INTERNATIONAL UNION for PURE and APPLIED BIOPHYSICS

IUPAB NEWS

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Activities of the INTERNATIONAL UNION for PURE and APPLIED BIOPHYSICS
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Editor's Note

December, 2014

The 18th International Biophysics Congress was held in Queensland, Australia from the 3-7 August 2014. It was wonderful to see many of the delegates in Brisbane. Old acquaintances were renewed and many newer colleagues who have only been known by email were finally introduced in person.

The Congress was widely regarded as a great success, and the various reports in this issue will give you more detail on various aspects. The Travel Awards for Young Scientists were my particular responsibility, and IUPAB made approximately one hundred such grants.

On another note, although IUPAB does not fund any schools or workshops in a Congress year, the program will resume for 2015 and 2016. The allocations for 2015 have been finalized, and they are listed in the Report on page 11. Reports on the Schools funded will be given in the *NEWS* next year.

For those who are interested in running schools and workshops in 2016, you might want to begin considering your application. The 2016 round of funding will open in mid 2015, with more details to come in the next *NEWS* issue, and on the IUPAB website.

As always, I am delighted to receive any feedback from you, and I am glad to be of assistance at any time during the year.

With best wishes,

Louise Matheson
Editor
mail@iupab.org

Report from the Secretary-General

Emeritus Professor Cristobal dos Remedios

The IUPAB 18th Congress 2014 was of course the year for IUPAB's major financial commitment, namely the 18th IBC held in Brisbane Australia on August 3-7. If my memory is correct, the last time IUPAB conducted an International Biophysics Congress that made a profit was the congress held in Buenos Aires in 2003. But in 2014, thanks to the hard work by Brett Hambly and his team (too many to mention by name), the 18th IBC managed to turn a tidy if small profit. What lessons can we learn from this Congress that might be valuable advice for the next congress in Edinburgh, Scotland?

I suppose the venues could not have been more different. Compared to Edinburgh, Brisbane is sub-tropical, remote, expensive to get to from Europe and the US, with difficult visa laws, and much more. But it also has beautiful weather, suntanned people, a relatively new and flexible convention centre, great seafood, and it got very good support from the Australian Society for Biophysics who strongly supported young Australian biophysicists.

Looking forward to 2017 and the 19th IBC in Edinburgh, Tony Watts and his team are already well organised. They have partners in the IUPAB of course, but they also have substantial local, English and European support, particularly from the Physics community. Now that we know what currency we will need in Scotland, I urge everyone to plan his or her budgets to attend. Details will soon be available on the IUPAB website.

Support for Workshops and Schools for Young Investigators

There were six applications for financial support for Advanced Schools and Workshops. All were successful. Indeed every applicant was awarded seed funding and most got nearly everything they requested. This is a good sign for those contemplating requesting funds for workshops/schools in 2017. The maximum grant normally will not exceed US$10,000, although this "rule" can

be broken for strongly-argued applications. There is always a “catch”, and this is no exception.
IUPAB does require that practically ALL of its funds be directed to support for young (PhD students) and early career biophysicists (post-docs) from developing countries. Organisers MUST obtain evidence (such as a signature from the recipient that they actually received the funds), AND the organisers MUST submit these receipts as well as a summary of the general financial statement at completion of the workshop. For more details see the News report on 2015 schools.

If you know of a young scientist who is eligible, i.e. from a developing country, and wishes to attend one of these Advanced Schools or Workshops, applications are now open.

Biophysical Reviews *Biophysical Reviews* is the official journal of the Union. It is published by Springer Life Sciences. It was first published in 2009 so it is now five years old. At the 18th IBC in Brisbane, the IUPAB Council decided unanimously to appoint an Editorial Committee to examine virtually every aspect of our journal.
That Committee comprises the IUPAB Executive (the President, Professor Zihe Rao; the Past-President, Professor Gordon Roberts; the Treasurer, Professor Patrick Cozzone; the President-Elect, Professor Marcelo Morales; and the Secretary-General. The Committee has already commenced its work and expects to report its findings in early 2015.
In 2015 *Biophysical Reviews* will cease publishing paper issues of the journal and will only be available as an electronic journal.

CODATA IUPAB is a strong supporter of the Committee on Data for Science and Technology (CODATA). Created in 1966, the mission of this body is to strengthen international science for the benefit of society by promoting improved scientific and technical data management. It is concerned with all types of quantitative data resulting from experimental measurements or observations in the physical, biological, geological and astronomical sciences. Particular emphasis is given to data management problems common to different scientific disciplines and to data used outside the field in which they were generated.
A vital part of CODATA’s work is its aim to make all published research and data available as widely as possible, and as soon as possible after acceptance.

But of course it is more than that. The 2014 CODATA General Assembly met at the Indian National Science Academy in New Delhi on 6-7 November 2014 and elected Professor Geoffrey Boulton as CODATA new President.

Season's Greetings On behalf of the IUPAB Council, we hope that 2014 has been a year of progress and success for all readers and that 2015 will be a year of renewed scientific progress.

Cris dos Remedios
Secretary-General

Report from Past President

Professor G.C.K. Roberts
University of Leicester, U.K.

The objective of IUPAB is the advancement of research and education in biophysics across the world. Its flagship activity is the triennial series of *International Biophysics Congresses*, which play a unique role in providing overviews of the breadth and depth of international biophysics research. The most recent of these was very successfully held in Brisbane, Australia, in August 2014.

In years when there is not a Congress, IUPAB supports Schools & Workshops, with the emphasis on providing support for young scientists from less scientifically-developed countries.

Additional important activities include:
Education & Capacity Building, through educational courses and workshops, particularly, though not exclusively, in scientifically less-developed countries.

The promotion of the ***Application of Biophysics*** in a range of fields from medicine to bionanotechnology, requiring collaborations with other relevant organisations, including other scientific Unions, in order to reach the appropriate audiences.
These are each looked after by Task Forces, whose reports are presented separately.

Biophysical Reviews is IUPAB's journal, published by Springer. It provides succinct and timely reviews of important current topics across the breadth of biophysics, currently at the rate of ~30 articles per annum. The journal also publishes occasional Special Issues, containing a group of articles focussed around a specific topic; these have proved particularly successful and well-cited. Currently almost 8,000 institutions worldwide have electronic access to Biophysical Reviews. Recognising the general trend in scientific publishing, Biophysical Reviews will go over to online-only publication at the beginning of 2015.

Collaborations with other scientific Unions under the umbrella of ICSU. These are clearly important but as yet relatively under-developed.
ICSU is currently running three major long-term programmes: *Integrated Research on Disaster Risk* (http://www.icsu.org/what-we-do/interdisciplinary-bodies/irdr/), Health and Wellbeing in the Changing Urban Environment: a Systems Analysis Approach (http://www.icsu.org/what-we-do/interdisciplinary-bodies/health-and-wellbeing-in-the-changing-urban-environment/), and Future Earth (http://www.icsu.org/future-earth) which focuses on environmental change and sustainability. It is apparent that these programmes are all concerned with problems on the global scale, and it is difficult to see how IUPAB could make a direct contribution.

Our emphasis on education and capacity-building is clearly the correct one, given our limited resources. Many of the larger Unions have substantial programmes aimed at schools, while the medium and small Unions, like IUPAB, focus on graduate education in the form of Advanced Schools and Workshops. Several Unions are open to the possibility of joint Workshops, and the increasing role of ICSU Regional Offices promises to be very helpful. The formation of groupings or 'clusters' of Unions with related interests has proved very valuable. IUPAB is now part of the 'Bio-Cluster' (as well as the recently-

formed Physical, Chemical & Mathematical Cluster, which is keen to encourage biological interactions). The Bio-Cluster is initiating a programme of Summer Schools in Spetses, Greece, and Schools on Receptors and Cell Signalling, on Advanced Imaging Methods and on Multiscale Simulations are under discussion, involving collaborations between IUPAB, IUBMB, IUIS, IUC, IUPSEM and IUPAP. This initiative will help us to extend our educational activities to a wider audience.

Gordon Roberts
Past President

Report on behalf of the President
Professor Zihe Rao

At the 18th International Biophysics Congress held in Brisbane, Australia in 2014, Professor Zihe Rao became president of IUPAB. He was instrumental in mobilizing the largest contingent of Chinese biophysicists to ever visit Australia.

Professor Rao has ambitious plans for IUPAB over the next three years. He wants to initiate four or five new Task Forces or Working Committees. Currently the IUPAB has only two. One is on education in biophysics (led by Associate Professor Bill Williams, New Zealand). The other task force is concerned with the application of biophysics (led by Professor Kuniaki Nagayama, Japan).

The focus of the proposed new Task Forces is still in the planning stage, so if any of the Adhering Bodies or their membership societies have suggestions for new Task Forces they should contact Professor Rao directly (email: raozh@xtal.tsinghua.edu.cn) or email the Secretary-General (email: dosremedios@iupab.org).

Apart from the annual meeting of the US Biophysical Society (February 7-11, 2015 in Baltimore Maryland), the next major event in global biophysics will be the 9th Asian Biophysical Association (ABA) meeting. The ABA is an

association of seven regional biophysical societies, and is the Asian equivalent of the European Biophysical Societies (EBSA). Professor Rao plans to use this occasion to discuss his plans for IUPAB with the IUPAB Council and Executive.

Professor Rao plans to internationalize IUPAB and to achieve this he plans to recruit more internationally recognized scientists to be the face of the IUPAB.

On behalf of the President
Professor Zihe Rao

Report from Treasurer, Professor P.J. Cozzone

Brief Financial Report on the 18th International Biophysics Congress (Brisbane, August 3-7, 2014)

Besides putting together an outstanding scientific programme and a perfect organization, our Australian colleagues in close collaboration with the International Union of Pure and Applied Biophysics and with the expert help of ASN Congress, have done an excellent job in managing wisely and effectively the Congress financial matters. Brett Hambly, convenor of the Congress, has recently announced that a profit of AUS $18,000 has been made on a total budget of ~ AUS $600,000. This profit has been split equally between IUPAB and the Australian Society for Biophysics (ASB). Moreover, all cash advances made by IUPAB to the 18th IBC (AUS $10,000) and the satellite meeting of Heron Island (AUS $5,000) have been reimbursed to IUPAB in due time.

These excellent results reinforce the financial position of IUPAB along the lines which had been presented and discussed during the General Assembly held on August 6, 2014 in Brisbane. In 2015, IUPAB will then be able to support 5 workshops and schools in Greece, France, Uruguay, USA and Singapore for a total amount of US$ 46,500.

A big round of applause for Brett Hambly, Mike Pickford and their teams for a job well done!

Patrick Cozzone
Treasurer, IUPAB

Report from Professor Brett Hambly, Convenor of 18th International Biophysics Congress on behalf of the Australian Society for Biophysics (ASB)

The flagship activity of IUPAB is the triennial series of International Biophysics Congresses, which play a unique role in providing overviews of the breadth and depth of international biophysics research. The Congress in 2014 was organised by the Australian Society for Biophysics (ASB).

Approximately 900 delegates and invited speakers met in Brisbane over a five day period and enjoyed a diverse range of biophysical topics. There were approximately 80 invited speakers from countries around the world. Participation in the meeting was boosted by the award of approximately 100 Young Scientist Travel Awards from IUPAB, jointly funded by ASB. Participation from China was particularly strong with approximately 200 delegates attending from that country.

The organisation of this Congress was a team effort, with particular thanks to both the members of the Congress Committee, especially the Programme Chairs Jamie Vandenberg and Glenn King, and the Executive of IUPAB, especially the President Prof. Gordon Roberts. Thanks also go to the eight local and eight International scientists who made up the Programme Committee that was pivotal in developing the outstanding programme. Many members of ASB have also made major contributions to the organisation of the Congress. We have also been fortunate to work with some outstanding professional organisations, including our PCO, ASN Events, the Brisbane Convention and Exhibition Centre, and Brisbane Marketing. We would also like to acknowledge the support of our sponsors and exhibitors without whom it would have been impossible to stage this event.

The Congress budget was approximately Australian$800,000 (approximately US$750,000). The Congress made a small surplus, which allowed the return of the seed funding provided by IUPAB, and the distribution of the remaining

surplus between IUPAB and ASB (approximately 1.5% of the total budget was distributed).

The 19th International Biophysics Congress will be held in Edinburgh in 2017, followed by Rio in 2020.

Brett Hambly
University of Sydney
18th International Biophysics Congress Convenor on behalf of the Australian Society for Biophysics

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Grants for 2015 Biophysics Schools

Applications closed at the end of September 2014 for assistance in funding biophysics. The IUPAB provided the following funding for six advanced schools in biophysics to be held during 2015:

Grenoble, France, February 2-5, 2015: Advanced isotopic labelling methods for integrated structural biology;
Spetses, Greece, May 17-21, 2015: Advanced workshop on receptors and cell signalling;
Dresden, Germany, July 15-17, 2015: Spectroscopies in biology - Recent advances;
Singapore, July 11-15, 2015: Tropical school on advances in biophotonics for biomedicine;
VIII POSLATAM Course, Salto**,** Uruguay, November 23-25, 2015: “Membrane lipids, transporters, channels…and all that Crosstalk”;
Newry, Maine, USA May 30-31, 2015: Muscle excitation/contraction coupling - New frontiers in EC coupling.

Each grant is awarded subject to the following conditions, which in brief require that the awardee a provide:

(1) a signed Sponsorship Agreement (on the website)
(2) the Treasurer with an invoice for the amount of the grant

(3) a detailed financial report, and receipts of specified expenses
(4) receipts signed by the student who actually received the IUPAB funds.

More details are available on the IUPAB website.

Taskforce on Applications of Biophysics
Report from Prof. Kuniaki Nagayama

(Jan 21, 2013: Webpage Start-up in IUPAB site)

1. Mission Statement
The Taskforce "Applications of Biophysics" has been established to promote the connection of biophysics to the public sectors in our society by advertising the usefulness of biophysics as application tools. Particularly, a focus is given to the biophysical methods, which must be useful not only in academic but also in public sectors.

2. For about one year before the start of 18th IUPAB Congress (August 2014), I tried to formulate the Taskforce by initializing a collaboration with Biophysical Society of Japan (BSJ) according to the performance indicator defined by Mission I in the webpage (Web publication in the IUPAB website as "Encyclopedia of Biophysical Methods – IUPAB" to introduce successful examples of biophysical methods). Specifically, the collaboration is to take a linkage to a BSJ webpage, where new faces of biophysical methods are to be introduced under collaborations between BSJ members and cooperated industries. An example is shown in the figure.

Fig. An example of "biophysical new faces"

3. IUPAB and BSJ exchanged MOU on the novel collaboration in May 2014.

4. An activity report of the Taskforce in Applications of Biophysics was given in the General Assembly of IUPAB held on August 5, 2014, with a statement on the future of the Taskforce.

Task Force on Education and Capacity Building - Report from Professor M.A.K. (Bill) Williams

Report on Activity to 2014

Much has gone on in the spirit of the education taskforce – workshops and support of conferences (See Reviews on Website and in IUPAB Updates). These events are coordinated and successfully run locally with IUPAB contributing financial support and the time of its members.

Successful Schools and Workshops have been funded to the following extent:

Brazil $10,000
Czech Republic $5,000
Bulgaria $6,000
Serbia $3,000

Brazil $12,000
China $3000
India $3,000
Portugal $5,000
Russia $6,000
Spain $9,000

Supporting the educational goals of Biophysics is central to IUPAB not just through the Taskforce. The "Taskforce" has contributed through providing aid to audiences with their investigation of Biophysics on the web, and by organizing Education sessions at Conferences.

A small "IUPAB" section was trialled on a New Zealand Biophysics website (www.biophysics.ac.nz). Biophysical reviews was highlighted and links were provided to some interesting on-line resources, including a talk by Philip Nelson on Keeping the Physics in Biophysics and fascinating animations of biophysics in action at Molecular Movies.

IUPAB Education Committee
Two Education presentations and workshop discussions were held at the 2014 conference in Brisbane on August 5 and August 6.

Workshop 1: Tuesday 1:00pm - 2:00pm.
Chair: Cristobal Dos Remedios

How to Make Progress in Medical Biophysics Research on a Limited Budget.

Cris demonstrated how freely-available internet websites can be used to identify the cellular and subcellular locations of a large number of proteins. He used the specific example of how FHL2 protein expression can be located in human heart muscle using the Human Protein Atlas (https://www.google.com.au/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=human+protein+atlas).
He then demonstrated how resources such as the tissue microarrays available at the Sydney Heart Bank website

(http://www.ncbi.nlm.nih.gov/pubmed/23856366 can be quickly accessed to determine if FHL2 expression changes in heart failure. Information about gene mutations, animal-specific isoforms and protein sequences and functions are available at the (http://www.expasy.org/).

For further information contact Cris by email:
cris.dosremedios@sydney.edu.au.

Workshop 2: Wednesday 1:00pm - 2:00pm
Chair: Martin (Bill) Williams

The Future of Biophysics
Bill discussed the fact that Biological physics has experienced something of a renaissance in recent years, and key to maintaining its success is its ability to attract not only students, but also new researchers, at all stages of their careers, into the field.
Informal discussions addressed: How do we inspire young scientists to take an interest in biophysics? What 10 Top-tips can we give Physicists embarking on studying Biology and Biologists embarking on studying Physics? How can freely available web resources be best used to educate both budding biophysicists and the general public? *And* How do we get the balance right between the breadth and depth of the physics and the biology?

Report of attending 18th IUPAB Congress
3-7 August 2014, Brisbane, Australia

By: Leila Fotouhi, PhD Student of Biophysics, University of Tehran
(Leila was a recipient of a Young Scientist Travel Award from IUPAB – Ed.)

Herewith, I would like to acknowledge the young scientist travel award (YSTA) from IUPAB providing the great opportunity for me to attend the 18th IUPAB Congress, which was held by the Australian Society for

Biophysics (ASB) and the International Union of Pure and Applied Biophysics (IUPAB) at Brisbane Convention and Exhibition Centre (Brisbane, Australia) from August 3 to August 7, 2014. About 700 scientific works were accepted for oral and poster presentation sections and the number of attendees were even more from all over the world!

The meeting began with a public lecture given by Stephen Curry and then after the official welcome, the Nobel Prize winner Brian Kobilka gave his lecture on “The structural insights into G protein coupled receptor signaling”, respectively, on the first evening. On the following days, oral presentations of interest to general audience by keynote or plenary speakers were arranged two times a day, one in the morning and the other one after poster presentation, then five or six more specialized sessions were held concurrently thereafter, and poster sessions were arranged after lunch time. In addition to these sessions, workshops such as “IUPAB Education Committee Workshop” were also designed. Among public speakers I mostly enjoyed, Carol Robinson’s lecture on application of MS for membrane protein lipid connection, Rajan Sankaranarayanan’s lecture on chiral proofreading during translation of genetic code, and also Henning Stahlberg’s lecture on high resolution structural studies of membrane proteins by cryo-electron microscopy.

Oral presentations

More than 100 oral presentations were pre-selected (presumably) on the basis of their significance and timeliness by the organizers within subject areas. Some of the presenters were postdoctoral fellows and graduate students and this was amazing to me. When I was submitting my work to the congress I myself preferred to present my research result in a poster and not in an oral presentation. Actually talks in front of experts of the field could be quite an experience! I strongly believe that graduate students should attend this kind of meeting at least once, to face the real world in competitive research.

From the platform presentations, I enjoyed Antoine van Oijen about single molecule studies of DNA replication and Xavier Daura’s presentation, which explicitly described about exploiting protein flexibility to predict the location of allosteric sites.

Poster presentations

Considering the advantage of gaining lots of feedbacks and ideas in a face to face manner, a poster presentation may be preferable than oral one. I think the time of poster presentation and time dedicated for visit and discussion about posters after lunch was not quite good. There were about 150 posters in each of three sessions, and not many of them would be of general interest to our lab. So, it was possible to talk to every poster presenter I was interested in during the sessions. I had a poster entitled “Comparison of heme degradation patterns during interaction of hemoglobin with n-alkyl sulfates” on the first day.
Our findings show that during Hb reaction with different concentrations of n-alkyl sulfates some fluorescent degradation species were formed and that the increase of hydrophobic chain length of n-alkyl sulfates correlates with amount of both ROS production and heme degradation. There were some scientists stopped by my poster, asked me about the core idea of our work and gave me quite a few good suggestions.

Conclusion

In general, I feel that attending the 18th IUPAB, as my first international event during my PhD really helps me a lot. The congress provided me an excellent opportunity to share and to know interesting new research results and to discuss about them, leading to knowledge exchange and the generation of new ideas.
At the end, I would like to thank my thesis supervisors Prof. Moosavi-Movahedi and Prof. Saboury too for the patient guidance, encouragement and advice they have provided throughout my research.

12th Greta Pifat Mrzljak International School of Biophysics

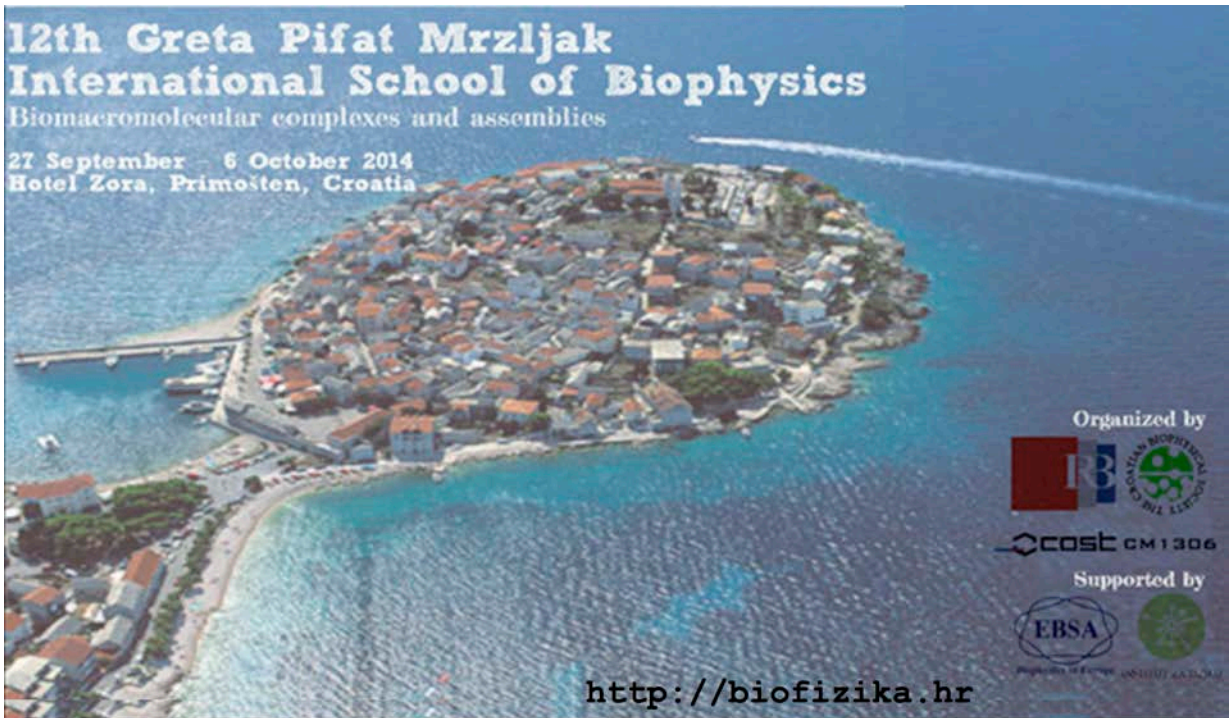
Primošten, Croatia, 27/9-6/10 2014

Dear Colleagues,
I am pleased to inform you that the 12th International School of Biophysics was successfully concluded a month ago in Primošten, Croatia. It was organized by the Rudjer Bošković Institute (RBI) and the Croatian Biophysical

Society (CBS) and coorganized by the EU-COST action CM1306 Molecular Machines.
The Lecturers were from Germany (4), Croatia (4) and then Austria (2), USA (2), UK (2) and also from Australia, Switzerland, Sweden, France and Belgium. The Lecturers presented in total 50 lectures of about 45-60 minutes.
We had 74 students, 45 of them outside Croatia, 9 coming from Germany and also from Slovakia and Slovenia (4), Poland, Russia, Switzerland, Hungary, France (3), Italy and Spain (2), and Australia, Austria, Bulgaria, Iran, Lithuania, Serbia, Sweden, the Netherlands and UK (1).
Gender balance was well respected – more than a half were female students. According to the questionnaire that they filled, students were of rather diverse backgrounds, from molecular and structural biology, biochemistry, physical and computational chemistry to biophysics. Most (46) of the students presented a poster. Selected students (24 in total) presented their work also with a short, 10minute talk.
The positive feedback gathered from the students and also from the lecturers will encourage us to engage in the organization of the next School. Many of the students who participated this time were informed by their colleagues who attended in 2012. The Lecturers are also quite open to the idea of coming back for the next School. The positive atmosphere of the School reflects also in strong bonds formed among the students which may be somewhat visible in our photo gallery at http://soft.ifs.hr/school/
The prospective date for the next School is the fall 2016. With hopes of making the School 2016 more international, we plan to formally request the support of IUPAB the next year.

Sincerely,

Dr. sc. Tomislav Vuletić
The School Chair Zagreb, 10.11.2014.



Poem about the School

Biophysics summer school, It was extraordinary cool.
Afternoons all on the beach, Maybe once I missed a speech.

Monte Carlo random noise, Stunning brilliant lecture choice.
Got us out of bed each day, With some pain, but that's OK.

Short talks really rush your heart, Yet the concept turned out smart.
Talking simply just went on, Sometimes even all night long.

Sadly, we have to depart, Can't wait for the next restart.
Coming years with you to bring, Please keep up this brilliant thing.

And with that we want to conclude: "Nosit ćemo vas u srcu svud". (Croatian: we'll have you in our hearts)

This poem was written by students at the 11th Greta Pifat Mrzljak International School of Biophysics and read at the Gala dinner on 8/10/12.