

## MSC EXAMINATIONS AND DIPLOMA PRESENTATION

The presentations of the scientific content of MSc dissertations took place from Monday the 14<sup>th</sup> to Friday the 18<sup>th</sup> of June, everyday in several thematic block sessions. The students of the final year of Biotechnology, Biophysics and Biology presented their results to younger and older colleagues as well as lecturers and answered their questions. The presentations showed a high level of preparation on the part of the students and a most interesting subject matter for the works themselves. MSc exami-

nations started on the 21<sup>st</sup> of June with the majority of students managing within the timescale set. This year 87 students took their MSc finals, of which 56 from Biotechnology, 19 Biophysics and 12 extra mural students of Biotechnology. Equally 18 students of Biology took their MSc finals at our Faculty.

Within the framework of the Polish-French Degree Programme for Biotechnology enabling the obtainment of a dual degree diploma from the Jagiellonian University and the University

see p. 3 ▶



The tables were full



... but soon that has changed



Cooks were investing a lot of effort

## PICNIC UNDER THE OAK

On the 28<sup>th</sup> of May, from the very morning, an array of deck chairs, umbrellas and barbeques started to fill the scene at the Faculty of Biochemistry, Biophysics and Biotechnology building. This was the preparation for the 4<sup>th</sup> faculty *Picnic under the Oak*. At one o'clock when everything was already prepared – the food table decorated with napkins of a merry check and wicker baskets, while red balloons bobbed in the air – the first guests arrived together with the representatives of the teams which had put themselves forward to participate in the triathlon.

While an increasing number of May revellers were refilling their plates with portions of exquisite żurek, mouth watering salads, cheeses and cakes, the teams of Administration, PhD

students, the *Nobel* Student Society, the Department of Analytical Biochemistry and the Department of Microbiology were engaging in heated competition. The contests in which they battled covered barbequing, a Faculty history knowledge quiz and darts.

All of the teams displayed a similar level of knowledge on the 40-year history of the Institute of Molecular Biology, the precursor of the Faculty of Biochemistry, Biophysics and Biotechnology. To nothing came the attempt on the part of some to cunningly lead their opponents astray. Equally the darts, despite training and ingenious strategies, was unable to show a clear leader in the triathlon. It was to be the dishes served up from the barbeque that were to determine victory.

The esteemed jury composed of Prof. Marta Dziejzicka-Wasylewska, Dr Justyna

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Visting Lecturers

It's past belief!

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## ► Piknik...

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"A" team at the barbecue



Grilled snacks



Jury had their hands full



The victorious throw



Nobel team argues during the competition on history of the Faculty



The winners – team from Analytical Biochemistry

Drukała and Dr Jacek Międzobrodzki debated long and hard over the verdict. For this was no easy decision: the dishes submitted for appraisal mesmerised in their composition, aesthetic qualities as well as terminology. Finally the main prize together with the honour of organising the next *Picnic under the Oak* ended up in the hands of the team from the Department of Analytical Biochemistry.

The picnic was honoured by a performance of the Faculty Choir lead with bravado by

## M E N U

The Department of Analytical Biochemistry cordially invites you for the following specialities:

**Terribly yummy**, terribly good, an academic fright straight from the wood!

There's nothing as **hellish as mountain cheeses and cranberry relish!**

Torun ginger bread may be swish but first do try **Ms Ibeth's kebabs** so shish!

Time for change with **Italian canary**, in your diet you have to vary!

**Soup with rabid coyote** meat and the work comes on a treat!

Forget about a seizure with lettuce and veg to ease yer!

## Most uncultured fluids

Jadwiga Oczóś. The endless applause and expressions of genuine admiration from the assembled public meant that the group decided on an encore. Following the performance, as a mark of gratitude for the enthusiasm shown in forming and leading the choir, the young choir leader, and MSc in Biotechnology into the bargain, was presented by the vice-dean of the Faculty, Marta Dziedzicka-Wasylewska, with a professional baton. This was also a farewell gift, for with the beginning of June Jadzia was to start work in her native Rzeszów.

As every year, as in this, the picnic was accompanied by a sale of garden and house plants. The money obtained from the sale of the plants (100.75 złoty) was presented to the Polish Humanitarian Initiative for the flood victims.

This year's picnic was entirely financed by funds of the Faculty of Biochemistry, Biophysics and Biotechnology.

## PhDs

Hevidar Taha *Effects of heme oxygenase-1 promoter polymorphism on human endothelial cells*, supervisor: prof. Alicja Józkowicz, 9<sup>th</sup> of April 2010

Danuta Mizgalska *MCPIP as RNAase regulating mRNA stability for interleukin-1*, supervisor: dr Jolanta Jura, 9<sup>th</sup> of April 2010

Elżbieta Wiernasz *Analysis of the recruitment process of heterochromatin proteins 1 (HP1) to areas of damaged chromatin*, supervisor: prof. Jerzy Dobrucki, 13<sup>th</sup> of April 2010

Karol Szczepanek *MCPIP Mitochondria overexpression of transcriptionally inactive STAT3 in the heart protects respiratory complex I against ischemia-in-*

*duced damage*, supervisor: prof. Józef Dulak, 8<sup>th</sup> of June 2010

Tomasz Kantyka *Interaction of extracellular cysteine proteinases of Porphyromonas gingivalis and Staphylococcus aureus with human epithelium-derived protease inhibitors*, supervisor: prof Jan Potempa, 29<sup>th</sup> of June 2010

**Grants obtained within the framework of the 39th edition of the Ministry of Science and Higher Education Competition:**

*The role of the Nrf2 transcriptional agent in progenitor endothelium cells as well as in the stimulation of revascularization processes in a model of an ischaemic rear limb in a mouse, prof. Józef Dulak, PhD project*

*The effect of change in the redox properties of the b-chain cofactors on distribution of electrons in cytochrome bc1, dr Artur Osyczka, PhD project*

*The mechanism of Staphylococcus aureus 'escape' from infected macrophages and the signif-*

*icance of this process in the in vivo spreading of staphylococcus, dr Joanna Koziel*

*The role of melanosomes of retinal pigmented epithelium in oxidative stress in vitro: the influence of aging on the antioxidating and pro-oxidative properties of granules, prof. Tadeusz Sarna*

*The characteristics of biogradation processes of Cyanobacteria toxins, dr Dariusz Dziga*

*The effect of reduced expression of PPARgamma on activities of endothelial progenitor cells in the context of antidiabetic therapy, prof. Alicja Józkowicz, PhD project*

*A comprehensive proteomic analysis of changes induced by clozapine and risperidone in the brain of a rat, dr Sylwia Kędracka-Krok*

## GRANTY

of Orleans, three students from Orleans prepared dissertations at the Faculty of Biochemistry, Biophysics and Biotechnology: Geraldine Bustin (at the Department of Analytical Biochemistry), Lamia Ghezali (at the Department of Medical Biotechnology) and Imene Henaoui (at the Department of Biophysics). The defence of these dissertations took place in Orleans on the 15<sup>th</sup> of June. Our faculty was represented by Prof. Alicja Józkowicz. In turn 4 students of the Faculty of Biochemistry, Biophysics and Biotechnology prepared their dissertations at the University of Orleans: Magdalena Filip, Agata Szade, Witold Nowak and Krzysztof Szade. The University of Orleans was represented by Dr Claudine Kieda and Prof. Chantal Pichon.

### MSc examinations and diploma presentation

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The degree diploma presentation ceremony on the 25<sup>th</sup> of June started with the traditional procession in gowns of the new MSc graduates and their tutors. Following the singing of *Gaude Mater Polonia* by the Faculty Choir and short speeches by the dean, Prof. Wojciech Froncisz, the vice-rector for didactics, Prof. Andrzej Mania as well as the vice-dean Prof. Marta Dziejzicka-Wasylewska, the formal presentation of the diplomas took place. The tutors praised the involvement and effort displayed by their charges. To round proceedings off a champagne toast was raised by Professor Mania. Then a group photograph and the mortar boards went flying skywards by way of farewell.

## VIII<sup>th</sup> INTERNATIONAL WORKSHOP ON EPR APPLICATION IN BIOLOGY AND MEDICINE

The Kraków workshops from the 'EPR Workshop' cycle, which this year will take place on the 4-6 of October, has for years drawn specialists in the field of the spectroscopy of Electron Paramagnetic Resonance and its biomedical applications. Their aim has been the direct exchange of information on the latest scientific achievements in the field of EPR application within biology and medicine as well as an enhancing of collaboration between the best world and Polish specialists. We envisage the participation of a dozen or so academics from European countries, the USA, Japan and Australia. There will be

among them eminent authorities like: Prof. G. Eaton, Prof. S. Eaton of Denver University, Prof. J. Hyde and B. Kalyaraman of the Medical College of Wisconsin, Prof. H. Halpern of the University of Chicago, Prof. A. Vanin of Moscow University, Prof. P. Kroneck of the University of Constance, and many others. In accordance with tradition we expect an excellent turn out of junior employees, PhD students and senior students, for whom this constitute a unique opportunity to obtain specialist knowledge first hand.

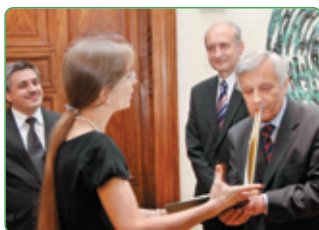
## AWARDS AND SCHOLARSHIPS



From left: dr Dominik Czaplicki (CITTRU), Paulina Chorobik, prof. J. Bereta and Maciej Czarnik (CITTRU)



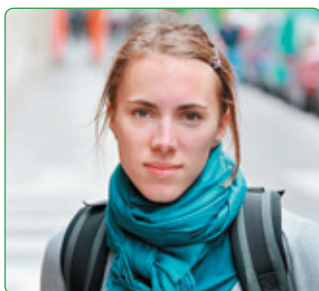
prof. Józef Dulak



prof. Alicja Józkowicz



dr Sylwia Łukasiewicz



Agata Szade

### The Polish Product of the Future Competition

On the 23<sup>rd</sup> of June this year the presentation of prizes for the 13<sup>th</sup> competition of *Polish Product of the Future* took place in Warsaw. Amongst the winners in the category of *Technology of the future at the pre-implementation phase* was the project entitled 'Antineoplastic therapy based on a modified Salmonella strain' submitted by the Centre of Innovation, Technology Transfer and Development of the Jagiellonian University. The organiser of the competition, under the honourable patronage of the Ministry of the Economy, is the Polish Agency for Entrepreneurial Development.

The originator and creator of the winning project was Dr Michał Bereta, who died in 2008, of the Department of Immunology of the Jagiellonian University's Collegium Medicum. The prize was collected by Professor Joanna Bereta of the Jagiellonian University's Faculty of Biochemistry, Biophysics and Biotechnology, who is coordinating further research work on the project.

The technology developed may in the future find an application in the treatment of patients with tumours thanks to the fact that the modified bacteria are located in the neoplastic tissue and subsequently enter inside the cells where they activate an apoptosis process, simultaneously activating the immune system.

### The Tadeusz Browicz Polish Academy of Art and Sciences (PAU) Prize

For 'original and innovative research into the role of heme oxygenase in the mechanisms of angiogenesis' this year's prize of the Tadeusz Browicz 5<sup>th</sup> Medical Faculty of the Polish Academy of Learning was received by Professor Józef Dulak and Professor Alicja Józkowicz of the Jagiellonian University's Faculty of Biochemistry, Biophysics and Biotechnology. The official presentation of the prize took place on the 19<sup>th</sup> of June at the headquarters of PAU on Sławkowska 17. The endower of the prize is the Jagiellonian University's Collegium Medicum.

### The Hasco-Lek Foundation Competition

Dr Sylwia Łukasiewicz of the Department of Physical Biochemistry of the Jagiel-

lonian University's Faculty of Biochemistry, Biophysics and Biotechnology has found herself amongst the prize winners of the 4<sup>th</sup> Hasco-Lek Foundation competition for the best scientific works. For her doctoral dissertation entitled 'The fluorescent testing of dimerization in the area of dopamine and serotonin receptors in an *in vitro* system' she obtained second place. 70 people took part in the competition. The competition aim is the selecting of the best MSc and PhD dissertations, as well as the promotion of their authors and their discoveries, in the field of pharmacy, biotechnology, medicine and chemistry with regard to their application for the pharmaceutical industry.

### The Ministry of Education and "Elle" Competition

Agata Szade of the Department of Medical Biotechnology of the Jagiellonian University's Faculty of Biochemistry, Biophysics and Biotechnology has been awarded a distinction by the competition committee of *Girls of the Future. In the Footsteps of Maria Skłodowska-Curie* organized for the first time this year by the Ministry of Education and the 'Elle' monthly magazine. 131 students from mathematics, nature, science and technical fields took part in the competition. The distinctions have been awarded to the authors who received the highest notations for the high standard and ambitious choice of the research topics. In her home department Agata Szade is involved in the project 'The Role of Heme Oxygenase-1 (HO-1) in the Induction and Progression of Squamous Carcinoma'.

### The Doctus Grant – The Małopolska Grant Program for PhD Students

Monika Rak of the Cell Biology Department, Klaudia Skrzypek of the Medical Biotechnology Department and Łukasz Skalniak of the Cell Biochemistry Department are the recipients of the *Doctus* grant. It is awarded, for a period of up to three years maximum, to second-year PhD students, whose research may be practically applied by enterprises working in the Małopolskie Voivodship area, contributing to the improvement of their competitiveness and economic development. The project is being carried out by the Małopolska Centre for Entrepreneurship within the Human Capital Operational Program 2007-2013.

# THE MAŁOPOLSKIE BIOTECHNOLOGY CENTRE

On the 1<sup>st</sup> of June the Małopolskie Biotechnology Centre (MBC) received permission to construct the main building, which will stand between the building of the Faculty of Biochemistry, Biophysics and Biotechnology and the Institute of Zoology currently under construction. The MBC will house 6 Centres of varied though thematically complementary research disciplines. The academic activities of the centres will take place in 14 laboratories including specialist laboratories adapted for work with dangerous biological class 3 agents such as: the Virology Laboratory, Microbiological Laboratory, Cell Culture Laboratory, Isotopic Laboratory. The remaining laboratories are the Roentgenographic Laboratory, the Laboratory for the Sequencing and Synthesis of Polypeptides, the Proteomic Laboratory, the Mass Spectrometry Laboratory, the Bioremediation Laboratory, the Food Safety Laboratory, the Bioreactors Laboratory with a semi-technological line for the production of recombinant proteins, the Laboratory of Genetic Material Isola-

tion with a DNA Bank, the Microarray Laboratory, the Magnetic Resonance Laboratory for neurobiology purposes, the specialist Animal Facility enabling work with transgenic animals as well as the Experimental Greenhouse. The MBC laboratories, with a total floor area of 3600 m<sup>2</sup>, will fulfill GLP/GMP standards.

In April and May of this year there took place, in the presence of a committee, the handing over of the completed building work at the Experimental Greenhouse, under the stewardship of Prof. dr hab. Halina Gabryś and at the Cell Culture Laboratory under the supervision of Dr Justyna Drukała.

At present work will be concentrated on the realisation of project work on the main building so that at the turn of 2010-2011 a contractor may be selected for the construction of the MBC.

*Justyna Supel*



MCB building



Committee approval of the works in Experimental Greenhouse



Committee approval of the works in Cell Culture Lab

## THE CYTOMETER LABORATORY

In June, two high quality cytometers were delivered to the Department of Medical Biotechnology. The first of these is a LSR II (Becton Dickinson) flow cytometer, equipped with three lasers and allowing for analysis based on 11 fluorescent parameters, with the utilization of extremely varied fluorochromes. The second is the latest generation, something unique on a European scale, Image Stream (Amnis) image cytometer. This is also equipped with three lasers and allows a quantitative photometrical and morphometrical analysis of cell suspension, i.e. the

simultaneous obtainment of 10 fluorescent images for each analysed cell as well as of an image in a light and dark field. This instrument is particularly useful in the analyses of extremely rare populations, allowing, among other things, for a differentiation of real cells from artifacts. The purchased devices will equip the Cytometrical Laboratory, which is a part of the Laboratory of Molecular Pharmacology of the Endothelium organised within the framework of the consortium the Jagiellonian Centre for Drug Development (JCET) POIG.02.02.00-00-014/08.

## THE 'MOLECULAR BIOTECHNOLOGY FOR HEALTH' PROJECT – A SUMMING UP OF THE SECOND QUARTER 2010

In the second quarter of 2010, within the framework of the project 'Molecular Biotechnology for Health' (Biotechnologia Molekularna dla Zdrowia - BMZ) financed from the European Fund for Regional Development, within the Operational Programme Innovative Economy, additional purchases of scientific equipment for the new laboratory were finalised. Moreover, executive project documentation for the animal facility was finalized. Until June 2010 about 50% of the funds (15,853,383.77 PLN) have been utilized.

In April, the Architecture Department of Kraków City Council gave permission for the construction of an animal facility, with the decision becoming operative at the end of April. As a consequence, work has begun on the executive documentation for the future animal facility, on the basis of which the tender application details will be drawn up for the construction supervision and contractor for the construction work.

In the first quarter of the year two fluorescent microscopes were purchased for the Cellular Biophysics Laboratory: an inverted microscope with a confocal module, module for stimulated emission depletion (STED) as well as an

inverted microscope with a confocal module and a fluorescence correlation spectroscopy module (FCS/FLIM).

A training course took place in April in Brem on using the mass spectrometer with a source of ESI-HCTultra ionization, which was supplied last year to the Department of Analytical Biochemistry (The Proteomic and Transcriptomic Laboratory). Oliwia Bocheńska MSc and Marta Kujda MSc, the PhD students from the Department of Analytical Biochemistry took part in the training.

In June a densitometer with a CCD scanning system for optical density measurements was purchased for the Laboratory of Plant Biotechnology, supervised by Prof. Halina Gabryś. The laboratory was also supplied with two laminar chambers with a horizontal airflow.

In the past quarter there a team has been formed, which will be responsible for database administration for the biological sample storage system as well as the coordination of the work in this laboratory. The team comprises: Justyna Drukała, PhD (coordinator), Agnieszka Andrychowicz-Róg MSc and Krystyna Stalińska, PhD.

*Aneta Pazik*

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## MYGEN – THE 10<sup>th</sup> FESTIVAL OF SCIENCE IN KRAKÓW



10<sup>th</sup> Science Festival  
Foto J. Szybiński

From the 12<sup>th</sup> to the 15<sup>th</sup> of May there was held, for the tenth time, on the Kraków Main Market Square the Festival of Science; during which academic institutes and Kraków institutions of tertiary education use the opportunity to prove that science does not have to be difficult but interesting. On the last day of the festival, the Saturday, the Faculty of Biochemistry, Biophysics and Biotechnology was given its own tent. Individual stands were prepared by students of Biotechnology, members of the *Mygen* Student Club and the *Nobel* Student Club as well as by employees of the Department of Cellular Biology, under the supervision of dr Zbigniew Madeja and dr Anna Wiśniewska.

Both Clubs already have experience of organising similar undertakings. Those interested

had an opportunity to isolate DNA from an onion by means of a 'kitchen sink method', something which enjoyed great success despite competition from the Agricultural University. Children could also place a sample with a pipette for electrophoresis, prepare their own plant culture in vitro or discover that the juice of a red cabbage can have different colours. Most popular was also the tissue paper chromatography, plasmolysis, and 'light games' prepared by the students of Biophysics. First and foremost it follows to mention the stands prepared by the Department of Cellular Biology – the fluorescent microscope, under which cells with green fluorescent protein could be observed, slime moulds with fluorescein, as well as observations of skin cells. The students of the first year of biotechnology prepared a stall for the very young, as well as bioethics posters under the supervision of Dr Gregor Becker.

Our stall would not have been a success without the help of the employees of the various departments of our faculty, who lent us the necessary reagents and equipment, none of which, luckily, was damaged. We consider this year's festival to be a great success, and the experience gained will enable us to make next year's even more successful.

*Barbara Zięba*



10<sup>th</sup> Science Festival  
Foto D. Giza



10<sup>th</sup> Science Festival  
Foto J. Szybiński



10<sup>th</sup> Science Festival  
Foto D. Giza

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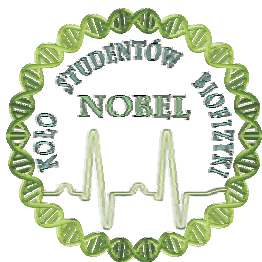
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# NOBEL



The final part of the current academic year has turned out to be the most important, but also the most pleasant one for the Biophysics Students' Club.

The biggest event this year was the 1<sup>st</sup> Polish Conference of Biophysics Students, whose aim was to integrate student clubs from the whole of Poland, discuss topics of particular interest to young scientists and exchange experi-

ence on the interdisciplinary field that is biophysics.

During the last few days before the conference started most intensive preparations were carried out by all the Club members. Ordering, collecting, fetching, buying, delivering, etc. the final preparations, arranging of the benches, checking the equipment, organizing the sponsors' and registration stalls, hanging the posters and preparing the conference materials for participants lasted almost into the small hours. The facial expression of the Janitor when asked, at 11.30 pm, to let us out, so that we could go and catch up on a few winks, and who was astonished to release a 15 strong group at this unearthly hour, will remain forever.

On the 15<sup>th</sup> May the vast majority of the invited students, as well as Department employees arrived at the registration desk. We were particularly overjoyed to see the arrival of the Special Guests, who had consented to give short lectures during the conference's duration. These were: Prof. Grzegorz Bartosz of the Biophysics Institute at the Department of Biology and Environmental Protection of the University of Łódź, Prof. Wiesław Gruszecki of the Biophysics Department at the Physics Institute of the Maria Curie-Skłodowska University in Lublin, Prof. Wiesław Nowak of the Biophysics and Medical Physics Department of the Physics Institute of the Nicolaus Copernicus University in Toruń and Prof. Stanisław Przestalski of the Wrocław University of Environmental and Life Sciences. They are, doubtlessly, the highest authorities in their field, so we felt we were particularly honoured. The crowning of the busy day was a bit of fun in one of Cracow's clubs. Due to the common spirit of the play that evening student and professor integration was total.

Judging by the low activity rate at the morning lectures on the 16<sup>th</sup> May, Cracow "by night" clearly had enchanted a large part of the students.

In the afternoon there was a poster session, during which intensive discussion took place, with the final event being the announcement of the best poster and best presentation. The competition prizes were provided by the Polish Biophysics Society.

As this was the first such conference in Poland, the topic range of the presentations



1<sup>st</sup> Polish Conference of Biophysics Students



Participants of the 1<sup>st</sup> Polish Conference of Biophysics Students



Nobel team has prepared grilled "bombs" and "dynamites" at the Picnic under the Oak



was quite wide so as to encourage the broadest group of students. In total 30 student presentations were entered, 14 posters were presented, and the number of visitors who came on those two days amounted to 95. This being very optimistic for the future, which is particularly important, as the next edition of the Polish Biophysics student conference is to take place this very academic year. We hope that for several years to follow Cracovian biophysics students will continue to make our field famous through the organizing of subsequent editions of the conference.

The weather is getting better, which does not make studying any easier, but facilitates picnics, outings and trips. The *Nobel* members constituting the "N Team" took part in the Picnic under the Oak, competing in all three events. Through joint efforts, ours and those of our academic supervisor prof. Jerzy Dobrucki, we succeeded in coming second!

The Biophysics Student Club *Nobel* decided to combine what is pleasant with what is useful and to go away on a scientific trip. Our travels began with participation in the V Collegium Physicum Hike. The hike, which took place from 23<sup>rd</sup> to 25<sup>th</sup> April, was a mountain trekking trip in the area of the Beskid Żywiecki mountains. Worth mentioning is that so far only physics and mathematics students had gone walking in the mountains together, but this year, we – biophysicists, were invited to join them for the first time.

The second mountain trip was the workshop "Experimental Physics in a Natural Environment". The trek along the Kościeliska Valley to the Ornak Hostel allowed us to carry out various experiments. The participants measured the air pressure at various heights above sea level, observed osmosis, plasmolysis and the effects of hypotension, which aroused great interest among the tourists we encountered on the way.

Our most distant journey was to the *Bioinformatics in Toruń – BIT 10* conference. Thanks to the invitation of Prof. dr hab. Wiesław Nowak six-person group had an opportunity to attend this international conference complete with a workshops, something which broadened our horizons and allowed us to make new scientific contacts.

All the *Nobel* Biophysics Student Club projects have been a success this year, while the



10<sup>th</sup> Science Festival, 2010



Nobel representatives among the participants of BIT 2010



Nobel at Picnic under the Oak

goals we set ourselves on activity and development have been achieved. We hope that, at least to a small degree, our activity this year has helped us to propagate the view of biophysics as an interesting subject to study. We are counting on next year to be as rich in experience and one which will allow us to develop both the existing and future membership of the Club.

*Agnieszka Pierzyńska-Mach*

## IT'S PAST BELIEF! ENCORE!

Charmed by the performance of our choir at the Department Graduation ceremony I would dearly like to initiate a musical theme in our cycle.

The last decade of the XX century was described in science as the decade of music. Many researchers have attempted to define music and the work of music within the category of physical phenomena and phenomena from the borders of biology and psychology. It has become apparent, among other things, what great an influence the performing of music has on active thinking. The performing of musical phrases is probably a kind of imitating of the logical thinking process of the Creator, following with sight the process of creating Something. In other words – music is a reflection and it possesses a structure of more general patterns, by which reality is ruled; some think that it is a side effect of acquiring the abilities for so called “higher psychic activities”. This subject may be read about in several learned books recently published<sup>1</sup>. Also the workings of the “musical mind”, which we all have and which has deep neurobiological roots, have been described. Our ancestors had an intuitive knowledge of this, paying for their offspring to obtain, a so deemed “proper” and sometimes in point of fact singular (Paganini) education, one relying on musical skills – playing an instrument, reading sheet music, singing (regardless of having a talent or not). If one thinks carefully about it, this is trivial – music has biological roots and is an adaptation, something undoubtedly recognised by any contemporary researcher. It has evolved with a certain “aim” and it serves some purpose. And it is a fact that our ancestors also intuitively fed children and provided them with an apt amount of sleep, with no understanding of metabolism.

The researchers into the field of Polish twentieth century cryptology, and here also from the inception of the 2<sup>nd</sup> republic<sup>2</sup>, have drawn attention to the fact that a cultural environment conducive to the development of cryptology must possess three characteristics: a high level of mathematical education, multilinguality and a high level of musical education. These, paradoxically, were guaranteed on the lands under partition, particularly that under Russian control, and subsequently in Poland of the interwar period. Cryptology, or as certain

linguists would have it, the most perfect manifestation of abstract thought – the ability for the reconstruction of texts and entire languages.<sup>3</sup> Without exaggeration one may here add the analysis of the recording and functioning of genetic information – the genetic code, the code of transcription factors and signal transduction pathways.<sup>4</sup> For musicality is that very ability of the specific analysis and interpretation of the abstract sequencing of symbols or, as other musicologists would have it, the analogical ability for Fourier transformations, thanks to which we recognize the melody and perceive a musical work as an autonomic whole.

Many eminent academics and thinkers have actively practiced music (although not necessarily being virtuosos). For example, Benjamin Franklin was an instrument maker, I will also add as examples a few nobel prize winners – Albert Schweitzer, physician, theologian and social activist, organist and authority on Bach, Manfred Eigen, practicing musician, chemist and biophysicist, the creator of the theory of hypercycle and quasispecies, or Richard Feynman, a quantum physicist, a musician and expert on the Tuvans, not to mention the unfulfilled fiddler, Albert Einstein. As far as Maria Skłodowska-Curie is concerned, then for sure her daughter, Ewa, performed music, (equally a notable social activist and publicist) and she must have got her talent from somewhere... And from our own Cracow backyard I can name Professor Władysław Stróżewski, and ontologist, musicologist and pianist, not forgetting Professor Stanisław Łukiewicz, in whose flat there always stood a piano, and who educated his children in the direction of his unfulfilled passion – music.

Therefore it's very good we have a choir. Bravo!Encore!

*Przemysław M. Płonka*

<sup>1</sup> Sacks O., *Muzykofilia*. Zysk i S-ka Wydawnictwo, s. j., Poznań 2009.

<sup>2</sup> Nowik G., *Zanim złamano 'Enigmę'*. Oficyna Wydawnicza Rytm, Warszawa 2004.

<sup>3</sup> Froedrich J., *Zapomniane pisma i języki*. PWN, Warszawa 1958.

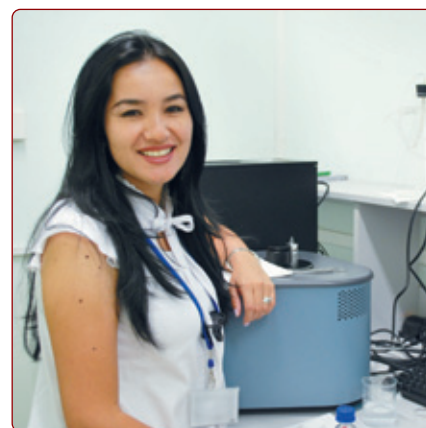
<sup>4</sup> Bodnar JW., Killian J., Nagle M., Ramchandani S., *Deciphering the language of the genome*. J Theor Biol 1997, 189: 183-193.

## VISITING LECTURERS

- PProf. Artur Schmidtchen, Division of Dermatology and Venereology, Department of Clinical Sciences, Lund University, Lund, Sweden, *Antimicrobial peptides and infections*, 5<sup>th</sup> of February, guest of the Department of Microbiology
- Prof. Markus Bohm, Department of Dermatology, University of Münster, Münster, Germany,  *$\alpha$ -MSH in cutaneous biology*, 13<sup>th</sup> of April, guest of the Department of Biophysics
- Dr Jolanta Rędownicz, The Laboratory of Molecular Bases for Cellular Movements The Marcel Nencki Institute of Experimental Biology, Warsaw, *On myosins in a cell nucleus*, 11<sup>th</sup> of May, guest of the Laboratory of Cellular Biophysics
- Prof. Janice Burke, Department of Ophthalmology, Medical College of Wisconsin, Milwaukee, WI, USA, *RPE melanosomes in aging and disease*, 14<sup>th</sup> of May, guest of the Department of Biophysics
- Dr Bill Ortyń, Amnis Corporation, Seattle, WA, USA, *Principles and Applications of the Image Stream & Imaging Flow Cytometer*, 2<sup>nd</sup> of June, guest of the Department of Medical Biotechnology
- Dr Piotr Suder, Faculty of Material Engineering and Ceramics, University of Science and Technology (AGH), *Proteom of cells of the central nervous system in morphine addiction in selected models*, 15<sup>th</sup> of June



Prof. Artur Schmidtchen



Dr Marcela Manrique Moreno

- Prof. Janusz Gębicki, Department of Biological Sciences, Macquarie University, Sydney, Australia, *Oxidized proteins as agents of biological damage*, 24<sup>th</sup> of June, guest of the Department of Biophysics
- Dr Jussi Meriluoto, Department of Biosciences, Åbo Akademi University, Turku, Finland, *Cyanobacterial hepatotoxins - analytical aspects and occurrence in the Finnish water environment*, 28<sup>th</sup> of June, guest of the Department of Physiology and the Biology of Plant Development

## PUBLICATIONS

### Publications – 3<sup>rd</sup> and 4<sup>th</sup> quarter of 2009 – cont.

Baran M, Mollers LN, Andersson S, Jonsson IM, Ekwall AKH, Bjersing J, Tarkowski A, Bokarewa M. Survivin is an essential mediator of arthritis interacting with urokinase signalling. *J Cell Mol Med* 2009 Sep;13(9B):3797-808.

Boros J, O'Donnell A, Donaldson IJ, Kasza A, Zeef L, Sharrocks AD. Overlapping promoter targeting by Elk-1 and other divergent ETS-domain transcription factor family members. *Nucleic Acids Res* 2009 Dec;37(22):7368-80.

Mizgalska D, Wegrzyn P, Murzyn K, Kasza A, Koj A, Jura J, Jarzab B, Jura J. Interleukin-1-inducible MCP1 protein has structural and functional properties of RNase and participates in degradation of IL-1beta mRNA. *FEBS J* 2009 Dec;276(24):7386-99.

### Publications – 1<sup>st</sup> quarter 2010 cont.

Kasza A, Wyrzykowska P, Horwacik I, Tymoszek P, Mizgalska D, Palmer K, Rokita H, Sharrocks AD, Jura J. Transcription factors Elk-1 and SRF are engaged in IL1-dependent regulation of ZC3H12A expression. *BMC Mol Biol* 2010 Feb 6;11:14.

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► **Publications**  
cont. from p. 11

Szymanska R, Kruk J. Identification of hydroxy-plastochromanol in Arabidopsis leaves. *Acta Biochim Pol* 2010;57(1):105-8.

**Publications – 2<sup>nd</sup> quarter 2010**

Augustynowicz J, Grosicki M, Hanus-Fajerska E, Lekka M, Waloszek A, Koloczek H. Chromium(VI) bioremediation by aquatic macrophyte *Callitriche cophocarpa* Sendtn. *Chemosphere* 2010 May;79(11):1077-83.

Banas AK, Krzeszowiec W, Dobrucki J, Gabrys H. Mannose, but not glucose or sucrose, disturbs actin cytoskeleton in Arabidopsis thaliana leaves. *Acta Physiol Plant* 2010 Jul;32(4):773-9.

Beaufort N, Plaza K, Utzschneider D, Schwarz A, Burkhart JM, Creutzburg S, Debela M, Schmitt M, Ries C, Magdolen V. Interdependence of kallikrein-related peptidases in proteolytic networks. *Biol Chem* 2010 May;391(5):581-7.

Bil J, Wlodarski P, Winiarska M, Kurzaj Z, Issat T, Jozkiewicz A, Wegiel B, Dulak J, Golab J. Photodynamic therapy-driven induction of suicide cytosine deaminase gene. *Cancer Lett* 2010 Apr 28;290(2):216-22.

Ilik P, Kotabova E, Spundova M, Novak O, Kana R, Strzalka K. Low-light-induced violaxanthin de-epoxidation in shortly preheated leaves: uncoupling from delta pH-dependent non-photochemical quenching. *Photochem Photobiol* 2010 May-Jun;86(3):722-6.

Kedracka-Krok S, Fic E, Jankowska U, Jaciuk M, Gruca P, Papp M, Kusmider M, Solich J, Debski J, Dadlez M, Dziedzicka-Wasylewska M. Effect of chronic mild stress and imipramine on the proteome of the rat dentate gyrus. *J Neurochem* 2010 May;113(4):848-59.

Koziel J, Karim AY, Przybyszewska K, Ksiazek M, Rapala-Kozik M, Nguyen KA, Potempa J. Proteolytic inactivation of LL-37 by karilysin, a novel virulence mechanism of *Tannerella forsythia*. *J Innate Immun* 2010;2(3):288-93.

Lason W, Bechyně I. Nanotechnology perspectives on epilepsy treatment. *Pharmacol Rep* 2010 Mar-Apr;62(2):439-40.

Loboda A, Jozkiewicz A, Dulak J. HIF-1 and HIF-2 transcription factors - Similar but not identical. *Mol Cells* 2010 May;29(5):435-42.

Niziolek-Kierecka M, Pilat A, Korytowski W, Girotti AW. Apoptosis-accommodating Effect of nitric oxide in photodynamically stressed tumor cells. *Photochem Photobiol* 2010 May-Jun;86(3):681-6.

Papareddy P, Rydengard V, Pasupuleti M, Walse B, Morgelin M, Chalupka A, Malmsten M, Schmidtchen A. Proteolysis of human thrombin generates novel host defense peptides. *Plos Pathog* 2010 Apr;6(4):-.

Sozer O, Komenda J, Ughy B, Domonkos I, Laczko-Dobos H, Malec P, Gombos Z, Kis M. Involvement of carotenoids in the synthesis and assembly of protein subunits of photosynthetic reaction centers of *Synechocystis* sp PCC 6803. *Plant Cell Physiol* 2010 May;51(5):823-35.

Surdacki A, Marewicz E, Rakowski T, Szumanska M, Szastak G, Pryjma J, Dubiel JS. Coincidence of moderately elevated N-terminal pro-B-type natriuretic peptide, endothelial progenitor cells deficiency and propensity to exercise-induced myocardial ischemia in stable angina. *Dis Markers* 2010;28(2):101-14.

Sztatelman O, Waloszek A, Banas AK, Gabrys H. Photoprotective function of chloroplast avoidance movement: In vivo chlorophyll fluorescence study. *J Plant Physiol* 2010;167(9):709-16.

Szymanska R, Kruk J. Plastoquinol is the main prenyllipid synthesized during acclimation to high light conditions in Arabidopsis and is converted to plastochromanol by tocopherol cyclase. *Plant Cell Physiol* 2010 Apr;51(4):537-45.

Trembecka DO, Kuzak M, Dobrucki JW. Conditions for using FRAP as a quantitative technique-influence of the bleaching protocol. *Cytom Part A* 2010 Apr;77A(4):366-70.

Wysoczynski M, Liu R, Kucia M, Drukala J, Ratajczak MZ. Thrombin regulates the metastatic potential of human rhabdomyosarcoma cells: distinct role of PAR1 and PAR3 signaling. *Mol Cancer Res* 2010 May;8(5):677-90.

Zhao H, Oczos J, Janowski P, Trembecka D, Dobrucki J, Darzynkiewicz Z, Wlodkowicz D. Rationale for the real-time and dynamic cell death assays using propidium iodide. *Cytom Part A* 2010 Apr;77A(4):399-405.