



## PROFESSOR STANISŁAW WIĘCKOWSKI (1931 – 2011)

Professor Stanisław Więckowski, our unforgettable friend, mentor and teacher, left us on March 22nd, 2011. Professor Więckowski was originally from the Warsaw area, but he bound his adult and professional life with Krakow and the Jagiellonian University. He was born on March 15th, 1931 in the village of Radosna, close to Warsaw, but he studied at the Jagiellonian University where he graduated in 1956. Every stage of Prof. Więckowski's professional career was connected with the Jagiellonian University. He received his doctoral degree in 1961 and his habilitation in plant physiology in 1967. Nine years later he obtained the title of extraordinary professor and in 1991 he was named ordinary professor.

Professor Więckowski was one of the co-founders of the Institute of Molecular Biology where he also carried out various functions including that of vice-director of the Institute. Nevertheless, his longest position was as the Head of the Plant Biochemistry Department. He served at this position uninterruptedly for 26 years. One of Prof. Więckowski's achievements was to formulate the scientific profile of the department in which the various aspects of photosynthesis became the main focus of research. And so it is up to this day.

Professor Więckowski was a remarkable person. He was an outstanding specialist in the fields of plant biochemistry and physiology. His scientific work was greatly respected both at home and abroad. He published over 150 experimental and review papers. He was also the author or co-author of five books, textbooks and academic monographs. He was a member of many scientific councils and on the editing board of various plant physiology and biochemistry journals. Professor Więckowski's achievements as a teacher are also very impor-



Prof. Stanisław Więckowski

tant. He was a mentor to several generations of students. He directed 60 master's degree students, successfully promoted 11 doctoral students and supervised four habilitations, thus creating a school focusing on photosynthesis research in Krakow.

Professor Więckowski received multiple awards for his academic and didactic achievements including the Golden Service Cross, the Knight's and Officer's Crosses of the Order of Polonia Restituta and the Medal of the National Education Committee.

Despite his many achievements and renowned academic standing, Professor Więckowski always remained very modest, shying away from publicity and not allowing for the organization of any festivities to celebrate his an-

### Contents

Prof. Więckowski
Grants
Polish-French School
XXXVIII Winter School
Professorships
Ph. D. Theses
Awards and Scholarships
The "Molecular Biotechnology for Health" project
The "Malopolskie Biotechnology Centre"
Mygen
Nobel
Visiting Lecturers
It's past belief!
Publications

► **Prof Stanisław Więckowski**  
cont. from p. 1

niversaries. He used to say “the quieter the better”. He was an example of impeccable manner, integrity and high ethical standards in science. These traits ensured that Prof. Więckowski was well-liked, valued and respected by others.

Despite retiring 10 years ago, he was always remained in touch with the Department. He would come to work on a regular basis and continued to carry out scientific research. He remained creative and immersed in the problems of science until the very end. While fighting dis-

ease he continued to make plans for the future: he wanted to write a book. It is a great pity that this will not come to be.

Professor Więckowski was with us for 56 years. He took an active part in the daily functioning of the Department and was always courteous, cheerful and ready to help others. That is how we will remember him.

*prof. Kazimierz Strzałka*



## POLISH-FRENCH SCHOOL



The 6<sup>th</sup> POLISH-FRENCH SCHOOL was held at our faculty on March 1<sup>st</sup> and 2<sup>nd</sup>. This year's school was entitled *New aspects of drug design and in vivo imaging*. It was organized jointly with the Jagiellonian University's Faculty of Chemistry, the Centre National de la Recherche Scientifique (CNRS, National Centre for Scientific Research) and the University of Orléans. The School was officially opened by the faculty's vice-dean for student affairs, Prof. Marta Dziejzicka-Wasylewska, who presented the his-

tory of the Jagiellonian University stressing the scientific ties which have existed for many years between Poland and France. The thirteen lectures presented during the school sparked the keen interest of undergraduate and graduate students from the FBBB, the Faculty of Chemistry and the University of Orléans. More than 50 people participated in the School.

The invited guests included scientists from France (Claudine Kieda, Chantal Pichon, Jean-Claude Beloeil, Alain Le Pape, Ewa Jakab Toth,

Hervé Watier), from the JU Faculty of Chemistry (Justyna Kalinowska-Tłuścik, Barbara Krajewska, Wojciech Piekoszowski, Szczepan Zapotoczny) and from our own Faculty (Martyna Elas, Agnieszka Jaźwa, Halina Waś).

The entire meeting was coordinated by Prof. Joanna Bereta and Dr. Agnieszka Łoboda from the FBBB, Prof. Chantal Pichon and Prof. Claudine Kieda from France and by Dr. Agnieszka Jańczyk from the Faculty of Chemistry.

On behalf of the organizers and attendees, we would like to extend a heartfelt thanks for the financial support provided to by Faculty and the Faculty of Chemistry. We would like to specially thank Prof. Marta Dziejdzicka-Wasylewska for the encouragement and support she has always given for the School.

dr Agnieszka Łoboda

## FBBB WINTER SCHOOL

The XXXVIII Faculty of Biochemistry, Biophysics and Biotechnology Winter School was held in Zakopane from February 12<sup>th</sup> to 16<sup>th</sup>. This year's meeting, organized by Prof. Jerzy Dobrucki and the Nobel Biophysics Students' Association, was focused on the theme of cytometry. The main goal of the School was to disseminate knowledge about the new scientific methods which have become available to us since the Faculty obtained new equipment financed by the *Molecular biotechnology for health* grant as well as to foster scientific collaboration between the researchers of the Jagiellonian University's various natural and exact sciences faculties.

Following the main theme of the School, the scientific sessions focused on imaging cytometry, flow cytometry, methods for investigating interactions between single molecules and methods for probing large tissues, embryos and entire animals. There were also two poster sessions with a total of 35 posters being presented.

The list of invited guests included: Dr. Andrzej Bielecki (JU), Prof. Stefan Chłopicki (JU), Prof. Wiesław Gruszecki (UMCS, Lublin), Dr. Grażyna Hoser (CMKP, Warsaw), Prof. Bożena Kamińska-Kaczmarek (IBD PAN, Warsaw), Prof. Jerzy Kawiak (CMKP, Warsaw), Prof. Claudine Kieda (CNRS, Orléan), Prof. Marek Langner (PW, Wrocław), Prof. Jacek Leśkow (WSB, Nowy Sacz), Dr. Rafał Luchnowski (UMCS, Lublin), Dr. Marta Miączyńska (MIBMiK, Warsaw), Dr. Magdalena Przybyło (PW, Wrocław), Prof. Ryszard Rudnicki (UŚ, Katowice), Dr. Grzegorz Rymkiewicz (CMKP, Warsaw), Prof. Wojciech Słomczyński (JU), Dr. Jacek Śmietański (JU) and Prof. Grzegorz Wilczyński (IBD PAN, Warsaw).

As in previous years, on the School's second evening, the members of the Nobel Bio-



physics Students' Association and of the Mygen Biotechnology Students' Association presented brief reports on their organizations' activities. They then gave a presentation entitled Top Nobel (Nobel) and gave out awards to the Faculty's outstanding departments (Mygen). For more detailed information please see the related articles in this issue of Triplet.

During their spare time, the School's attendees were able to take part in hikes organized into the Koscieliska and Malej Laki Valleys of the Tatra Mountains. Unfortunately, due to an extremely low number of ski enthusiasts the Prof. Z. Wasylewski Memorial was cancelled.

The XXXVIII Winter School was financed by the FBBB and also received support from the following firms: KAWA. SKA Ltd. (main sponsor), Alab Ltd., Becton Dickinson Ltd., Biogenet, Bruker Polska Ltd., Meranco Ltd., Sigma-Aldrich Ltd., Labart Ltd. and IKA POL.

Registration

Prof. W. Gruszecki

Poster session

A trip to Little Meadow Valley



## POMOST AWARD FOR DR. AGNIESZKA ŁOBODA – THE ApoE4 GENE AND WOUND HEALING



Dr A. Łoboda

### **Where did you get the idea to apply for this grant?**

I like to keep up with funding opportunities both from the Ministry of Science and the Foundation for Polish Science (FNP). I had previously participated in the FNP's START programme which is directed to young scientists. Since I have two kids, Szymon who is 5 years old and Olga who is 3 years old, I meet the requirements of the POMOST programme which is designed to provide good working conditions for the best scientists who are raising small children. I was also motivated by the fact that Dr. Aneta Kasza was awarded in the first edition of POMOST.

### **How were the applications evaluated?**

POMOST received 109 applications of which 14 were chosen for an award. The applications were evaluated in two stages. First, each application was judged by a panel of four reviewers. In the second stage, about 25 applicants were invited for personal interviews. The scientific merit and innovativeness of the proposed project was most important but the capacity of the centre where the project will be carried out to guarantee adequate working conditions was also taken into consideration. During the second stage, the team of FNP experts assessed the feasibility and proposed methods for the study. The applicants previous scientific achievements were also considered.

### **What is your project about? Why is it important?**

My project deals with variants of apolipoprotein E in regenerative medicine and especially in wound healing. The discovery that possessing a given variant of ApoE is connected to faster or slower wound healing is of fundamental importance. Such experiments have not been carried out until now because ApoE is studied rather in the context of diseases such as atherosclerosis, heart disease or Alzheimer's disease. My initial research shows that the presence of ApoE4 is tied to increased expression of heme oxygenase-1 which is a protective enzyme and of other proangiogenic factors such as VEGF. We have shown that these factors are important in wound healing. Based on these results I am suggesting that the higher levels of HO-1 and VEGF correlated to a higher level of ApoE4 can lead to better wound healing.

### **And what if this hypothesis is wrong?**

This topic has never been studied before. It is worth finding out what the correlation between the various types of ApoE such as ApoE2, ApoE3 and ApoE4 and wound healing is regardless of the final results. The research project will take three years, so we will be able to verify this hypothesis both in vitro and in vivo. If it turns out that the presence of the ApoE4 isoform accelerates healing, than after studies on animal models it will be good to investigate this relationship in humans. Because the problem of difficult-to-heal wounds presents a serious complication for diabetes patients and is becoming more prevalent today, we will aim to check the correlation between the presence of a given isoform of apoE and wound healing in this group of patients. During this project, we will make use of many new methods such as laser microdissection (apparatus purchased from "Molecular Biotechnology for Health" project resources). We will use it to analyse skin samples, to cut out specific structures and to determine gene expression in them. I believe that this project has a potential for success based on the initial results from in vitro and in vivo studies carried out by us and in collaboration with the University of Kiel.

*Interviewed by: Dominika Giza*

## PROF. KRYSZYNA URBAŃSKA

On January 21st, 2011, Krystyna Urbańska received the title of Professor of Biological Sciences which was granted to her on December 23<sup>rd</sup>, 2010. Prof. Urbańska embarked on her scientific career in 1975 when she finished her undergraduate studies with a major in biology and began doctoral studies directed by Prof. Stanisław Łukiewicz at the Biophysics Department of the Jagiellonian University's Institute of Molecular Biology. After defending her doctoral thesis in 1981, she was hired in the Department of Biophysics which was headed by Prof. Stanisław Łukiewicz. During these years she spent time working in the Department of Dermatology at the Yale School of Medicine, the EPR Centre in Milwaukee, the Department of Radiology at SUNY and the Department of Radiology at UMDNJ. While working in the Department of Biophysics, she obtained her ha-

bilitation in 2001. In 2003 she was named head of the Tumour Radiospectroscopy and Radiobiology Laboratory in the Department of Biophysics.

Prof. Urbańska's scientific interests include:

- the development of models for radiobiological studies of skin and eye melanomas,
- investigation of the mechanisms of melanoma radio-resistance and ways to reduce it,
- melanoma biology, including, most recently, vascularization of melanomas and post-therapy changes in vascularization,
- photodynamic tumour therapy using 2<sup>nd</sup> and 3<sup>rd</sup> generation photosensitizers, assessment of their efficacy on the cellular system, investigation of their functional mechanisms and pre-clinical trials on transplanted melanomas in animals.

## ROOSA LAITINEN SELECTED TO LEAD A LABORATORY FINANCED BY THE MAX PLANCK SOCIETY

At the end of March the process for selecting the head of a laboratory financed by the Max Planck Society was concluded. In accordance with an agreement signed last year, this laboratory will be created at the Jagiellonian University. Roosa Laitinen, who is from Finland and currently works in Germany, was selected as the best from a pool of 14 candidates from various countries. Dr. Laitinen's specialization is in plant molecular genetics and more specifically in the molecular basis for the problem of hybrid incompatibility. Contrary to her young age, Roosa Laitinen has outstanding achievements in this field. The laboratory, which will open on July 1st, 2011, will temporarily be located partly in the Centre for Natural Studies and partly in the facilities of the Faculty of Biochemistry, Biophysics and Biotechnology. Eventually the MPG Laboratory will be located in the Malopolska Biotechnology Centre whose construction is scheduled to be completed by late 2012. It is



Dr R. Laitinen  
(phot. Vishal Kapoor)

expected that the Molecular Plant Biology Laboratory which is being created will collaborate closely with the Faculty of Biochemistry, Biophysics and Biotechnology as well as with other institutions conducting research into plant molecular genetics, biochemistry and physiology and related fields.

*Prof. dr hab. Kazimierz Strzałka*

Henryk Mach *Applications of Near-UV Spectroscopy to the Analysis of Proteins and Nucleic Acids*, Supervisors: prof. Tadeusz Sarna, prof. C. Russ Middaugh, Jan 4th 2011

Janusz Ligęza *Influence of tyrphostins AG1024 and SU1498 on autocrine stimulated mitogenic signaling in human colorectal cancer cells – LoVo*, Supervisor: prof. Andrzej Klein, Feb 11th 2011

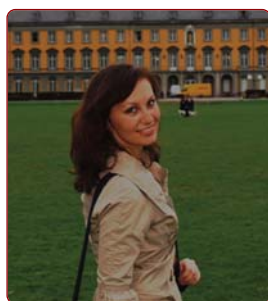
## DOKTORATY

## AWARDS AND SCHOLARSHIPS

### CITY OF KRAKOW ACADEMIC SCHOLARSHIPS



Renata Szymańska



Paulina Koczurkiewicz



Monika Czapla and Arkadiusz Borek

The awards ceremony for the winners of the 4th edition of the City of Krakow Academic Scholarship took place on March 8th in the Cracow City Council Chamber located in City Hall. This scholarship aims to distinguish particularly talented undergraduate and doctoral students whose scientific and artistic activity demonstrates a potential to contribute to the development of Krakow or to significantly contribute to the development of science. The scholarship committee selected 37 winners from almost 500 applications. Among them are Renata Szymańska and Paulina Koczurkiewicz.

Renata Szymańska is a member of the Department of Plant Physiology and Biochemistry, and her interests focus on the antioxidative properties of vitamin E and other lipophilic compounds derived from plants. She is a PhD student and has already published over a dozen papers. She has previously been awarded the Malopolska doctoral scholarship, the President's Award of the Polish Copernicus Society of Naturalists for the best popular-science publication and the Institute for Educational Studies' award in the open competition entitled "See if you can construct a sentence".

Paulina Koczurkiewicz is a graduate student in the Jagiellonian University's Faculty of Pharmacology. She is carrying out her doctoral research under the supervision of Prof. Zbigniew Janeczko from the Department of Pharmacognosy and in strict collaboration with the

FBBB's Department of Cell Biology where she is advised by Dr. Marta Michalik. Her research focuses on the influence of new triterpenoid saponins isolated from plants on healthy and cancerous human cells. Her goal is to isolate compounds which could be used as potential chemotherapeutic agents or as starting products for the semisynthesis of new derivatives.

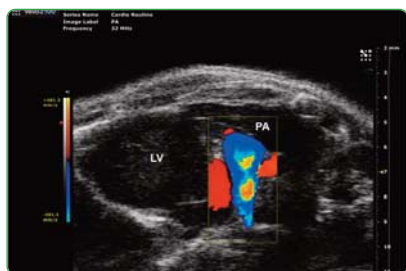
### THE FOUNDATION FOR POLISH SCIENCE START FELLOWSHIP

Monika Czapla and Arkadiusz Borek, who are graduate students at the FBBB, were awarded START fellowships from the Foundation for Polish Science. The START programme is directed to young researchers who have already achieved some success in their fields. The fellowships constitute a recognition of their achievement so far and a motivation for further progress by allowing them to focus entirely on their research.

This year 128 young scientists received fellowships from a pool of 1027 applicants. Among the winners were 15 people from the Jagiellonian University.

Monika Czapla and Arkadiusz Borek work in the Department of Biophysics where they investigate the structure and function of cytochrome bc1 under the direction of Dr. Artur Osyczka. Both of them are graduate students and co-authored a paper on this protein which was published last July in the weekly *Science*.

## MOLECULAR BIOTECHNOLOGY FOR HEALTH



Vevo training - mouse heart projection along the long axis. Visible is left ventricle (LV) and blood flow through the pulmonary artery (PA)

Construction work on the new animal facility is scheduled to conclude in April. The last remaining construction elements, which are the flow sterilizers, an automatic wash and a laminar flow cabinet with an access window, will also be delivered. The last stage will involve the purchase of the cages and is planned for July 2011.

The animal facility will ultimately make it possible to house 8000 mice, around 250 rats, 20 rabbits and 100 gerbils or hamsters. It will consist of three areas: i) breeding area which

will have limited access and where unique mouse and rat lines will be bred; ii) experimental area to which all researchers will have access and in which the laboratory animals will be housed and where surgical procedures and in-vivo analysis will be carried out; iii) technical area which will include animal feed and litter storage, a washing facility and a sterilizing facility. The entire animal facility will function using an individually ventilated cages (IVC) system which will ensure sterile conditions for the animals which could also include immunodeficient lines. It will also possess a cage exchange station, litter removal station and laminar flow

cabinets enabling researchers to carry out all necessary actions related to the breeding and housing of the animals in sterile conditions to ensure the safety of both the animals and the human workers. At present it will be the only animal facility of its kind in Poland.

The facility will include a surgical room equipped with an anaesthesiology set, a surgical table, a surgical microscope, surgical tools, a laminar flow cabinet, incubator, microscope and equipment necessary for tissue isolation and the creation of cell lines. There will also be an analysis room with a high-resolution ultrasound, a system for in-vivo luminescence and fluorescence detection, a Doppler flow meter and a haematology and biochemistry analyser. This will allow all of the Faculty's groups which work on animal models to carry out a diverse range of experiments and to collaborate with other experimental institutions and pharmaceutical firms.

Training in the use of the high resolution ultrasound machine (Vevo2100) took place on March 28-30, 2011. This piece of equipment is designed for small animals and was purchased within the framework of the *Molecular Biotechnology for Health* project. The training was conducted by Dr. Annie Paquin, applications specialist from VisualSonics company based in Toronto, Canada. Participants included members of the Department of Medical Biotechnology and the Department of Biophysics who are directly interested in using this device for their own research. The training was very practical and allowed the participants to acquire the

necessary expertise in the imaging and functional analysis of cardiac muscle and large vessels as well as other organs and interior structures including skeletal muscles (healthy and ischaemic) and tumours. Furthermore, during the training the participants also learned about the device's additional capabilities which are possible after the incorporation of additional modules. For example, it is possible to analyse blood flow in small and deep vessels, to conduct 3D imaging and to use microbubble contrasts for improved imaging of microvascularization.

A spectroscopy cryostat was also recently purchased for the plant biotechnology laboratory.

Animal facility before adaptation



Animal facility during adaptation



## MALOPOLSKA BIOTECHNOLOGY CENTRE OPEN HOUSE

The Malopolska Biotechnology Centre is organizing an Open House on June 9th and 10th, 2011. The Open House will be an opportunity to present the scientific research possibilities on state-of-the-art equipment which are available in the MCB laboratories that have already begun functioning. These include:

- mass spectrometer
- DSC and ITC calorimeters
- liquid chromatography (HPLC) with a DAD and ELSD detector
- a bioinformatics cluster
- an x-ray diffractometer

- fluorescence microscope for karyotyping and mFISH with a system for microdissection
- microarray system for expression analysis
- fluorescence scanner and spot cutter

In addition to lectures on the newest research methods, attendees will also be able to participate in hands-on exercises.

Detailed information about the MCB Open House programme will be posted soon on the Malopolskie Biotechnology Centre website [www.mcb.uj.edu.pl](http://www.mcb.uj.edu.pl). You are cordially invited to attend.

*Jolanta Rogowska*

The first "Science Mine" Polish-French Student Conference took place on February 27-28, 2011 as a prelude to the Jagiellonian University's Faculty of Biochemistry, Biophysics and Biotechnology Polish-French School. The conference was organized by the Mygen Biotechnology



part of the visit was a tour of the mine. As we travelled the mine's labyrinths and visited its one-of-a-kind chambers both on rail and on foot, our tour guide taught us not only about the history and function of the mine itself but also about the cultural and economic implications which the "white gold" from Bochnia brought for the development of the Krakow region. Many of us even decided to make a wish to the mythical Treasurer as we tasted the salt directly from the walls of the mine.

After the tour, the participants were taken to the "Ważyn Chamber". There, 248m underneath the ground, we spent the remainder of the evening and night. At our disposition was a sports field, restaurant, sleeping quarters and dance room. However, without a doubt the most popular element was a 140-meter slide, once used for transporting salt, which we were allowed to use under the mine personnel's supervision. Despite the relatively low temperature (about 16°C) in the chamber, everyone was delighted with this unusual location for spending the night. An additional benefit was the mine's special health-promoting microclimate thanks to which the conference was actually quite "healthy".



Conference participants

Student's Association in collaboration with the Jagiellonian University's Chemistry Student's Association and the Neuronus Neuroscientists' Association. The originators of the conference were Prof. Joanna Bereta and Prof. Claudine Kieda. The name "Science Mine" is due to the extraordinary location of the conference which took place in the Salt Mine in Bochnia, nearby Krakow.

On February 27th, in the late Sunday afternoon, the 46 conference participants, including 10 guests from France, descended 176m underground and into the depths of the Bochnia salt mine via the Campi shaft. The first

In the morning, the participants left the Ważyn Chamber and returned to the surface and the city centre via the Sutoris shaft for the scientific part of the conference. The presentations took place in the Bochnia Salt Mine Spa conference hall. During the presentations we were honoured to have Prof. Joanna Bereta and Prof. Claudine Kieda as our guests. Talks were given by students of biotechnology, biology and chemistry, as well as by two invited guests from the University of Orléans, Fabien Bastaert and Masnsen Cherief, who are 4th year students.

Both the Polish and French conference attendees were very happy with the conference and the time spent together. Now we wait until we meet again, perhaps once more in Krakow.

On behalf of the Students' Association we would like to thank the Faculty for all of its support and Dr. Agnieszka Łoboda and Dr. Agnieszka Jańczyk from the Faculty of Chemistry for their invaluable help.

*Ewa Piskadło, Barbara Zięba*



The 38th FBBB Winter School was held in Zakopane on February 12th to 16th, 2011. Prof. Jerzy Dobrucki had undertaken to organize this annual event, and he enlisted the assistance of members of the Nobel Biophysics Students' Association to help him in this particularly challenging task. The members of Nobel responded generously and gave it their all. The major part of the effort fell to Paulina Rybak and Agnieszka Grabowiecka, though all of Nobel's members contributed their time and effort, including those who were not able to be present in Zakopane for the School.

As has become the custom, the members of the students' associations were honoured with organizing an integration evening on the School's second day, which they gladly did and in so doing garnered the sincere appreciation of all the School's attendees. The "Nobels" decided to present a play entitled "Top-Nobel" designed as a take-off on a well know television show. During this play, the audience had an opportunity to appreciate the achievements of distinguished scientists and inventors such as Edison, Förster and Herzenberg.

In the mornings, hikes into the mountains were organized to locations such as the Smreczynski Lake at the far end of the Koscieliska Valley and to the Malej Laki Valley. Some participants also got stoked on the great snow conditions in Poland's Tatra Mountain capital and took time for some wild skiing.

In February several of our Association's members had the extraordinary opportunity to participate in the "8th Advanced Imaging Methods Workshop" organized in Berkeley, California. During these workshops, the participants were able to exchange information and experiences with each other. The entire event consisted of thematic lecture blocks which aimed to present the most recent developments and techniques in microscopy methods and their applications.

We also decided to expand our biophysics horizons by participating in a conference organized by the Faculty of Biology and Agriculture of the University of Rzeszow. We were invited to participate in this conference by Prof. Grzegorz Bartosz, who was responsible for the biotechnology part of the conference. The conference was entitled "Biotechnology: from basic research to practical applications" and focused on many aspects of biotechnology which had previously not been familiar to us.

Since there is still some time left before exams, the members of Nobel SA organized a studio photography session in early April. The goal was for everyone to present their "extra-biophysics" interests (the student does not live from learning alone...). The students posed before the camera with items which represented their hobbies. The entire event provided us with a large dose of laughter and fun and helped us take a break from our everyday duties.

Many undertakings await us in the days to come. The most important include the II Polish Biophysics Students' Conference as well as the II Biophysics Students Exchange Programme, the next edition of Meetings with Biophysics for high-school students as well as various upcoming trips to regions near and far both for academic purposes as well as, of course, for fun and integration.

*Agnieszka Pierzyńska-Mach  
Aleksander Szczurek*

## NOBEL

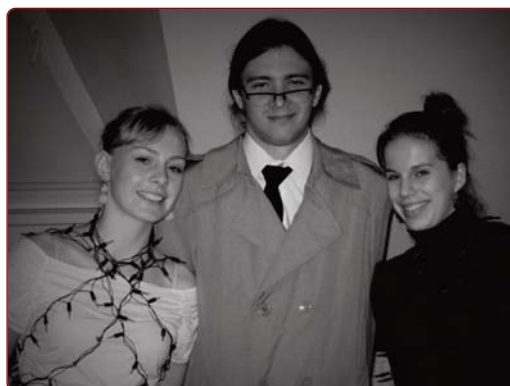
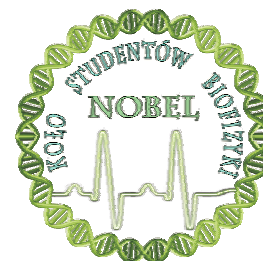


Photo session

Winter School

Conference in Rzeszów



**POMOST programme (POIG I.1.2) SCHOLARHIPS co-financed by the FNP  
for 2 full-time Master's degree students**  
(biotechnology, biochemistry, biology, natural sciences major)

PROJECT TITLE: „Significance of apolipoprotein E polymorphism in regenerative medicine”

**1000 PLN/month – starting June 1st, 2011 (possibly for 6 months – 2 years)**

Project directed by – Dr. Agnieszka Łoboda

The project involves:

- Analysis of angiogenic properties of macrophages with varying isoforms of apolipoprotein E
- Investigation of wound healing time in mice with varying ApoE genotypes
- Isolation and characterization of endothelial progenitor cells and primary keratinocytes isolated from ApoE2, ApoE3 and ApoE4 mice
- Analysis of gene expression in wounds – laser microdissection, miRNA

Project location: Dept. of Medical Biotechnology, Faculty of Biochemistry, Biophysics and Biotechnology, Jagiellonian University

**Application deadline: May 22nd, 2011**

Applications (including CV, motivational letter, at least one letter of recommendation from a scientific employee and document confirming that the applicant is enrolled in a full-time Master's degree programme as well as transcript of grades from Bachelor's degree programme or from the past academic year) should be sent via electronic or traditional mail to:

Dr. Agnieszka Łoboda

Faculty of Biochemistry, Biophysics and Biotechnology, Jagiellonian University

Gronostajowa 7, 30-387 Kraków

Tel: 0048-12-664 64 12 Fax: 0048-12-664 69 18

e-mail: agnieszka.loboda@uj.edu.pl

**INTERVIEWS WILL BE HELD  
IN LATE MAY 2011**



**INNOWACYJNA  
GOSPODARKA**  
NARODOWA STRATEGIA SPÓJNOŚCI

UNIA EUROPEJSKA  
EUROPEJSKI FUNDUSZ  
ROZWOJU REGIONALNEGO



## GOŚCIE

Dr Maciej Wiznerowicz, Poznań Medical University, *Epigenetic mechanisms in mammal embryonic development and stem cells*, 5 January, hosted by Medical Biotechnology Dept.

Dr Maciej Krzystyniak, Nottingham Trent University, *Magnetic nuclei relaxation of  $^{17}O$  as a tool the studies of proteins in solutions*, 10 January, hosted by Physical Biochemistry Dept.

prof. J. Majewski



dr M. Krzystyniak



Prof. A. Słomiński, University of Tennessee, Memphis, USA, *Novel Natural Noncalcemic Vitamin D3 Analogs as Potential Therapeutics*, 18 February, hosted by Biophysics Dept.

Dr Roosa Laitinen, Max Planck Institute, Tübingen, Germany, *Consequences of adaptive evolution: lessons from A. thaliana hybrids*, 24 February, hosted by FBFB

Prof. Józef Bujarski, Plant Molecular Biology Center, Northern Illinois University, De Kalb, IL, USA and Institute of Bioorganic Chemistry, PAS, Poznań, *Mechanisms of RNA virus recombination in mosaic bromovirus*, 4 March, hosted by Biophysics Dept.

Prof. Jaroslaw Majewski, University of California, Davis, Los Alamos Neutron Scattering Center, Los Alamos National Laboratory, CA, USA, *Structure and Dynamics of Biomembranes investigated with Neutron Scattering*, 18 March, hosted by Plant Biochemistry and Physiology Dept.

## WHAT A STORY! THE DEVIL IN THE TRIPLETS

Przy okazji ubiegłorocWith the occasion of last year's Nobel Prize awards, I learned that a devil lurks behind every scientist... Truly, one day we will all have to untie a few hellish Gordian knots. During a certain belated master's thesis defence last summer, a thought-provoking discussion arose at the instigation of our Deputy Dean, Prof. Dziedzicka-Wasylewska, which led us to reflect on the Gauguinian (and "Triplet-ish") questions: "where do we come from, where are we headed, who are we...?" With emphasis on the "where are we headed...?" Our conversation dealt with the so-called "silent" genetic polymorphism stemming from single, synonymous nucleotide substitutions<sup>1</sup>.

These substitutions result in synonymous codons which encode for the same amino acids as the original codons in wild-type genes. Yet these 'silent' substitutions effect protein expression, tertiary structure and function and are probably responsible for some genetic disorders, the efficacy of certain tumour therapies and possibly even for cell and organism survival rates. How? This is a key question. Perhaps by influencing the dynamics and kinetics of translation and of the protein folding process associated with it by which the native structure is obtained, by influencing the quantity of molecules created, by engaging the translation apparatus and the RNA processing apparatus used in the expression of other cellular genes. By changing secondary and tertiary RNA structure...

All of this would be possible through the phenomenon called codon bias which results in (or perhaps is conditioned by) the disproportionate use of synonymous tRNA's... For how else can one explain, for example, the changes in survival rates of E. coli strains transfected with different synonymous variations of the GFP gene, i.e. of a protein which the bacteria has no use for (maybe)?<sup>2</sup> It is not just important to

know what is in the gene. The "old" question, supposedly answered by Nirenberg in the 1960's, the "how", remains just as pertinent today. But anyhow, what is really encoded in the genome? And where the devil are the "traits" encoded?!

Two interesting facts connect to the topic of "silent" polymorphism. The first is a Polish thread incarnated in the person of Prof. Grzegorz Kudła, originally from the International Institute of Molecular and Cell Biology (IIMCB) in Warsaw. The second is a 1987 publication by Sharp and Li<sup>4</sup>, which according to scientific research websites, has received over 1000 citations. Almost as many as the Nirenberg's work some 25 years earlier. Their work deals with the quantification of codon bias. So many citations for a single publication presages a new "Nobel"... Let's wait and see... But in the meantime, new questions arise: how will nature amaze us next and what other surprises is that devil lurking around the corner still hiding? Where are we really headed with our research on the mechanisms of encoding and expression of genetic information? Where should we be headed?

And one final thought: are the belated summer master's thesis defences so disliked by our Deputy Dean not actually stimulating...?

PM Płonka

Kimchi-Sarfaty C, et al. Science 315: 525-8; 2007.

Kudla G, et al. Science 324: 255-8; 2009.

Nirenberg M, Matthaei JH. Proc Natl Acad Sci U S A 47: 1588-602; 1961.

Sharp PM, Li WH. Nucleic Acid Res 15: 1281-95; 1987.

## PICNIC INVITATION

The *Picnic under the Oak* will once again take place this year during the early afternoon hours of the first Friday of June (June 3rd) in the Faculty of Biochemistry, Biophysics and Biotechnology's courtyard. The Depart-

ment of Analytical Biochemistry's Team, winners of last year's triathlon, would like to invite all readers of *Triplet* to attend this marvellous springtime get-together.

# PUBLICATIONS

## PUBLICATIONS – 2011, 1<sup>st</sup> QUARTER

Appenroth KJ, Keresztes A, Krzysztofowicz E, Gabrys H. Light-Induced Degradation of Starch Granules in Turions of *Spirodela polyrhiza* Studied by Electron Microscopy. *Plant and Cell Physiology* 2011;52(2):384-91.

Boesch-Saadatmandi C, Loboda A, Wagner AE, Stachurska A, Jozkowicz A, Dulak J, Doring F, Wolfram S, Rimbach G. Effect of quercetin and its metabolites isorhamnetin and quercetin-3-glucuronide on inflammatory gene expression: role of miR-155. *Journal of Nutritional Biochemistry* 2011;22(3):293-9.

Broniec A, Klosinski R, Pawlak A, Wrona-Krol M, Thompson D, Sarna T. Interactions of plasmalogens and their diacyl analogs with singlet oxygen in selected model systems. *Free Radical Biology and Medicine* 2011;50(7):892-8.

Cerda-Costa N, Guevara T, Karim AY, Ksiazek M, Nguyen KA, Arolas JL, Potempa J, Gomis-Ruth FX. The structure of the catalytic domain of Tannerella forsythia karilysin reveals it is a bacterial xenologue of animal matrix metalloproteinases. *Molecular Microbiology* 2011;79(1):119-32.

Dabrowski JM, Urbanska K, Arnaut LG, Pereira MM, Abreu AR, Simoes S, Stochel G. Biodistribution and Photodynamic Efficacy of a Water-Soluble, Stable, Halogenated Bacteriochlorin against Melanoma. *Chemmedchem* 2011;6(3):465-75.

Dziedzic-Letka A, Rymarczyk G, Kaplon TM, Gorecki A, Szamborska-Gbur A, Wojtas M, Dobryszczycki P, Ozyhar A. Intrinsic disorder of *Drosophila melanogaster* hormone receptor 38 N-terminal domain. *Proteins-Structure Function and Bioinformatics* 2011;79(2):376-92.

Florczyk U, Golda S, Zieba A, Cisowski J, Jozkowicz A, Dulak J. Overexpression of biliverdin reductase enhances resistance to chemotherapeutics. *Cancer Letters* 2011;300(1):40-7.

Florczyk U, Golda S, Zieba A, Cisowski J, Jozkowicz A, Dulak J. Overexpression of biliverdin reductase enhances resistance to chemotherapeutics. *Cancer Letters* 2011;300(1):40-7.

Golebiowski FM, Gorecki A, Bonarek P, Dziedzicka-Wasylewska M. Efficient overexpression and purification of active full-length human transcription factor Yin Yang 1 in *Escherichia coli*. *Protein Expression and Purification* 2011;77(2):198-206.

Grzyb J, Bojko M, Waloszek A, Strzalka K. Ferredoxin: NADP<sup>+</sup> oxidoreductase as a target of Cd<sup>2+</sup> inhibitory action - Biochemical studies. *Phytochemistry* 2011;72(1):14-20.

Kozik A, Golda A, Mak P, Suder P, Silberring J, Barbasz A, Rapala-Kozik M. Myeloperoxidase-catalyzed oxidative inactivation of human kininogens: the impairment of kinin-precursor and

prekallikrein-binding functions. *Biological Chemistry* 2011;392(3):263-74.

Malachowa N, Kohler PL, Schlievert PM, Chuang ON, Dunny GM, Kobayashi SD, Miedzobrodzki J, Bohach GA, Seo KS. Characterization of a *Staphylococcus aureus* Surface Virulence Factor That Promotes Resistance to Oxidative Killing and Infectious Endocarditis. *Infection and Immunity* 2011;79(1):342-52.

Ohbayashi T, Irie A, Murakami Y, Nowak M, Potempa J, Nishimura Y, Shinohara M, Imamura T. Degradation of fibrinogen and collagen by staphopains, cysteine proteases released from *Staphylococcus aureus*. *Microbiology-Sgm* 2011;157:786-92.

Orzechowska A, Lipinska M, Fiedor J, Chumakov A, Zajac M, Slezak T, Matlak K, Strzalka K, Korecki J, Fiedor L, Burda K. Coupling of collective motions of the protein matrix to vibrations of the non-heme iron in bacterial photosynthetic reaction centers (vol 1797, pg 1696, 2010). *Biochimica Et Biophysica Acta-Bioenergetics* 2011;1807(1):165-6.

Rapala-Kozik M, Bras G, Chruscicka B, Karkowska-Kuleta J, Sroka A, Herwald H, Ky-Anh N, Eick S, Potempa J, Kozik A. Adsorption of Components of the Plasma Kinin-Forming System on the Surface of *Porphyromonas gingivalis* Involves Gingipains as the Major Docking Platforms. *Infection and Immunity* 2011;79(2):797-805.

Schaller S, Latowski D, Jemiola-Rzeminska M, Dawood A, Wilhelm C, Strzalka K, Goss R. Regulation of LHClI aggregation by different thylakoid membrane lipids. *Biochimica Et Biophysica Acta-Bioenergetics* 2011;1807(3):326-35.

Singh SK, Wilczynska KM, Grzybowski A, Yester J, Osrah B, Bryan L, Wright S, Griswold-Prenner I, Kordula T. The Unique Transcriptional Activation Domain of Nuclear Factor- $\kappa$ B Is Critical to Specifically Induce Marker Gene Expression in Astrocytes. *Journal of Biological Chemistry* 2011;286(9):7315-26.

Smalley JW, Byrne DP, Birss AJ, Wojtowicz H, Sroka A, Potempa J, Olczak T. HmuY Haemophore and Gingipain Proteases Constitute a Unique Symbiotic System of Haem Acquisition by *Porphyromonas gingivalis*. *Plos One* 2011;6(2).

Szymanska R, Dluzewska J, Slesak I, Kruk J. Ferredoxin:NADP(+) oxidoreductase bound to cytochrome b(6)f complex is active in plastoquinone reduction: Implications for cyclic electron transport. *Physiologia Plantarum* 2011;141(3):289-98.

Wladyka B, Dubin G, Dubin A. Activation mechanism of thiol protease precursor from broiler chicken specific *Staphylococcus aureus* strain CH-91. *Veterinary Microbiology* 2011;147(1-2):195-9.

Ziaja M, Lubieniecka J, Lewicka M, Pyka J, Plonka PM. Changes in nitric oxide content following injury to the neonatal rat brain. *Brain Research* 2011;1367:319-29.

### Editorial board:

Martyna Elas,  
Monika Rak,  
Magdalena  
Tworzydło

### Contact:

[martyna.elas@uj.edu.pl](mailto:martyna.elas@uj.edu.pl)

The editors reserve the right to adjust the material. Texts not signed are from the editors.

### Logo:

Sebastian Szytuła

### Design:

Klemens Napkowski

### DTP & print:

Quartis

Faculty of Biochemistry,  
Biophysics and  
Biotechnology,  
Jagiellonian University  
Ul. Gronostajowa 7  
30-387 Kraków