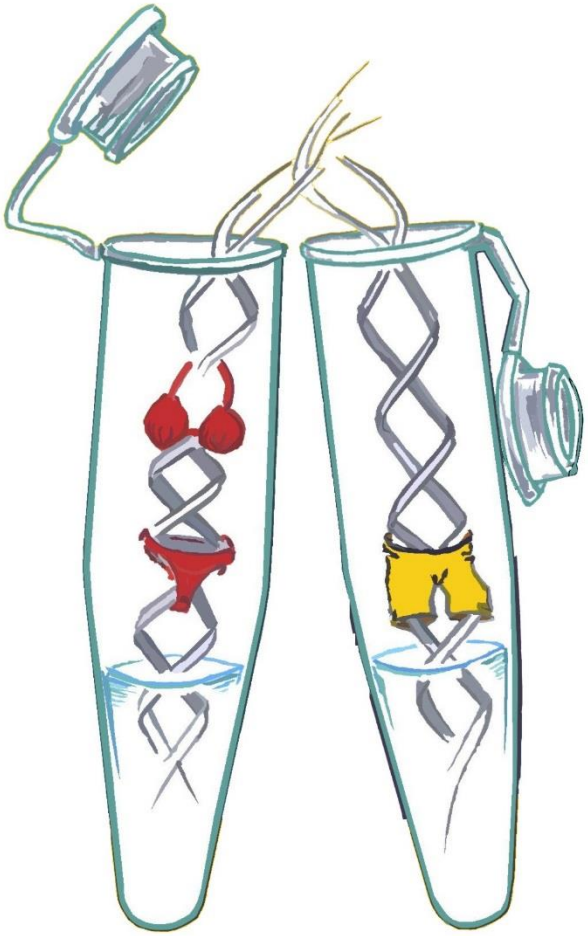
FEBS EDUCATİON WORKSHOP ON TEACHİNG MOLECULAR EVOLUTİON

AND

XIX BİOTECHNOLOGY SUMMER SCHOLL



13-16 of July 2013, Gdansk, POLAND

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TABLE OF CONTENTS

Introduction 4
Venue 4
The targeted audience 4
Trainers and lectures 4
Contacts 4
Location of Conference 5
Organizing Committee 6
Organizers 8
FEBS (Federation of European Biochemical Societies) 9
Intercollegiate Faculty of Biotechnology 12
Polish Society of Biochemistry and Molecular Biology 12
Foundation for the Development of Gdansk University 13
Foundation for Polish Science 13
Brief history of Biotechnology Summer Schools 15
Conference Programme 18
Information on Speakers and Talks 20
Prof. Wiesław Babik (Jagiellonian University, Krakow, Poland) 20
Angel Herráez (Alcalá University, Madrid, Spain) 21
Ryszard Korona (Jagiellonian University, Krakow, Poland) 23
Grzegorz Kudla (MRC Human Genetics Unit, University of Edinburgh, Scotland) 24
Jean-Luc Lebrun 25
Jaroslaw Marszalek (IFB UG&MUG, Poland) 26
Juli Peretó (Valencia University, Spain) 27
Dan Tawfik (Weizmann Institute of Science in Rehovot, Israel) 28
Rafał Zieliński (University of Texas, M.D. Anderson Cancer Center in Houston, USA) 29
List of Participants 30
Notes 31

Introduction

Evolution is one of the big conceptual ideas that underpin modern biology. Understanding evolutionary processes from a molecular perspective is, likewise, one of the key explanatory frameworks that allow us to explore and make sense of complex biochemical processes.
A key challenge for educators is to fully embed scientific thinking about evolution into biochemistry curricula. At the same time, students may bring to the classroom strongly held belief-based explanations for the origins of life and the emergence of complex life processes. The second challenge is thus to find useful and productive ways to advance these discussions in the classroom.

This year edition of the FEBS education workshop and XIX Biotechnology Summer School concerns basics of modern molecular evolution and teaching soft skills – how to write a good grant.

Venue

The conference will take place from 13th to 16th of July 2013 in the building of Intercollegiate Faculty of Biotechnology UG&MUG (Kladki 24, 80-822 Gdansk, Poland).

The targeted audience

PhD students, young scientists and academics involved in biochemistry and related biosciences, with an interest in understanding and teaching molecular evolution.

Trainers and lectures

Our choice of speakers for the workshop on "Teaching molecular evolution" was dictated by the fact that their research topics in molecular evolution are directly linked to the experimental work in the fields of protein biochemistry, molecular biology, molecular ecology and biotechnology thus providing an excellent examples of using molecular evolution to understand, and to teach biochemistry, molecular biology and related fields.
In addition, they are involved in undergraduate and /or graduate teaching.

Meeting on grant writing on 15-16 of July , organized uder FNP auspices, will be led by the experts involved in FNP SKILLS project.

Contacts

All questions on conference please send to e-mail: bss_contact@bss.ug.edu.pl

You can also contact with:

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Location of Conference

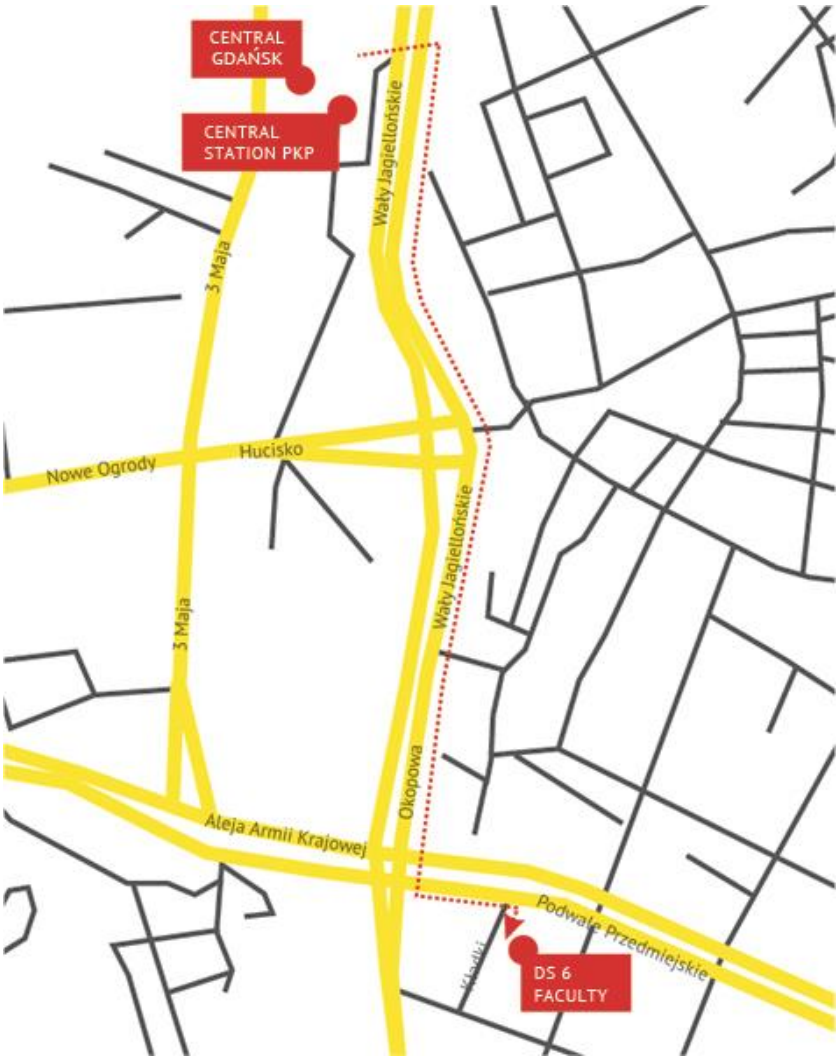
This year's event takes place in the building of the Intercollegiate Faculty of Biotechnology of the University of Gdansk and the Medical University of Gdansk, Kladki 24 Street, Gdansk, POLAND.

Participants will be accommodated in dorm no 6, Podwale Przedmiejskie 20 Street, Gdansk, nearby the Faculty.

How to get to?
To get to the Gdansk Glowny Railway Station (Main Rail Station) from the airport take bus line no 210, direction Goscinna. Get off at the Dworzec Glowny train stop.

The walk from the Gdansk Glowny Railway Station at Podwale Grodzkie 1 Street to the Faculty building takes about 15 minutes.

Optional, you can take a tram no 3 (direction Stogi Pasanil) or 8 (direction Stogi Plaza). Get off at the Okopowa tram stop. The building of the Faculty is located on the right side facing the direction of the tram.



Organizing Committee

Workshop Chair:

Prof. dr hab. Igor Konieczny (Intercollegiate Faculty of Biotechnology UG&MUG, Poland)

Workshop Scientific Coordinators:

Prof. Angel Herraez (Alcala University, Spain, Member of FEBS Education Committee, Coordinator of Workshop)

Prof. Gul Guner Akdogan (School of Medicine-Dokuz Eylül Dokuz Eylül University, Turkey, Chair of the FEBS Education Committee)

Prof. dr hab. Jarosław Marszałek (Intercollegiate Faculty of Biotechnology UG&MUG, Poland)

Organizational team:

Elżbieta Serżysko (Intercollegiate Faculty of Biotechnology UG&MUG, Poland)
Dr Anna Gwizdek-Wiśniewska (Intercollegiate Faculty of Biotechnology UG&MUG, Poland)
Joanna Jaszczołt (Foundation for the Development of Gdańsk University, Poland)
Katarzyna Sroślak-Janasiewicz (Foundation for the Development of Gdańsk University, Poland)
Aleksandra Krypa (Foundation for Polish Science, Poland)

Igor Konieczny, University of Gdańsk, Poland

Dean of Intercollegiate Faculty of Biotechnology of University of Gdansk and Medical University of Gdansk. Professor at the Department of Molecular and Cellular Biology and leads Laboratory on Molecular Biology. His research conserns the analysis of DNA metabolism of extra-chromosomal genetic elements in bacteria with particular emphasis on DNA replication initiation, partitioning and post segregation killing systems. He teaches Molecular Biology of Nucleic Acids. Prof. Konieczny was awarded by EMBO and Howard Hughes YIP Programmes. He is COST Committee Member in Biomedicine and Molecular Biosciences Domain.

Jaroslaw Marszalek, University of Gdańsk, Poland

He is also a lecturer – see page no 28.

Angel Herraez

Member of FEBS education Committee. He is also a trainer – see page no 23

Gul Guner Akdogan (Chair, FEBS Education Committee)

Professor, Department of Biochemistry, School of Medicine, Dokuz Eylül University, Izmir, Turkey Gül Güner-Akdogan is holder of BS and MSc in Biochemistry from Geneva University, Switzerland. After completing her PhD degree in Istanbul University in 1980, she had a post-doc period engaged in research and in biochemistry education. She was appointed to Assoc Prof degree in Izmir, Dokuz Eylül University School of Medicine, Department of Biochemistry in 1987 and to professorship in the same institution in 1992. She has had an active role in the practice and in management of education in her medical school. In 1996, she was awarded an ECFMG (USA) fellowship (Educational Commission for Foreign Medical Graduates) and was invited as a visiting professor to the Department of Biochemistry, Health Sciences Center, School of Medicine, West Virginia University, USA. She was first introduced to and had the opportunity of practicing Problem-Based Learning system to medical students. On her return to Izmir in 1997, she was incorporated into the PBL Committee of Dokuz Eylül Medical School, the first faculty in Turkey to apply PBL. Gül was reinvited to the USA medical school for a short-term "revisit" in 2001. She also

served as the Vice-President of the School of Medical Biology between 1988-94. In 1999, the infrastructure Project which she coordinated: "Learning Resources Centre" was supported by the Governmental Planning Body at Ankara, and gave the Medical School the opportunity to modernise its infrastructure for PBL. The R-LAB (Research Laboratory) designed in 1999 for providing laboratory facilities for the Special Study Modules of the PBL students has been working efficiently since then and a recent paper has been published in BAMBED (January 2011) reviewing this activity. Since 2002, Gül has been directing the Central Research Laboratory of Dokuz Eylul Medical School. She has also been actively working in promoting the post-graduate education in health sciences and from 2000 to 2010, she was the Director of the Graduate School of Health Sciences responsible for the coordination and management of MSc and PhD degrees. Linked to this role, Gül is serving as the coordinator of Dokuz Eylül University on the Doctoral Council of EUA. She is on the Executive Committee of ORPHEUS (Organisation for PhD education for biomedicine and health sciences in the European System) and organised the 6th ORPHEUS Conference in Izmir in April, 2011.

Gül Güner's research activity is focused on the extracellular matrix in health and disease and its communication with cells including fibroblasts, and lately, endothelial cells. She has over 50 publications on her research, cited in SCI, extended SCI, Index Medicus, etc. Gül was invited by Prof. Jean Wallach (Lyon) to join the FEBS Working Group on Teaching Biochemistry as a founding member in 2001. Since then, she has worked in this group and from 2008, on the FEBS Education Committee founded by late Prof. Edward Wood (Leeds). Gül Güner Akdogan organised, coordinated, or served as a trainer in over forty workshops, symposia, and meetings mostly including FEBS, IUBMB, etc. She is on the Editorial Board of BAMBED (Biochemistry and Molecular Biology Education Journal) and on the Editorial Board of "Bioscience Education".

Since 2009, Gül Güner has been serving as Chair of FEBS Education Committee.

Organizers

The Organizers of workshops on molecular evolution on 13-14 of July are:

- **Federation of the Societies of Biochemistry and Molecular Biology (FEBS) Education Committee** (with kind support of **FEBS Science and Society Committee**),
- **Intercollegiate Faculty of Biotechnology of University of Gdansk and Medical University of Gdansk** (IFB UG&MUG),
- **Polish Society of Biochemistry and Molecular Biology** (PTBioch),
- **Foundation for the Development of Gdansk University**.

The Organizer of meeting on grant writing on 15-16 of July is **Foundation for Polish Science** (FNP). Meeting is organized as a part of SKILLS project and is co-fund by the European Union within European Social Fund.

Project co-financed by European Union within European Social Fund

FEBS (Federation of European Biochemical Societies)

The Federation of European Biochemical Societies (FEBS) is one of the largest organizations in European life sciences, with more than 36,000 members distributed among over 35 national biochemistry and molecular biology societies (our 'Constituent Societies') across Europe and neighbouring regions.
As a charitable organization, FEBS promotes, encourages and supports biochemistry, molecular cell biology, molecular biophysics and all related areas, in a variety of ways:

- We offer advanced courses (with Youth Travel Fund grants for FEBS members),
- We provide various types of fellowships (for FEBS members - and non-members in the case of Summer Fellowships),
- We publish primary research and reviews through our four journals,
- We facilitate the exchange of information at our annual Congress and other meetings (see below)
- We run an annual Young Scientists' Forum, for scientific exchange and support for career development
- We run workshops on biochemistry and molecular biology education
- We support Constituent Society meetings through our FEBS3+ and National Lecture programmes
- We award prizes and medals in recognition of scientific distinction
- In addition to providing information through our website, we offer a free e-newsletter, *FEBS News*, with updates on FEBS programmes, news from the FEBS community and Constituent Societies, and events and job listings

FEBS' objectives

The objectives of FEBS are to contribute to and promote the advancement of research and education for the public benefit in the sciences of biochemistry, molecular biology and related disciplines by all suitable means and in particular by:

- holding and arranging congresses, training and educational courses on matters connected with biochemistry and molecular biology and related disciplines;
- facilitating and supporting the exchange of scientific information between biochemists, molecular biologists and scientists working in related disciplines generally and especially in Europe and other countries of Constituent Societies;
- facilitating and supporting the training of young scientists in research, in the form of fellowships; and
- organising the editing and publication of scientific research and educational material in biochemistry and molecular biology and related disciplines.

Public benefit

Through the activities outlined above, the beneficiaries of FEBS include scientists at all levels directly engaged in research and education in the molecular life sciences, and ultimately humankind across the globe through the contributions of these areas of science to human health, agriculture, biotechnology and related areas, and enrichment of human knowledge.
FEBS wholly owns its international journals, which are of importance to FEBS both by directly contributing to its objectives and as a source of income to supports its other purposes. FEBS follows all directives on Open Access publishing from the UK, EU and relevant research funders

across the world. Its journals offer authors an immediate open access option for new articles and an option to turn past papers open access; in addition, authors are able to immediately deposit accepted research articles in institutional repositories, through which they are accessible to the public, and all published articles in our subscription-model journals are freely available after 12 months to all readers. FEBS has also recently launched an entirely open access journal, *FEBS Open Bio*.
FEBS events are normally open to scientists throughout the world. Recipients of FEBS grants for fellowships and for support of attendance at meetings are normally required to be members of FEBS' Constituent Societies (where membership criteria are those expected of learned societies) and resident within the FEBS area of Europe and neighbouring countries. Some FEBS programs particularly benefit disadvantaged scientists.

FEBS Congress

As one of the largest bio-congresses in Europe, with approx. 2500 attendees, the annual FEBS Congress provides a platform for international scientific exchange and showcases the newest developments in biochemistry, molecular biology and related areas. The Congress comprises plenary lectures presented by outstanding scientists including Nobel Laureates, a range of subject-specific symposia to provide the latest updates in different areas of bioscience research, extensive poster communications, and a variety of interesting workshops and other activities on related topics. The Congress is held annually in countries that have a Constituent Society of FEBS. The Congress is also immediately preceded by the FEBS Young Scientists' Forum (YSF), a lively gathering of over 100 PhD students and young postdocs, whose attendance at this event and the ensuing FEBS Congress is funded by FEBS YSF fellowships.
The 2013 (38th) FEBS Congress will be held in St Petersburg, Russia, from 6 to 11 July 2013. The YSF 2013 will take place from 3 to 6th July 2013. For more information visit the Congress website: www.febs-2013.org.

FEBS Education Committee

Members of the Education Committee

- Gül Akdogan-Güner (Chair) (Izmir, Turkey)
- Angel Herráez (Alcalá de Henares, Spain)
- Frank Michelangeli (Birmingham, UK)
- Wolfgang Nellen (Kassel, Germany)
- Tomáš Zima (Prague, Czech Republic)
- Co-Opted Members:
- Keith Elliott (Manchester, UK)
- Peter Ott (Bern, Switzerland)
- Ex-Officio Committee Members:
- Israel Pecht, Secretary General of FEBS (Rehovot, Israel)
- Sir Alan Fersht FRS FMedSci, Treasurer of FEBS (Cambridge, UK)
- Jaak Järv, Chairman, Advanced Courses Committee (Tartu, Estonia)

Short History

The FEBS Education Committee had its roots in the FEBS 'Working Group on Teaching Biochemistry', which was founded in 2001 by Professor Jean Wallach (Lyon, France). Between 2001 and 2006, it was active in promoting educational events at yearly FEBS Congresses. In the Council Meeting held in Istanbul in 2006, the 'FEBS Working Group on Teaching Biochemistry'

was converted into the 'FEBS Education Committee', with Professor Edward J. Wood (Leeds, UK) as the founding Chair. Professor Gül Akdogan-Güner (Izmir, Turkey) took over following the sad loss of Ed Wood on 14 December 2008.

Mission and Aims

The FEBS Education Committee has the mission of promoting education of the highest quality in Biochemistry and Molecular Biology in Europe at both the undergraduate and postgraduate levels. In order to realize this important mission:

1. We encourage the development of innovative teaching methods
2. We disseminate advice on educational resources
3. We arrange at least one education event at each FEBS Congress
4. We arrange other educational events from time to time such as workshops on educational issues in FEBS member countries on request

Some recent activities

The FEBS Education Committee co-organized (in various collaborations with the IUBMB, SEBBM and FEBS Science and Society Committee) three workshops during the 2012 IUBMB–FEBS Congress held in Sevilla, with the IUBMB Education Committee and the FEBS Science and Society Committee:

- 'Research into Effective Learning Strategies: What Biochemistry Is Learning from the Other Sciences'
- 'Teaching Molecular Evolution: A Unifying Principle of Biochemistry' (joint activity with the FEBS Science and Society and IUBMB Education Committees)
- 'Science in School: Biodiversity and Evolution' (joint activity with the FEBS Science and Society Committee and SEBBM).

We also organized CV clinics, as we have done in many previous FEBS Congresses.

Workshops on Education

Since 2008, we have been organizing Biochemistry and Molecular Biology Education Workshops throughout the FEBS area:

- Sofia, 16–17 October 2008
- Cluj-Napoca, 30 September 2009
- Athens, 14 May 2010
- Opatija near Rijeka, 18–19 September 2010
- Tallinn, 14 May 2011
- Slovakia (Smolenice), 12–14 September 2011
- Ljubljana, 3-4 November 2011
- Izmir, 29–30 March 2012
- Yerevan, 8–9 October 2012
- Cambridge, UK, 16-17 December, 2012

FEBS Education Platform

The FEBS Education Committee maintains an interactive internet site (Virtual Classroom) where information and material relevant to the Education Events are posted. Several discussion forums related to the topics of the various workshops are available for discussion among participants and with the lecturers and moderators. In addition, with a link to the Wiley-Blackwell website, workshop participants are able to download book chapters related to the Workshop topics. The site is available at http://edu.febs.unibe.ch. Workshop participants and lecturers receive the information necessary to access the site by separate e-mail.

Intercollegiate Faculty of Biotechnology

The Intercollegiate Faculty of Biotechnology of the University of Gdańsk and the Medical University of Gdańsk was created by the decision of both Senates in June 1993. The idea of the Faculty was based on conviction that close interaction between research and teaching activities of the two universities will form a special, creative academic centre, using innovative methods of education and basing on top-level standards of research. Integration of the local scientific community remains a key element of our mission.
Faculty continues tradition of molecular biology introduced in Gdańsk by Prof. Karol Taylor.

Today, the 17 Faculty groups trained scientists who are providing advanced education to approximately two hundred undergraduate and graduate students. Our research and teaching is performed in well-equipped modern laboratories at the Institute of Biotechnology and the Tri-City Central Animal Laboratory. This investment will enable us to create new research groups devoted to medical and animal biotechnology. The aim of our Faculty is to provide possibly the highest standard of education based on early integration of students into research activities of the faculty units.

Institut of Biotechnology

Tri-City Central Animal Laboratory

We believe that involvement of the students in the specific projects greatly supports the individualized system of study and facilitates formation of a unique, well-integrated academic community.

In 2012 the Faculty get the title of "The best field of study" granted by the Ministry of Science and Higher Education.

Polish Society of Biochemistry and Molecular Biology

The aim of the **Polish Biochemical Society (PTBioch)** is to promote and support all aspects of biochemical research in Poland. To achieve these aims PTBioch organizes conferences, scientific discussions, meetings, lectures and workshops, and publishes scientific magazines. It also evaluates the situation and needs of biochemistry in Poland and deals with state authorities responsible for scientific policy. PTBioch maintains contacts with related societies in Poland and abroad. PTBioch was established in 1958, and became member of FEBS in 1964.

Foundation for the Development of Gdansk University

The principal aim of the **Foundation for the Development of Gdansk University** is to support the activity and promote the development of Gdańsk University. This aim is achieved through assistance, both material and financial, lent to the University as well as co-operation with the University's departments.

The Foundation aim raises funds for the accomplishment of its goals primarily from its own activity, but also, to a smaller extent from donations and voluntary contributions offered by various public institutions, firms and enterprises.

The Foundation conducts statutory and commercial activity. The main areas of the Foundation's activity comprise:

- teaching and training,
- research expertise and consultancy,
- physico-chemical investigations,
- publishing and printing services.

The Foundation has license to conduct editorial activity in its own name and has been placed on the list of the Ministry of Environmental Protection's experts in the field of nature and air protection and protection from noise. The Foundation conducts scientific investigations and provides expert advice to enterprises, research institutions and public administration bodies. It organizes conferences, symposia and research work-shops on various subjects. It co-organizes language courses and certificate examinations. The Foundation provides organizational and financial support to student research circles and promotes student cultural and sporting activity. It offers Ph.D. scholarships to the University's post-graduate students.

The Foundation for the Development of Gdańsk University
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Tel: +48 58 552 03 53, **Fax:** +48 58 552 37 06
E-mail: frug@univ.gda.pl
Website: www.frug.ug.edu.pl

Foundation for Polish Science

The Foundation for Polish Science has been active since 1991. It is a non-governmental, non-political, non-profit institution with a mission to support science. It is the largest Polish non-governmental source of funding for research.

The Foundation carries out its statutory tasks by:

- supporting leading scientists and research teams,
- modernizing research facilities in all fields of science,
- assisting innovative projects and the commercialization of scientific discoveries and inventions.

The Foundation operates in accordance with its guiding motto: "Supporting only the best, so that they can become even better" as well as the following principles:

- support is provided directly to scientists and research teams,
- all grants, prizes and stipends are awarded by way of a competition,
- the leading criterion in awarding support is scientific excellence,
- the achievements and output of FNP competition entrants is evaluated by scientists respected in their fields – both Polish and international (peer review method),
- support is provided according to the "hard money" principle (high selectivity when choosing recipients).

Foundation for Polish Science
Grażyny 11, 02-548 Warsaw
phone: +48 22 845 95 01
e-mail: fnp@fnp.org.pl, **www.fnp.org.pl**

SKILLS Project

SKILLS Project is run by the Foundation for Polish Science. It aims at strengthening the R&D staff potential within science administration, management of scientific research and communicating science.

SKILLS Project is addressed to:

- academics and researchers residing in Poland and employed at the research units resided on the territory of Poland (employment contract only);
- PhD students who are FNP stipendees and/or laureates (present or former) and reside on the territory of Poland.

SKILLS Project is open to researchers in **all academic disciplines**.

SKILLS Project has many components within its offer:

- Trainings on research management and research team management,
- Trainings on technology transfer and entrepreneurship,
- Trainings on science communication,
- Trainings on popularising science,
- Meetings on participants initiative,
- International conferences,
- Programme Officers Academy,
- MENTORING Programme,
- Science popularisation contest INTER.

For more information please visit our website: www.fnp.org.pl

Project co-financed by European Union within European Social Fund

Brief history of Biotechnology Summer Schools

Biotechnology Summer Schools are organized annually since 1994. In 2002 the conference "Biotechnology in Poland" was held and in that year BSS did not take place. All Biotechnology Summer Schools were organized in summer resorts in Northern Poland.

The idea of Biotechnology Summer Schools came from Professor Anna J. Podhajska, who gained many people's support over Her initiative. Among them was Marian Kawczyński from Beckman. This firm became the main sponsor of the 1st, 2nd, 3rd Biotechnology Summer School. The number of sponsors increased every year and thanks to all these companies and institutions the organization of Biotechnology Summer School was possible (table 3). Schools are organized by professors and students from the Intercollegiate Faculty of Biotechnology UG&MUG.

The main aim of this event is to provide students a wide range of courses which are not available in the standard syllabus. We would also like to create a relaxed learning environment and give Polish and foreign students a chance to meet highly renowned specialists during lectures as well as in rather informal circumstances. Moreover, Biotechnology Summer Schools give Polish and foreign scientists chance to develop cooperative relationships and create a forum for integration. What is also important this meeting has become a great opportunity for professors who are of polish descent to renew contacts with their native country.

The first four Biotechnology Summer Schools did not have narrowly specified themes. Lectures and seminars covered topics such as human genetics, molecular biology of nucleic acids, the biotechnological application of microorganisms, gene therapy, molecular evolution, cell signaling, virology, transgenic plants and animals, analytical and preparative methods, pharmaceutical biotechnology, molecular diagnostics, plasmid vectors and many more. Students learned also about statistics, bioethics, legal and business issues in biotechnology, philosophy of science and even history of Poland. The 5th Biotechnology Summer School was the first BSS where thematic modules have been determined. However, lecturers also referred other subjects, not related to biotechnology (table 2). Panel discussions and commercial presentations of laboratory equipment complemented the Summer School's programme.

Biotechnology Summer Schools were honored with the presence of many eminent scientists such as professors: Ewa and Ernest Bartnik, Stanisław Bielecki, Klaus Halhlbrock, Waleria Hryniewicz, Robert Huber(Nobel Prize winner in Chemistry in 1988), Berndt Jastorf, Adam Jaworski, Roman Kaliszan, Władysław Kunicki Goldfinger, Andrzej Legocki, Janusz Limon, Mirosław Małuszyński, Jerzy Paszkowski, Andrzej Płucienniczak, Richard P. Sinden, Piotr Stępień, Wacław Szybalski, Tomasz Twardowski, Jacques H. Weil, Robert Wells, Brigitte Wittman-Liebold, Maciej Zenktler, Maciej Żylicz.

No less important than learning is having fun. Many entertaining activities for Summer Schools are always planned. A fancy-dress party, a bonfire with singing, games, sports, playing on words, Petanque (thanks to prof. E. Bartnik), disco are the part and parcel of every School. These events are conductive to socializing among the participants. There was also a chance to visit interesting places such as Gdańsk, Malbork, Gniew and Złota Lipka.

We hope that this year's Biotechnology Summer School will be as successful as previous ones and will be an unforgettable experience for all participants.

This text was based on conversations with prof. Ewa Łojkowska, Ewa Kiszka, dr Krzysztof Waleron and materials gathered by Monika Domachowska and Natalia Bednarz.

Table 1. Themes at Biotechnology Summer Schools

Summer School	Thematic Modules
Wilga 1994 Łączyno 1995 Stegna 1996 and 1997	Miscellaneous
Gołuń 1998	1. Biotechnological processes 2. Molecular medicine 3. Plant biotechnology
Łączyno 1999	1. New techniques for protein purification and identification 2. Fundamentals for bioprocess engineering 3. Molecular aspects of cancer biology
Twardy Dół 2000	1. Modern techniques of cell structure and cell function analysis 2. Genetic modifications in animals 3. Genetic modifications in plants 4. Transgenic food 5. Commercialization of biotechnology 6. Bioprocess control 7. Possible applications of DNA chips
Łączyno 2001	1. Modern methods of molecular biology and biotechnology 2. Molecular neurobiology 3. Ethical aspects of biotechnology
Sobieszewo 2003	1. Plants biotechnology 2. Molecular diagnosis of neoplastic disease 3. Bioinformatics – molecular evolution and protein structure
Sobieszewo 2004	1. Genomics, microarrays, molecular diagnosis of cancer 2. Biotechnological applications in agriculture 3. Biotechnological applications
Sobieszewo 2005	1. Bioprocess engineering 2. Proteomics 3. Molecular biology of signal transduction
Łapino 2006	1. Immunotherapy of cancer research and clinical stages 2. Molecular diagnosis and cancer treatments 3. Molecular diagnosis and treatment of human and plant pathogens 4. Legal and administrative aspects of research project (in polish)
Łapino 2007	1. Cancer causes, diagnosis and therapy 2. Others
Sobieszewo 2008	1. Virology, mostly involved with HCV 2. "Secret life of B. subtilis" – application oriented microbiology 3. Biomarkers of environmental pollutions
Gdańsk 2009	1. Plant resistance to biotic and abiotic factors 2. Plants as a "green factory" for pharmaceutics, nutraceutics and colorants 3. Microbe - plant systems 4. New trends and hot topics in plant biotechnology
Gdańsk Sobieszewo 2010	1. HCV - pathogenesis, disease, therapy 2. Influenza virus. AH1N1 influenza. Viral research 3. Absorption, distribution, metabolism and clearance of drugs 4. Information about EU fund
Gdańsk Górki-Zachodnie 2011	1. Biochemistry and biotechnology of plant lipids 2. Bacterial genetics
Jurata 2012	Current scientific research and its practical application – the possibilities of using the findings in any sector of industry

Table 2. Sponsors and organizers of Biotechnology Summer School

Summer School	Sponsors	Organizers
Wilga 1994	Beckman	Prof. Anna Podhajska (Vice-Dean of IFB), Marian Kawczyński (Beckman)
Łączyno 1995	Beckman, Promega, Tempus Programme EU	Prof. Ewa Łojkowska (IFB), Prof. Anna Podhajska (Vice-Dean of IFB), the group of biotechnology students, International Relations Office of MUG
Stegna 1996	Beckman, Promega, Tempus Programme EU, KBN	Prof. Ewa Łojkowska (IFB), Prof. Anna Podhajska (Vice-Dean of IFB), the group of biotechnology students, International Relations Office of MUG
Stegna 1997	Beckman, Promega, Tempus Programme EU, UNESCO/PAN MCBN Network, KBN	Prof. Ewa Łojkowska (IFB), Prof. Anna Podhajska (Vice-Dean of IFB), the group of biotechnology students, International Relations Office of MUG
Gołuń 1998	Beckman, Promega, Tempus Programme EU, UNESCO/PAN MCBN Network, MEN	Prof. Wiesław Makarewicz (Dean of IFB), Prof. Ewa Łojkowska (IFB), Prof. Anna Podhajska (Vice-Dean of IFB), the group of biotechnology students
Łączyno 1999	Promega, Bio-Rad, Kendro, UNESCO/PAN MCBN Network, MEN	Prof. Wiesław Makarewicz (Dean of IFB), Prof. Jacek Bigda (Vice-Dean of IFB), the group of biotechnology students, International Relations Office of MUG
Twardy Dół 2000	Promega, Bio-Rad, Kendro, UNESCO/PAN MCBN Network, MEN	Prof. Jacek Bigda (Dean of IFB), Prof. Ewa Łojkowska (Vice-Dean of IFB)
Łączyno 2001	Kendro, Promega, UNESCO/PAN MCBN Network, Bio-Rad, KBN, KAWA.SKA	Prof. Jacek Bigda (Vice-Dean of IFB), the group of biotechnology students, International Relations Office of MUG
Sobieszewo 2003	Alab, BioMoBil Centre Of Excellence, University of Gdańsk, UNESCO/PAN MCBN Network	Prof. Jacek Bigda (Dean of IFB), Prof. Ewa Łojkowska, the group of biotechnology students, International Relations Office of MUG
Sobieszewo 2004	BioMoBil Centre Of Excellence, UNESCO/PAN MCBN Network	Prof. Jacek Bigda (Dean of IFB), Prof. Ewa Łojkowska, the group of biotechnology students, International Relations Office of MUG
Sobieszewo 2005	BioMoBil Centre Of Excellence, UNESCO/PAN MCBN Network	Prof. Jacek Bigda (Dean of IFB), Prof. Ewa Łojkowska, the group of biotechnology students, International Relations Office of MUG
Łapino 2006	BioMoBil Centre Of Excellence, 5th Thematic Programme Eu	Prof. Jacek Bigda (Dean of IFB), Prof. Ewa Łojkowska, the group of biotechnology students, International Relations Office of MUG
Łapino 2007	"Scan Balt" Campus Project Interreg III	Prof. Ewa Łojkowska, Prof. Andrzej Składanowski, BIO-MED, the group of biotechnology students
Sobieszewo 2008	Marie Curie Programme, 6th Thematic Programme	Prof. Ewa Łojkowska (Dean of IFB), Prof Krystyna Bieńkowska-Szewczyk, BIO-MED, the group of biotechnology students
Gdańsk 2009	European Social Fund (INNOpomorze), Polish Academy of Science, Russian Academy of Science	Prof. Ewa Łojkowska (Dean of IFB), the group of biotechnology students
Sobieszewo 2010	6th Framework Programme: HEPACIVAC; European Social Fund (Human Capital Programme): PRO-GOS	Prof Krystyna Bieńkowska-Szewczyk, BIO-MED, the group of biotechnology students
Gdańsk Górki-Zachodnie 2011	European Social Fund (Human Capital Programme): PRO-GOS	Prof. Antoni Banaś, prof. Igor Konieczny, dr Anna Gwizdek-Wiśniewska, the group of biotechnology students
Jurata 2012	European Social Fund (Human Capital Programme): PRO-GOS	prof. dr hab. Igor Konieczny (IFB UG & MUG), dr Anna Gwizdek-Wiśniewska (IFB UG & MUG), Students of the Intercollegiate Faculty of Biotechnology UG & MUG

Conference Programme

Saturday 13th July **FEBS EDUCATION WORKSHOP ON TEACHING MOLECULAR EVOLUTION**			
8:00	9:00	Registration	
9:00	9:20	Opening	
9:20	9:40	Introduction **"Evolution: from Modern to Functional Synthesis"**	Jaroslaw Marszalek (University of Gdansk, Poland)
9:40	10:15	Lecture **"Laboratory molecular evolution"**	Dan Tawfik (Weizmann Institute of Science, Rehovot, Israel)
10:15	10:25	Discussion	
10:25	11:00	Lecture **"Discussing on the origin of life as an educational tool in biochemistry"**	Juli Peretó (Valencia University, Spain)
11:00	11:10	Discussion	
11:10	11:25	Coffee break	
11:25	13:25	Workshops In Silico practical, gr A: **"Molecular evolution illustrated using protein structure"**	Angel Herráez (Alcalá University, Spain)
13:25	14:10	Lunch	
14:10	14:45	Lecture **"Teaching metabolism with an evolutionary flavor"**	Juli Peretó (Valencia University, Spain)
14:45	15:00	Discussion	
15:00	15:15	Coffee break	
15:15	16:45	Small group discussion (three small groups A1, B1, C1 – facilitated with the three trainers)	
16:45	17:45	Report of the small group discussion to the whole group, feedback and close	

Sunday 14th July **MOLECULAR EVOLUTION RESEARCH**			
9:00	10:00	Lecture **"Evolution under failed selection"**	Ryszard Korona (Jagiellonian University, Poland)
10:00	10:15	Discussion	
10:15	11:15	Lecture **"Synonymous but not the same: causes and consequences of codon bias"**	Grzegorz Kudla (MRC Human Genetics Unit, University of Edinburgh, Scotland)
11:15	11:30	Discussion	
11:30	11:45	Coffee break	
11:45	12:45	Lecture **"Protein structure-function in the light of molecular evolution"**	Dan Tawfik (Weizmann Institute of Science, Rehovot, Israel)
12:45	13:00	Discussion	
13:00	13:45	Lunch	
13:45	14:45	Lecture **"History of divergence and gene flow in hybridizing newts"**	Wieslaw Babik (Jagiellonian University, Poland)
14:45	15:00	Discussion	
15:00	15:15	Coffee break	
15:15	17:15	Small group discussion (4 x 30 min for each presenter, thus everybody would have a chance to talk with presenters, in 4 separate seminar rooms)	
16:15	18:15	Workshops In Silico practical, gr B: **"Molecular evolution illustrated using protein structure"**	Angel Herráez (Alcalá University, Spain)
19:30		The integration party*	

Monday 15th July **SKILLS – GRANT WRITING**			
8:30	9:00	Meeting registration (FNP)	
9:00	11:00	**Grant call and grant sponsor - grant vocabulary - grant team (PI, Co-PI, collaborator, researcher)**	Jean-Luc Lebrun Rafał Zieliński
11:00	11:15	Coffee break	
11:15	13:00	**Grant exploration - model grant - identification of parts and role**	Jean-Luc Lebrun Rafał Zieliński
13:00	14:00	Lunch	
14:00	15:30	**Grant evaluation - mechanism, and evaluation criteria**	Jean-Luc Lebrun Rafał Zieliński
15:30	15:45	Coffee break	
15:45	17:00	**Can you afford a grant? (timing and pre-requisites)**	Jean-Luc Lebrun Rafał Zieliński

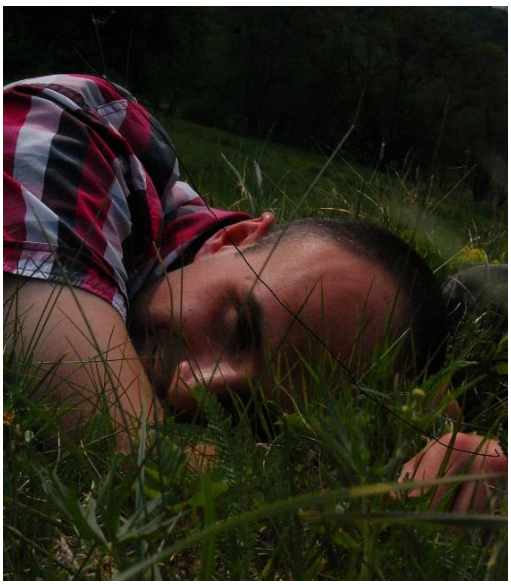
Tuesday 16th July **SKILLS – GRANT WRITING**			
9:00	11:00	**The grant title**	Jean-Luc Lebrun Rafał Zieliński
11:00	11:15	Coffee break	
11:15	13:00	**The grant abstract and lay abstract**	Jean-Luc Lebrun Rafał Zieliński
13:00	14:00	Lunch	
14:00	15:30	**The grant specific aims and significance statement**	Jean-Luc Lebrun Rafał Zieliński
15:30	15:45	Coffee break	
15:45	17:00	**Open Q&A session**	Jean-Luc Lebrun Rafał Zieliński
17:00	17:30	Summary, ending of conference	

The list with the division of participants into groups will be posted on a board during conference.

** The integration party will take place in Koliba Beach in Sopot (Powstancow Warszawy 20 Street, Sopot, nearby Baltic Sea). As a part of tradition the social event during the conference is costume party. This year's one is titled **"Evolution"**. All participants are very welcome to dress up in fancy dress costume (one's own interpretation of evolution).*

Information on Speakers and Talks

Prof. Wiesław Babik (Jagiellonian University, Krakow, Poland)



Wiesław Babik is an associate professor at the Jagiellonian University in Kraków. He received his PhD in 2004, and worked as a postdoc in the Helmholtz Centre for Environmental Research in Halle (Germany) and the Imperial College of London. He uses information from contemporary DNA sequences to infer history of populations. In particular he is interested in the causes, demography and the age of intraspecific differentiation, as well as in studying the extent of gene flow between diverging populations. He also studies variation of the Major Histocompatibility Complex (MHC) genes in natural populations, with special emphasis on the effects of natural selection and genetic drift on the patterns of variation at the molecular level. He is an associate editor of the Proceedings of the Royal Society B: Biological Sciences.

Talk: **History of divergence and gene flow in hybridizing newts**
Sunday 14th July, 13:45

The process of speciation, or the origin of species, has been in the center of evolutionary inquiry since its beginning. The emergence of reproductive isolation is often a gradual process and the completion of speciation may take millions years. If diverging populations are not completely isolated geographically, natural hybridization followed by introgression of genomic fragments between incipient species may occur. Historical patterns and consequences of genetic exchange between hybridizing species are poorly understood, but new genomic and analytical tools promise a rapid progress in the field. I will present the results of our research on the historical demography and gene flow in a pair of hybridizing newt species. These newts are characterized by a long history of post-divergence genetic exchange, as evidenced by the mitochondrial DNA data. We performed high throughput transcriptome sequencing, de novo assembly to generate a wealth of genetic markers in this system. Tens of thousands of single nucleotide polymorphisms and tens of nuclear sequence markers were then used to compare models of divergence and gene flow and estimate their parameters. Analyses based on the allele frequency spectra and coalescent simulations have provided insights into the history and dynamics of genetic exchange between the newt species. Nuclear gene flow has been asymmetric and temporal variation in its extent may be linked to range changes the newts experienced during the Pleistocene climatic oscillations. I will discuss the relevance of these results in a broader context and highlight some novel conceptual approaches.

Angel Herráez (Alcalá University, Madrid, Spain)

Angel Herráez holds a degree (BSc + MSc, 1985) in Chemistry from University of Valladolid, Spain. He followed his doctorate studies in the University of Alcalá, where he got the PhD degree in Biochemistry in 1990. He then spent one year as post-doc in the MRC Clinical Research Centre at Harrow, U.K. After that, he established back in the University of Alcalá as assistant professor, then associate professor, and finally (1997) in a tenured position as lecturer/associate professor in the Department of Biochemistry & Molecular Biology.

Angel Herráez's research activity started on differentiation markers, with particular focus on membrane proteins. This evolved into studies of cell surface modification aimed at drug carrier systems and the process of blood cell removal from circulation as a possible target. His major research interest has been on structure of biomolecules and protein properties. Along time, he started to get involved in the development of materials to support teaching and learning, particularly in using the technological developments in computerised tools. He has developed some expertise in bioinformatics, mainly on (bio)molecular structure visualisation. While maintaining a collaboration with colleagues in the field of mechanisms of action of antitumour agents, his interest and dedication has been increasingly devoted to the facilitation of learning and the development of interactive resources for both instructors and students. He is also collaborating with a research group at Universidad Complutense in Madrid who works on nutritional epidemiology and health promotion.

Fruit of his activity in the field of education, Angel Herráez has developed a website, http://biomodel.uah.es, where he builds all his materials and offers them openly and free to the community. Since the year 2000, he is member of a joint effort to share educational materials in Spanish, BioROM, which has been publishing a CD-ROM nearly every year between 2001 and 2010 and stays available and updated in the website www.biorom.uma.es and a few mirror sites.
On 2001 Angel Herráez, together with Prof. José Luque, published a book in Spanish on Molecular Biology and Genetic Engineering (Harcourt/Elsevier, ISBN 978-84-8174505-4) which has been successfully accepted both as a textbook and as a reference for professionals in diverse areas where the molecular concepts and techniques are increasingly needed. The second edition of this book, now authored only by Angel, was released in 2012 (Elsevier, ISBN 978-84-8086-647-7).
Since January 2007 Angel Herráez is a member of the Editorial Board of the Journal Biochemistry and Molecular Biology Education. In the period 2008-2012 he acted as coordinator of the Education Group of the Spanish Society of Biochemistry and Molecular Biology (SEBBM). As such, he led some workshops and courses associated to the yearly congresses of SEBBM. Among them, he organised the "2010 Workshop on Biochemistry Education: Assessment Strategies in Protein Structure", an IUBMB-sponsored Educational Activity with an international audience. He was also in the Organising Committee of the 22nd IUBMB / 37th FEBS Congress (Sevilla, 2012) responsible for coordinating the educational activities during the congress together with IUBMB and FEBS Education Committees.

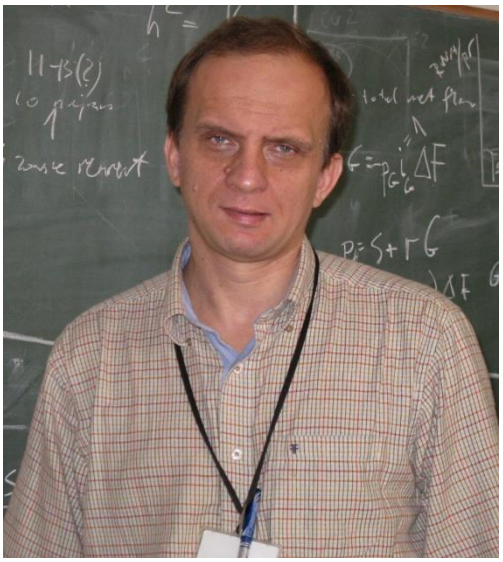
Angel is a member of the Education Committee of FEBS since January 2012.

Workshop: **In Silico practical: "Molecular evolution illustrated using protein structure"**
Saturday 13th July, 11:25

The aim is to present a tool that instructors may use to support their students' understanding of molecular evolution, in terms of protein sequence and three-dimensional structure, i.e. conserved and diversified domains within a protein family.
It is based on freely available software to configure a hands-on, practical activity.
Using the ConSurf server (consurf.tau.ac.il) allows to identify functional regions of proteins, based on their evolutionary conservation. Each amino acid residue gets a colour related to the extent of its conservation among the family of proteins that share sequence homology, thereby making clear which are the conserved regions and the highly variable regions. Results are displayed using the Jmol applet (jmol.org), within either the "FirstGlance in Jmol" or the "Protein Explorer" environments. Results may also be downloaded and saved for later study.
This user-friendly tool finds related protein sequences, performs multiple sequence alignments, constructs a phylogenetic tree, and assigns a conservation level to each amino acid residue in the target protein, all automatically.

The workshop session will present the software and train attendants on its use, and will propose ways to exploit it as a core part of learning activities with their students.

Ryszard Korona (Jagiellonian University, Krakow, Poland)



Ryszard Korona is a professor at Jagiellonian University in Krakow. His PhD was on competitive behavior of beetles, post-doctoral training on co-evolution of bacteria-phage systems. For some fifteen years uses the budding yeast as an experimental organism in the study of evolutionary genetics and genomics. His research projects concentrate on: genetic determinants of major components of fitness, such as rate of growth and survival, stress resistance; spontaneous mutations, their rate of origin, selective value, dominance status, genetic interactions; molecular mechanisms of phenotypic buffering of mutational damage; experimental evolution of laboratory of microorganisms.

Talk: **Evolution under failed selection**
Sunday 14th July, 9:00

Mutations serve as 'raw material' for evolution, this is what optimists like to say. In fact, vast majority of mutations are more or less harmful to the functioning of organisms. Natural selection, if present, is much more busy in conserving already existing functions than in creating new ones. This aspect of evolution is inadequately studied and very little taught. This is likely to change as researchers have been alarmed by recent reports about the relatively high rate at which mutations accumulate in human population after as it is now substantially less exposed to natural selection than in the past. Evolutionary biology offers not only a general conceptual framework to deal with this problem but also specific theoretical and experimental tools developed to ask specific questions and, hopefully, get answers. I am going to review briefly current ideas explaining why even relatively serious mutational damage has often only limited or none effects on phenotype, in other words, why mutations are buffered. It was recently strongly advocated that this kind of mutational buffering is an evolved feature of organisms, not only to protect them from an imminent harm but also to help to adapt to emerging challenges by storing genetic variation and thus potentiate development of heritable change. This idea can be now evaluated critically in light of results obtained in both laboratory and field studies. The questions on the load of mutations and its impact on fitness, and human health, are especially complex and thus require careful selection of model systems suitable for systematic studies. I am ready to explain why a unicellular eukaryote, the budding yeast, is still about the best one.

Grzegorz Kudla (MRC Human Genetics Unit, University of Edinburgh, Scotland)

Grzegorz Kudla is a group leader at the MRC Human Genetics Unit, University of Edinburgh, Edinburgh, Scotland. After receiving his doctorate in the Maciej Zylicz lab, International Institute of Molecular and Cell Biology, Warsaw, Poland, he worked as a postdoc with Joshua Plotkin at Harvard University and with David Tollervey at the University of Edinburgh, to study the influence of codon bias on gene expression. He is currently developing experimental and bioinformatic tools to study regulation of gene expression, protein-RNA interactions, and RNA-RNA interactions. Since 2008 he has served as Academic Editor of the open access journal PLoS ONE.

Talk: **Synonymous but not the same: causes and consequences of codon bias**
Sunday 14th July, 10:15

Synonymous (silent) mutations do not alter protein sequence, but they can influence gene expression at various stages, from transcription to protein folding. In microorganisms, such mutations profoundly influence fitness and evolution, and in humans, they are known to cause a number of diseases. In biotechnology, differences in protein yields of more than a 1,000-fold have been observed between synonymous genes. Therefore, understanding the consequences of synonymous mutations is important in a range of research areas, including molecular evolution, gene regulation, biotechnology and medicine.
To experimentally study the effects of silent mutations, we constructed a library of synonymous green fluorescent protein (GFP) genes with randomized codon usage. When expressed in Escherichia coli, the GFP variants differed 250-fold in their expression levels. More surprisingly, the GFP variants differentially affected bacterial growth. The reduction in fitness was generally greatest for highly expressed constructs with a low codon adaptation index, recapitulating the known properties of selection on codon usage. I will present ongoing work on the mechanisms through which synonymous mutations influence gene expression and fitness in Prokaryotic and Eukaryotic cells.

Jean-Luc Lebrun

Jean-Luc Lebrun has managed research programs while working at Apple Computer in its Advanced Technology Research group for over ten years. He subsequently invested his energy in the commercialization of research at Kent Ridge Digital Labs, a Singapore-based IT lab. He now leaves in San Jose California.

For the past twelve years, Jean-Luc Lebrun has been conducting courses on grant writing, scientific writing, and scientific presentation for more than three thousand scientists, researchers, clinicians, and doctoral students in South East Asia and Europe. He was recently in Krakow and Warsaw giving seminars on scientific writing for the Foundation for Polish Science. He willingly agreed to return to Poland, a country he appreciates, and share with the participants to the summer school of Biotechnology his practical knowledge on grant writing.

He is an author of three books on scientific writing and scientific presentations: "Scientific Writing 2.0 - a reader and writer's guide"; "When the scientist presents" (Both published by World Scientific Publishing Inc) and "Guide Pratique de rédaction scientifique"(published by EDP - éditions de Physique).

He is also co-designer of a computer program to assess the quality of a scientific paper prior to publication (SWAN - freely accessible online at http://cs.joensuu.fi/swan/). Team Members: Jean-Luc Lebrun, Tuomo Kakkonen, Tomi Kinnunen, Henri Leisma, Ernest Arendarenko. SWAN is a Java application that takes a typical scientific paper (not a review paper) and analyses it to detect writing problems: lack of structure, lack of fluidity, lack of clarity, lack of focus (among others). It does so with the help of the writer who answers a few questions prior to automatic analysis. It delivers an extensive diagnostic report suggesting ways to improve the paper.

Talk: **Grant writing**
Monday 15th July, Tuesday 16th July

Grant writing meeting covers a typical grant call. Concerns of the grant reviewers and grant providers are highlighted through the systematic analysis of both the grant application document and the written instructions given by the grantor to its grant reviewers. The meeting exposes the main reasons for grant rejection or grant award based on the study of past grant applications. It covers the process of grant preparation and writing.

Meeting is organized as a part of SKILLS project and is co-fund by the European Union within European Social Fund.

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Jaroslaw Marszalek (IFB UG&MUG, Poland)

Jaroslaw Marszalek is Tenured Professor at the Department of Molecular and Cellular Biology at Intercollegiate Faculty of Biotechnology of University of Gdansk and Medical University of Gdansk. He leads Laboratory of Evolutionary Biochemistry. The main focus of his research is the role of molecular chaperones of Hsp70 system in essential mitochondrial processes such as biogenesis of iron-sulfur clusters containing proteins and maintenance and propagation of mitochondrial genomes. He studies the role of Hsp70s in these processes from functional, structural and evolutionary perspective. He teaches Molecular Evolution. Prof. Marszalek is also a Visiting Associate Professor at the Department of Biochemistry, University of Wisconsin-Madison, USA.

Talk: **Evolution from Modern to Functional Synthesis**
Saturday 13th July, 9:20

Using historical perspective I will discuss development of the evolutionary science from early days of observations and theoretical considerations to current experimental research both in the laboratory and in the field. I will emphasize the importance of modern evolutionary studies for bio-medical research, biotechnology and conservation.

Juli Peretó (Valencia University, Spain)

Juli Peretó is Tenured Professor at the Department of Biochemistry and Molecular Biology, and researcher at the Evolutionary Genetics Unit, Cavanilles Institute for Biodiversity and Evolutionary Biology, University of València. His research interests include the evolution of metabolism, the minimal genome concept, and the history of ideas on the natural origin and the artificial synthesis of life. He teaches metabolism in an evolutionary context to biologists, biochemists and biotechnologists. Currently coordinates a consortium of eight European universities in the Erasmus IP course Origin, Evolution and Future of the Biosphere. He was formerly Secretary of the International Society for the Study of the Origin of Life (ISSOL-The International Astrobiology Society) and has been elected as Second Vice President of ISSOL for the term 2011-2014. His most recent book, coauthored with A. Moya, is "Simbiosis: seres que evolucionan juntos" (Síntesis, Madrid, 2011).

Talk: **Discussing on the origin of life as an educational tool in biochemistry**
Saturday 13th July, 10:25

The talk will summarize fifteen years of teaching experience on chemical and biochemical evolution at the University of València. I had a wonderful opportunity to design a syllabus with an evolutionary approach to some fundamental concepts in biochemistry, molecular biology, genetics or cell biology. The importance of evolution in biochemical research is hardly obvious according to the contents of most of our textbooks, but as biochemists we must assume Dobzhansky's famous slogan («Nothing in biology makes sense except in the light of evolution») and introduce an evolutionary perspective in our teaching as the unique way to understand why biological things are the way they are at the molecular level. Thus we can confront historical contingency and chemical determinism in the configuration of biochemical functions. My discussion will focus on the current hypotheses about the origin of autocatalysis –a minimal property for the origin of life– and the beginnings of self-maintained biochemical networks, self-reproductive membranes and self-replicative nucleic acids.

Talk: **Teaching metabolism with an evolutionary flavor**
Saturday 13th July, 14:10

Most students look at metabolism as an exaggeratedly complicated subject. I propose that introducing an evolutionary approach to the study of metabolism, as the outcome of more than 3,000 million years of opportunism and molecular tinkering, improves the ability to grasp their logic. There are several models for metabolic pathway evolution. According to the patchwork model, the one with most explanatory power, I will consider some key topics as discussed with my students: how enzymatic flexibility and promiscuity allows the evolvability of metabolic functions; how metabolic networks and environments have coevolved through the history of our planet, as eloquently shown by the evolution of oxygen metabolism; and how new metabolic phenotypes may evolve through symbiotic associations leading to veritable metabolic mosaics. I will also discuss within an evolutionary framework how fuzzy are the borders of some classical concepts, such as those of enzyme specificity, essential amino acid or Needham's rules on nitrogen excretion.

Dan Tawfik (Weizmann Institute of Science in Rehovot, Israel)

Born in Jerusalem, Prof. Tawfik received a B.Sc. in chemistry and biochemistry from the Hebrew University of Jerusalem in 1988, and an M.Sc. in biotechnology in1990. He did his doctoral work at the Weizmann Institute under the supervision of Profs. Zelig Eshhar and Michael Sela, and was granted a Ph.D. in 1995 on the basis of his thesis: "Towards Antibody-Mediated Peptide Hydrolysis."
In 1996, Prof. Tawfik completed two years of postdoctoral research under Prof. Alan Fersht, at Cambridge University and the MRC Centre for Protein Engineering (UK). From 1997 to 2001, he held the position of senior research fellow at Sidney Sussex College, as well as at the MRC Centre for Protein Engineering, where he was appointed group leader in chemical biology in 1999. Prof. Tawfik joined the staff of the Department of Biological Chemistry at the Weizmann Institute of Science in thespring of 2001, where he serves now as full Professor. He has received numerous awards and fellowships, including the Sir Charles Clore Prize, the Weizmann Institute's highest honor for a newly-appointed senior scientist, the Wolgin Prize, and the Haim Weizmann Prize by the City of Tel-Aviv, and the EMBO membership. He entered the field of protein evolution through his interest in enzyme engineering, when he realized that unraveling the mysteries of protein evolution is a charming intellectual endeavor and a powerful way of facilitating protein engineering. Research in the Tawfik laboratory integrates protein science, and chemical and evolutionary biology. Enzymes ranging from hydrolases to DNA methyltransferases are being studied, while addressing both the applicative and fundamental aspects of protein evolution. Proteins present a dichotomy. They are highly robust and remarkably proficient and specific. They can, nonetheless, rapidly change and adopt new structures and functions, as manifested in the rapid emergence of resistance in plants, insects, and bacteria, or of herbicide and pesticide degrading enzymes.

Talk: **Laboratory molecular evolution**
Saturday 13th July, 9:40

I will discuss the application of laboratory evolution to address fundamental aspects of molecular evolution. I will briefly describe the experimental approaches we use, and the insights that can be gained - foremost, what are the properties of the intermediates of protein evolution processes.

Talk: **Protein strcuture-function in the light of molecular evolution**
Sunday 14th July, 11:45

I will discuss how understanding the principles of protein evolution has made it necessary to revsie basic pardigms of protein struture-function, foremost the notion of "one sequence = one structure = one function". I will describe our insights regarding the principles that underline protein evolution, and how these dictate the properties of the extant enzymes and enzyme families.

Rafał Zieliński (University of Texas, M.D. Anderson Cancer Center in Houston, USA)

Dr. Rafal Zielinski holds a position at the Department of Experimental Therapeutics, University of Texas, MDAnderson Cancer Center in Houston, TX. He graduated from Catholic University of Lublin, Poland, where he also obtained his PhD. Dr. Zielinski received extensive postdoctoral training at National Institutes of Health, National Cancer Institute, Radiation Oncology Branch, Bethesda MD and Department of Experimental Therapeutics UT, MDAnderson Cancer Center where recently, he was promoted to Research Scientist. His scientific interest is focused on development of new therapies targeting HER2 and oncogenic transcription factors: STAT3, STAT5 and HIF-1α. Dr. Zielinski is an author and co-author of more than twenty peer-reviewed publications. As a Scientist in academic institution, Dr. Zielinski is actively involved in application for research support. His experience involves multiple application for federal (NIH, DOD, SPORE) as well as private foundation grants. Dr. Zielinski also served as reviewer of multiple scientific proposals.

Talk: **Grant writing**
Monday 15th July, Tuesday 16th July

Grant writing meeting covers a typical grant call. Concerns of the grant reviewers and grant providers are highlighted through the systematic analysis of both the grant application document and the written instructions given by the grantor to its grant reviewers. The meeting exposes the main reasons for grant rejection or grant award based on the study of past grant applications. It covers the process of grant preparation and writing.

Meeting is organized as a part of SKILLS project and is co-fund by the European Union within European Social Fund.

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List of Participants

	Name	Position	City, Country	Institution
1.	Błenska Anna	Student	Gdańsk, Poland	IFB UG&MUG
2.	Borowik Agnieszka	Student	Gdańsk, Poland	IFB UG&MUG
3.	Brodzik Karolina	Student	Gdańsk, Poland	IFB UG&MUG
4.	Bury Katarzyna	PhD	Gdańsk, Poland	IFB UG&MUG
5.	Celeda Ewa	Student	Warsaw, Poland	Warsaw University o Technology
6.	Chruściel Elżbieta	PhD	Gdańsk, Poland	IFB UG&MUG
7.	Cichosz Alina	Student	Gdańsk, Poland	IFB UG&MUG
8.	Czetyrbok Katarzyna	Student	Gdańsk, Poland	IFB UG&MUG
9.	Dubiel Andrzej	PhD student	Gdańsk, Poland	IFB UG&MUG
10.	Filipiak Marcin Szymon	Student	Warsaw, Poland	Warsaw University o Technology (Faculty o Chemistry)
11.	Fisher Agnieszka	Student	Warsaw, Poland	Politechnika Warszawska
12.	Fojcik Maciej	Student	Gdańsk, Poland	Faculty of Oceanography and Geography, University of Gdańsk
13.	Gerigk Magda	Student	Gdańsk, Poland	Gdansk University of Technology
14.	Grabowska Kinga	Student	Gdańsk, Poland	IFB UG&MUG
15.	Gross Marta	Student	Gdańsk, Poland	IFB UG&MUG
16.	Ihnatowicz Anna	PhD	Gdańsk, Poland	IFB UG&MUG
17.	Jurczyk Agnieszka	PhD student	Gdańsk, Poland	University of Gdansk
18.	Kamińska Małgorzata	Student	Warsaw, Poland	Warsaw University of Technology
19.	Karłowicz Anna	PhD student	Gdańsk, Poland	IFB UG&MUG
20.	Kawiński Adam	PhD student	Gdańsk, Poland	IFB UG&MUG
21.	Kaźmierczak Wojciech	Student	Warsaw, Poland	Warsaw University of Technology
22.	Kominek Jacek	PhD student	Gdańsk, Poland	University of Gdansk
23.	Komorowska Magdalena	Student	Gdańsk, Poland	IFB UG&MUG
24.	Kozłowska Katarzyna	PhD student	Gdańsk, Poland	University of Gdansk
25.	Landowski Christa	Student	Houston, TX, USA	University of Houston Downtown
26.	Lasek Robert	PhD student	Warsaw, Poland	University of Warsaw (Faculty of Biology)
27.	Lesiak Dorota	PhD student	Gdańsk, Poland	IFB UG&MUG
28.	Lai Vi	Student	Houston, TX, USA	University of Houston Downtown
29.	Manicki Mateusz	PhD student	Gdańsk, Poland	University of Gdansk
30.	Marczak Mikołaj	Student	Gdańsk, Poland	IFB UG&MUG
31.	Matuszewska Marta	Student	Gdańsk, Poland	IFB UG&MUG
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51.				

Notes