution, whilst being given the opportunity to work in laboratories of INTAS' member countries for several months and initiate scientific co-operation.

Specific features & benefits

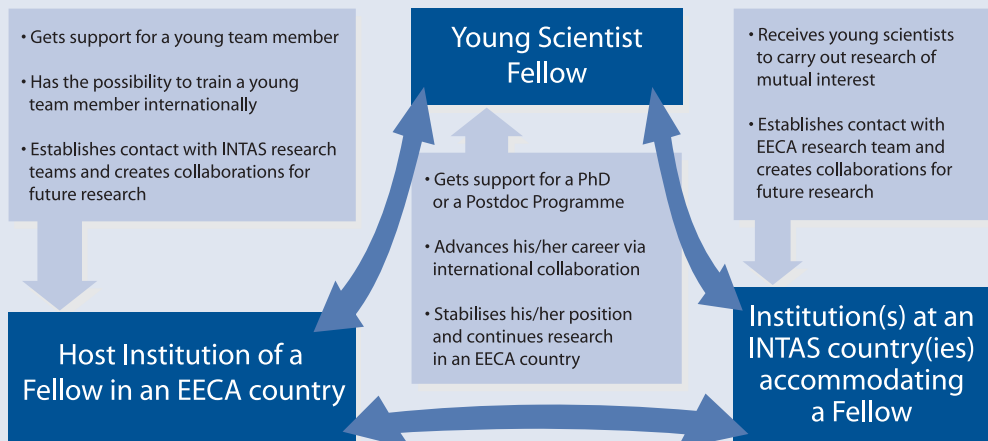
Due to its orientation towards preserving EECA young scientists in their research teams, the INTAS YSF Programme through FP6 was different from, and complementary to, many

national programmes supporting young scientists and the EC Marie Curie mobility programme. Indeed, it helped young scientists from EECA countries to get familiar with fellowship grant applications, thus facilitating their further involvement in the Marie Curie programme.

INTAS YSF Programme allowed flexible co-funding schemes. Such schemes not only provided extra funding for the Programme, but also allowed the better adaptation of specific countries' and institutions' thematic priorities and gave more opportunities to young scientists from less scientifically developed EECA countries.

The joint call partners have been either international scientific organisations, like CERN, or scientific institutions in an INTAS member state, such as GSI, DESY or governmental institutions and universities in an EECA country.

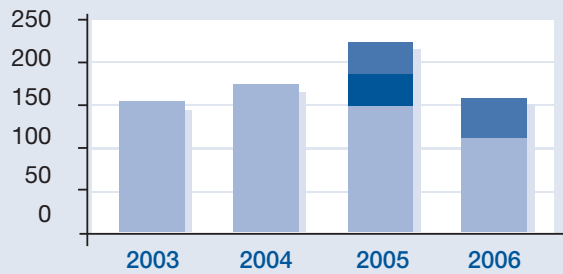
INTAS YSF Programme: Three lateral benefits



Outcome & impact

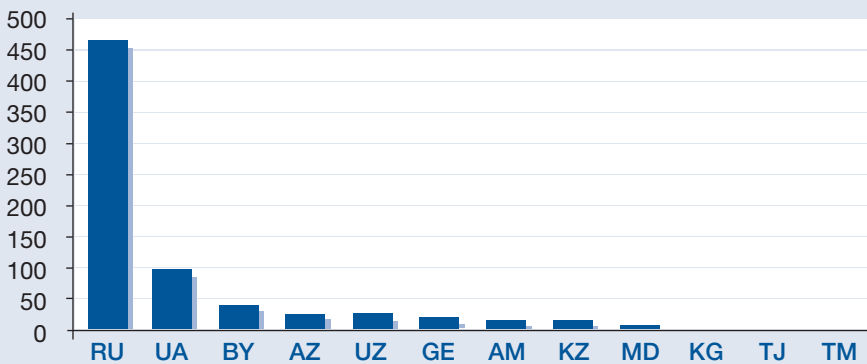
The 713 Young Scientist Fellowships awarded by INTAS in 2003-2006 were distributed per year as illustrated here.

- Collaborative Calls with EECA countries
- Collaborative Calls with INTAS MS institutions
- Open Calls

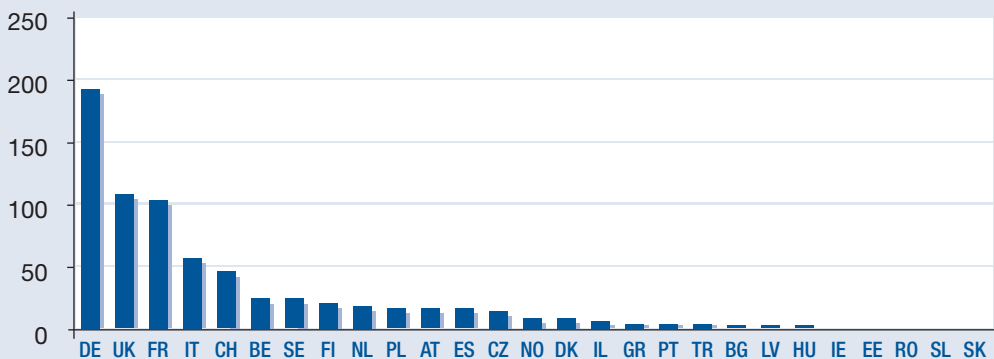


The impact of the INTAS YSF Programme in 2003-2006 on the strengthening of scientific collaboration between EECA countries and INTAS member states research institutions can be estimated from the two charts below.

Distribution of the awarded YSF per EECA country



Involvement of research institutions from different INTAS member states
(Number of fellowships awarded with INTAS host institution in a given country)



Conclusions & preliminary lessons

The unique features of the Young Scientists Fellowship Programme have allowed the development of an efficient instrument for the promotion of scientific co-operation between EECA young scientists and INTAS member state researchers. It has also enabled the strengthening of international scientific co-operation at all levels (individual researchers, research teams, institutions, national research ministries and academies) and the development of more favourable research environments for young scientists in their host institutions.

Follow-up: Workshop on INTAS YSF Programmes

In summer 2007, INTAS and the Tomsk State University will be jointly organising in Tomsk, Russia a **Workshop on INTAS Programmes supporting Young Scientists in the EECA countries and future prospects.**

The aim is to summarise the results of the INTAS YSF Programme, to learn lessons from the past and to highlight prospects for the future. There will be presentations on INTAS programmes supporting young scientists, various national as well as European Community programmes (Marie Curie programme) supporting young scientists.

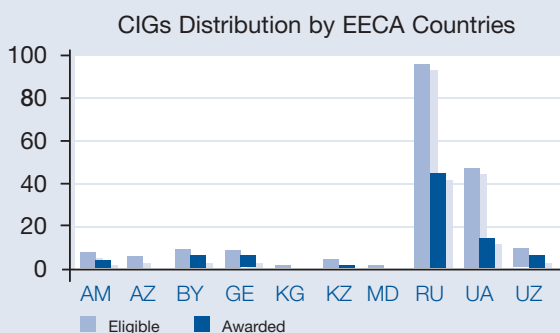
Conference Grants Programme

INTAS Conference Grants Programme supported scientific events of particular relevance to INTAS scientific policy, including on the one hand *organisation grants* supporting the organisation of international scientific events (conferences, seminars, symposiums, workshops, etc.) and on the other hand *individual grants* supporting the participation of scientists from the EECA countries in internationally recognised scientific events, thus developing contacts with western scientists.

The Call was permanently open from March 2005, with closure dates in May, August and November. 22 Conference Organisation Grants (total amount of about €254,000) and 87 Conference Individual Grants (total amount of about €80,000) were awarded as a result of this programme, supporting scientific events held over 2005 and 2006.

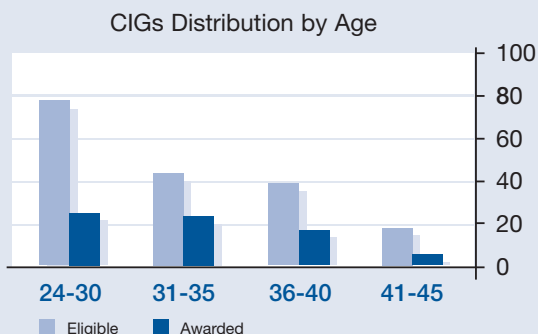
Conference Individual Grants (CIGs)

Distribution by countries



The distribution of eligible applications received by scientific fields showed a very good response in biology, chemistry, and physics. The highest success rates are observed within social & human sciences and life sciences.

Distribution by age of grantees



Conference Organisation Grants (COGs)

Over 21 countries were involved as conference organisers from approximately 150 applications received for Conference Organisation Grants. 120 applications were submitted by EECA countries.

15 grants were awarded for conferences organised by Russia and Ukraine in chemistry, mathematics, social sciences, biology, informatics and mechanics, one grant to Belarus in physics, and one to Kyrgyzstan in environmental sciences.

On the side of INTAS member states, 5 grants were awarded for conferences organised in Estonia, Poland, Switzerland, The Netherlands and Turkey, covering principally biology, physics, and environmental problems.

Summer Schools Support Programme

INTAS' Programme for the Support of Summer Schools aimed at stimulating a larger participation of young scientists from EECA countries in internationally acknowledged summer schools, at further involving them in the international scientific community and, at promoting contacts between EECA young scientists and scientists from the INTAS member states.

INTAS awarded **43 Summer School grants** on a competitive basis responding to six calls launched over the period 2003-2005. The total amount awarded was **about € 615,000**.

INTAS also sponsored in 2005 and 2006 five Summer Schools selected on the basis of their international recognition, openness to EECA countries, and relevance to INTAS thematic priorities. They received funding in a total amount of **€ 78,000**. The list is given below.

Finally, INTAS supported the attendance of young scientists from EECA countries at three annual **meetings of Nobel Laureates** held in Lindau in 2005 and 2006, and the meeting to be held in July 2007. The total support amounts to about **€ 30,000**.

Name of Summer School	Field	Organising Institution
CERN European School of High Energy Physics	High Energy Physics	CERN, Geneva, Switzerland & JINR, Dubna, Russia
FOSAD: International School on Foundations of Security Analysis & Design	Security in Computer Systems	University Residential Centre of Bertinoro, Italy
ESMEC – European Summer School on Medicinal Chemistry 2005 & 2006	Medicinal Chemistry	European Federation for Medicinal Chemistry, Urbino, Italy
Jyväskylä Summer School 2005	Multidisciplinary	University of Jyväskylä, Finland
ENVIROMIS 2005 & 2006	Environment Research & Training	Siberian Center for Environment Research & Training (SCERT)

INTAS Electronic Library Action

In 2002 INTAS started its most comprehensive action in providing EECA researchers with up-to-date scientific literature based on electronic delivery: the INTAS e-library infrastructure action.

The e-library enabled scientists and students to have a rapid and timely access to a range of electronic journals & databases of major scientific publishing houses, and to receive additional scientific information by document delivery. E-journals and document delivery covered the full range of scientific subjects that occur in INTAS projects to reflect the collaboration between EECA scientists and the INTAS member states.

This action was important and far reaching insofar as INTAS offered this service not only to researchers involved in its projects, but to all non-profit research and education institutions and scientists in eleven EECA countries: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

Licensing Agreements with Publishers

Until 31 December 2006 a licensing agreement with **Springer publishers** allowed free access to around 1200 electronic journals and to the mathematical database

"Zentralblatt Mathematik". Access for Belarussian scientists to the full Springer e-journal collection was made possible in 2006, thanks to a co-funding arrangement between INTAS and the German Research Foundation (DFG).

A licensing agreement with **Blackwell publishers** will run until 31 October 2007 allowing free access to around 400 electronic journals in Science, Technology and Medicine (Blackwells STM collection). Scientists and students in 8 EECA countries have access to Blackwells' resources: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Moldova, Ukraine and Uzbekistan.

Document Delivery

This part of the e-library programme provided scientific articles via e-mail. It was available in all participating countries, either through the "subito" document delivery service or through the German National Library of Science and Technology (TIB).

In some participating countries, smaller publishing houses such as Oxford University Press (OUP), Mary Ann Liebert (MAL), etc. were made available through INASP, the International Network for the Availability of Scientific Publications (UK).

Budget Overview & Country Statistics

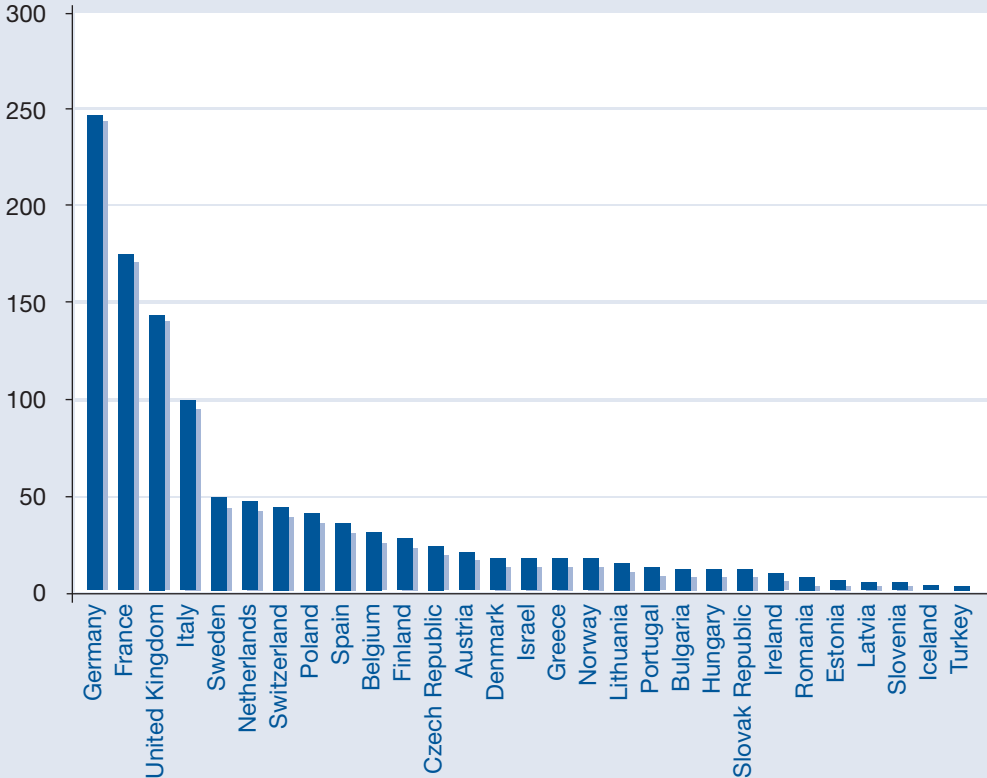
In the period 2003-2006 INTAS launched 40 actions with a total budget of 68.8M€*:

- 2 Open Calls for Project Proposals (28.4M€)
- 7 Thematic Calls for Project Proposals (8.2M€)
- 12 Collaborative Calls for Project Proposals (15.4M€)
- 4 Young Scientists Fellowship Open Calls (9.1M€)
- 11 Young Scientists Fellowship Collaborative Calls (1.6M€)
- 3 Innovation Calls (1.1M€)
- 1 Innovation Collaborative Call (0.2M€)
- Other Support Actions (infrastructure, conferences, summer schools, e-library and ININ) (4.8M€)

* Approximately

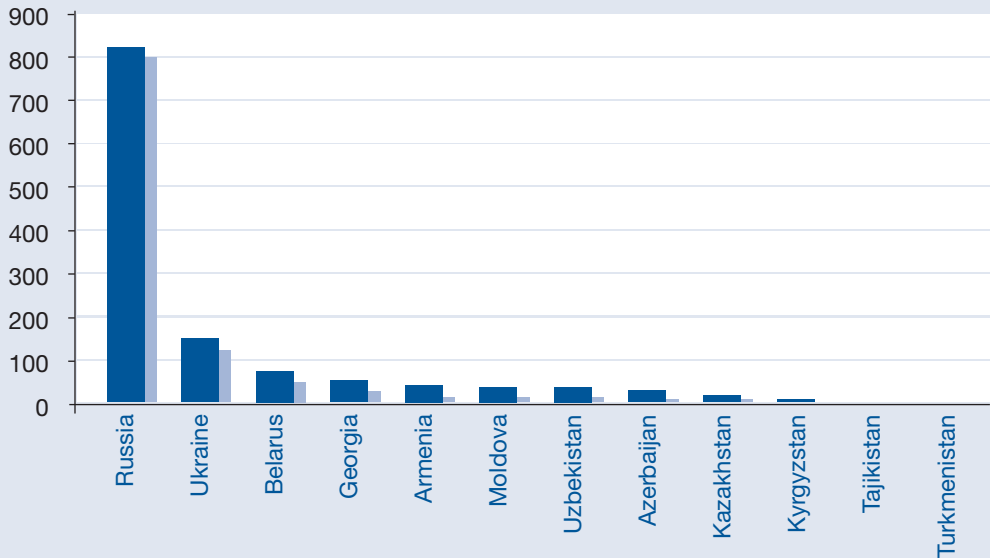
All Calls for Project Proposals 2003-2006

(Number of teams per Member State – All fields - Total number of teams: 1161)



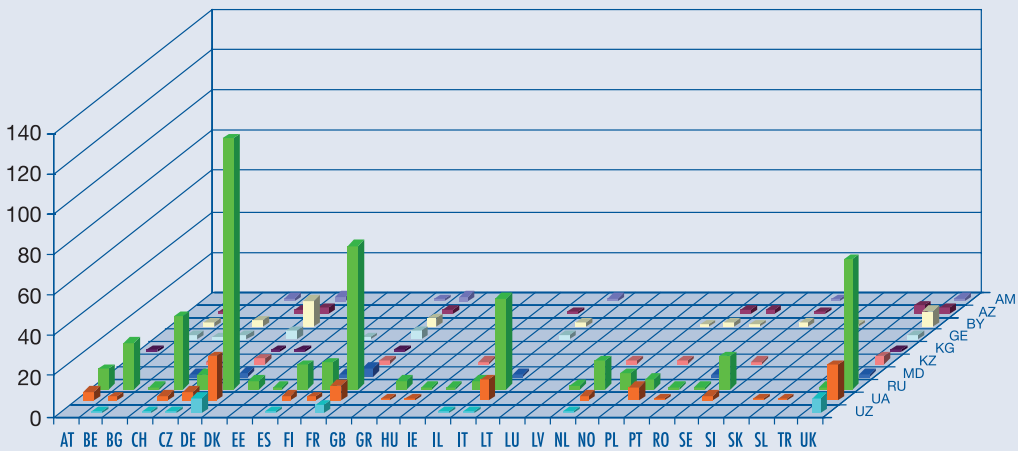
All Calls for Project Proposals 2003-2006

(Number of EECA teams – All fields - Total number of teams: 1234)

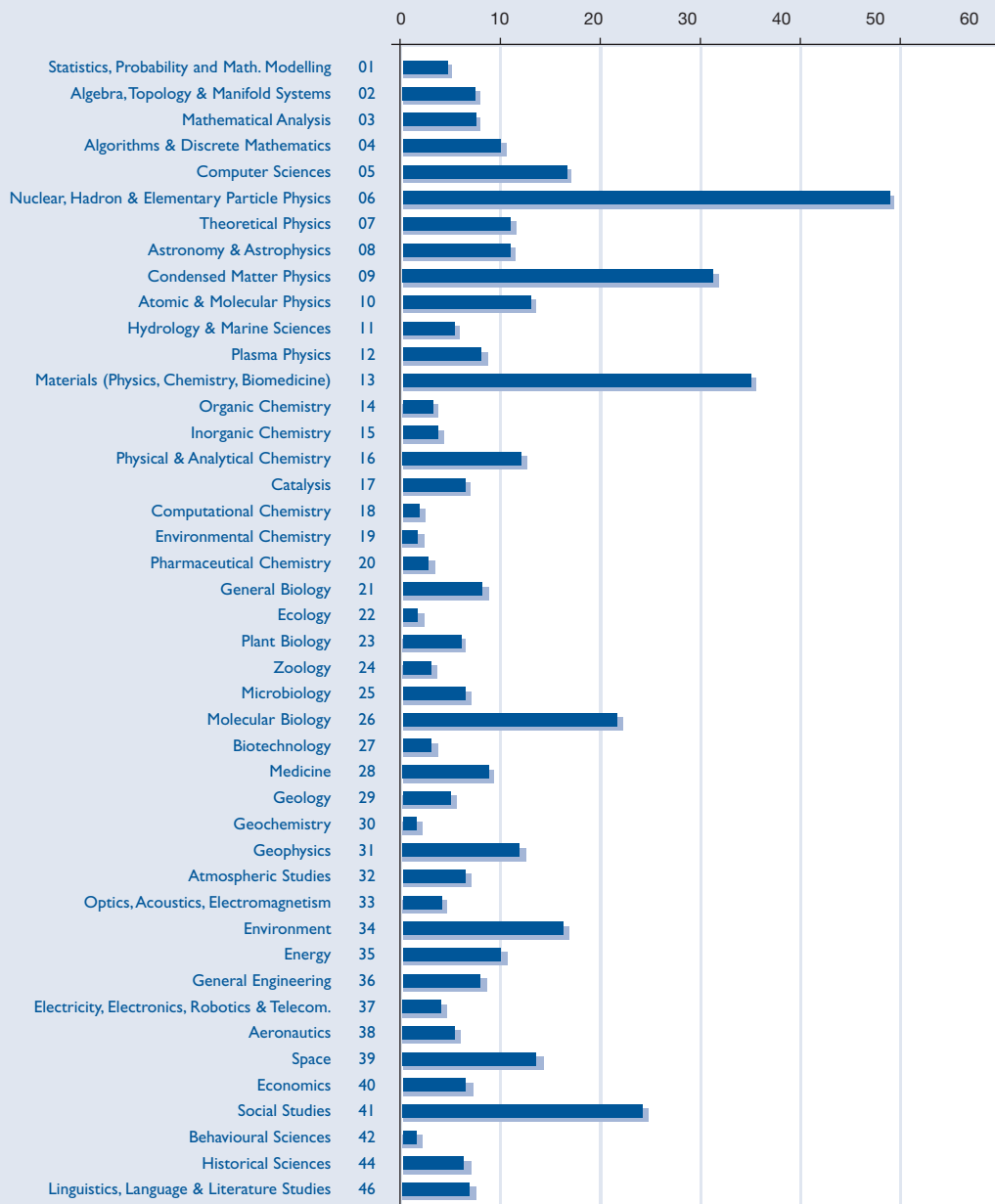


Young Scientist Fellowship Calls 2001-2006

(Correlation Member States host institution/ EECA country of the fellow – All fields)



Calls for Project Proposals 2003-2006 (Distribution of Projects by Thematic Field)





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