

IUBMB NEWS

Issue 5 May 2018



President's Message

It has been an honour to serve as President of the IUBMB over the last three years. During this time, the members of the Executive Committee and I have channeled our efforts into the activities of the Union. In addition to supporting research-orientated initiatives, we have also devoted special attention to the promotion of research and

education in Biochemistry and Molecular Biology.

To address this aim and in collaboration with FEBS, we organised a conference on Education in Biochemistry and Molecular Biology, held in Rehovot (Israel) in September 2017. In this regard, this conference was the first step to propel the changes required to bring all levels of education in Biochemistry and Molecular Biology into the 21st century. Future Educational Conferences will be held around the world. Efforts are being made to organise future events in the Philippines in 2019 and in the United States in 2021.

Another important aspect of education is to provide young scientists, particularly those from developing countries, with the opportunity to attend international congresses and meetings. IUBMB is firmly committed to this endeavour and devotes significant financial resources to this end. I wish to give special thanks to the Tang Prize Foundation (Taiwan) for actively promoting the participation of young scientists in these events through the concession of fellowships.

The training of future scientists should go beyond traditional courses and bench work. This vision is embraced by IUBMB. In this regard, it has contributed to supporting the 1st European PhD & Postdoc Symposium, organised by the European Academy for Biomedical Science (ENABLE) consortium, held in Barcelona in November 2017. We intend to support similar student-promoted scientific events in the future including the 2nd European PhD & Postdoc Symposium "The Promise of Future Medicine: From Research to Therapy" to be held in Copenhagen, Denmark, November 7-9, 2018 (www.enablenetwork.eu).

From its unique global vantage point, IUBMB is in an ideal position to encourage the launch of Biochemistry and Molecular Biology Societies in countries where they do not currently exist. By identifying key scientists in these areas of the world and giving them advice and support, IUBMB can promote science there and at the same time increase the membership of the organisation. In this regard, we have recently witnessed the launch of societies in Serbia and Peru, and these and other countries including Uruguay, Malaysia and The Philippines have applied for Adhering Body status in the IUBMB. Others are being encouraged to follow their example.

IUBMB has also been involved in fostering collaborations with our members and with our Regional Organisations. Working together, we have been able to strengthen the meetings of our Adhering Bodies. IUBMB has sponsored scientific lectures at events organised by our adhering bodies and organisations, thus boosting our brand.

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IUBMB has launched a new activity, namely Focused Meetings. This initiative seeks to bring scientists together to discuss cutting-edge advances in a given field. IUBMB is the main sponsor of these gatherings and provides funds to facilitate the attendance of young scientists. Furthermore, a special agreement has been signed to strengthen the involvement of IUBMB in the organisation of the Miami Winter Symposia. Founded by our former President Prof. Bill Whelan more than 50 years ago, these symposia now carry the IUBMB seal in their names, thus increasing our visibility.

We have also dedicated significant effort to our journals. In this regard, we have worked intensively with Wiley to increase the visibility and prestige of our publications. An agreement with TiBS has also been reached to keep it as an IUBMB asset. The future of our journals clearly depends on our willingness to submit papers for publication. I therefore urge you to give priority to our journals over others.

I strongly encourage you to attend the congresses, conferences, courses, and meetings that bring the IUBMB community together. The Seoul Congress will set the bar to a very high level. I am looking forward to seeing you in

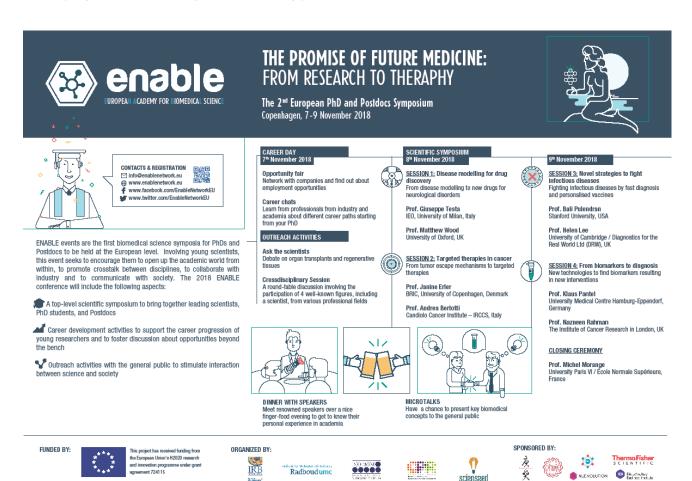
Lisbon in 2021, where the IUBMB congress will be held in collaboration with FEBS and PABMB. This will be the first congress to be organised jointly by these three organisations, thus reflecting their commitment to pursue a common goal, namely to foster Biochemistry and Molecular Biology.

These are exciting times for the Molecular Life Sciences, and IUBMB is set to embrace the challenges that lie ahead. IUBMB's main strength lies in the great number of outstanding people that belong to its member organisations.

These people represent an immense body of expertise and their commitment to IUBMB will define the future of the Union.

In this regard, it is now time for me to pass the baton to Prof. Andy Wang and the members of the new Executive Committee and to wish them every success in their endeavours.

Joan J. Guinovart, PhD President, IUBMB

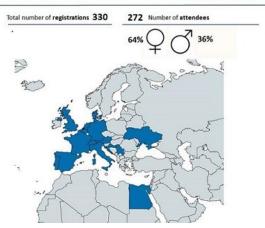


Three Travel Fellowships for eligible applicants from non-FEBS regions (FASBMB, PABMB and FAOBM) are available

ENABLE 2017: Breaking Down Complexity: Innovative Models and Techniques in Biomedicine

In November 2017, the first ENABLE conference for young researchers took place in Barcelona, Spain. A group of 35 volunteer PhD students and Postdocs from 4 European research institutes, with support from institute coordinators and an innovative science communication agency, worked for more than a year to make this event a reality. The result: a 4-day event in which young and senior scientists had the opportunity to interact, not only between themselves but also with scientific companies, students from other fields and citizens of Barcelona. This event would not have been possible without the support of our sponsors.

ENABLE 2017: Breaking Down Complexity: Innovative Models and Techniques in Biomedicine



1. Countries of residence of the ENABLE participants.

NUMBERS AND FIGURES

- 272 participants from 15 countries attended the conference
- 68 travel grants were awarded
- High impact on social media channels: 1900 and 689 followers on Twitter and Facebook, respectively
- Post-event video here

OUTREACH

We invited students from 2 primary and 2 secondary schools from the Barcelona area to IRB Barcelona, to take them on a journey into what it means to be a scientist. Primary school students were introduced to the scientific method through fun experiments while secondary school pupils had the opportunity to talk to predoctoral and postdoctoral researchers about what it is like to work in academia.

During the "Ask the Scientist" podium talk, cancer was in the spotlight, as invited scientists discussed the challenges and advances of fighting this disease with the audience. In a cross-disciplinary session a day later, scientists and well-known non-scientific guests were invited to a panel discussion on the importance of leadership. Finally, for members of the public who wanted to dive deeper into scientific research, microtalks were held. At four bars in various neighbourhoods of Barcelona, 16 ENABLE participants presented their research to a non-scientific audience.

CAREER DAY

With the ENABLE Career Day, we sought to explore the opportunities of a career in science within and outside academia.

The main highlight was the science fair, where 28 companies presented themselves, their portfolios, and job opportunities they had to offer, with more than a dozen advertised job openings. This allowed the participants to meet representatives from companies.

Additionally, we organized 13 **"Career Chats"** with professionals from different areas who answered questions on their career paths, and offered **8 workshops** that covered topics from scientific writing to what it takes to start a biotech-based company.

SCIENTIFIC SYMPOSIUM

We invited 8 renowned keynote speakers, who presented their state-of-the-art research in 4 interconnected sessions. Apart from the talks, we fostered interaction with our speakers during the networking event **Tapas with Speakers**.

We also wanted to provide participants with the opportunity to present their own scientific results and receive critical feedback from peers. In this regard, we selected 16 participants to present **short talks** and 100 participants to present their work in the **two poster sessions**. We awarded prizes to the best short talk, micro talks and posters.





Miami Winter Symposium 2018

William J. Whelan, PhD, FRS (University of Miami) & Michael P. Walsh, PhD, FRSC (University of Calgary)

The 51st Miami Winter Symposium (MWS) was held during January 28-31 on the topic of Stem Cells: Today's Research. Tomorrow's Therapies. The IUBMB sponsored 18 travel fellows, from Africa, Asia, New Zealand and Europe, who all presented posters and were identified by red rosettes bearing the IUBMB logo. They were among the 313 attendees from 32 countries. Among the seven awardees was Sir John Gurdon (The Wellcome Trust / Cancer Research UK Gurdon Institute, University of Cambridge), who shared the Nobel Prize for his fundamental contribution to knowledge of stem cell formation. He received the Lifetime Achievement Award and delivered a lecture entitled "The formation of stem cells from somatic cells by nuclear transfer to eggs". Among the other awardees, Joshua Hare (University of Miami) delivered the Feodor Lynen Lecture on "The emerging role of pluripotent stem cells in translational studies of tissue repair: Emphasis on cardiac injury" and Michael Clarke (Stanford University) delivered the IUBMB Lecture entitled "Perturbations in stem cell self-renewal pathways in degenerative disease and cancer".

The subject matter was broadly based and moved from basic to translational to therapeutic aspects. The program included twelve 15-minute Spotlight talks chosen from the 130 posters. The program was planned by an international committee, of which the IUBMB representative, Angelo Azzi, was the co-chair.

Students, postdocs and travel fellows were guests at a party, which also included the awardees and invited speakers. This allowed the younger members of the audience to meet the distinguished speakers one-on-one, and not be crowded out by the more senior attendees. Photos from the party, which was held at the new Frost Museum of Science, are appended. Dr. Phillip and Mrs. Patricia Frost welcomed the guests.

The enthusiasm of these young people has since been the subject of letters of appreciation received by the organizers, who in turn thank the IUBMB for their continuing support of the travel fellow program, participation in which is a lifelong memory.

The 2019 Miami Winter Symposium on "Evolving concepts in HIV and emerging viral infections" will take place on January 28-30, 2019. For further information, please go to: www.miamiwintersymposium.com.



Angelo Azzi presents the IUBMB Medal to Michael Clarke

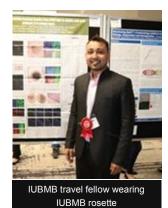


Bill Whelan (seated) at the student party



Dr. Phillip and Mrs. Patricia Frost welcome guests to the student party at the Frost Museum of Science



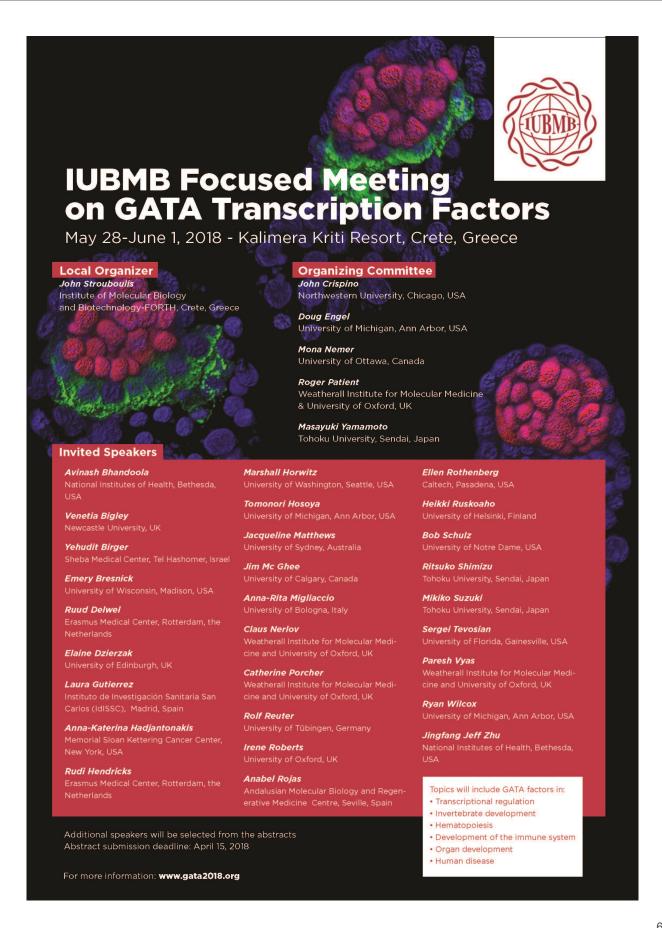






Angelo Azzi presents the Lynen medal to Joshua Hare







Plenary Lectures

IUBMB Named Lecture



Aaron Ciechanover
Technion-Israel Institute of Technology (Israel)
[2004 Nobel Prize in Chemistry]



John Hardy University College London (UK)



Craig ThompsonMemorial Sloan Kettering Cancer Center (USA)



Feng ShaoNational Institute of Biological Science (China)



Ruslan M. Medzhitov Yale University (USA)

Advanced Methods in

FEBS Practical Course

MACR@M@LECULA CRYSTALLIZATION



Organized with support of FEBS, IUBMB, Czech and Slovak Crystallographic Association and Czech Society for Structural

TERESE BERGFORS HARTMUT LÜCKE

CHRISTIAN BIERTÜMPFEL ABEL MORENO

MONIKA BUDAYOVÁ-SPANO IVANA NEMČOVIČOVÁ

MARTIN CAFEREY JOE NG

KARSTEN DIERKS BERNHARD RUPP

HOWARD EINSPAHR

PETRA FROMME – IUBMB Lecturer IVANA KUTÁ SMATANOVÁ

CHRISTIAN BETZEL JEROEN MESTERS

JIŘÍ BRYNDA JANA NEBESÁŘOVÁ

RADKA CHALOUPKOVÁ PETR PACHL

NAOMI E. CHAYEN MARC L. PUSEY

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RICHARD GIEGÉ ĽUBICA URBÁNIKOVÁ

LATA GOVADA K.V. VENKATACHALAM

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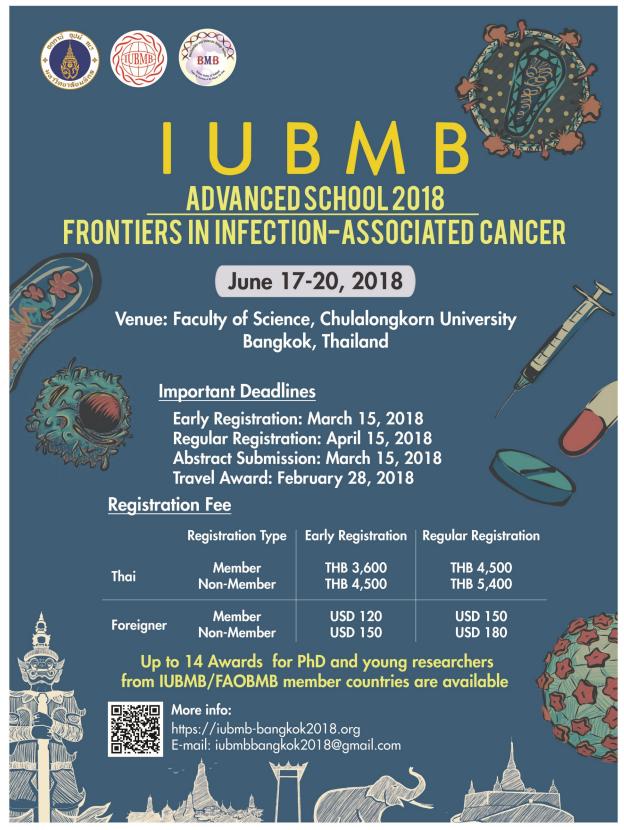
IVANA KUTÁ SMATANOVÁ

PAVLÍNA ŘEZÁČOVÁ

JUAN MANUEL GARCIA-RUIZ

https://macromolcryst2018.febsevents.org/











INSTITUTIONAL SPONSORS:







IUBMB Programs and Benefits of Membership

IUBMB provides a wide range of programs available to scientists resident in IUBMB member countries, including:

- **Congresses** are held triennially in countries that are members of the Union and have a record of being outstanding and memorable scientific events for the world community of biochemists and molecular biologists.
- **Focused Meetings** replaced Conferences and Symposia in 2017. Up to 3 per year will be sponsored to a maximum of US\$60,000 each.
- **Young Scientists' Programs** are competitive awards covering travel, accommodation and meals for participation in the YSP held in conjunction with Congresses and Focused Meetings.
- Advanced Schools provide advanced training of PhD students and young postdoctoral fellows in the field of biochemistry, molecular biology and cell biology. These competitive awards cover travel, accommodation and meals for successful applicants.
- Educational Activities. The IUBMB is involved in a broad range of educational programs. The Union distributes biochemistry textbooks and review journals without charge to scientists and teachers in developing areas, and holds or sponsors symposia on education at regional biochemical meetings around the world. It also cooperates with the editors of the journal Biochemistry and Molecular Biology Education in identifying timely topics for presentation at symposia and workshops.
- Wood-Whelan Research Fellowships are competitive awards covering travel, incidental costs and living expenses for visits of 1-4 months to other laboratories in the IUBMB region for the purpose of carrying out experiments that require special techniques or for other forms of scientific collaboration or advanced training.
- Mid-Career Research Fellowships were established in response to an increased demand for further training of mid-career biochemists in the Developing World. These are short-term Fellowships (1-2 months), covering travel and incidental costs to a maximum of US\$5,000, to enable researchers to work in an established laboratory to learn state-of-the-art techniques that are not readily available in their own countries.
- **Trans-Continental Youth Travel Fellowships.** This collaborative activity between the IUBMB and the Federation of European Biochemical Societies (FEBS) provides trans-continental Youth Travel Fellowships to FEBS Advanced Courses and is financed by IUBMB.
- Plenary and Jubilee Lectures. At IUBMB Congresses, several endowed lectures feature prominently in the program: IUBMB, Osamu Hayaishi, Chester Beattie, IUBMB Life, Feodor Lynen, Severo Ochoa, EC Slater and Edward Wood Lectures. In addition, IUBMB Jubilee and Special Letures are intended as Plenary Lectures at

scientific meetings, in particular of the smaller Adhering Bodies or Associate Adhering Bodies for which the budget would normally allow only for local speakers.

- **FEBS-IUBMB Speakers.** This collaboration between IUBMB and FEBS provides financial support for invited speakers at FEBS Advanced Lecture Courses, FEBS Workshops and FEBS Special Meetings. Up to 10 invited speakers are supported per annum (up to US\$2,000 each) from outside Europe.
- IUBMB Publications. Trends in Biochemical Sciences, IUBMB Life, Biochemistry and Molecular Biology Education (BAMBEd), Biotechnology and Applied Biochemistry, Molecular Aspects of Medicine, BioFactors. In addition, the following books/pamphlets are produced by IUBMB: Wiley-IUBMB Book Series, Standards for Doctoral Degrees in the Molecular Biosciences, and Metabolic Pathways Maps and Animated Maps (Animaps) prepared by the late Don Nicholson, University of Leeds.
- Biochemical Nomenclature. The International Union of Pure and Applied Chemistry (IUPAC) and the IUBMB have established the IUPAC-IUBMB Joint Commission on Biochemical Nomenclature (JCBN) and the Nomenclature Committee of the International Union of Biochemistry and Molecular Biology (NC-IUBMB).

In order to maintain and enhance these programs, IUBMB depends on the financial support of its Adhering Bodies. It is important to note that the annual dues have not been increased for many years. Rather, the Executive Committee has preferred to pursue additional sources of income. Publications represent the major source of income for IUBMB but, with the rapid changes occurring in the publication business, particularly with the advent of open access publishing, maintenance of this income at current levels is challenging. The Executive Committee is continuously working hard to develop alternative funding sources, but the Union is still very dependent on the support of its Adhering Bodies.

Adhering Body status in the IUBMB is an investment rather than an expense. The direct financial benefits from membership in the IUBMB surpass the actual cost, and there are many other associated non-monetary benefits.

Finally, it is also important to note that IUBMB is an international organization that, in addition to providing opportunities to all member countries, emphasizes programs that support young scientists, particularly from developing countries. The Union's philosophy has always been that rich countries can afford to contribute more than poorer countries to this end. Of course, situations change over time and one of the roles of the Executive Committee is to keep track of such changes and, for example, encourage emerging economies to contribute in proportion to their capacity, and to recruit new members to the Union.

More details about the extensive list of IUBMB programs can be found on the Union's website: www.iubmb.org



IUBMB Journal Issue Highlights – May 2018 The Editors-in-Chief of IUBMB journals thank you for your support and readership.

Please enjoy the following Highlighted Articles, available to read for free until July 31st:

IUBMB Life celebrates the life and work of Tony Linnane: Anthony (Tony) W. Linnane: A man of mitochondria and much more *IUBMB Life*, DOI: 10.1002/iub.1736

The Role of Lipids in Host-Pathogen Interactions IUBMB Life, DOI: 10.1002/iub.1737

Effect of resveratrol and pterostilbene on aging and longevity

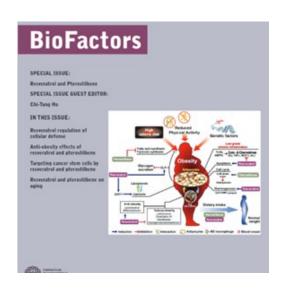
BioFactors, DOI: 10.1002/biof.1400

Construct a gene-to-metabolite network to screen the key genes of triterpene saponin biosynthetic pathway in Panax notoginseng Biotechnology and Applied Biochemistry, DOI: 10.1002/bab.1580

<u>FastFeedback Questions: A new teaching method</u> *Biochemistry and Molecular Biology Education*, DOI: 10.1002/bmb.21103

New Biotechnology and Applied Biochemistry Special Issue on Proteins

A <u>Special Issue</u> guest edited by Enrico Dainese, Gianfranco Gilardi, and Mauro Maccarrone





New BioFactors Special Issue on Resveratrol and Pterostilbene

A Special Issue guest edited by Chi-Tang Ho

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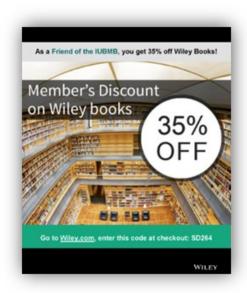
When: June 4, 12-1pm

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gram!



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www.sasbmb-fasbmb2018.com

It is with great excitement that we announce the next joint conference of the FASBMB and the South African Society for Biochemistry and Molecular Biology (SASBMB) will be held at the North-West University (NWU) in Potchefstroom, South Africa, from July 8 - 11, 2018.

This joint conference is held approximately every six years in South Africa and brings together members and students of both societies, as well as international delegates. It allows a broader - African - context to this meeting and, appropriately, the theme for this conference is "Life begins here" from which we can address a number of topics relevant to health, disease and technology in Africa. During the conference, the following twelve topics will be covered over three days:

Structural Biology Cell Biology Gene Regulation and Genomic Dynamics Plant Biology Drug Discovery & Medicinal Plants Infectious Diseases Inflammation and Immunity
Non-communicable Diseases
Inherited Metabolic and Neurodegenerative Diseases
Biotechnology
Systems Biology, "Omics" and Bioinformatics
Bioenergetics and Biotransformation

We will provide an intimate environment for this conference, which will be held on the scenic and friendly Potchefstroom campus of the NWU (for more about the NWU, see www.youvisit.com/tour/nwu). Potchefstroom is situated on the banks of the Mooi River in the North-Western Province, ±120 km southwest of Johannesburg. It borders the oldest and largest meteorite impact site in the world, called the Vredefort Dome – a UNESCO World Heritage Site. Potchefstroom is among the oldest and most historic cities in this part of the country and, with the NWU at its core, has developed into the educational hub of the North-West Province.

One of the aims of FASBMB and SASBMB is to promote scientific exchange between academics and students of biochemistry and molecular biology. It is, thus, an objective of this conference to provide the opportunity for as many students as possible to attend this meeting. To do this, we will reduce the cost for student registration as much as possible. We also have arranged a range of accommodation and transport options at different cost structures, including a lower cost accommodation option mainly for students.

The events management company, Londocor, organisers for the 2012 SASBMB-FASBMB conference, will again organise this conference. The conference website www.sasbmb-fasbmb2018.com is active and will indicate the key dates, conference details and other important information.

I warmly invite you to attend this conference and we look forward to welcoming you in Potchefstroom!

Yours sincerely,

Francois van der Westhuizen (Chair Organizing Committee)

PABMB: Approaching 50 years promoting the advancement of biochemical sciences in the Americas

by Hugo Maccioni, Past Chairman, PABMB

The Pan American Association for Biochemistry and Molecular Biology (PAABS) initiated its activities informally around mid 1969 and formally on January 1st, 1970. The purpose of the Association is to foster and support the growth and advancement of research and education in Biochemistry and Molecular Biology within the Americas.

William J. Whelan, the founder of PAABS, describes its early years in his article "The Foundation and Early Years of PAABS (PABMB)" which is available on the PABMB website (PABMB.org/organization/history). He traced the origin of the Association to 1967, when he moved from the University of London to the University of Miami to take the Chair of Biochemistry. In Europe, he helped create the Federation of European Biochemical Societies (FEBS), of which he was the first Secretary General. From Miami he pursued the idea of founding a similar regional association in the Americas, B. Horecker, at the time President of the American Society for Biological Chemistry (ASBC, now ASBMB), D. Whittaker, then serving as President of the Canadian Biochemical Society, as well as the pioneers Severo Ochoa and Luis F. Leloir, and many other scientific colleagues in South America shared his enthusiasm. The Association came into official existence in 1970, with Luis F. Leloir (Nobel Prize 1970, Argentina) as the first President, and Whelan as Secretary General.

In 1973 Whelan became the Secretary General of the International Union of Biochemistry (IUB, now IUBMB) and from this position he worked to have the Union provide funds to PAABS and to the recently constituted Asian-Oceanian Federation of Biochemical Societies (FAOB, now FAOBMB). In 1982, the two regional Associations, PAABS and FAOB, were incorporated as IUB Associated Organizations, and since 1999, all four Regional Organizations, PAABS, FAOB, FEBS and the African Federation of Biochemical Societies (AFBS, now FASBMB) are Associated Organizations of IUBMB. In 1992 PAABS changed its name to Pan American Association for Biochemistry and Molecular Biology (PABMB).

Initially chartered in Mexico City on December 4th, 1975, since April 9th, 2015 PABMB is registered in Toronto, Ontario, Canada. The constituent Societies are those devoted to research in Biochemistry and Molecular Biology in the Americas and the Caribbean, namely Argentina, Brazil, Chile, Uruguay, Panama, Peru (Sociedad Quimica del Peru, Sección Bioquímica), Canada, USA (ASBMB and the American Chemical Society, Division of Biological Chemistry) and Mexico. The culturally related Spanish and Portuguese Biochemical Societies are Adherent Societies of PABMB. Cuba and Venezuela are Associated Societies

of PABMB. The Peruvian Society of Biochemistry and Molecular Biology has been recently created, and it is expected to adhere to PABMB soon.

Major activities of PABMB are the dissemination of information and sponsorship and organization of meetings for the presentation and discussion of discoveries and developments in biochemistry and molecular biology and related sciences; the sponsorship and organization of special courses for advanced students in biochemistry and molecular biology; the discussion of methods for the teaching of pure and applied Biochemistry and Molecular Biology; the sponsorship of the exchange of faculty and students between institutions of the Americas engaged in research and teaching in these fields of study.

Towards the furtherance of these aims, the Association works closely with its constituent Biochemical Societies for the development of Biochemistry and Molecular Biology, particularly in Latin American countries where the relatively scarce financial resources and other limitations make interactions between biochemists in Northern and Southern countries difficult. PABMB organizes its own Congress in conjunction with the Meeting of one of its Constituent Societies (Buenos Aires, Argentina, 1984; Sao Paulo, Brazil, 1990; Ixtapa, Mexico, 1992; Pucon, Chile, 1996; San Francisco, USA, 1999; Pinamar, Argentina, 2005; Aguas de Lindoia, Brazil, 2008; Pucon, Chile, 2013; and Vancouver, Canada, 2016). The XIVth Congress will be held in Argentina by the end of 2019 and the XVth Congress in Lisbon, Portugal, held jointly for the first time with IUBMB, FEBS and the Portuguese Biochemical Society, in June 2021.

As stated in its website, PABMB sponsors the PABMB Lecture Award, providing partial financial support for an outstanding speaker, the PABMB Lecturer, chosen by a Constituent or Adherent Society or by a Regional Association to deliver a Conference in its regular Meeting. The Lecturer, who also receives a commemorative plaque, must be affiliated to a PABMB Constituent Society. Recently, PABMB provided financial support for the organization of a PABMB Symposium during the regular Meeting of a Constituent Society. The aim of such Symposia is to stimulate the participation of speakers from different PABMB Constituent Societies, as a means of improving the exchange of information as well as the collaboration among researchers of the Americas, Spain and Portugal.

Another important activity of PABMB is to financially support young scientists, enabling them to attend courses, meetings and workshops in a country different from their own on relevant topics of Biochemistry and Molecular Biology.

Since 2010, PABMB has organized 2 Congresses, awarded 29 PABMB Lectures, and financed 12 courses/workshops and 8 Symposia. For all these activities and events the PABMB has depended on the steadfast and generous

financial support provided by IUBMB, which adds its funding to the modest contributions collected from the Constituent Societies.

PABMB also participates in the PROLAB (Promoting Research Opportunities for Latin American Biochemists) program, co-financed by ASBMB and IUBMB. This program is designed to support postdoctoral fellows and young investigators from countries affiliated to PABMB (via their corresponding national societies) to work for 1-6 months in the laboratory of a scientist affiliated to ASBMB. The purpose of the support is for the fellows or young investigators to carry out experiments that require special techniques or expertise, to acquire advanced training or to foster other forms of scientific collaboration. Ten fellowships per year (about one third of the candidates) have been awarded by this program in recent years, and we hope that this number will increase in the future.

The governance of PABMB is in the hands of an Executive Committee constituted by a Chairman, a Vice Chairman, a Past Chairman, a Secretary General and a Treasurer, who are nominated and elected by the affiliated Societies. The Council is formed by delegates of the PABMB Constituent Societies and both the EC and the Council meet at every PABMB Congress, although the EC may in addition meet during the course of a meeting of an affiliated Society, if necessary. Until December 2017, I acted as Chairman of the Association, with Jorge Babul (Santiago, Chile) as Past Chairman, Sergio Grinstein (Toronto, Canada) as Vice Chairman, Bianca Zingales (Sao Paulo, Brazil) as Secretary General (until 2016, currently José Sotelo Silveira, Uruguay) and Carlos Argaraña (Argentina) as Treasurer. Since January 2018, the Chairman is Sergio Grinstein, the elected Vice Chairman is Bianca Zingales, and the elected Treasurer is R. Pablo Aguilar (West Lafayette, IN, USA). José Sotelo Silveira is the Secretary General and I will stand as Past Chairman for the next three years.

There was a strong increase in the visibility of PABMB in the Americas and Europe in previous years due to the hard work of its various Officers. From my vantage point, during my terms as Vice Chairman and Chairman, the formidable efforts and dedication of Jorge Babul to promote and improve the PABMB are particularly noteworthy. The expertise of Bianca Zingales and more recently of José Sotelo Silveira constituted a solid contribution to that end. The hard work of Carlos Argaraña and of Sergio Grinstein resulted in the regularization of the legal and administrative status of the PABMB, which greatly facilitated the financial

transactions underlying its different academic activities. I have no doubt that such a dedication will also characterize the performance of the incoming EC.

General References

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Hugo Maccioni



William J. Whelan

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OBITUARY

Anthony (Tony) W. Linnane: A Man of Mitochondria and Much More

by Phillip Nagley*
Department of Biochemistry and Molecular Biology,
Monash University, Clayton, VIC, Australia



FIG 1 Emeritus Professor Anthony Linnane, 2017.

Tony Linnane was a highly accomplished research leader in the Department of Biochemistry at Monash University in Melbourne, Australia. He is well known as a towering figure of Australian and international Biochemistry not only for his outstanding research on the biogenesis of mitochondria but also for his roles in the Australian Biochemical Society (ABS, later becoming ASBMB) and the International Union of Biochemistry (IUB, later becoming IUBMB). Born in Sydney on July 17, 1930, Linnane received his PhD at the University of Sydney in 1956, working under the supervision of Professor Jack Still. In the mid-1950s he was the first to isolate functional mitochondria from baker's yeast, Saccharomyces cerevisiae, an organism with which he made his most lasting and impressive achievements during a remarkable two decades of work during the 1960s and His later work branched out into a series of 1970s. mammalian biochemistry and molecular biology projects covering diverse areas. These projects, some of which were pursued after he left Monash in 1996, predominantly had a biomedical focus embodying a drive toward clinical trials and commercialization. He continued working well into his eighties (Fig. 1), virtually to the day of his passing on November 11, 2017.

On completion of his PhD, Linnane went to the lab of David E. Green at the Institute for Enzyme Research at the University of Wisconsin, USA. Linnane pursued work on preparations derived from beef heart mitochondria, called electron transport particles, containing portions of what became later known as the mitochondrial respiratory chain. In his two years at the "Enzyme Institute" Tony encountered many leading biochemists of the era, providing an inspirational experience for him. The vision of contributing to science at the highest level permeated Tony's life from that time on.

Returning to the University of Sydney in 1959, as Lecturer, Tony decided not to compete directly with the mammalian mitochondrial "heavyweights" he had encountered in the US, but to use yeast as a model eukaryote that not only contained functional mitochondria but also readily generated mutants called "petites" that lacked respiratory function. He realized that the emerging studies on protein synthesis, informed by genetic studies in bacteria, could be applied to yeast to work out how mitochondria are formed. In 1962, Linnane moved to Monash (as Reader in Biochemistry, to be made Professor in 1965). There his seminal work took off as he and his colleagues set up a series of elegant studies that demonstrated a protein synthesizing system within mitochondria of yeast, which could be inhibited by antibacterial drugs such as chloramphenicol to generate a respiration-deficient phenotype resembling that of petite mutants. Linnane's studies supported the then controversial view that mitochondria had evolved from bacteria.

Linnane and colleagues discovered a series of antibiotic resistance markers (that presumably affected mitochondrial ribosomes), which were inherited separately from nuclear genes. At the same time, Linnane used the property of *Saccharomyces* as a facultative anaerobe to generate cells with primitive (under-developed) mitochondria after anaerobic growth in fermentative mode yielding ethanol as a product of anaerobic glycolysis. Restoring oxygen enabled the cells to regenerate mitochondria with their full array of membranes and respiratory enzymes, thus allowing biochemical approaches to analyzing mitochondrial formation.

In the relatively well-funded environment in Australian Universities of that period, Linnane built up a formidable array of technologies including biochemistry, genetics, enzymology, electron microscopy and later, molecular biology, to investigate "the biogenesis of mitochondria," a descriptor used by Tony to "tag" his research. The years 1967 through to 1987 saw a remarkable series of 66 publications under this generic title (plus many more without a "biogenesis of mitochondria" label) on a wide range of topics. Through such broad multidisciplinary approaches, with a common integrated focus, the formation of the mitochondrial organelle and its membrane-associated enzyme complexes of the respiratory chain and ATP synthase was elucidated. The key understandings to emerge from Linnane's work were that this process takes

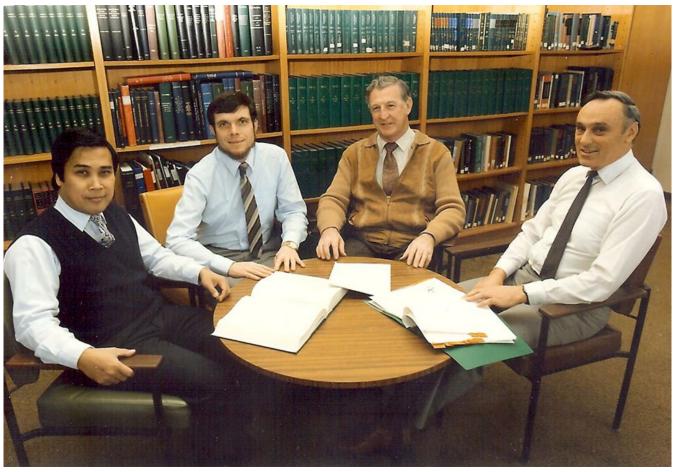


FIG 2 Senior colleagues in the early days of the Centre for Molecular Biology and Medicine at Monash University, 1986. From left: Sangkot Marzuke, Phillip Nagley, Tony Linnane, Bruce Lukins. Monash University Archives, IN467.

place by co-operative contribution of two genetic systems (the chromosomes containing nuclear DNA and another multicopy organellar genome in the mitochondria, called mtDNA), and two separate ribosomal protein-synthesizing systems: one in the cytosol and one within mitochondria themselves.

A major achievement of Linnane and colleagues at Monash was the construction of the first physical map of yeast mtDNA in the mid-1970s. The physical mapping of 10 protein-coding genes and two rRNA genes on the circular mitochondrial genome was performed by molecular genetic techniques, exploiting the unique properties of petite mutants as deletion mutants each retaining a particular portion of mtDNA. This elegant physical mapping of gene locations predated the use of restriction enzymes, who widespread application came later. Work after this period at Monash began to focus on the mitochondrial ATP synthase. As part of these studies, a series of novel monoclonal antibodies were made, which were highly efficient in immunoprecipitating the undissociated ATP synthase complex. These new tools allowed a series of experiments on the structure and function of this enzyme complex to be carried out. Linnane's senior colleagues during this highly productive phase of his career at Monash University included Bruce Lukins, Phillip Nagley, and Sangkot Marzuki (Fig. 2).

For these major contributions to understanding the formation of mitochondria, Linnane was elected as Fellow of the Academy of Science (Canberra) in 1972 and Fellow of the Royal Society (London) in 1980. Thereafter. Linnane's efforts changed direction and broadened in the 1980s. Molecular biology and antibody technologies were already strengths in the Linnane group and he capitalized on these to move into the diversified areas of human interferon research and antibodies recognizing serum mucins in colorectal and other cancers. Linnane's lifelong interests in mitochondria and bioenergetics (particularly oxidation/reduction) were refocused on mammalian ageing. He placed much emphasis on coenzyme Q₁₀ (CoQ₁₀) a key component of the mitochondrial respiratory chain, which at the time had emerged in the public domain as a dietary supplement sold as complementary medicine.

Linnane had much success in attracting funds from private foundations and benefactions, as well as commercial investment capital, to support this broad range of activities.



FIG. 3 Tony Linnane in deep conversation with Luis Vitetta (left) in Melbourne, 2015.

Linnane founded the Centre for Molecular Biology and Medicine (CMBM) in 1983. The CMBM provided the funds and ambience to allow Tony and colleagues in the Centre to pursue productive research in the three areas mentioned above, as well as supporting the basic research of his close academic colleagues at Monash and other collaborators in clinical settings. Linnane had been Head of Department on several occasions during his career at Monash since the 1960s. Whilst Linnane was Director of CMBM, in 1991, he resumed the headship of the Department of Biochemistry. He led the process of departmental name change (eventually to become Biochemistry and Molecular Biology in 1996). But pressures within that Department, in some measure assisted by forces within the University, led to Linnane's relinquishing the departmental headship in 1994. However, the situation became even more strained after he stepped down as departmental head. Linnane left Monash in 1996 to relocate CMBM as an independent incorporated entity first at the Repatriation Hospital in Heidelberg and then later in its longer-term home in the Epworth Hospital in Richmond (both locations are suburbs of Melbourne). Linnane retired from Monash as Emeritus Professor of Biochemistry and Molecular Biology in recognition of his highly meritorious 34-year service to the University. Linnane was honoured with AM (Member of the Order of Australia) in 1995 and was awarded a Centenary Medal in 2001 (an award created by the Australian government, on the centenary of Federation of Australia). He was elected as Fellow of the Australian Academy of Technological Sciences and Engineering in 1999.

Linnane and his colleagues in the independent CMBM pursued the avenues of research and development work in bioenergetics and therapeutics aimed at treatment of chronic diseases particularly those of ageing, mostly with private investment funds and support from private foundations. His main scientific contributions after 1998 were to studies on mtDNA mutations in ageing (extending work already commenced in the 1990s at Monash), use of CoQ_{10} in ameliorating bioenergetically insufficient physiological or medical situations, and the theoretical aspects of oxidation-reduction biochemistry underpinning the use of agents such as CoQ_{10} or vitamin C (ascorbic acid).

The CMBM labs at the Epworth Hospital closed in 2007. But a new phase in Linnane's work had already opened. From about 2000, Tony had been collaborating in the biopharmaceutical area with Luis Vittetta, a medical scientist then at Swinburne University, Melbourne. In 2007, Vitetta moved to the Centre for Integrative Clinical and Molecular Medicine at the University of Queensland (UQ) in Brisbane. Linnane was appointed an Honorary Professor at UQ in 2007 to perform consultative work with Vitetta at the Princess Alexandra Hospital in Brisbane. After Vitetta moved to Sydney in 2013 as Director of Medical Research at MedLab Clinical, Ltd., both he and Linnane became adjunct Professors in the School of Medicine at the University of Sydney from 2014 (Fig. 3). Linnane still lived Melbourne, and his role as consultant and advisor allowed his participation in the organization of clinical trials

both in Sydney and in Melbourne.

Tony Linnane made many contributions to the Australian Biochemical Society (ABS), the forerunner to ASBMB. He was NSW State Representative to ABS 1959-1960, Secretary of ABS 1961-1966, and President of ABS 1974-1976. His main contribution as Secretary was to ensure an international presence at the annual ABS conferences through the bringing of at least one eminent international speaker, who would not only participate in the conference but who would also visit other locations in Australia. In this period, an arrangement was made with the Biochemical Society UK to sponsor one such prominent biochemist to come to Australia each year for the annual ABS conference. Linnane was awarded the Lemberg Medal of ABS in 1972, and he was made an Honorary member of ASBMB in 2005.

As president of ABS in the mid-1970s, Tony worked hard to bring the first IUB Congress to the Southern Hemisphere, and his efforts resulted in the 12th IUB Congress being held in Perth WA, in 1982. This Congress brought many distinguished Biochemists to Australia that year. Some visiting speakers also participated in satellite meetings, including one at Monash and another on the Indian Pacific train from Sydney to Perth over 3-4 days! The Congress was unfortunately affected by political aspects (external to Linnane) that resulted in denial of entry visas to Russian delegates by the Australian Government of the day. This led to complications for the 11th Ordinary General Assembly of IUB, in which resolutions were voted by the delegates present in Perth (Part 1). To allow the Russian delegates to record their votes, Part 2 of the General Assembly took place 3 weeks later in Moscow (all this was ably managed by Bill Whelan, then IUB General Secretary).

Tony became involved in regional as well as international organizations. Such involvement was encouraged by various Presidents of IUBMB, especially E.C. (Bill) Slater (the Netherlands, 1988-1991) and Kunio Yagi (Japan, 1994-1997). Tony greatly valued these friendships and these individuals, together with Brian Clark (Denmark, IUBMB President 2000-2003), had much influence on his professional and research life (1). Linnane was President of the Federation of Asian and Oceanian Biochemists (FAOB), during 1975-1977 (FAOB was later to become FAOBMB). He was Treasurer of IUBMB for 9 years between 1988 and 1997. He was a driving force for the IUBMB Conferences held in each of the two intervening years between the triennial IUBMB Congresses. These took place during the period 1992 to 2016, the first being held in Nagoya, Japan and the last in Vancouver, Canada. One such Conference was held in Melbourne as the OzBio2010 Conference, under the leadership of Nick Hoogenraad and Phillip Nagley.

Linnane was founding Editor of the IUB-sponsored journal *Biochemistry International*, published by Academic Press (Sydney) and running it from his office at Monash from 1980 until he left in 1996 (and for a short time after that until 1998). The journal had changed its name to *Biochemistry and Molecular Biology International* (BAMBI) in 1993 and,

after Linnane left the position of Editor in Chief, in 1999 morphed into *IUBMB Life* published later by Wiley (so continuing to the present day). Linnane was awarded the IUBMB Distinguished Service Award in 2000. Additionally, in 1990, he was made an Honorary Member of the American Society for Biochemistry and Molecular Biology (the other ASBMB).

Tony was a determined man for all his adult life, ever conscious of the drive to succeed at whatever he turned his hand to in the professional sphere. He had a great interest in horse racing throughout his life. In the most recent decades he enjoyed many happy times with his family, often travelling overseas with his second wife Daryl and the children. Tony had enduring friendships with many colleagues in Australia and overseas and, as befits one with the "old school" approach, each year he would send out many handwritten Christmas and Seasons' Greetings Cards to his friends. Sadly, no such cards were received in December 2017.

ACKNOWLEDGEMENTS

I apologise to all those colleagues of Tony Linnane whose names could not be mentioned here due to space limitations. I am grateful for Dr. William J. Whelan (University of Miami, USA) for information about the General Assembly of IUB held in 1982.

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*Address correspondence to: Phillip Nagley, Department of Biochemistry and Molecular Biology, Building 77 at 23 Innovation Walk, Monash University, Clayton, VIC 3800, Australia.

E-mail: phillip.nagley@monash.edu

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Contact: Professor Corinne M. Spickett, c.m.spickett@aston.ac.uk **Website:** http://www.masstrplan.org/event/summerschool2018/

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