



The Polish-French School

The fifth Polish-French School entitled *Modern Biological Imaging Needs Biophysics...* took place between the 17th to the 20th of February at our Faculty. It was organised jointly with CNRS (Centre National de la Recherche Scientifique) and the University of Orleans. 14 lectures were given, all enthusiastically received by the undergraduate and PhD students of the Faculty of Biochemistry, Biophysics and Biotechnology as well as the Faculty of Chemistry. Lecture participants also included students from the Warsaw Department of Molecular Medicine and the University of Orleans. In total the School assembled 80 participants. The School was concluded with an examination, sat by first year PhD students, those students



see p. 3 ▶ Participants of the School

GRANTS

TEAM

Professor Jan Potempa of the Department of Microbiology is a laureate of the TEAM programme financed by Foundation for Polish Science within the framework of the European Regional Development Fund. His project entitled *Enzymes produced by P. gingivalis as virulent factors as well as the potential aim for the development of new drugs against periodontitis, rheumatoid arthritis, atherosclerosis and aspiration pneumonia* was considered the best in the area of biotechnology and related sciences and was awarded with 2,412,300 PLN.

Periodontitis is a chronic inflammatory disease caused by bacteria, including *Porphyromonas gingivalis*, which colonise the surfaces of the teeth below the gum line. Untreated periodontitis may not only cause the loss of the dentition but also is correlated with serious systemic health problems, such as heart disease or rheumatoid arthritis. In addition, a connection has been found between aspiration pneumonia and various oral bacteria, including *P. gingivalis*. *P. gingivalis* produces enzymes that break down other proteins (called gingipain) and enzymes that modify other proteins (peptidylarginine deiminase, PAD) which are essential for defending the bacteria from attack by the host immune system. The activities of these en-

zymes may also contribute towards the development of systemic diseases mentioned above. The aim of the research is the exploration of the role of gingipains and PAD, not only in the pathogenesis of periodontitis, but also as a mechanistic link between periodontitis and cardiovascular disease or rheumatoid arthritis. The outcome of the research should allow for the design and testing of specific inhibitors targeting gingipains and PAD for future development of these compounds into potential drugs to treat and/or prevent periodontitis and associated diseases.

Professor Potempa's project envisages the formation of several research groups headed by the Professor as well as current employees of the Department of Microbiology (Dr Joanna Kozieł, Dr Katarzyna Maresz and Dr Krzysztof Pyrc). The project's execution would see the employment of new personnel including individuals with the PhD degree as well as, PhD students and undergraduates. The implementation of such an ambitious plan will require the creation of a dynamic research team, which would undoubtedly increase the academic and scientific potential of the Department of Microbiology and the Faculty itself. Comprehensive information about the project, together with details on candidate recruitment procedure, can be found at <http://www.wbbib.uj.edu.pl/micro/>.

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An interview with Prof. Potempa on the subject of this research appeared in the *Dziennik Polski* newspaper of the 9th of February 2010.



Prof. Jan Potempa (middle) and his team dr Joanna Kozieł (left), dr Katarzyna Maresz & dr Krzysztof Pyrc

LIDER

Dr Grzegorz Dubin has received a grant from the National Centre for Research and Development within the Lider programme. The programme's aim is to support the development of academic staff through the expansion of the skills of young academics in the independent managing of research teams. 202 projects were submitted, of

which 6 were from the Jagiellonian University. A total of 23 grants were finally awarded. Dr Dubin's project entitled *An Anti-Carcinogenic Therapy of the Future – the search for low-molecular activators of the p53 protein signalling path* will involve working on new methods in the treatment of cancers. Given the large differences between types of cancer illnesses, the most valuable aims for the development of new therapies are those elements which are common for many cancers, like, for example, the p53 protein signalling path. In the vast majority of cancers this path is inactivated. Restoration of this path functionality results in a regression of tumors, as was shown in animal and in pre-clinical studies. On the technical side, the project will include selection of aptamers capable of bonding and inhibiting the functions of the main negative regulators of the p53 protein. In the case of success the innovative approach proposed might become the anti-carcinogenic therapy of the future, effective in over half the known cases of cancer. Dr Dubin has received, for a three year period within the framework of the Lider project, one million Polish złoty to cover the costs of academic research staff as well as reagents and analysis.

Innovatory Methods in Utilising Stem Cells in Medicine

The research project described in the previous edition of *Triplet* has been started. It is financed within the framework of the Economic Innovation Operational Programme (EIOP) action 1.1.2 (POIG 01.01.02-00-109/09). Participation on the part of our Faculty involves employees, PhD students and undergraduates of the Department of Medical Biotechnology, the Department of Cellular Biology, the Department Analytical Biochemistry as well as the Laboratory of Cellular Biophysics. New equipment and laboratories financed from other funding, such as investment grants and POIG will be employed within this project. A modern

flow cytometry laboratory will be created at the Department of Medical Biotechnology (instrument purchase within the framework of the Jagiellonian Centre for Drug Development (POIG 02.02.00-00-014/08)). The work is almost completed at the modern tissue culture laboratory, where research will be conducted into the utilisation of stem cells in the treatment of wounds and burns (the laboratory and equipment has been financed from the projects: The Małopolska Centre of Biotechnology and the Molecular Biotechnology Project for Health - POIG.02.01.00-12-064/08).

Grants obtained within the 38th Ministry of Science and Higher Education competition

The characteristics of the interaction between proteins of plasma kinin-forming system (the contact system) and the cells of Candida albicans yeasts, prof. Andrzej Kozik

The role of the protein regulators of plant photomorphogenesis in the control of the process of the biosynthesis of chlorophyll, dr Przemysław Kazimierz Malec

Molecular analysis Arabidopsis thaliana PCNA, dr Wojciech Kazimierz Strzałka

The role of heme oxygenase 1 (HO-1) as a modulator of angiogenic and myogenic differentiation of induced pluripotent stem cells, dr Ewa K. Zuba-Surma

Optimization of the preparation of antigenically defined mesenchymal stem cells for regenerative therapy of ischemic heart, dr Ewa K. Zuba-Surma

Analysis of the substrata specificity and mechanism of activity regulation of the staphylococcal serine protease SplB, prof. Adam Dubin, PhD project

Endothelial progenitor cells in the treatment of ischaemic limbs in diabetic mice – the role of heme oxygenase 1, dr Alicja Józkwicz, PhD project

Study of the atomic models of thylakoid membrane through the use of molecular dynamic simulation, prof. Marta Pasenkiewicz-Gierula, PhD project

The role of infection by the human corona virus NL63 in the development of secondary bacterial infection, prof. Jan Potempa, PhD project

The mapping of places of specificity fixation of the protease substrata of pathogenic bacteria including the proteases produced by Staphylococcus aureus, prof. Jan Potempa, PhD project

Professor Koj's Birthday



On the 26th of February we celebrated the 75th birthday of Professor Aleksander Koj, an excellent academic, an internationally renowned biochemist, a pioneer in the field of acute-phase proteins and cytokine function, and the Rector of the Jagiellonian University for three terms of office (1987-90, 1993-1999).

There were flowers, cakes and other mouth watering confectionary, heartfelt wishes from Faculty employees and individuals from outside the university, and first and foremost many thanks for the work, the support, the constant cooperation, the mind and the heart given.

Thanks you very much Professor, and we wish you all the very best!



THE COPERNICUS ASSOCIATION AWARD

Renata Szymańska MSc, a PhD student at the Department of Plant Physiology and Biochemistry has been honoured with the prize of the President of the Polish Copernicus Association of Naturalists for the most interesting article published by a PhD student in the nature journal *Wszechświat* for 2009. The prize winning article entitled *Vitamin E cures everything except a broken heart* appeared in Volume 110 (number 1-3), pp. 57-57 of the *Wszechświat* journal.

involved in our Faculty's Polish-French study programme as well as those interested from the Faculty of Chemistry (in total 35 persons).

Invited guests included lecturers from France (Jean-Claude Beloeil, Stephane Petoud, Luigi Agrofoglio, Stéphanie Lerondel, Franck Suzenet, Marc Vandamme, Patrick Baril), from the Jagiellonian University's Faculty of Chemistry (Małgorzata Barańska, Justyna Kalinowska-Tłuścik, Marzena Z. Suder) as well as employees of our Faculty (Alicja Józkowicz, Martyna Elas, Ewa Zuba-Surma, Agnieszka Łoboda).

Besides the lectures, the visitors from France had an opportunity to become better acquainted with some laboratories at our Faculty. Those interested were shown round the

Biophysics Department by dr Martyna Elas; prof. Jerzy Dobrucki presented the Laboratory of Cellular Biophysics while the visit to the Department of Medical Biotechnology was conducted by prof. Józef Dulak.

The meeting was coordinated by prof. Jerzy Dobrucki and dr Agnieszka Łoboda with the cooperation of prof. Jarosław Czyż and professors Chantal Pichon and Claudine Kieda. The School was financed by the Jagiellonian University's Faculty of Biochemistry, Biophysics and Biotechnology, the University of Orleans, CNRS as well as 'Region Centre' of Orleans. Financial support was also provided by the KAWA.SKA. Ltd.

Dr Agnieszka Łoboda

► **The Polish-French School**
cont. from p.1

Forthcoming conferences

The Polish-French Erasmus Seminar

From the 12th-14th of April our Faculty will witness at four-day seminar entitled *Modern trends in cellular studies*. Its participants will be French students from the Paris Diderot University (Paris 7) as well as students from the Jagiellonian University's Faculty of Biochemistry, Biophysics and Biotechnology. The aim of the seminar is not simply a presentation of the latest knowledge from the fields of biochemistry, genetics, molecular biology but also the integration and development of contacts amongst the students and employees of our universities.

Seminar speakers include Professor J. Silber (Paris Diderot), prof. Guidalberto Manfioletti of the University of Trieste as well as dr J. Dobrucki, dr I. Horwacik, dr A. Jozkowicz, dr E. Zuba-Surma, dr J. Jura, prof. M. Pasenkiewicz-Gierula, and others from the Faculty of Biochemistry, Biophysics and Biotechnology.

In the Genetics degree programme at the Paris Diderot University great importance is given to the international exchange of students and student visits abroad both within Europe and the USA. Similar seminars (*Erasmus Week*) are organised in conjunction with Paris Diderot by the Universities of Rome, Florence, Padua, Milan, Trieste and Krakow.

Quinone and Oxygen in Energy Coupling and Catalysis

The International Symposium entitled Quinone and Oxygen in *Energy Coupling and Catalysis* will take place on the 23rd of July this year at Collegium Maius. Dr Artur Osyczka of our Faculty is the main organiser of this event. It will accompany the 16th European Bioenergetics Conference (EBEC) in Warsaw from the 17th to

the 22nd of July. The Krakow meeting will allow specialists in the field of molecular bioenergetics, biology, physics, chemistry and medicine to discuss the latest achievements in quinone and oxygen catalysis in the respiratory and photosynthetic chain. The topics covered will include: electron and proton management, engineering of the catalytic sites, short-circuit prevention, side reactions and ROS generation, relation to mitochondrial DNA mutations and human diseases. Further information on: <http://www.wbbib.uj.edu.pl/mbg/>

EUROBIOTECH 2010

The conference CENTRAL EUROPEAN CONGRESS OF LIFE SCIENCES EUROBIOTECH 2010 will take place from the 20th to the 22nd of September 2010 in the grounds of the New Campus facility in Kraków. It is being organised by the Krakow Agricultural University, the Jagiellonian University as well as the Targi w Krakowie Ltd. The conference will be devoted chiefly to white biotechnology. The two previous conferences were devoted to green and red biotechnology.

The academic conference programme will consist of 5 main themes:

- Environmental Biotechnology and Bioenergy
- Medicine and Food Biotechnology
- Clean Technologies and Biomaterials
- Pharmaceutical Biotechnology
- Intellectual Property Rights and commercialisation

Invited to give plenary and session papers are eminent academics from countries within Europe and beyond, including a session with the participation of American academics.

Besides the lectures and poster sessions, the conference will also see the participation of companies operating within the area of white biotechnology and related fields. The organisers' intention is to create a platform for the interchange of thoughts and experiences and also the initiation of closer and more effective cooperation between science and industry. Further information at: www.eurobiotech.krakow.pl

We sincerely invite you to participate in the conference.

prof. Kazimierz Strzałka



**QUINONE AND OXYGEN
IN
ENERGY COUPLING AND CATALYSIS**

July 23, 2010
Jagiellonian University

EBEC Satellite Kraków 2010

PhDs

Małgorzata Gil *Increased efficacy of Fc receptor-targeted cancer vaccines*, supervisor: prof. Hanna Rokita, 5th of January 2010

Abdulkarim Karim *Expression, purification and*

characterization of novel matrix metalloproteinase like-enzyme (karylisin) of the periodontal pathogen Tennerella forsythia ATCC 43037, supervisor: prof. Jan Potempa, 29th of January 2010

MOLECULAR BIOTECHNOLOGY FOR HEALTH

In March an application was submitted for permission to construct a laboratory animal compound, as well as for the reconstruction work at the Cell Bank. Two microscopes – FCS/FLIM and STED - have also been delivered for the Laboratory of Graphic Cytometry.

The work on the laboratory animal facility, coordinated by dr Alicja Józkowicz, is proceeding to schedule. On the 12th of March this year the D44 company, responsible for the project documentation, submitted an application at the Department of Architecture of Krakow City Council for permission to build the laboratory. Following acceptance of the documentation and the conducting of a tender bid, construction work will be started in the basements of the FBBB. At the same time equipment purchases for animal facility will take place. One of the aims in upgrading the laboratory is to introduce unique models of transgenic animals that have to date been unavailable in Poland.

On the 30th of March the renovation work to adapt the storage area for the purposes of the future Cell Bank was completed. The coordinator of the project is dr Justyna Drukała. The Cell Bank, consisting of cryogenic tanks with liquid nitrogen, will store biological specimens at a temperature of -190°C. The Cell Bank will protect unique cell lines (including transgenic) and lines of hybridoma cells as well as plasmic and viral vectors produced by FBBB.

Towards the end of March two new fluorescence microscopes were delivered to the Laboratory of Image Cytometry, coordinated by



The Cell Bank



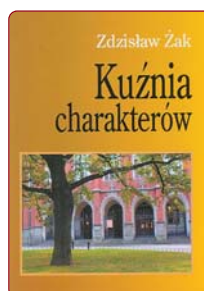
Microscopes and staff training session

dr Jerzy Dobrucki. One of these is high resolution Leica CW STED (continuous wave, stimulated emission depletion), while the second is LEICA SMD (single molecule detection). They will be used for studying the structure and function of animal and plant cells.

Photographs of the purchased equipment may be found on: www.wbbib.uj.edu.pl/bmz (grant No: POIG.02.01.00-12-064/08 – *Molecular biotechnology for health*)

A Forge of Characters – recollections of Professor Zdzisław Żak

Professor Zdzisław Żak, a retired professor of our Faculty, the director of the Jagiellonian University's Institute of Molecular Biology from 1984 to 1987, and also for many years the Chairman of the Krakow Section of the Polish Biochemical Association (1984-2005), published a book entitled *A Forge of Characters*. Together with his colleagues, graduates in 1947 of the Henry Sienkiewicz 4th State Junior and Senior Grammar School in Krakow, he presents reminiscences from school, university and professional life. Of especial note is the chapter by Professor Żak which describes in detail his academic career so closely linked with our Faculty.



WYDAWNICTWA

Prof. Zdzisław Żak

An issue of *Advances in Cellular Biology* devoted to stem cells

An issue of *Advances in Cellular Biology* has appeared devoted to stem cells. The edition editors are dr Maria Anna Ciemerych of Warsaw University and prof. Józef Dulak of our Faculty. Recommended reading.

THE MAŁOPOLSKA BIOTECHNOLOGY CENTRE



Bioinformatics cluster



DSC and ITC microcalorimeters

An important stage in the realisation of the project was the submitting of documentation on the 1st of April 2010 to the Architecture Department. This referred to the granting of permission for the construction of the main Małopolska Biotechnology Centre building. In addition the work on modernising the greenhouse and cell culture laboratory is coming to a close.



Modernising work in the greenhouse

Initial purchases of equipment have equally been made. DSC and ITC microcalorimeters have been purchased from the project funds, together with a HPLC, a mass spectrometer and a computer cluster for bioinformatics. The purchase of an x-ray diffraction meter is currently in progress.

UPCOMING ACADEMIC YEAR

The coming academic year 2010/2011 will see the full introduction of the Bologna Declaration and our Faculty will witness the start of MSc programmes in Biotechnology and Biochemistry. Students with at least a BSc diploma will be entitled to apply. Acceptance on the courses will be determined on the basis by the marks average obtained on BSc courses together with the result of the entrance examination. The number of places for Biotechnology and Biochemistry is 80 and 30 respectively. Electronic registration of students will take place from 26th of June to 14th of July 2010. The entrance examinations for both degrees will be held on the 19th to the 21st of July.

In addition, in June, there will take place the recruitment for the 5-year MSc in Biophysics, as well as the BSc 3-year degree programme in Biotechnology and, in addition – for the first time, a three year BSc degree pro-

gramme in Biochemistry. Places on the aforementioned degree programmes will be allocated on the basis of the results obtained from the so-called 'qualifying subjects' taken during the secondary school final school leaving examinations (Matura).

Detailed information on deadlines for registration as well as qualification principles for all the types of degree courses is available at: <http://www.rekrutacja.uj.edu.pl/>

THE FBBB EDUCATIONAL PROMOTIONS

During the second half of March there took place two events at which the Faculty of Biochemistry, Biophysics and Biotechnology had an opportunity to present their educational profile: from the 17th to the 19th there occurred the 12th Krakow Education Fair while on the 18th of March the Jagiellonian University's Open Days were held.

For the events, coloured information leaflets were prepared about the three programmes of study at our Faculty – Biochemistry, Biophysics and Biotechnology. The most excellent photographs depicting our Faculty were the work of a former student, a graduate of Biotechnology, Artur Matysik (www.p53studio.pl).

The leaflets are available at the Students Secretariat. We would encourage you to become acquainted with their contents and to send any comments which may help in the preparation of future versions of the leaflets to the Editorial Board of Triplet.



THE 37TH FACULTY OF BIOCHEMISTRY, BIOPHYSICS AND BIOTECHNOLOGY WINTER SCHOOL

The 37th Winter School of the Faculty of Biochemistry, Biophysics and Biotechnology took place in Zakopane, from the 13th to the 17th of February. This year's meeting, organised by dr Jerzy Dobrucki, was devoted to two subjects – bioinformatics and the 40 year anniversary of the beginning of the Institute of Molecular Biology.

The programme was consequently divided into two blocks to reflect this thematic divide. The problems connected with bioinformatics were presented in four afternoon sessions. Lectures were given by such eminent specialists as prof. Wiesław Nowak of the Nicholas Copernicus University in Toruń and prof. Andrzej Koliński of Warsaw University.

The four evening sessions jointly entitled *40 Years of Tradition of the Institute of Molecular Biology* were devoted to a presentation of the research, both current and previous, conducted in the various Departments and Laboratories of the Faculty of Biochemistry, Biophysics and Biotechnology. The history of the creation and development of the Institute of Molecular Biology, from which our Faculty derived, was presented in a most colourful way by the School's honorary guest, prof. Aleksander Koj, and the Faculty dean, prof. Wojciech Froncisz.

In addition, on the first and third day of the 37th Winter School, there was held a Round Table Discussion appropriately devoted to the problems of the development of scientific research in Poland along with the future of bioinformatics. These most stimulating discussions were chaired by prof. Wojciech Froncisz and prof. Wiesław Nowak.

In a similar way to the two previous years the organisers had invited the Scientific Student Club of Biotechnology *Mygen* to participate in proceedings as well as for the first time the *Nobel Academic Student Club* of Biophysics. During the two-hour presentation by the members of both Clubs, a short report of their activities to date was given, and, subsequently, a presentation entitled *The Wanderings of a living system towards self perception or the micro world through the eyes of a biophysicist* (the Nobel Club) as well as the Student Prize awarding ceremony for distinguished employees of the Faculty of Biochemistry, Biophysics and Biotechnology (The *Mygen* Circle). Detailed accounts of these parts of the programme may be found on pages 8 and 9.



The last day of the School saw the Professor Zygmunt Wasylewski Memorial faculty skiing competition take place on the Harenda slopes, this being held for the third time. The event was commented on with verve by dr Jacek Międzobrodzki. For the women's downhill, places on the podium went to: Dominika Trembecka MSc of the Cellular Biophysics Laboratory (1st place), Oliwia Bocheńska MSc of the Department of Analytical Biochemistry (2nd place) and dr Magdalena Tworzydło of the Department of Physical Biochemistry (3rd place). Amongst the men the winner was dr Marcin Wasylewski of the Department of Plant Physiology and Development, while second and third place went to dr Jerzy Dobrucki and Paweł Janowski of the Laboratory of Cell Biophysics. In the category *The Most Picturesque Descent*, Joanna Kwiatek of Nobel turned out to be unbeatable. First place in the women's snowboarding was taken by Jolanta Pierścińska of the Department of Physiology and Plant Development, while from amongst the men the award *ex aequo* went to dr Bojan Žagrović of the Laboratory of Computational Biophysics and Marcin Zawrotniak of Nobel.

The 37th Winter School was financed by funds from the Faculty of Biochemistry, Biophysics and Biotechnology as well as thanks to the support of our gold sponsor KAWA.SKA Ltd, as well as Becton Dickinson Poland Ltd, Bio-Rad Poland Ltd, Bruker Poland Ltd, Meranco Ltd., Merck Ltd, POLYGEN Ltd., and Sigma-Aldrich Ltd.



Prof. A. Koj handed over the symbolic insignia, dated from 1980, to prof. W. Froncisz



Prof. Wojciech Nowak from Nicholas Copernicus University in Toruń



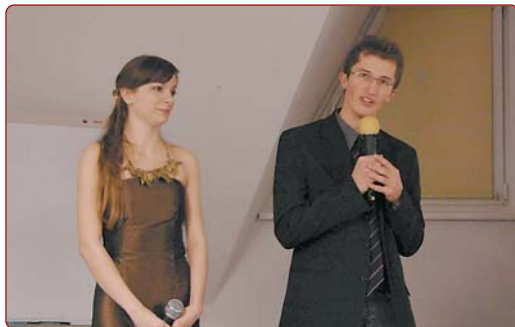
Prof. J. Dulak receives the award for enterprize



Oliwia Bocheńska from Dept. of Analytical Biochemistry (left) Prof. Halina Gabryś from Dept. of Plant Biotechnology (center) Dr J. Międzobrodzki, the commentator at Professor Z. Wasylewski Memorial (right)

MYGEN

Joanna Kaczanowska and Adrian Grzybowski conducting the gala



Agnieszka Węgrzyn reported the achievements of Mygen



Jakub Siemiączko

Award for prof. J. Potempa, for "his crazed love of science" (left)

Award for dr S. Kędracka-Krok, for "most beaming employee" (right)



of laughter and resounding applause. The prize winners in this year's category of *Exercises full of reciprocated love* were the team conducting lab classes in the *Application of immobilized proteins in biotechnology and analytical biochemistry*; the *most attractively dressed employee of the Faculty* was hailed as dr Alicja Józkowicz; while *the most smiley* was dr Sylwia Kędracka-Krok. For *his crazed love of science* a prize was given to prof. Jan Potempa. While the *award for enterprise* was presented to prof. Józef Dulak; and for *the Scientist closest to discovery of the molecule of love* – dr Andrzej Górecki. The titles of *Ms Femme Fatale* and *Mr Macho – the breaker of female hearts* wound their way to dr Magdalena Tworzydło and Wojciech Pilch. The addressee of the student's valentine turned out to be the irreplaceable Janina Mrugalska. The prizes were presented to the victors by a most charming Cupid, who reminded one somewhat of our colleague Rajmund Królikowski. The gala atmosphere was freshened up by the humour of the master of ceremonies clearly inspired by the well-known presenter of Polish Family Fortunes.

To all those honoured once again we extend our sincere congratulations.

The programme preparation was the culmination of the joint efforts of many people. A word of mention is due to, besides those already cited: Agnieszka Węgrzyn, Krzysztof Krawczyk, Adam Górcze and Jakub Siemiączko, without whose involvement this glittering evening could never have taken place.

Anna Oszmiana

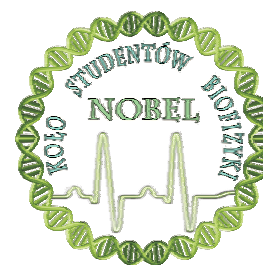


NOBEL INVITES

The Biophysics Student Club Nobel at the Faculty of Biochemistry, Biophysics and Biotechnology invites you to participate in the 1st Polish Student Conference of Biophysics, which will take place on the 15th and 16th of May 2010. The aim of the conference is to enable students to present their own research projects together with discussions on biophysical subjects. We hope that the 1st Polish Student Conference of Biophysics will enable integration within student circles, the exchange of experience and result in a wider form of cooperation. Besides students, invitations have been sent to renowned lecturers from other institutions of higher education in Poland, authorities in the

field of biophysics: prof. Grzegorz Bartosz of the Institute of Biophysics at the University of Łódź, prof. Wiesław Gruszecki of the Department of Biophysics of the Maria Curie-Skłodowska University in Lublin, prof. Wiesław Nowak of the Nicholas Copernicus University in Toruń as well as prof. Stanisław Przystański of the Nature University in Wrocław.

Agnieszka Pierzyńska-Mach, coordinator of 1st Polish Student Conference of Biophysics



The next term was to begin and with it a series of new events. The first of these was participation at the 37th Winter School in Zakopane; to which the members of Nobel were invited for the first time. This several day trip to the mountains was a good form of escape for all after the examination period. We had an opportunity to not only participate in a series of lectures and discussions but also to help in some way with the organisation of such a large undertaking. One of our tasks was the organising of The Student Club Evening in conjunction with *Mygen*. During the course of this Paulina Rybak, the Nobel president, presented a talk on our activities to date. This was the first opportunity for Nobel to be presented to such a large gathering. The next, and we hope long remembered point in the programme, was to be the presentation entitled: *The Wanderings of a living system towards self perception or the microworld through the eyes of a biophysicist*. Paulina Rybak's lively script, one which truly captivated the audience, tells of the journey of the 'Living System' to three research laboratories – a crystallographic, an EPR laboratory as well as of course the laboratory of the Department of Computational Biophysics and Bioinformatics – all in search of its true nature. The main role of the 'Model', superbly played by Marcin Zawrotniak, will surely stay with the School's participants for a long time not simply because of the make-up, but first and foremost as a result of our colleague's acting talent.

The Biophysics Student Club was not only active artistically. The spirit of sporting rivalry was most acutely felt during the Professor Zygmunt Wasylewski III Memorial competition, with two of our members taking winning prizes. A big round of applause for bravado and a touch of humour went to 'The Ladybird' – Joanna Kwiatek, who won the main prize in the *Most Picturesque Descent*. It follows to say that lessons in the art of skiing had only been taken by our intrepid colleague the day before the event! Given that with each run she improved on her previous time, we are hoping that next year she will be a strong contender in the Women's Downhill.

The next event *Nobel* was to appear at was to be in March. Within the framework of the University's Open Doors Day all of us, along with the rest of the students, encouraged secondary school pupils to take up a degree at our Faculty. Flashing electronic lights, colour specimens under the microscope and colourful oscillatory reactions – elements of the Biophysics stand in Auditorium Maximum – drew crowds of interested young people, with, at times, a

host of the most surprising questions. Excursions to the University Campus were also organised where the pupils listened to lectures prepared by members of Nobel as well as visiting the Faculty's laboratories.

The final stage of the Club's promoting of Biophysics as a degree at secondary schools, something that has been running for several months, was the *Meeting Biophysics* held at the



The Model in crystallography lab



The organizers of the Winter School with Nobel



Nuclear Energy project, Swierk



The prize winner in *The Most Picturesque Descent* category, Joanna Kwiatek

University Campus, Gronostajowa 7. During the meeting pupils had an opportunity to listen to lectures as well as take part in practical classes organised especially for them. In a word they

see p. 10 ▶

It's past belief! A Scientist's Fiction

Is it fitting for academic employees (and students) to dip into science fiction on the quiet at the expense of the current reading of academic works? How does fantasy affect the development of science? Which ever way it is many writers of science fiction are scientists themselves. Yet the influence on literature and contemporary culture wielded by Isaac Asimov is surely unique. Amongst the many motifs drawn from his *Foundation Trilogy*, together with its sequels and prequels, I was shocked to discover, for example, the jumps in hyperspace known from the much later Georg Lucas films, not to mention the very concept of struggle between great pan-galactic political systems, or the obsessively probed problem of robot identity on the part of Adam Wiśniewski-Snerg and also Stanisław Lem: the impossibility of recognising if my actions are directed from outside (even if I discover that I'm not controlled then there remains the uncertainty as to whether the very discovery is not controlled). One may read about Asimov's influence in many other aspects of contemporariness besides simply science (e.g. in the field of economics – on the works of the 2008 Nobel Prize Winner, Paul Krugman), for instance in Wikipedia, while the very idea and chief principles of psychohistory – the Asimovian equivalent of

theoretical physics in the social sciences – have been revived and have to a certain degree only just been formulated in Philip Ball's recently published book *Critical Mass*.

I was to read with even greater surprise Asimov's PhD thesis on the regulation of the activity of tyrosinase during the oxidation of catechol. In other words on a subject pursued obsessively left and right by, among others, numerous research groups from our Faculty. As it suits the lover of research *in silico* (but rather *in cerebro*), Asimov did not spare on pure mathematical reflections. Following the train of thought and rhetorical questions one may here ask if the problem of the unsolvability of the robot's paradox does not have some kind of connection with the metabolism of catecholamine in the central nervous system, and the black of Darth Vader's helmet with the black of neuromelanin? One thing is certain – in conducting science one can also count on a Nobel Prize for Literature, or at least an Oscar or two...

Isaac Asimov. *The Foundation Trilogy*. Doubleday & Company, Inc, Garden City, NY, 1951, 1952, 1953.

Isaac Asimov and Charles R. Dawson. *On the Reaction Inactivation of Tyrosinase during the Aerobic Oxidation of Catechol*. *J Amer Chem Soc*, 1950, 72, 820-828.

Przemysław M. Płonka

► NOBEL

cont. from p. 9

Smiling Nobelists encouraging high school students to biophysics



had the chance to spend one day as if real students of the Faculty of Biochemistry, Biophysics and Biotechnology. Recruitment was initially

slow but with time gained such a tempo that the limit for places was exceeded threefold! In order to fulfil the expectations and requests of all those keen pupils there are plans for a repeat event in the near future. We have great hopes that interest in Biophysics will be as strong when the real student enrolment takes place.

At the end of March, in conjunction with the Jagiellonian University's Physics Club, we organised a field trip entitled Nuclear Energy Close Up. The project dealt with the question of atomic energy in Poland and in the world, as well as the means of obtaining such energy. Thanks to the kindness of the scientists working daily at the only active research reactor in Poland, *Maria* in Świerk – not far from Warsaw, we were able to listen to a lecture on the subject of the working system and the functioning principles of an atomic reactor.

Spring is in full force and our Club is working flat out. The nearest big event will be the 1st Polish Student Conference in Biophysics, which we will report on in the next edition of Triplet.

Agnieszka Pierzyńska-Mach

Visiting Lecturers

Dragan Cvetkovic, Faculty of Technology, University of NIS, Leskovac, Serbia, 17th of January to 15th of February, guest of the Department of Plant Biochemistry and Physiology

Dr Natallia Pshybytko, Institute of Biophysics and Cell Engineering, National Academy of Sciences of Belarus, Minsk, Belarus, 2nd of March to 2nd of April, guest of the Department of Plant Biochemistry and Physiology

Prof. Young-Joon Surh, Seoul National University, Seoul, Korea, *Regulation of Inflammatory and Redox Signaling*, 1st of February, guest of the Department of Medical Biotechnology

Dr Hye-Kyung Na, Sungshin Women's University in Seoul, Seoul, Korea, *Role of κ B Kinase in Inflammation-Associated Carcinogenesis*, 1st of February, guest of the Department of Medical Biotechnology

Prof. dr hab. Ewa Bartnik, Institute of Genetics and Biotechnology, Faculty of Biology Warsaw University, *Regulation of the stability of human mitochondrial RNA*, 12th of February, guest of the Department of Medical Biotechnology

Prof. Zygmunt Derewenda, Dr Robert Nakamoto of the University of Virginia, Charlotte, USA as well as Prof. A. Kossiakoff of the University of Chicago, Chicago, USA, 19th of March, guests of the Faculty of Biochemistry, Biophysics and Biotechnology

Dr Halyna Semchyshyn, National Science Institute (Ivano-Frankivsk, Ukraine), a cycle of lectures entitled: *Free radicals, antioxidants and the immune system*: 1. *Free radicals and reactive species: general concept*, 2. *Biological sources of reactive species*, 3. *Oxidative stress*, 4. *Protection mechanisms against oxidative stress*, 5. *Oxidative stress, ageing and diseases*, 6. *Reactive species and the immune system*, 15th of March to 15th of May, guest within the framework of the Marie Curie Transfer of Knowledge programme.

Dr Petra Mayr, Oxford Optronix, Oxford, Great Britain, presentation of the OxyLite and OxyFlow system for blood flow and oxygen measurement, 26th of March, guest of the Department of Medical Biotechnology



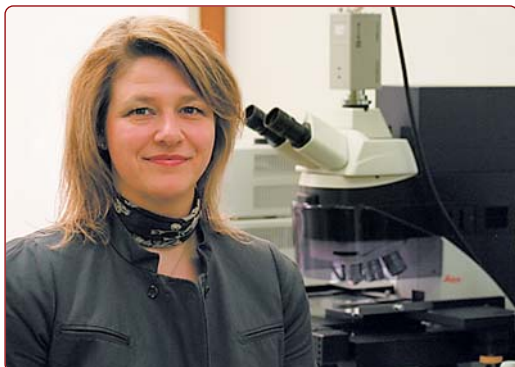
Dragan Cvetkovic



Dr Natallia Pshybytko and prof. K. Strzałka



Dr Hye-Kyung Na and Prof. Young-Joon Surh



Dr Jolanta Jura and dr Aneta Kasza talk to Prof Ewa Bartnik (right)

Dr Petra Mayr (left)

Publications of the Faculty of Biochemistry, Biophysics and Biotechnology – 4th quarter 2009 (cont.)

- 1 Grymek K, Lukasiewicz S, Faron-Gorecka A, Tworzydło M, Polit A, Dziedzicka-Wasylewska M. *Role of silent polymorphisms within the dopamine D-1 receptor associated with schizophrenia on D-1-D-2 receptor hetero-dimerization*. Pharmacological Reports 2009 Nov-Dec; 61 (6): 1024-1033
- 2 Konturek PC, Sliwowski Z, Koziol J, Ptak-Belowska A, Burnat G, Brzozowski T, Konturek SJ. *Probiotic bacteria Escherichia coli strain Nissle 1917 attenuates acute gastric lesions induced by stress*. Journal of Physiology and Pharmacology 2009 Dec; 60 (Suppl. 6): 41-48
- 3 Kubera M, Grygier B, Arteta B, Urbanska K, Basta-Kaim A, Budziszewska B, Leskiewicz M, Kolaczowska E, Maes M, Szczepanik M, Majewska M, Lason W. *Age-dependent stimulatory effect of desipramine, and fluoxetine pretreatment on metastasis formation by B16F10 melanoma in male C57BL/6 mice*. Pharmacological Reports 2009 Nov-Dec; 61 (6): 1113-1126
- 4 Malicki S, Winiarski M, Matlok M, Kostarczyk W, Guzdek A, Konturek PC. *IL-6 and IL-8 responses of colorectal cancer in vivo and in vitro cancer cells subjected to simvastatin*. Journal of Physiology and Pharmacology 2009 Dec; 60 (4): 141-146

Publications – 1st quarter 2010

- 1 Byrne DP, Wawrzonek K, Jaworska A, Birss AJ, Potempa J, Smalley JW. *Role of the cysteine protease interpain A of Prevotella intermedia in breakdown and release of haem from haemoglobin*. Biochemical Journal 2010 Jan; 425 (1): 257-264
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33277 and Aggregatibacter actinomycetemcomitans Y4 with an epithelial cell line. Journal of Periodontal Research 2010 Apr; 45 (2): 229-238

- 5 Jones T, Brown P, Berube K, Wlodarczyk A, Longyi S. *The physicochemistry and toxicology of CFA particles*. Journal of Toxicology and Environmental Health-Part A 2010 Jan; 73 (5-6): 341-54
- 6 Karim AY, Kulczycka M, Kantyka T, Dubin G, Jabaiah A, Daugherty PS, Thogersen IB, Enghild JJ, Nguyen KA, Potempa J. *A novel matrix metalloprotease-like enzyme (karilysin) of the periodontal pathogen Tannerella forsythia ATCC 43037*. Biological Chemistry 2010 Jan; 391 (1): 105-117
- 7 Karkowska-Kuleta J, Kozik A, Rapala-Kozik M. *Binding and activation of the human plasma kinin-forming system on the cell walls of Candida albicans and Candida tropicalis*. Biological Chemistry 2010 Jan; 391 (1): 97-103
- 8 Krzysiek-Maczka G, Michalik M, Madeja Z, Korohoda W. *Involvement of cytoskeleton in orientation of cell division in contact guided cells*. Folia Biologica-Krakow 2010; 58 (1-2): 21-27
- 9 Malec P, Maleva MG, Prasad MNV, Strzalka K. *Responses of Lemna trisulca L. (Duckweed) exposed to low doses of cadmium: thiols, metal binding complexes, and photosynthetic pigments as sensitive biomarkers of ecotoxicity*. Protoplasma 2010 Apr; 240 (1-4): 69-74
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