

# CAS Scholarships for Visiting Professors

The aim of the scholarship programme is to invite world-renowned scientists representing international research institutions who, by delivering lectures on innovative solutions and modern technologies as well as by running seminars with students, PhD students and academics, will strengthen the WUT academic community's intellectual potential.

IN THE SPRING SEMESTER OF 2012/2013 THE CENTER FOR ADVANCED STUDIES HOSTED THE FOLLOWING SCIENTISTS:

- Professor Colin Sheppard, Italian Institute of Technology (Italy)
- Dr. Celia Fonseca Guerra, Department of Theoretical Chemistry, VU University Amsterdam (the Netherlands) – the first part of the visit
- Kim R. Fowler, MSc, Electrical and Computer Engineering, Kansas State University (USA)
- Professor Grzegorz Rozenberg, Department of Computer Science of Leiden University (the Netherlands)
- Professor Peter Achermann, Institute of Pharmacology and Toxicology, University of Zurich (Switzerland)
- Professor Shyuichi Izumiya, Department of Mathematics, Faculty of Science, Hokkaido University (Japan) – the first part of the visit.

IN THE AUTUMN SEMESTER OF 2013/2014 THE WARSAW UNIVERSITY OF TECHNOLOGY WILL BE VISITED BY:

- Dr. Celia Fonseca Guerra, Department of Theoretical Chemistry, VU University Amsterdam (the Netherlands) – the second part of the visit
- Professor Matthias Bickelhaupt, Department of Theoretical Chemistry, VU University Amsterdam (the Netherlands)
- Professor Tomasz Łętowski, U.S. Army Research Laboratory (USA)
- Professor Adam Kowalczyk, Victoria Research Laboratories, NICTA, the University of Melbourne (Australia)
- Professor Mircea Sofonea, Laboratoire de Mathématiques et Physique, Université de Perpignan Via Domitia (France)
- Professor Takuo Fukuda, Department of Mathematics, College of Humanities and Sciences, Nihon University and Tokyo Institute of Technology (Japan).

To find more information on scholarships for visiting professors please visit [www.csz.pw.edu.pl](http://www.csz.pw.edu.pl)

The CAS scholarships for visiting professors are co-financed by the European Union within the European Social Fund.

## CAS Advanced Studies Offer

Throughout the academic year the Center provides, within the CAS Advanced Studies Offer, a range of interdisciplinary basic and special lectures for WUT academics as well as MSc and PhD students. It is also addressed to representatives of other academic circles. The offer is to enrich and complement the knowledge our students acquire during their majors and to serve as an inspiration for the listeners' scientific development.

BASIC LECTURES / SPRING SEMESTER 2012/2013

- Professor Irmina Herburt (WUT) – *Geometric Tools\**
- Marian Majchrowski, PhD (WUT) – *Complex Analysis with the Elements of Integral Transforms\**
- Professor Ewa Bartnik (UW) – *We and Our Genes: Hopes and Fears\**
- Professor Tadeusz Rzeżuchowski (WUT) – *Ordinary Differential Equations*

SPECIAL LECTURES / AUTUMN SEMESTER 2012/2013

- Professor Jan Fronk (UW) – *Introduction to Molecular Biology\**
- Professor Teresa Regińska (IM PAS) – *Application of Numerical Analysis\**
- Professor Zbigniew Pakieła (WUT) – *Characteristics of Engineering Materials*

- Professor Van Cao Long (University of Zielona Góra) – *Foundations of Quantum Information Theory: Mathematical Tools and Physical Realisations\**
- Professor Piotr Girdwoyń, Professor Ewa Bulska, Barbara Wagner, PhD, Andrzej Witkowski, PhD, DSc, Andrzej Wymolek, PhD, DSc, Jolanta Borysiuk, PhD (Centre for Forensic Science, UW) – *Physicochemical Studies of Matter in Criminology\**
- Professor Witold Prószczyński (WUT) – *Measurement of Resistance of Linear Models to Observation Data Irregularities – Uncorrelated and Correlated Observations\**
- Professor Zbigniew Pakieła, Professor Małgorzata Lewandowska, Professor Jarosław Mizera, Professor Krzysztof Sikorski, Zbigniew Pakieła, PhD, DSc (Eng), Wojciech Świączkowski, PhD (Eng), Wojciech Szychalski, PhD (Eng) (WUT) – *Advanced Techniques for Characterising Materials' Microstructure and Properties*
- Professor Marek Demiański (UW) – *Understanding Complexity\**

See more information:  
<http://www.konwersatorium.pw.edu.pl/oferta/>

\* Lectures co-financed by the European Union within the European Social Found

## Calendar of Events

- APRIL 2013 > *Academia Scientiarum Principalium* – open lectures on mathematics and computer science addressed to pupils, students and teachers
- > International research scholarships for PhD students and academics – an additional edition was held of two competitions with 10 scholarship winners in each
- MAY 2013 > 4th issue of the CAS Newsletter was published
- > 8th issue of the *Profundere Scientiam* CAS bulletin was published
- JUNE 2013 > CAS Spring Scientific Workshop, Lipnik Park
- > We celebrated the Center for Advanced Studies' 5th anniversary, which was combined with a ceremony awarding CAS scholarship holders with letters of congratulations and the *Flawless or imperfect? When drawbacks turn out to be assets* lecture by Professor Małgorzata Lewandowska, WUT
- > WUT Colloquium Lecture: *Why Do We Sleep? Hypotheses and Controversies* by Professor Peter Achermann, University of Zurich, Switzerland
- JULY 2013 > The Summer Research Project Programme addressed to MSc and PhD students was launched
- AUGUST 2013 > An exhibition connected with the Polish-Japanese mathematical conference presented prints by Utagawa Hiroshige entitled *Fifty-Three Stations of the Tōkaidō*
- > President of Hokkaido University, Professor Keizo Yamaguchi, visited WUT and preparations were made to sign a cooperation agreement between Warsaw University of Technology and Hokkaido University
- SEPTEMBER 2013 > *Numerical Methods in Unstable Problems*, a book by Professor Teresa Regińska from the Institute of Mathematics of the Polish Academy of Sciences, was published within the CAS Lecture Notes series
- > Amsterdam Density Functional Program (ADF) – the course was run by CAS visiting professors – Professor F. M. Bickelhaupt and Dr. C. Fonseca Guerra, Department of Theoretical Chemistry, Vrije University, the Netherlands
- > In cooperation with the National Centre for Research and Development we initiated *Top Engineering* – a series of meetings held for the WUT academic community with representatives of technological enterprises
- OCTOBER 2013 > *Effective Methods in Information Management* – training session for WUT PhD students
- > The CAS Advanced Studies Offer launched for the autumn semester of 2013/2014 – 6 basic and 4 special lectures
- > *On the Modeling of Complex Systems*, a book by Professor Jonathan D. H. Smith, was published within the CAS Lecture Notes series
- > 9th issue of the *Profundere Scientiam* CAS bulletin was published
- > WUT Colloquium Lecture: *From Doctor Zhivago to the Riemann Hypothesis* by Professor Franck Leprévost, University of Luxembourg, Luxembourg
- > CAS Autumn Scientific Workshop, Sterdyń



The Ossolinski Palace in Sterdyń

### CAS Newsletter

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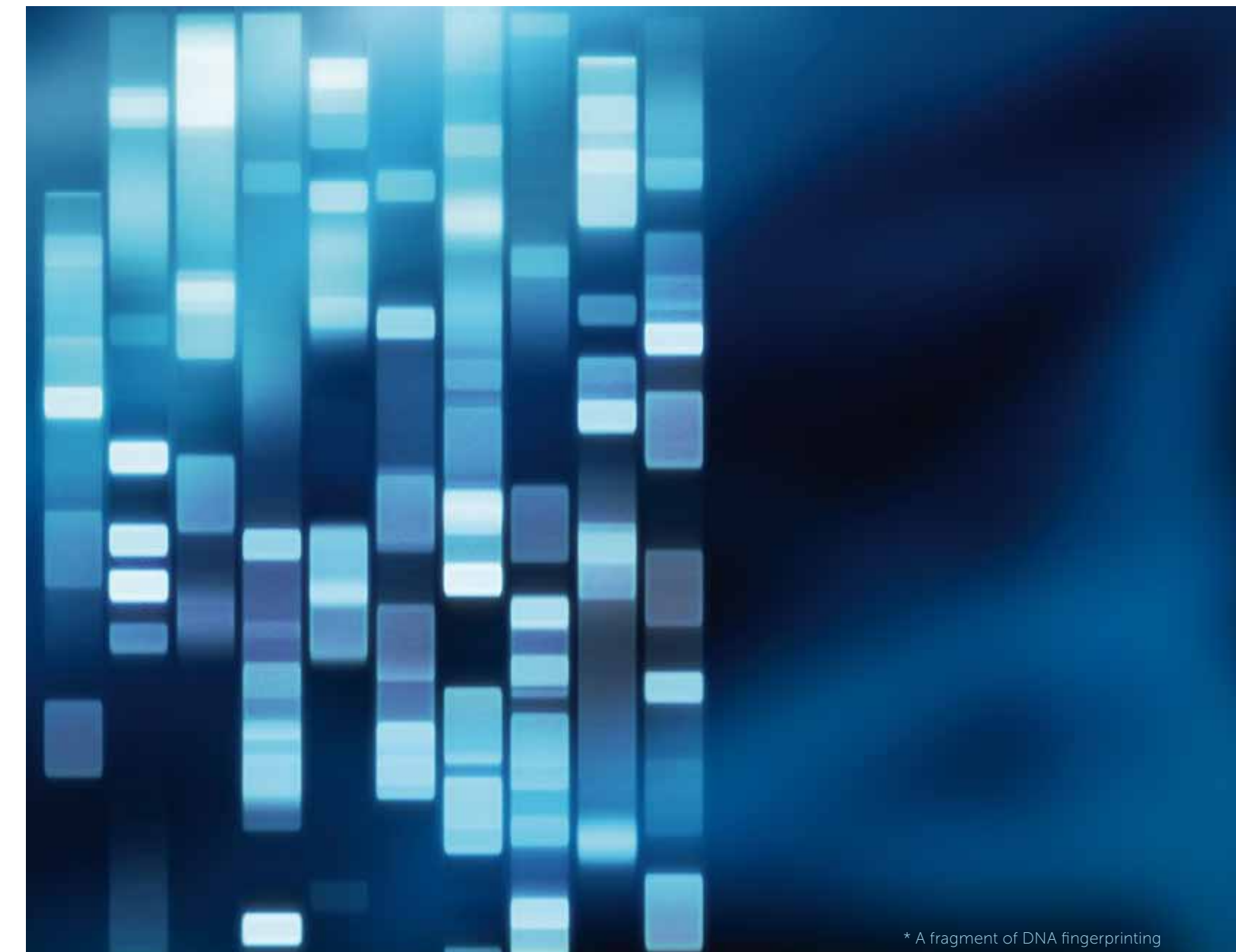
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# No. 5 NEWSLETTER

NOVEMBER 2013



## Center for Advanced Studies OF WARSAW UNIVERSITY OF TECHNOLOGY



\* A fragment of DNA fingerprinting

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Newsletter no. 5 covers the eighth issue of the *Profundere Scientiam* CAS bulletin (published in May 2013).  
See all of the *Profundere Scientiam* issues at [www.csz.pw.edu.pl/index.php/biuletyn](http://www.csz.pw.edu.pl/index.php/biuletyn)

# A Lesson in Humility

based on an interview given by Professor Kenneth J. Shapiro, published in the *Profundere Scientiam* CAS bulletin, issue no. 8

The picture of contemporary mankind that Professor Shapiro features is the firm yet misguided belief of being the first-after-God species predestined for supreme aims. In Professor Shapiro's view it is essential that we give up this anthropocentric attitude and shift our focus to biocentrism, in which the life of every individual creature is a value in itself. We must co-exist and not dominate in the world, as our usurped supremacy has led so far to serious harm to the world of nature. The interviewee rejects traditional Western thought about the hierarchy of creature superiority: God, angels, humans and animals, as he is not convinced of the rightness of this order which is built on religious dogmas that claim human beings were created in the likeness of God and were given superiority over all other species. By holding the view that we are superior to other creatures we commit the sin of arrogance. Instead of a vertical division into better or worse, Professor Shapiro believes in a horizontal division into particular species with all their unique intrinsic characteristics. Humans are one of many species, so we need to eliminate the error of assigning *Homo sapiens* to a separate category. We should try to understand other animals as they are, rather than primarily perceive them through an analysis of similarities or differences with our species.

Yet, changing the way of thinking and fighting wrong assumptions is a long and difficult process. In order to ensure the most convenient option for living, the human mind is endowed with the abilities to rationalise, categorise, and to label groups, and it is skillful enough to justify the grounds on which any division is made. As a result, we become prejudiced against these groups and we treat them as inferior to us. And if something is inferior then we believe it is at our disposal. This mechanism is the foundation for our attitude towards animals, which we eat, wear, love, cut open in laboratories, use for hard labour, keep in cages, and the like. Among the numerous forms of abuse and cruelty towards animals, Professor Shapiro elaborates on two – animals in laboratories and animals in entertainment. Regarding the first, he is critical of the notion that animals in the lab “sacrifice” themselves for science or that it is somehow in their interest to undergo harm and death for science. Treated no better than lab equipment, the animals serve as a picklock opening the realm of knowledge of human diseases. At the same time, however, lab animals have no voluntary commitment to helping scientists in

gaining any new facts on human disabilities and should never have been the means to our success in the field of science. We should have and in the future must rely on other forms of achieving advancement in technology and medicine, such as clinical and epidemiological studies of humans.

Professor Shapiro highlights what caging itself, in zoos and circuses does to animals. For most animals, life in a cage deprives them of their species identity by preventing their expression of species-specific behaviours. A lion in a cage is no longer a lion as his or her being is dependent on hunting and living in a pride.

Professor Shapiro and his organisation, Animals and Society Institute, are committed to changing the existing paradigm of human dominance over other animals. Although ASI and the contemporary animal protection movement have made progress towards providing animals with decent and undisturbed existence, all of these efforts may turn out to be insufficient in the face of the huge impact humans have had on the natural world. We are in the midst of a mass extinction with a horrifying large number of animals and plants disappearing from our globe. Through the work of Professor Shapiro and others who share his views, the time may come when we will come out of our intellectual cages and will see where our arrogance has led us.

**Professor Kenneth Joel Shapiro** – is a graduate of Harvard University and Duke University, co-founder and Executive Director of the Animals and Society Institute which aims at examining human – animal relations in an interdisciplinary dimension, i.e. taking into account the portrayal of these relations in the social sciences, natural sciences, and the humanities. As a psychologist, Professor Shapiro also focuses on the correlation between violence towards animals and people as well as on promoting campaigns of the fight for animal rights. Professor Shapiro is a founding editor of *Society and Animals: Journal of Human-Animal Studies* and cofounder and coeditor of the *Journal of Applied Animal Welfare Science*.

# Genetics: Two Sides of the Same Coin

based on an interview given by Professor Ewa Bartnik, published in the *Profundere Scientiam* CAS bulletin, issue no. 8

In Professor Bartnik's opinion there are undoubtedly more hopes than threats in genetics, though genetics is not free from the latter. The hazards may stem from being magnified by the media and the pursuit of sensationalism or from our insufficient knowledge on issues related to genetics. Teachers and schools should provide us with at least some fundamental knowledge, including genetics, so that we will be able to ask questions and understand the answers. In the era of the omnipresent Internet and quick access to other mass media we need to be able to select and categorise information, to separate illusions from facts, to identify those news items which are disseminated to arouse media coverage and those which are genuine scientific breakthroughs.

Contemporary genetics has been gathering momentum for the last few decades, and though this progress is quite remarkable and opens up abundant possibilities in medicine, we need to bear in mind that the moral code of the geneticist is still in its infancy. As a consequence, irregularities or abuse may take place. Two of the gravest threats, according to Professor Ewa Bartnik, are fragile and insufficient confidentiality of the data and the accompanying apprehension that patients' medical records may fall prey to agencies that have a vested interest in using easily accessible facts.

Another menace is the commercialisation of science, that is, luring people with a plethora of genetic tests examining who knows what and more. Apart from tests such as “How much of our DNA comes from the Neanderthals?” which seems to be nothing more than the fulfillment of a wealthy person's fancy, there are also tests for genetic diseases. The question is how to interpret their outcome, who should pass on the information to the interested party and what procedures should be implemented if the result turns out to be a worst-case scenario?

Nevertheless, despite the apparent disadvantages that development in genetics entails, one should look at the brighter side. Whereas interfering in the reproductive process by dabbling in a human embryo for alleged improvement of the child is absolutely unacceptable, modifying the genome of an adult as a part of gene therapy is definitely beneficial. Contemporary diagnostics of cancer can only trace already existing abnormal cell or tissue growth, so what doctors want to do is to be able to predict or to identify a disease *a priori*, when there are no conspicuous symptoms, when it in fact has not yet started to develop. The more we know about mutations in the human genome, the more we can do to help, perhaps not in prolonging the life span, but in improving the quality of life, especially in patients affected by diseases of old age, for example, Alzheimer's or Parkinson's disease, or by treating patients suffering from the multifactor diseases of civilization, that is, a combination of genes and the environment, like diabetes or cardiovascular disabilities.

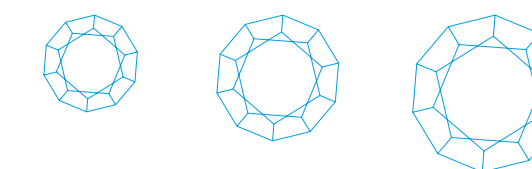
It is important to notice that the benefits of genetics are present in our lives. We do not even realise that we are living in a genetically modified world with simultaneously no harm being done. Scientists are continuously playing with nature by cross-breeding varieties of the same species of vegetables to improve their quality. For example, the tomato that we eat is derived from breeding seven different varieties. The key issue to understanding the possibilities which geneticists are currently exploring is to get some idea of their work.

In general, there is no point in being afraid of anything that genetics may bring, as this knowledge is not meant to cause harm but to do good. This knowledge is there to help us.



Professor Ewa Bartnik  
| Photo courtesy  
Prof. E. Bartnik

**Professor Ewa Bartnik** – a distinguished specialist in molecular biology and genetics. She holds an academic position at the Institute of Genetics and Biotechnology (University of Warsaw), she is also affiliated with the Institute of Biochemistry and Biophysics of the Polish Academy of Sciences. For a decade Professor Bartnik worked on genetic biochemistry and then shifted her attention to mitochondrial diseases caused by mutations in mitochondrial DNA. She is the co-author of 90 scientific publications, was or still is head of several funds for research granted by the State Committee for Scientific Research and of Miteuro – a network of European laboratories conducting various research projects on mitochondrial diseases. Professor Bartnik is a member of the Central Commission for Academic Degrees and Titles, the Polish National Committee for UNESCO, the Committee of Human Genetics and Molecular Pathology PAS, the Committee for GMO, and the International Bioethics Committee UNESCO. She likes to popularise knowledge, and in 2008 she was the laureate of the first edition of the Karol Sabath Award for the Most Media-Friendly Scientist, awarded by the Polish Science Journalists' Association, in 2012 she was awarded the Order of the Rebirth of Poland for outstanding achievements in the fields of research, education and science and for strengthening international scientific cooperation.



## High-Tech Fliers Land at WUT

In November of this year, in cooperation with the National Centre for Research and Development, the CAS will launch a series of meetings entitled *Top Engineering* in which specialists working for different technological enterprises will take part.

As part of this bold project the Center is planning to organise lectures by representatives of renowned technological institutions and companies and to present exhibitions covering scientific achievements in given technological fields. Meetings within the *Top Engineering* series will be addressed to the WUT academic community.

THE LIST OF THE SCHEDULED LECTURES IS AS FOLLOWS:

- Prof. J. Filipiak – *Advances in telemedicine*, Comarch
- Dr. D. Dzirba – *Shale gas exploitation*, PGNiG
- M. Darecki – *Aeronautical engineering of the twenty-first century*, UTC
- Dr. R. Dwiliński – *Industrial use of GaN*, Ammono
- Dr. R. Szwed – *Intelligent electrical grid networks*, ATM
- Dr. J. Bułka – *Effective management of data*, Silver Media
- Prof. A. Nawrat – *Development plans of Poland's land military technology*, Polish Defence Holding
- Prof. T. Uhl – *Remote diagnostics of technical devices*
- Prof. M. Chorowski – *Cryotechnology*
- Prof. B. Grzybowski – *Nanotechnologies*