



Summary review of the Faculty of Science

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Foreword


As dean of the Faculty of Science I am delighted to have this opportunity to look back on the year 2013. The essence of an academic environment to me is that research and education go hand in hand. The fact that the University of Amsterdam (UvA) has succeeded in achieving this across the board was corroborated by the Accreditation Organisation of the Netherlands and Flanders (NVAO), which awarded the UvA its maximum score in last year's Institutional Quality Assurance Audit. In its report, the NVAO commented that it was 'impressed with the convincing manner in which the UvA has demonstrated [...] that it is "in control" of education quality assurance'.

Looking at the efforts of our faculty members in 2013, it may safely be said that they too were impressive – our degree programmes in the sciences are popular among students, and our researchers are delivering world-class performance. This annual review summarises the key milestones achieved in 2013. It is my pleasure to present it to you, and it is a privilege to lead such a talented organisation, an organisation we can all be proud of.

Since I myself only joined the faculty in Amsterdam on 1 January 2014, I would like to take this opportunity to once more thank my predecessor, Kareljan Schoutens. As dean, he steered the faculty on course through turbulent times and significantly contributed to the numerous academic successes achieved in 2013. He undertook virtually superhuman efforts both within and outside this faculty in seeking structural collaboration among the science faculties in Amsterdam.

In December 2013 the plan to merge the three science faculties at the UvA and VU University Amsterdam into a single organisation foundered in the face of student opposition. Opponents feared mass education whilst proponents emphasised that the degree programmes offered would be strengthened and that joining forces would bolster the faculties' position in the national and international arena.

I would like to take the positive points from this debate to lay the foundations for a renewed vision for collaboration. Together with all parties involved, I wish to gradually work towards joining forces, one logical step at a time. This will enable us to build on the hard work undertaken by a great many people to create a bright future for 'science in Amsterdam'.

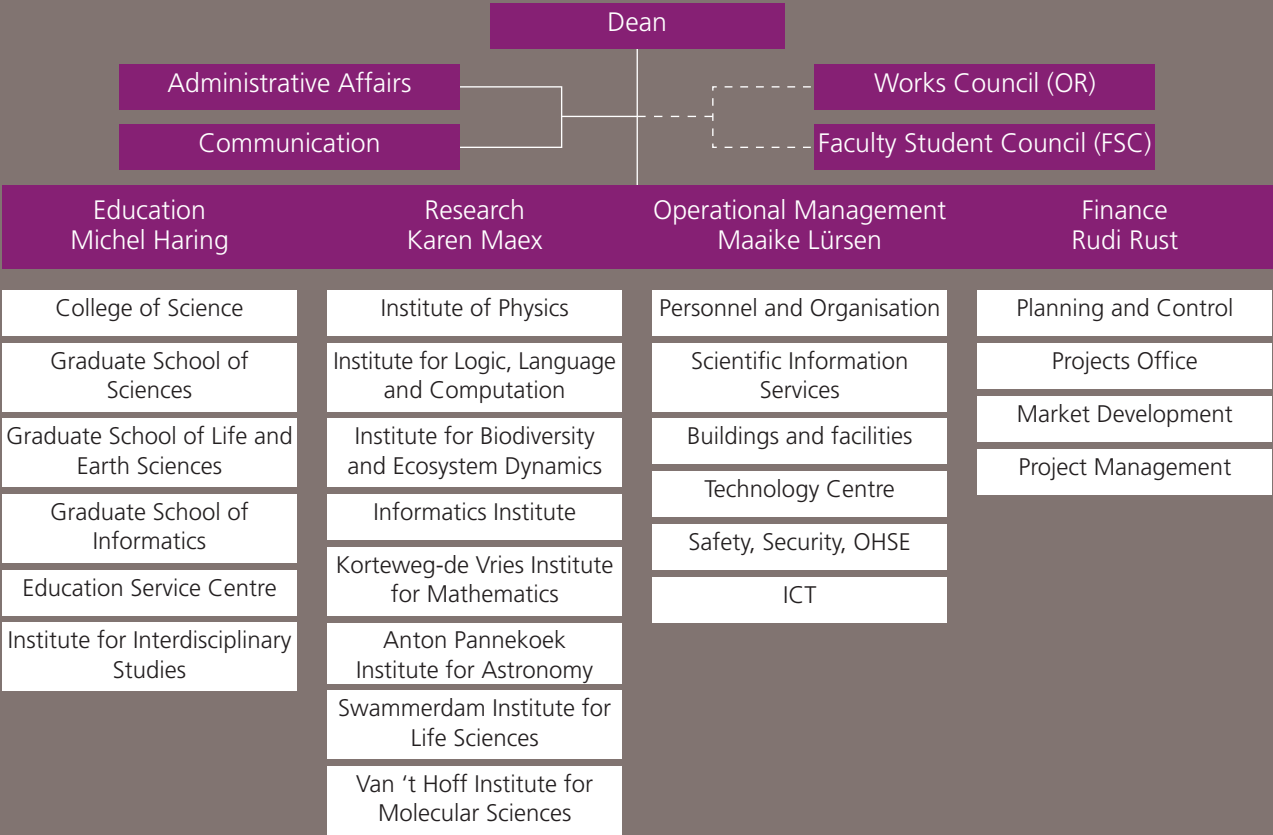


Prof. Karen Maex
*Dean of the Faculty of Science
University of Amsterdam*





The Faculty's leadership team (left to right): Michel Haring, Director of Education; Maaïke Lürsen, Director of Operations; Rudi Rust, Director of Finance; Karen Maex, Dean.



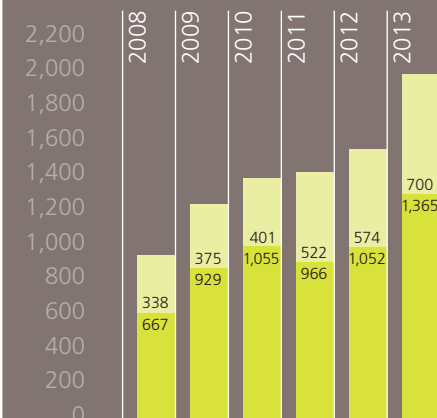
Students and lecturers at the Faculty of Science



In 2013, 16 of the faculty's degree programmes underwent assessment for the purpose of extending NVAO accreditation.

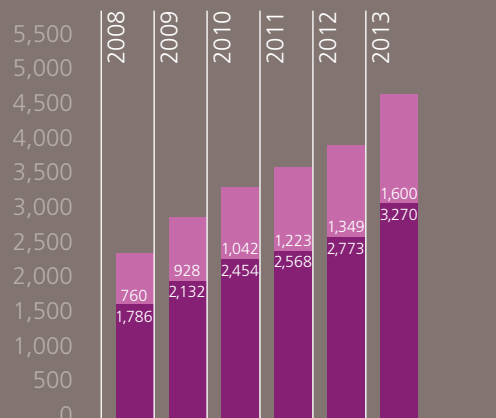
The assessment results are encouraging – in terms of level and quality all degree programmes were assessed as 'satisfactory without reservation'. A number of standards were assessed as 'good'. The Master's programme in Logic was singled out as 'excellent' and is the first and only UvA degree programme with this designation. New student enrolment was again far higher than the previous year, increasing by 24% on average relative to 2011-2012, with a total of over two thousand new Bachelor's and Master's students.

STUDENT ENROLMENT



ENROLMENT

Master's programmes
Bachelor's programmes



ENROLLED STUDENTS

Master's programmes
Bachelor's programmes

Bètabreak

From 2011, students on the BètaBreak Committee have been organising a monthly lunch discussion forum in the hall of the faculty building, aimed at connecting the various (natural) sciences groups based at Science Park. Topics discussed during BètaBreak in 2013 included epidemics and vaccinations, plans for the Amsterdam Faculty of Science, rules for art and the use of doping in sports.

Lecturer of the year

During the 2013 Dies Natalis, Dr Jan van Maarseveen received the UvA Lecturer of the Year award for his passionate and interactive method of teaching. According to the jury, Van Maarseveen has the ability to convey the specific knowledge required to link chemistry, physics and biology.

Promoting expertise

The faculty attaches great value to facilitating the continuous development of expertise, including that of teaching staff, and promotes this through the organisation of a University Teaching Qualification (UTQ) track for all teaching staff. In 2013, 65 UTQ certificates were awarded to Faculty of Science lecturers. The aim is for all lecturers to complete this track.

Study associations in 2013

The six study associations fulfil a pivotal role at the faculty. They offer welcome support to hundreds of students and ensure that students have a good time both within and outside the faculty.

NSA / Physics, Astronomy and Mathematics / 750 members / The NSA jointly organises lectures for all second and third-year Physics and Astronomy students in collaboration with the Physics and Astronomy orientation course. This year's theme of their annual symposium was 'Unsolved problems in science'.

ACD / Chemistry / 240 members / Now ranking as the number one study association for chemistry in Amsterdam, ACD attracted some 60 new members. In 2013, ACD launched a programme of mini excursions of around one hour to businesses based at Science Park, such as the glassworks, the technology centre and Lighthouse Industries.

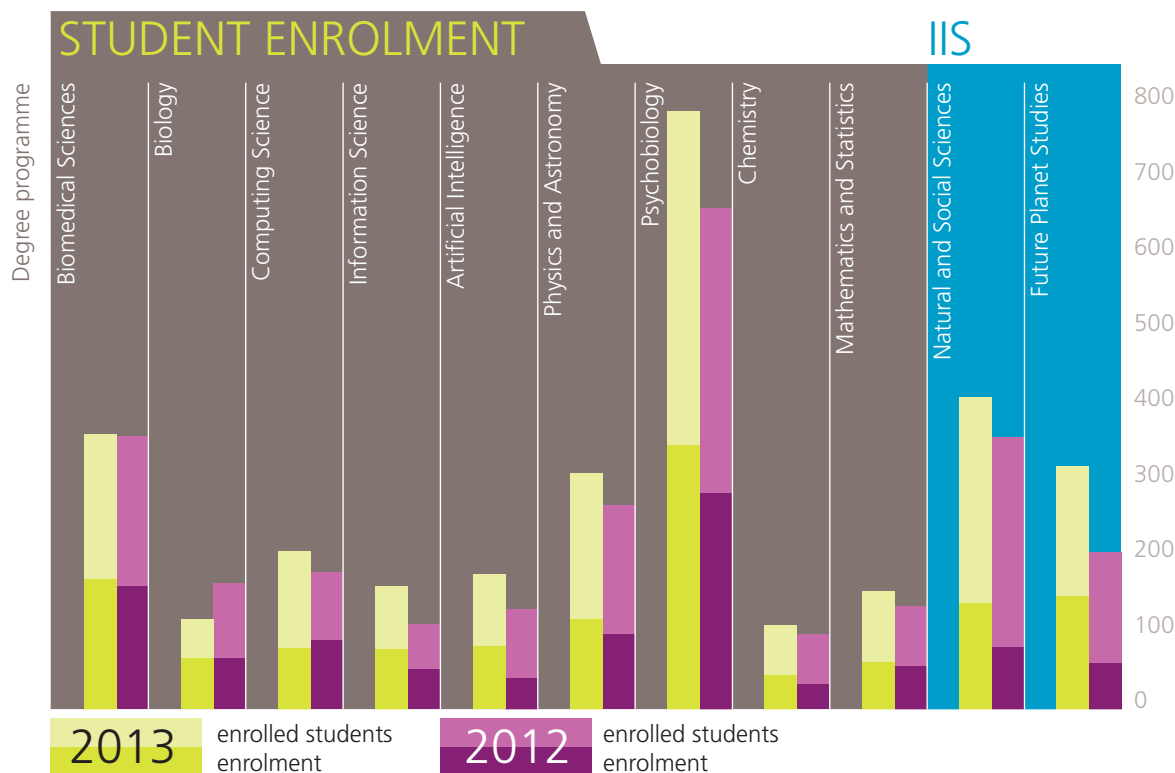
Spectrum / Natural and Social Sciences and Future Planet Studies / 613 members / Spectrum is the new name for the Natural and Social Sciences study association, formerly SVBG. 'Picsie', a photography committee, was established in 2013, with the remit to create an online archive bringing together all photographs taken at events organised by Spectrum over the years. Picsie also arranges for photographers or committee members to attend events to ensure they are all documented.

GAOS / Earth Sciences and Physical Geography / 105 members / GAOS organised an excursion to the Noord-Zuidlijn, the new north-south metro line in Amsterdam currently under construction, including a visit to the building site under Amsterdam Central Station. This was followed by a lunch in the GAOS room, which dozens of third-year students attended.

VIA / Informatics / around 1,300 members / The day of the Hackaton hosted by the VIA at Science Park was well-attended. VIA members experimented with Robolab Naos NXT-Robots, an oculus rift, LEAP motion controllers and more. Various lectures were held on topics such as gaming engines.

CONGO / Biology, Biomedical Science and Psychobiology / around 2,200 members / First-year students need to digest a lot of information in a short space of time when starting their studies. A fortnight after new students have started their degree programmes, CONGO organises an information evening to clarify important matters once more and provide further information. This explanatory session (called 'Studenten Leggen Uit', or SLUit) provides information on practical matters relating to Science Park, faculty points of contact, participation in decision-making (faculty and central level) and the structure and organisation of CONGO.

Faculty of Science Bachelor's programmes



STUDY SUCCESS



Diploma after four years; degree programme commenced in 2009; small cohorts may cause the academic success rate to fluctuate.



Degree programmes at the College of Science span the entire science spectrum. Over 2,500 students were enrolled in these programmes in 2013. Some further 650 students were enrolled in programmes at the Institute for Interdisciplinary Studies (IIS).

Incentive prizes for first-year students

An incentive prize was presented to young talents at The Royal Holland Society of Sciences and Humanities (KHMW) in Haarlem. Pjotr Buys (Mathematics and Technical Mathematics), Sam van den Brink (Physics and Technical Physics), Jorien Duivenvoorden (Chemistry) and Bryan Eikema (Computing Science and Technical Computing Science) were each awarded € 500.

Four bronze medals at International Mathematics Competition

The UvA delegation claimed four bronze medals during the 20th International Mathematics Competition (IMC) for students, held in Bulgaria. The winners were Sam van den Brink, Carla Groenland, Jolien Kerssens and Alan Groot. The delegation from the Korteweg-de Vries Institute for Mathematics (KdVI) comprised three first-year and five second-year students who also returned with three honourable mentions. First and second-year students across the globe take part in the IMC.

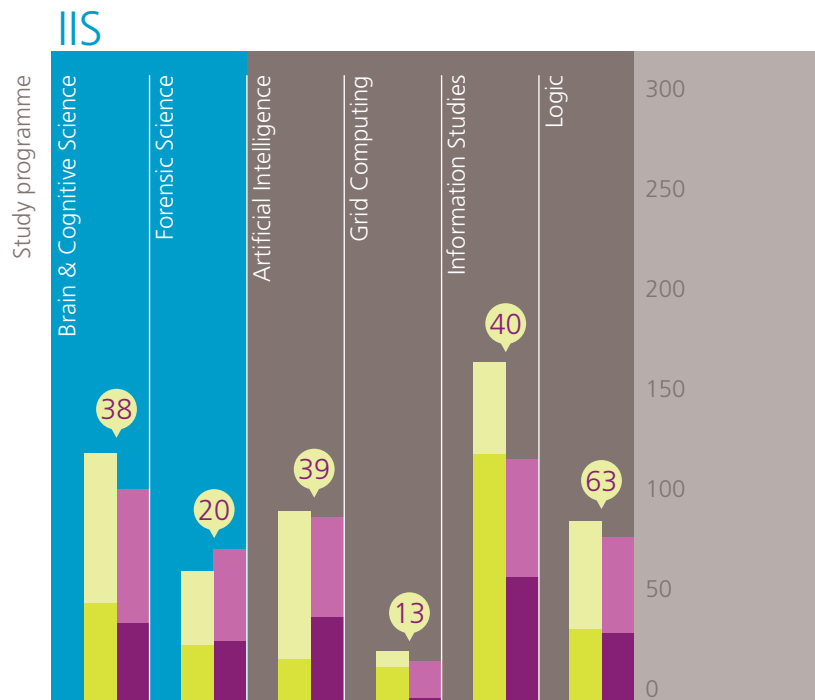
Top rankings for four Faculty of Science degree programmes

Biology, Natural and Social Sciences, Mathematics and Chemistry rank among the top research-oriented higher education programmes in the Netherlands, according to the standards applied by the Options Guide for Universities. Each programme with a total score of 76 points and an assessment of ++ or higher is given the designation of 'top programme'. Scores for top programmes at the Faculty of Science are: Biology 80 points, Natural and Social Sciences 78, Mathematics 76 and Chemistry 76. These scores are national averages based on the questions selected by the Options Guide from the National Student Survey (NSE 2013).

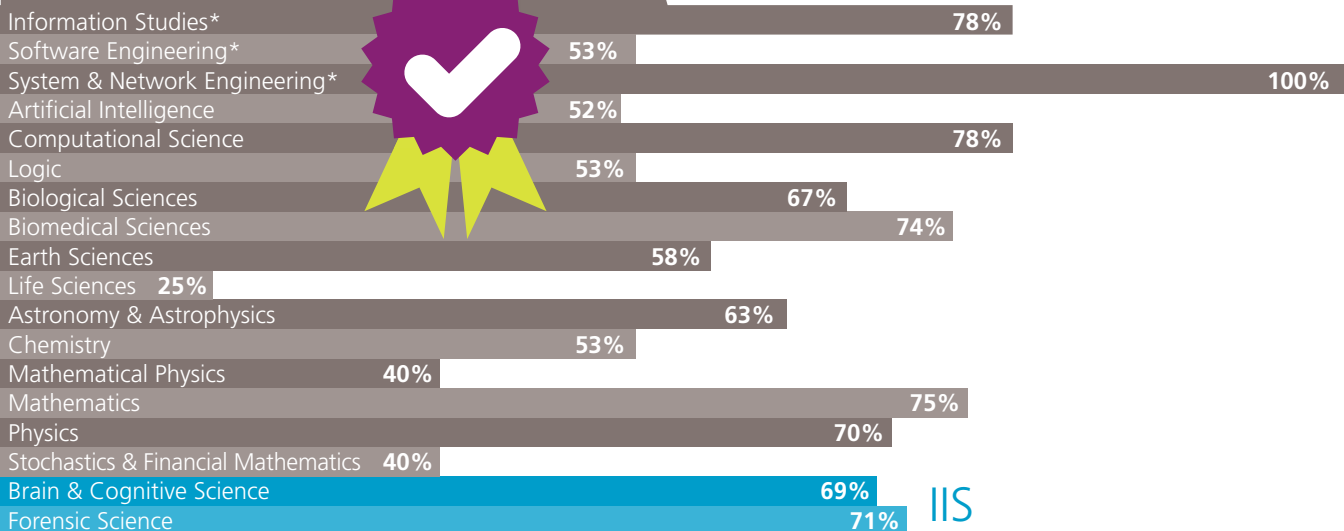
Faculty of Science

Master's programmes

Master's programmes at the Faculty of Science are based at three Graduate Schools: Informatics, Science and Life and Earth Sciences. In 2013, a combined total of more than 1,400 students were enrolled in these Master's programmes. Almost 200 students were enrolled in Master's programmes at the Institute for Interdisciplinary Studies, all of which are taught in English.

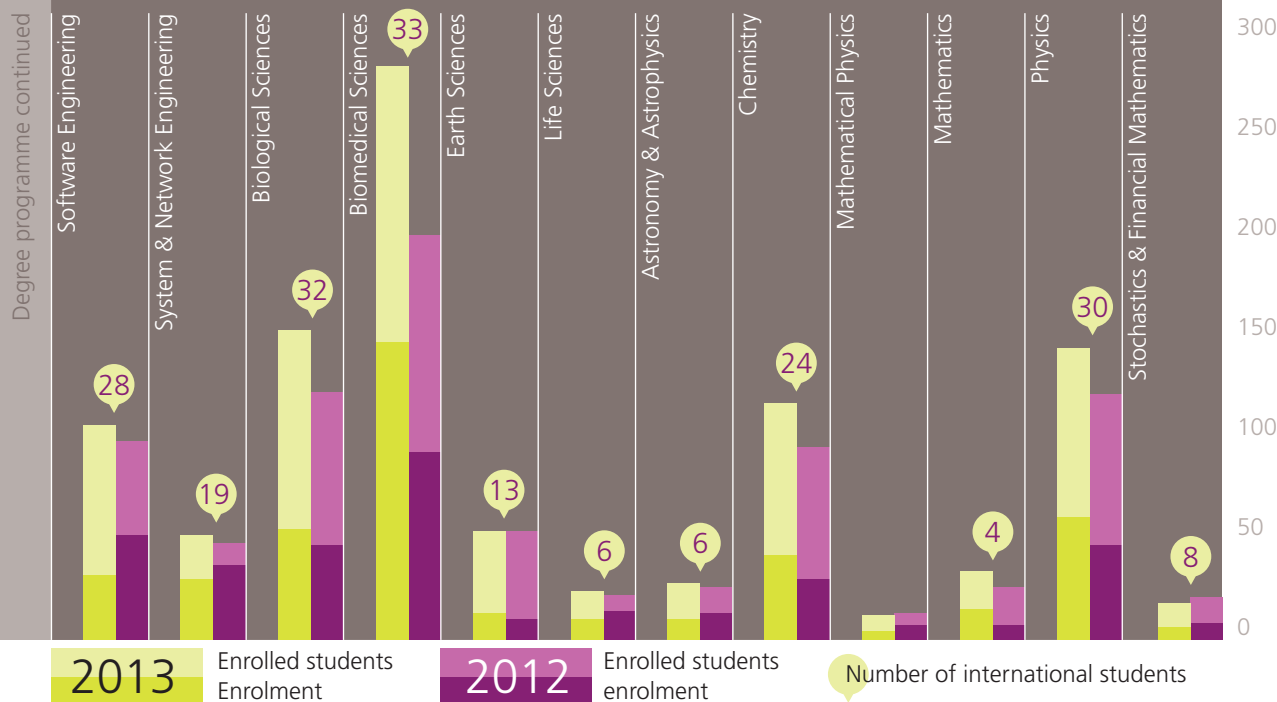


STUDY SUCCES



Diploma after second* or third year; degree programme commenced in 2011; small cohorts may cause the academic success rate to fluctuate.

STUDENT ENROLMENT



UvA and St. Petersburg: Master's in Computational Science

April 2013 marked the signing of an agreement between the UvA and the ITMO University of St. Petersburg for a joint Master's programme in Computational Science. The collaboration was cemented on the initiative of Prof. Peter Sloom, who is affiliated with both universities.

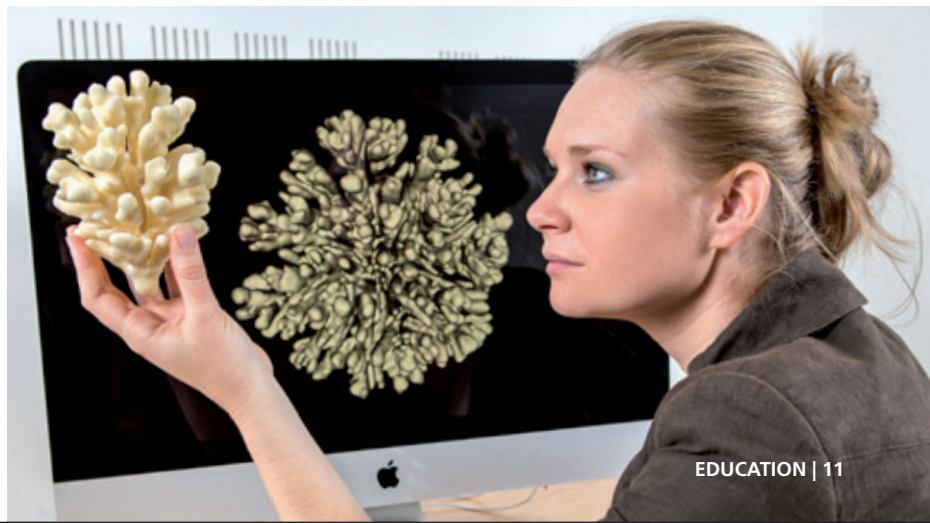
SNE best Master's in Computing Science

The independent Options Guide for Master's programmes 2013 named the Faculty of Science Master's in Network Engineering the best Master's programme in the Netherlands in the category of Computing Science in research-oriented higher education.

Graduation of first Teaching major

Lukas Droge was the first Faculty of Science student to obtain a degree with a major in Teaching. This major track offers students an opportunity to obtain

a first-level teaching qualification for secondary education. Droge earned his qualification to teach biology while studying for his Master's degree in Medical Biology.



Institute for Interdisciplinary Studies

The UvA's knowledge centre for interdisciplinary learning and teaching identifies new themes and issues linked to current developments in science and society.

IIS

FIGURES

Staff	FTE
112 people	47
Lecturers teaching at the IIS	
IIS	93
Faculty of Science	125
Faculty of Social and Behavioural Sciences	49
Faculty of Humanities	19
Faculty of Law	11
Faculty of Economics and Business	1
AMC-UvA	6
External	180

Students	Programmes	2012-2013
Natural and Social Sciences	Bachelor	374
Future Planet Studies	Bachelor	221
Earth Sciences	Bachelor	57
Forensic Science	Master	81
Brain and Cognitive Sciences	Research Master	97
Interdisciplinary electives and Honour's programmes		2,376

The Institute for Interdisciplinary Studies (IIS) is the UvA's knowledge centre for interdisciplinary learning and teaching and develops new courses in collaboration with the faculties. The IIS has more than 15 years' experience in interdisciplinary education and continuously develops substantive education innovations with an interdisciplinary character.

Over 3,000 students study at the IIS. The Bachelor's in Natural and Social Sciences and in Future Planet Studies, the Master's in Forensic Science and the Research Master's in Brain and Cognitive Sciences are among the programmes offered at the IIS. It also offers electives (minors, Honour's modules and various public activities) for students at all faculties. All its activities are interdisciplinary in nature and designed in collaboration with one or more faculties.

Implementation and innovation go hand in hand at the IIS, where the Teaching Lab plays a key part since it was launched in 2013. With a pivotal role in experiments, publications, manuals and interdisciplinary education methods, the Teaching Lab organises workshops on designing and bolstering interdisciplinary programmes for programme directors and lecturers and advises on various innovation programmes, among other things.

Manuals

- Teaching Lab, Institute for Interdisciplinary Studies, 'An introduction to interdisciplinary research'
- Teaching Lab, Institute for Interdisciplinary Studies, 'Interdisciplinary learning activities'

Politics, Psychology, Law and Economics

The UvA is preparing to launch a new English-taught interdisciplinary programme in Politics, Psychology, Law and Economics (PPLE) in September 2014. Students will learn to analyse the complex nature of society, organisations and societal challenges by integrating methods used in psychology, political science, law and economics. The IIS served as course developer and process manager on behalf of the faculties of Law, Behavioural Sciences, and Economics and Business.

IIS launches pre-Honour's programme

To challenge excellent students from day one, a group of first-year students of Natural and Social Sciences and Future Planet Studies started a pre-Honour's programme in September 2013. Students with top marks on their pre-university school-leaving examinations were invited to take part.

Tesla minor

Students doing the Tesla minor learn how to apply scientific knowledge acquired during their Master's studies in a non-university context. The Tesla minor was developed on behalf of the Faculty of Science and was launched in the second semester of 2012-2013. The new minor will be offered again in the second semester of 2013-2014.

'The interplay between development and implementation once more led to innovative, interdisciplinary teaching programmes and curricular recommendations in 2013.'

Lucy Wenting, Director of the IIS

Communication and information

Information activities carried out by the Faculty of Science reached a record number of people in 2013. Some 3,000 people attended the information days and information was provided to a further 3,000 school pupils. A range of public activities were additionally undertaken to kindle enthusiasm in science among young people and adults.

New offering for schools

In 2013, the Communication Department's Outreach team developed three new learning packages for schools, bringing the total number of available packages to 11. The team organised five new masterclasses, comprising advanced courses for excellent pupils. Outreach facilitates content-based activities for school classes either at the Faculty of Science or on-site at the school. Primary schools also took part in the robotics workshop in which students head off to primary schools with materials in hand to teach classes. The purpose of these activities is to spark interest among pupils and teachers for science, engineering and technology by engaging in content-based activities.

Children's lectures

Each month, a scientist from the Faculty of Science discusses scientific research with 8 to 12-year-olds at the NEMO Science Centre in Amsterdam. These popular Wakker Worden Children's lectures are always fully booked, drawing 80 children to NEMO on Sunday mornings. A 3D film workshop was developed for primary schools as a result of such a lecture by Dr Klaasjan van Druten.

Bètapartners

Minister of Education, Culture and Science Jet Bussemaker presented a cheque in the amount of € 250,000 to Bètapartners for the Broad Regional Support Centre (Brede Regionale Steunpunt), a cluster of support

centres for the fields of physics, chemistry, biology, computing science, NLT, earth sciences and engineering/technology. The themes of professionalisation, course innovation and alignment are high on the Support Centre's agenda. Founded in 2004, Bètapartners is a network formed by VU University Amsterdam, the UvA, the Amsterdam University of Applied Sciences (HvA) and InHolland University of Applied Sciences, together with 33 secondary schools and several businesses and other institutions in the provinces of North Holland and Flevoland and the region of Het Gooi. They joined forces to spark enthusiasm among secondary school pupils with a talent for science and technology, to heighten the appeal of science programmes and improve the quality of education in these subjects.

Ralph Wijers at the University of the Netherlands

Online lectures delivered by top Dutch professors are available to view free of charge on the website of the University of the Netherlands. A new lecture is posted online every weekday, with a new professor lecturing every week.

New website and newsletter

The website for current students and the employee website were transferred to the new Hippo content management system in the first half of 2013. The migration of the faculty website and those of five research institutes, which were transferred in the course of 2012, marks the completion of the migration project. October saw the publication of the revamped faculty newsletter. Following a survey among staff, suggestions and criticisms were analysed and incorporated, resulting in a fresh, new look that is more consistent with the new UvA website launched last year. Images can now also be used to support and highlight messages.

In autumn 2013, Prof. Ralph Wijers from the Anton Pannekoek Institute for Astronomy gave five astronomy lectures, with the sun, stars and black holes among the topics discussed.

Lectures by Ralph Wijers and other Dutch professors can be viewed on www.universiteitvannederland.nl.

FNWI Lecture Tour launched

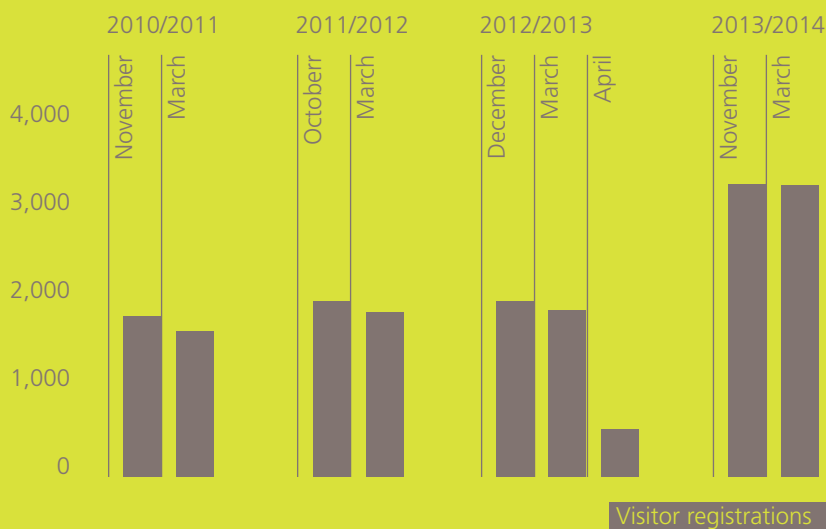
The Faculty of Science became a partner of the SPUI25 academic and cultural centre in 2013, kicking off with the FNWI Lecture Tour. This lecture series hosts scientists from the faculty to talk on the latest developments in their research. The FNWI Lecture Tour is a new platform where scientists in the natural sciences introduce themselves to a wide audience.

Rise in visitor numbers to information days

The number of applications for the faculty's Bachelor's programme information days, during which school pupils have an opportunity to orient themselves on their choice of study programme, has risen steadily in recent years. Interest in the Master's programme information evening has risen too.



INFORMATION DAYS



Broad-based research in the (natural) sciences in Amsterdam

FIGURES

FACULTY OF SCIENCE

Publications



1,504

Doctorate conferrals



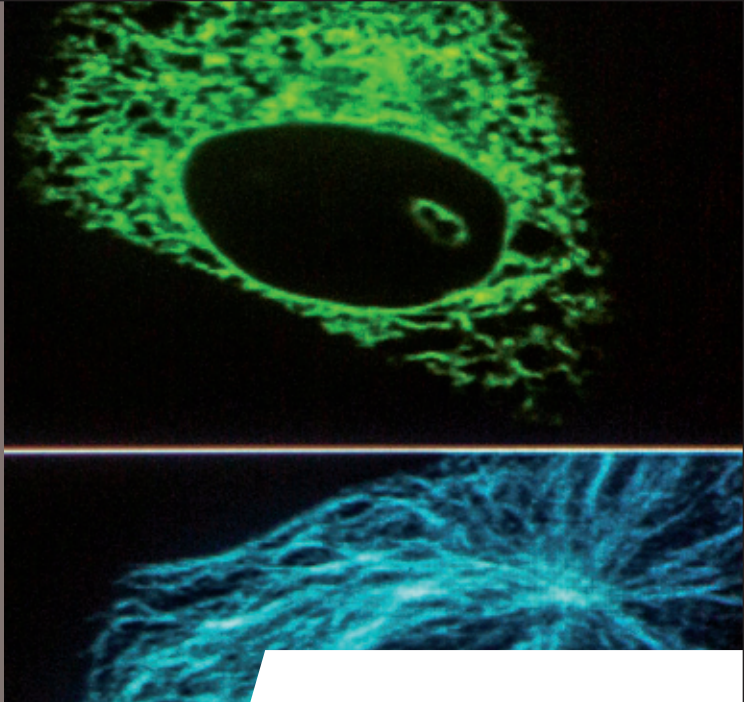
106

Staff



FTE

Totale	1,184
Male	793
Female	391
Professors	77
Associate professors	67
Assistant professor	87
PhD candidates	363
Non-Dutch employees	394



The Faculty of Science comprises eight research institutes, each of which has a dedicated field of work. The Faculty thus covers a broad field within the (natural) sciences.

The University of Amsterdam has designated 14 research priority areas in total. Research conducted within these priority areas highlights the best the UvA has to offer and enjoy international acclaim.

Research institutes at the Faculty of Science participate in five of these priority areas: Systems Biology, Gravitation and Astroparticle Physics, Brain and Cognition, Quantum Matter and Quantum Information, and Sustainable Chemistry. The faculty itself has designated another four faculty research priority areas in: Global Ecology, Green Life Sciences, Informatics for a Data rich World, and Soft Matter.

Advanced Research Centre for NanoLithography opens

The new Advanced Research Centre for NanoLithography (ARCNL), a public-private partnership between ASML, the Foundation for Fundamental Research on Matter (FOM), the Netherlands Organisation for Scientific Research (NWO), the UvA and VU University Amsterdam, will conduct fundamental research on nanolithography, the most important technology for manufacturing computer chips and processors in PCs, smartphones and tablets. The centre will focus initially on the physical and chemical processes crucial to extreme ultra-violet (EUV) lithography. Prof. Joost Frenken was appointed the ARCNL's first director.

Amsterdam Center for Forensic Science and Medicine founded

The UvA, AMC-UvA and the Netherlands Forensic Institute (NFI) work closely in the area of forensic and scientific medical research and in 2013 joined to establish the Amsterdam Center for Forensic Science and Medicine

(CLHC), a virtual, interdisciplinary centre of expertise for forensic innovation. With the CLHC, the UvA, AMC-UvA and NFI aim to establish a flourishing, internationally recognised programme in Forensic Science in the Netherlands (also see page 21).

Andreas Bonn medals

The Andreas Bonn medals are presented once every five years for original doctoral research work in Natural Science, Exact Science or Medicine and Dentistry at the UvA. In 2013, PhD candidates Sebastiaan de Vet (Natural Science) and Jop Briët (Exact Science), were each awarded an Andreas Bonn medal, in addition to Alexander Vlaar at the AMC-UvA (Medicine). A total of 23 young researchers were nominated for this award.

Anton Pannekoek Institute for Astronomy

The API enjoys worldwide acclaim in astrophysics. Internationally oriented research groups conduct research on black holes and neutron stars, gamma radiation, the evolution of stars, planet formation and observation techniques.

FIGURES

API

Publications



283

Doctorate conferrals



12

Staff



	FTE
Professors	2
Associate professors	9
Assistant professors	3
Postdocs	13
PhD candidates	26
Support and management staff	5

Artist's impression of Sagittarius A*, the supermassive black hole at the centre of the Milky Way.

Star-gazing evenings attract great interest

The first star-gazing evenings in March and April 2013 were already fully booked just three hours after they were announced. Visitors attended a lecture, toured the planetarium and had a chance to ask the astronomers questions. Eighty people were given an opportunity to have a look at the planetariums and telescopes at Science Park during these evenings. Attendees could also enjoy extensive lectures on topics highlighted in the 'news flash', ask questions during 'ask the astronomer' sessions and groups of 20 were shown around the telescopes in the sun and star planetarium.

Scientific Advisory Council assesses API research

Another focus for the API in 2013 was the mid-term research review. In November, the Scientific Advisory Council visited the API to form an opinion on the quality of its scientific

research on the basis of an internal review and staff interviews. The Council concluded that *'the productivity level of API continues to be very high, and more importantly to be of the highest quality. With API continuing to attract and win substantial research funding, they are maintaining their status as a world-class research institute'*.

API staff successfully acquire grants

Various API staff were awarded a grant for their research in 2013. In the Free Competition, Dr Sera Markoff was awarded a grant for a postdoc. Dr Saskia Hekker received an ERC Starting Grant to conduct research at the Max Planck Institute for Solar System Research in Göttingen. Dr Jason Hessels (ASTRON, guest researcher at the API) received both an ERC Starting Grant and a Vidi grant. Dr Joeri van Leeuwen (ASTRON, also a guest researcher at the API) acquired a TOP grant and an NWO Medium grant.

The grants awarded to Hessels and Van Leeuwen will be used to appoint a number of PhD candidates and postdocs. These appointments stem from the API's collaboration with ASTRON in the field of radio astronomy.



'With a top-level appointment of a MacGillavry Fellow, top scores and a top mid-term evaluation '13 became the API's lucky number.'

Prof. Ralph Wijers, Director of the API

Van 't Hoff Institute for Molecular Sciences

Focus on social relevance in response to questions arising in society. Scientists from a range of chemistry disciplines join forces.

HIMS

FIGURES

Publications



162

Doctorate conferrals



16

Staff



FTE

Professors	12
Associate professors	6
Assistant professors	9
Postdocs	20
PhD candidates	55
Support and management staff	20

The Molecular Photonics group published an article in Nature Chemistry on the speed of movement of molecular motors, which doubles when adding 3% water as a 'lubricant' to the solvent.

Amsterdam briefly reigns as world capital of analytical chemistry

Analytical chemists at the Van 't Hoff Institute for Molecular Sciences hosted 1,500 international colleagues and numerous businesses in Amsterdam in June during the 39th International Symposium on High-Performance-Liquid-Phase Separations and Related Techniques, chaired by Prof. Peter Schoenmakers.

Prestigious Italian award for Prof. Krishna

Prof. Rajamani Krishna won the prestigious Eni Award for his research on fundamental aspects of gas separation and purification. Italy's President Giorgio Napolitano presented him with the award – a gold medal and € 200,000 – in Rome in June. Eni, an Italian multinational oil and gas company on a par with global corporations such as Shell, BP, ExxonMobil and Total, launched the Eni awards in 2008 as a 'Nobel Prize for energy and the environment'.

Sustainable Chemistry: University research priority area

In 2013, the Executive Board designated 'Sustainable Chemistry, from theory to application', a theme initiated by the HIMS, as a UvA research priority area. Structural additional funding was earmarked to expand the number of academic staff and thereby bolster research focused on better understanding chemical processes in which fuels are produced or consumed under the influence of light or electricity.

Amsterdam Center for Forensic Science and Medicine opens

The Amsterdam Center for Forensic Science and Medicine (CLHC) opened its doors on 13 September as an interdisciplinary expertise centre clustering the experience, knowledge and expertise of the HIMS, AMC-UvA and the Netherlands Forensic Institute (NFI). Prof. Arian van Asten, professor by special appointment of Forensic Analytical Chemistry (HIMS), and Prof. Maurice Aalders, professor by special appointment of Forensic Biophysics (AMC-UvA), both delivered inaugural lectures to mark the occasion.

Science news

- HIMS researchers were extremely successful in acquiring research funding in 2013. Eight research proposals were approved, including for an ERC Advanced Grant by Prof. Joost Reek. Dr Wojciech Dzik commenced his research in 2013, having been awarded a personal Veni grant
- As many as three HIMS PhD candidates were recognised for the exceptional quality of their doctoral theses. Linde Smeenk received the Stufkens Prize from the Holland Research School of Molecular Chemistry, Elena Uliyanchenko won the I.M. Kolthoff Award presented by the Analytical Chemistry section of the Royal Netherlands Chemistry Society (KNCV) and Nicole Franssen won the DPI Golden Thesis Award. Additionally, Pawel Dydio obtained his PhD with the title of doctor cum laude.
- Prof. Joost Reek was appointed the new director of the HIMS effective 1 November, succeeding Prof. Aart Kleijn, who took up the position of director of the Center of Interface Dynamics for Sustainability in Chengdu, China.

Appointments

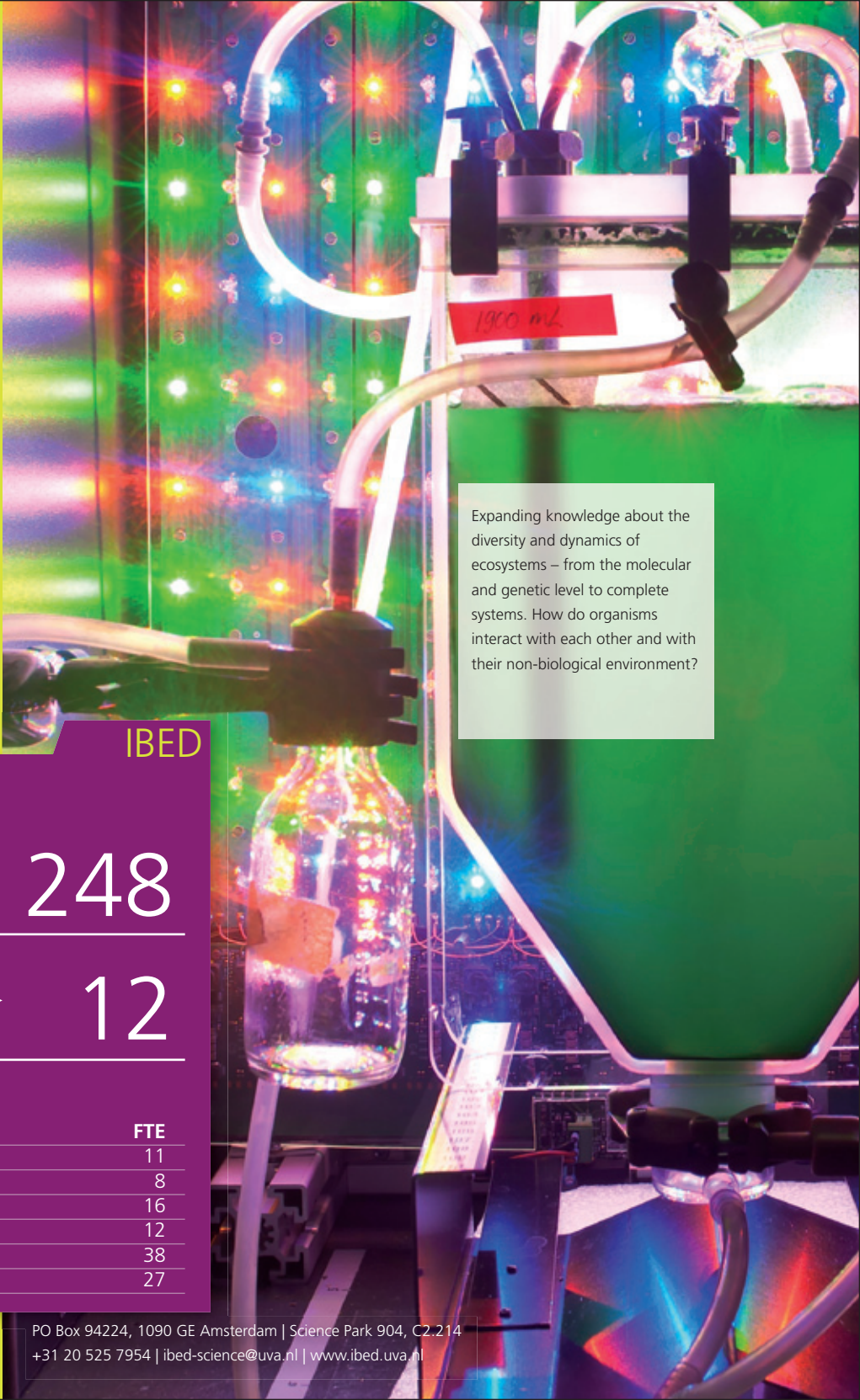
- Prof. Bas de Bruin was appointed professor of Bio-inspired Sustainable Catalysis.
- Prof. Fred Brouwer was appointed professor of Spectroscopy and Photonic Materials. He was previously professor by special appointment of Molecule Spectroscopy, a chair endowed by Stichting John van Geuns Fonds.



'Designating Sustainable Chemistry as a research priority area recognises the quality and relevance of sustainable chemistry research at the HIMS.'

Prof. Joost Reek, Director of the HIMS

Institute for Biodiversity and Ecosystem Dynamics



Expanding knowledge about the diversity and dynamics of ecosystems – from the molecular and genetic level to complete systems. How do organisms interact with each other and with their non-biological environment?

FIGURES

IBED

Publications



248

Doctorate conferrals



12

Staff



FTE

Professors	11
Associate professors	8
Assistant professors	16
Postdocs	12
PhD candidates	38
Support and management staff	27



HIGH-LIGHTS

'Vogel het uit!' receives 2013 Academic Year Prize

The interdisciplinary team that proposed the 'Vogel het uit!' project, led by researchers Dr Judy Shamoun-Baranes and Prof. Willem Bouten, aims to involve people who enjoy outdoor life in the high-tech study of bird behaviour. In October 2013, State Secretary for Education, Culture and Science Sander Dekker presented the team with € 100,000 in prize money to carry out the proposed project. The Academic Year Prize is a Dutch prize awarded annually to the most original and innovative communication plan for making a scientific research project more accessible to a broader public.

Sponge faeces as the driving force behind tropical coral reefs

How can a coral reef, one of the most diverse and productive ecosystems on the planet, survive in nutrient-poor tropical waters, like an oasis in a marine desert? This question, also known as Darwin's Paradox, seems to have been answered 171 years later by researchers Dr Jasper de Goeij from the UvA and Dick van Oevelen from the NIOZ. The researchers showed that sponges are the missing link between corals and algae and other coral reef inhabitants. Sponges recycle waste products from corals and algae and

convert them into a food source for other reef inhabitants. This crucial cycle, termed the 'sponge loop' by the researchers, explains how energy and nutrients are conserved within the coral reef ecosystem instead of leaking to the surrounding waters of the marine desert.

Cultivation of rice doesn't reduce atmospheric CO₂

Rice cultivation does not lead to a reduction of CO₂ gas in the atmosphere even though it is currently used to compensate CO₂ emissions from other sources such as coal-fired power plants. These are the conclusions from a study carried out by an international team of researchers led by UvA Prof. Karsten Kalbitz and Prof. Ingrid Kögel-Knabner from the Technische Universität München. Soils used for rice production are mostly managed under submerged conditions (paddy soils). The lack of oxygen reduces the microbial degradation of soil organic carbon. Until now, rice paddy soils were generally thought to function as net sinks of CO₂. A study of paddy soils used for rice cultivation for 50, 100, 300, 700, and 2,000 years shows that this is not the case.

IN BRIEF

Science news

- Likelihood of death doesn't always increase with age.
- New generation of flame retardants possibly more hazardous than previously thought.
- Non-stick coatings found in purified drinking water.
- Common swifts make mysterious twilight ascents.
- More new species in geologically dynamic regions: mountain formation stimulates increased biodiversity.
- Giant viruses over the dyke: DNA code of giant algae virus cracked.

Grants and prizes awarded

- Dr Isabel Smallegange awarded NWO MEERVOUD grant.
- Andreas Bonn Medal awarded to Dr Sebastiaan de Vet.
- Marino Marinković wins 2013 Joep van den Bercken Prize.

Appointments

- Prof. Corina Brussaard was appointed professor by special appointment of Viral Ecology.
- Prof. Hal Caswell was appointed professor of Mathematical Demography and Ecology.
- Prof. Piet Verdonchot was appointed professor by special appointment of Wetland Restoration Ecology.



'Fundamental knowledge about the functioning of our living environment, both at the local and the global level, is essential to address the immense challenges of the future.'

Prof. Peter van Tienderen, Director of the IBED

Institute for Logic, Language and Computation

World leader in the interdisciplinary domain of mathematics, linguistics, computing science, philosophy and artificial intelligence. With roots in logic research in Amsterdam at the turn of the 20th century.

FIGURES

Publications

of which 137 Faculty of Science



241

Doctorate conferrals



3

Staff



of which
Faculty of
Science

	FTE	
Professors	11	5
Associate professors	8	6
Assistant professors	15	6
Postdocs	20	12
PhD candidates	39	24
Support and management staff	4	4

VI grants for Sima'an and Gierasimczuk

Two ILLC researchers were successful in the Innovational Research Incentives Scheme, the NWO grant programme for talented, creative researchers who conduct innovative research. Dr Khalil Sima'an was awarded a Vici grant of € 1.5 million to conduct research on a new generation of translation machines. In contrast with the mediocre performance of current translation machines, this Vici-funded research programme involves developing translation machines which, like human translators, first reformulate a text in their 'own words' and then translate them. Dr Nina Gierasimczuk was awarded a Veni grant of € 250,000 for research involving the development of a new, formal framework for modelling learning and garnering knowledge, thus identifying the complex balance between 'individual learning' and 'learning in a group'.

Language in Interaction project launched

Language in Interaction, an NWO Gravitation project, was launched in 2013 with a total grant of € 27.6 million. Led by Peter Hagoort (Nijmegen), the project focuses on interdisciplinary study of the

phenomenon of language – the most powerful communication system, and a product of evolution. To gain a better understanding of this extraordinary phenomenon, language is to be studied at all levels, ranging from the brain to social interaction and linguistic structures. The ILLC is one of the partners leading this project in collaboration with three institutes in Nijmegen. Prof. Johan van Benthem was one of the principal project applicants, Prof. Rens Bod and Prof. Robert van Rooij are co-leading two of the seven work packages.

Joint Research Center with Tsinghua University

Early September marked the foundation of the Tsinghua-UvA Joint Research Center in Logic in the presence of Dymph van den Boom, Rector Magnificus. The ILLC aims to intensify collaboration with Chinese scientists in the field of logic and philosophy and to promote and facilitate the launch of new projects. The contributions of Prof. Johan van Benthem and ILLC alumna Fenrong Liu, the two research centre directors, featured prominently during the opening of the UvA academic year. As part of the Joint Research Center, four PhD candidates will commence research projects in 2014.

IN BRIEF

Awards

- Prof. Henkjan Honing was awarded a Distinguished Lorentz Fellowship in recognition of his ground-breaking interdisciplinary work in the field of music and cognition.
- Prof. Ronald de Wolf (CWI/ILLC) won an ERC Consolidator Grant for his project 'Progress in quantum computing: Algorithms, communication and applications'.
- Prof. Harry Buhrman (CWI/ILLC) was one of the principal applicants in the successful 'Networks' NWO Gravitation proposal, a project headed by Michel Mandjes (KdVI).

Appointments

- Prof. Arianna Betti was appointed professor of Language Philosophy (Faculty of Humanities).
- Prof. Robert van Rooij was appointed professor of Logic and Cognition (Faculty of Science).



'In 2013, both the ILLC research institute and the MSc in Logic were assessed as excellent. We are set to continue this success.'

Prof. Yde Venema, Director of the ILLC

Institute of Physics



FIGURES

IoP

Publications



204

Doctorate conferrals



20

Staff



FTE

Professors	18
Associate professors	16
Assistant professors	10
Postdocs	35
PhD candidates (excluding approx. 25 Nikhef FTEs)	57
Support and management staff	8

With almost all research activities grouped under the GRAPPA, Quantum Matter & Quantum Information and Soft Matter research priority areas, the Institute of Physics (IoP) covers a broad spectrum of both experimental and theoretical topics, ranging from particle physics to soft matter.

On 21 August, the entire UvA Executive Board visited CERN, the European Organization for Nuclear Research, in Geneva. Stan Bentvelsen, the UvA professor who headed the Dutch contribution to the ATLAS experiment when the Higgs boson was discovered in 2012, hosted the visit.

2013 Physics Prize for Stan Bentvelsen and Frank Linde

Prof. Stan Bentvelsen and Prof. Frank Linde were recognised with the prestigious 2013 'Physica' Prize for their contributions to the discovery of the Higgs boson during the ATLAS experiment at CERN. As the respective former and current programme directors of the Nikhef ATLAS group, Linde and Bentvelsen directed the Dutch contribution to the discovery of the Higgs boson.

2013 Minerva Prize for Katerina Dohnalová

The FOM Foundation awarded the 2013 Minerva Prize to Dr Katerina Dohnalová. FOM awards the prize for the best physics publication to a female researcher every two years. Dohnalová, who started in 2013 as a MacGillavry Fellow, received the prize for her research on silicon quantum dots – tiny nano crystals in which quantum mechanical properties play a clear role. By adding a carbon layer

to the quantum dots, Dohnalová was able to change their electronic structure. As a result, the quantum dots emit light more efficiently than otherwise. The efficient silicon quantum dots are a suitable candidate for tomorrow's LEDs, displays and flexible solar panels.

Florian Schreck off to a flying start with ERC Consolidator Grant

Prof. Florian Schreck was appointed to the Experimental Quantum Physics Chair created with funds endowed under the Physics and Chemistry sector plan. 'Physics World' ranked Schreck's achievement of a Bose Einstein condensate produced using only laser cooling among the top ten 'Physics Breakthroughs of the Year 2013'. Shortly before transferring to Amsterdam, the European Research Council (ERC) awarded him a Consolidator Grant of € 1.8 million. Schreck studies the quantum mechanics of many-body systems. These systems display behaviour that cannot simply be reduced to formulas describing the behaviour of the individual parts.

IN BRIEF

Science news

- FOM 'Projectruimte' grants for Dr Robert Spreeuw (€ 521,000) and Prof. Stan Bentvelsen (jointly with Prof. Bob van Eijk, Nikhef: € 400,000).
- Joint licensing agreement between the UvA, Delft University of Technology and the BASF chemical company for BASF's commercialisation of the concept of magnetic cooling developed by Prof. Ekkes Brück.
- ASML establishes the Advanced Research Center for NanoLithography (ARCNL) at Science Park in collaboration with the UvA, VU University Amsterdam, AMOLF, FOM and NWO.
- ERC Advanced Grant for Dr Gora Shlyapnikov.
- FOM Programme for Dr Robert Spreeuw et al. (€ 0.8 million for the IoP).
- Open STW Programme under Prof. Daniel Bonn with NFI and two industrial partners (€ 420,000).

Appointments and tenure track positions

- Dr Alejandra Castro: tenure track in String Theory.
- Dr Katerina Dohnalová: tenure track in Optoelectronic Materials (MacGillavry Fellow).
- Prof. Jeroen van Dongen: professor of History of Natural Science (0.6 FTE).
- Dr Diego Hofman: tenure track in String Theory.
- Prof. Florian Schreck: professor of Experimental Quantum Physics.
- Prof. Wim Sinke: professor of Photovoltaic Energy Conversion (0.1 FTE).
- Dr Vladimir Gritsev: associate professor of Condensed Matter Theory (D-ITP).
- Dr Wouter Waalewijn: tenure track in Theoretical Particle Physics (D-ITP).

'#physicsinamsterdamisbooming. More top physicists conduct top research: lots of new researchers in 2013; partner of the new ARCNL institute.'

Prof. Daniel Bonn, Director of the IoP

Informatics Institute


Research in computer science based on curiosity and applicability. Focuses on complex information systems, with an emphasis on collaborative, data-driven, computational and intelligent systems with interactive components.

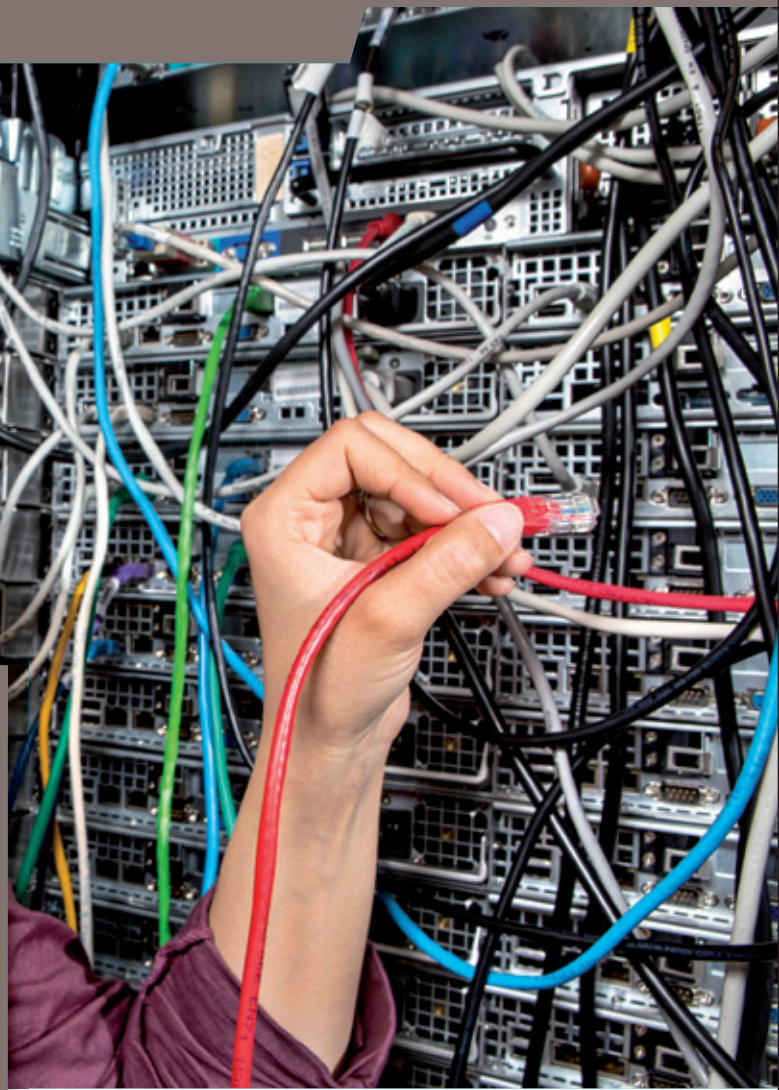
IVI

FIGURES

Publications  238

Doctorate conferrals  16

Staff		FTE
Professors		11
Associate professors		10
Assistant professors		11
Postdocs		22
PhD candidates		58
Lecturers		14
Support and management staff		24



HIGH-LIGHTS

Regional and national initiatives

In 2013 the IvI took active part in two major projects at the e-Science Center: SIM City and Searching Public Discourse – the latter in a consortium of the UvA and Utrecht University. The e-Humanities initiative took further shape with the formation of the Center for Humanities and Technology (CHaT) and collaboration in the organisation of the new minor Digital Humanities (VU University Amsterdam and UvA). The IvI won a substantial contract for the ODE-Open Data Exchange II through the Amsterdam Economic Board, participating as part of a consortium made up of the UvA, VU University Amsterdam and the Waag Society.

Internationalisation

Russian President Vladimir Putin extended Prof. Peter Sloot's 'Russian Leading Scientists Program' by another two years (2013-2014). This programme is generating a flow of PhD conferrals at the UvA. In the same connection, the Ministry of Economic Affairs granted the IvI € 120,000 to fund a Dutch-Russian summer school in 2014 with a focus on modelling complex systems. Peter Sloot has also taken steps to set up a Complexity Institute in Singapore.

Education innovations

In 2013, 16 students started the new track in Game Studies, part of the one-year Master's in Information Studies. The two-year Master's in Computational Science was launched following the renaming of the current Grid Computing programme. Computational Science was designed in association with VU University Amsterdam's Computer Science Department and is offered as a joint programme.

Knowledge valorisation

The IvI actively endorses the UvA's policy of developing practical applications for knowledge as one of its main objectives, alongside research and education. An external auditor audited knowledge valorisation at the IvI. The auditor recommended more structure and eliminating barriers. Following up on these recommendations, the IvI appointed Bert Bredeweg as Valorisation Officer (VO). He has started to set up a network with the business community and organised several Business to University (B2U) workshops. Four small start-ups (Euvision, Thirdsight, Perceptech and Electric Ant) have been established in the vicinity of the IvI in recent years, and two new start-ups (Scyfer and 904 labs) were launched in 2013.

IN BRIEF

Awards

- Dr Ana Varbanescu received a MacGillavry Fellowship.
- The ICT Personality Award was presented to Prof. Arnold Smeulders (UvA) and Prof. Peter Apers (University of Twente) for their vital role in enhancing the image of ICT research in the Netherlands.
- Under its Seventh Framework Programme (FP7), the EU awarded the project TERESA (Telepresence Reinforcement-Learning Social Agent) a grant totalling € 3 million, with € 800,000 earmarked for the UvA. Led by Dr Shimon Whiteson in collaboration with Dr Maarten van Someren, the project aims to develop a social intelligent telepresence robotic system.
- The Software and Network Engineering (SNE) group received a grant from the European Regional Development Fund (ERDF) to research how software and hardware can be optimally aligned to increase 'green' data centre operations.

Appointment

- Dr Theo Gevers was appointed full-time professor of Computer Vision. He previously worked as an associate professor at the IvI.



'Computing Science is slowly but surely securing a pivotal role in scientific research and in the academic world.'

Prof. Jan Bergstra, Director of the IvI

Korteweg- de Vries Institute for Mathematics

The KdVI is advancing the science of mathematics, both theoretical and applied, and aims to promote the application and appreciation of mathematics in other scientific disciplines and society as a whole.

The principal applicants in the Networks project.



FIGURES

KdVI

Publications



89

Doctorate conferrals



6

Staff



FTE

Professors	8
Associate professors	8
Assistant professors	7
Postdocs	6
PhD candidates	20
Lecturers	2
Support and management staff	1

Multi-million euro grant for complex networks research

Minister of Education, Culture and Science Jet Bussemaker awarded a € 22.7 million Gravitation Programme grant to the Networks project, led by Prof. Michel Mandjes. This programme aims to create scope for innovative research and international breakthroughs in science at the global level. Large-scale networks – including digital networks as well as traffic, transport and energy networks – take centre stage in the Networks project, which focuses on modelling, understanding, managing and optimising complex and highly volatile networks. The research is performed in a consortium of 11 researchers from four different institutions: the UvA, the National Research Institute for Mathematics and Computer Science (CWI), Eindhoven University of Technology and Leiden University. The grant has provided a huge impetus for mathematics and computing science research at the UvA and is highly beneficial for mathematicians in the Netherlands.

KdVI successful

Last year was a very successful grant year for the KdVI. The grants awarded clearly demonstrate the relevance of mathematics research. Prof. Lex Schrijver received a prestigious ERC Advanced Grant of € 2.5 million for his research project entitled ‘Applying Fundamental Mathematics in Discrete Mathematics, Optimization, and Algorithmics’. Prof. Sergey Shradin was awarded an NWO Vici grant of € 1.5 million to conduct research on comparisons and the space of surfaces over the next five years. Dr Tatjana Eisner received a Vidi grant for her research concerning the predictability of dynamical systems. NWO TOP grants went to Dr Hessel Posthuma’s proposal for symmetry research (junior TOP) and to the team of Prof. Onno Boxma (Eindhoven University of Technology) and Prof. Michel Mandjes and Dr Sindo Núñez Queija (both UvA) for their project on ‘Two-dimensional models in queues and risk’. Lastly, the NWO STAR and GQT mathematics clusters agreed to fund a three-year tenure track position at the KdVI.

Outreach and knowledge valorisation

Besides research, the KdVI successfully undertook a number of outreach and knowledge valorisation activities in 2013. The KdVI and IILC organised the 11th ‘Leve de Wiskunde!’ symposium at Science Park, attended by over 100 secondary school teachers and pupils. Lectures were delivered by Prof. Sindo Núñez Queija, Prof. Benedikt Löwe, Dr Roland van der Veen and Prof. Alexander Rinnooy Kan. In addition, the KdVI organised preparatory summer courses in Mathematics for school pupils lagging behind in these subjects and who want to study at a university. Participation in these summer courses continues to rise. In 2013 there were 146 participants in the Mathematics courses; 51 aspiring students sat the university entrance examination in mathematics.



‘If 2014 is half as good as 2013, it will be brilliant!’

Prof. Jan Wiegerinck, Director of the KdVI

Appointment

Prof. Hans Maassen was appointed as professor of Quantum Probability and Quantum Information at the KdVI. Hans Maassen studies the nature of information in quantum mechanics systems such as atoms, particles of light and crystal lattices.


Swammerdam Institute for Life Sciences

This is the faculty's largest institute, its field of work spanning biological disciplines such as molecular and cell biology, microbiology, botany, physiology and neurobiology. Knowledge from other areas of science is applied to build a multidisciplinary approach.

FIGURES


SILS

Publications




150

Doctorate conferrals



22

Staff



	FTE
Professors	13
Associate professors	9
Assistant professors	30
PhD candidates	91
Lecturer	1
Support and management staff	51

Neurogenesis in the adult brain: new-born nerve cells are recognisable as white cell bodies with coloured dendrites. Neurogenesis is affected by factors such as stress and brain diseases as well by movement and nutrition in early life (Korosi et al., BBr 2012; Lucassen et al., tins 2013).

LCAM recognised with Euro-Bioimaging five-star ranking

LCAM is a collaboration between the SILS, AMC-UvA and NKI in the field of microscopy. LCAM's application to become a Euro-Bioimaging flagship centre for functional imaging was honoured with the highest possible ranking in Europe. Euro-Bioimaging is a new pan-European ESFRI initiative aimed at establishing an advanced microscopy research infrastructure for selected state-of-the-art imaging techniques.

Biochemical roadmap of a human being

In collaboration with several international system biologists, Prof. Hans Westerhoff compiled a human 'biochemical roadmap'. This roadmap is the product of a major research project led by researchers from San Diego, Reykjavik, Manchester and Amsterdam. Published in Nature Biotechnology in March 2013, it is regarded as a great scientific breakthrough.

Investments in Green Defence Against Pests by STW and industry

The Green Defence Against Pests programme (GAP), with a total budget of € 3.3 million and coordinated by Prof. Michel Haring, focuses on the development of sustainable, environmentally friendly crop protection. Staff from research groups at five Dutch universities (UvA, Wageningen University, Utrecht University, Leiden University and Radboud University Nijmegen) and ten businesses in the cultivation sector contributed to the programme. GAP was among the five perspective programmes to receive an investment from the STW technology organisation and the plant breeding industry. As part of this project Dr Petra Bleeker was awarded a Vidi grant for her research on the manner in which tomatoes arm themselves against insects.

Awards

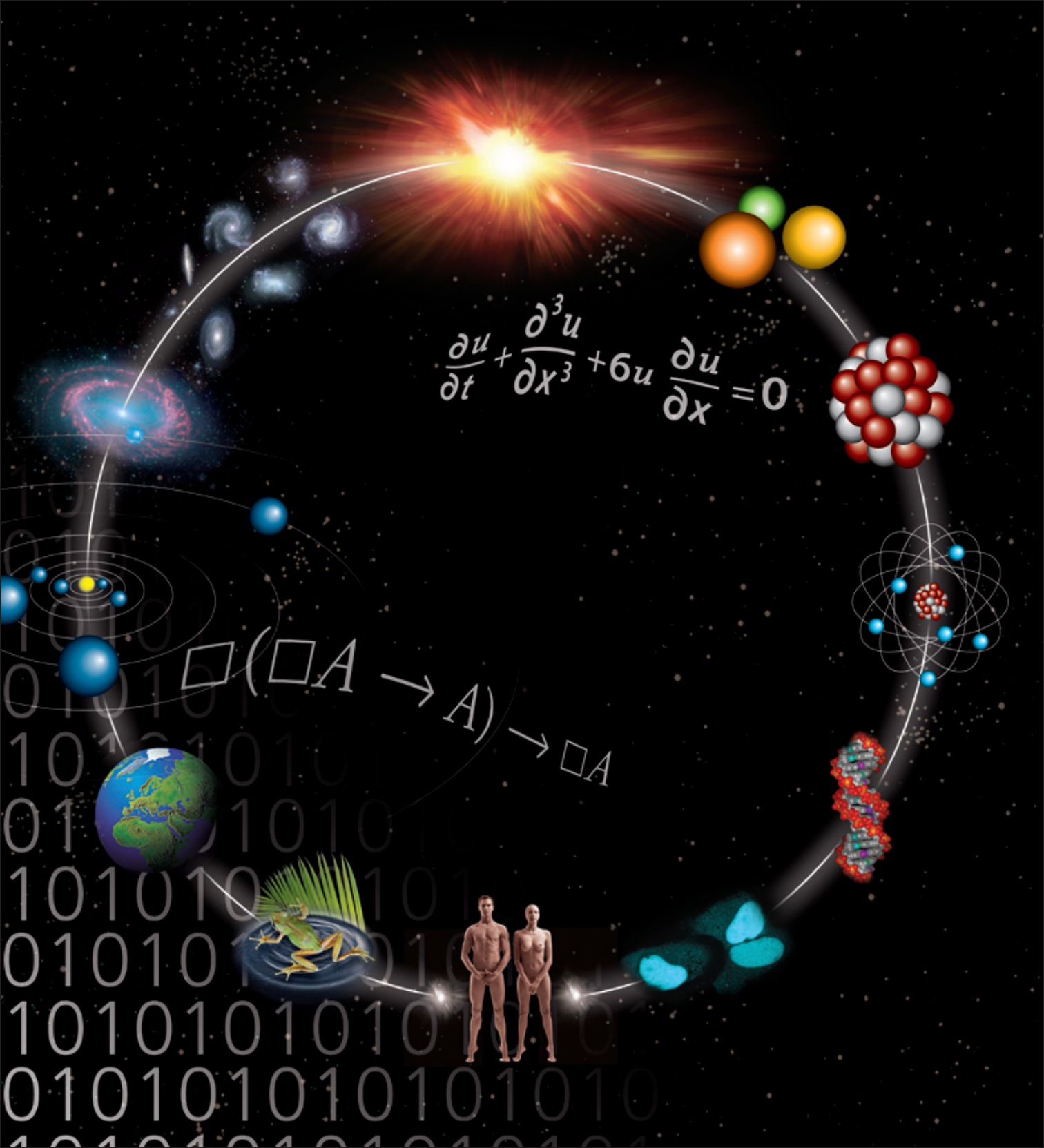
- Martin Vinck received his PhD cum laude. He also won the Scopus Prize and received a Rubicon Scholarship, gaining research experience abroad for a maximum period of 24 months.
- Grants awarded by the Province of North Holland and the Chamber of Commerce to the SILS and Naktuinbouw to develop technology to determine the origin of horticultural products.
- NWO Chemical Sciences is funding two research projects through an ECHO grant awarded to Dr Joachim Goedhart and Prof. Dorus Gadella Jr and to Prof. Klaas Hellingwerf and Prof. Marloes Groot (VU University Amsterdam).
- In collaboration with two professors of Utrecht University Dr Harm Krugers obtained a ZonMw Top grant. He also obtained a USA Military Operational Medicine Research Program grant.
- Johan Westerhuis received two publication awards from the Metabolomics Society to recognize his outstanding scientific publications.

Appointments

- Prof. Marcel Prins was appointed professor by special appointment of Phytopathology.
- Prof. Joost Keurentjes was appointed professor by special appointment of Applied Quantitative Genetics.
- Prof. Roel Nusse was appointed professor of Stem Cells and Regenerative Biology.
- Dr René van Amerongen was appointed as MacGillavry fellow to set up a new independent research line.

'SILS made a lot of groundbreaking discoveries in 2013: let's keep going.'

Prof. Willem Stiekema, Director of the SILS



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