



# IUBMB

# NEWSLETTER

ISSUE NO. 13 • JUNE 2022

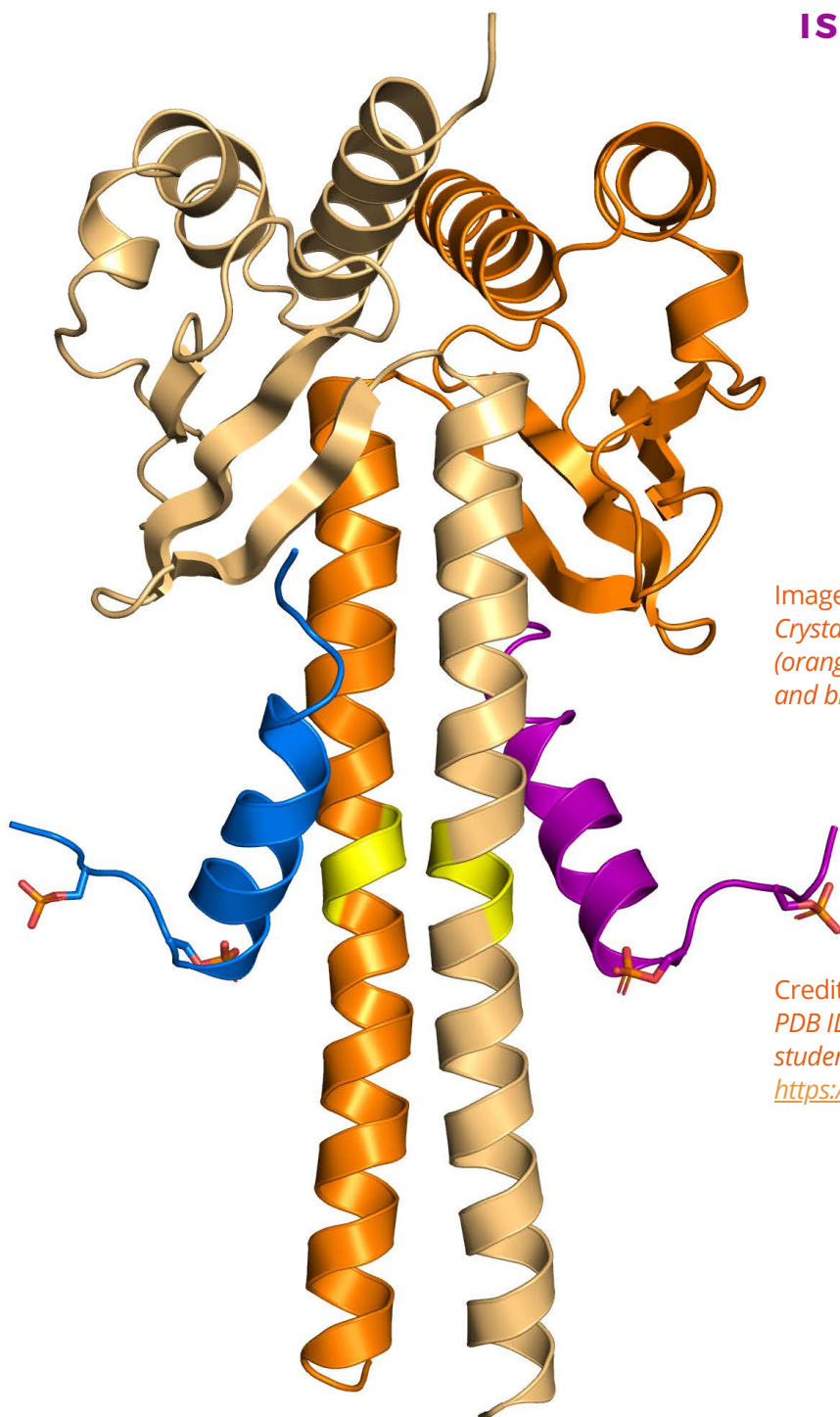


Image:

*Crystal structure of human Mad1 C-terminal domain (orange) bound to phosphorylated Bub1 CD1 domain (purple and blue).*

Credits:

*PDB ID: 7B1F. Determined by Elyse Fischer while she was a Ph.D. student in David Barford's group.*

*<https://www.embopress.org/doi/full/10.15252/embr.202052242>*

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# Message from the President



**Alexandra Newton**

Dear Friends of IUBMB,

Sir Hans Krebs had a vision to unite biochemists separated by the atrocities of World War II, a union which would serve as a catalyst for collaborations, intellectual exchange, and training between biochemists in different countries who had been separated by the war. Thus was established the International Union of Biochemistry (IUB) in 1955, following its admission to the International Science Council; it was renamed the International Union of Biochemistry and Molecular Biology (IUBMB) in 1991. As we face the atrocities of a wars, famines, and natural disasters seven decades later, the IUBMB is committed more than ever to help. How are we doing this?

In March, we put in place a new program, Relocation Support for Displaced Trainees, to support graduate students and postdoctoral fellows displaced from their labs because of natural disasters, war, or other events beyond their control that interrupt their training. This program provides financial support of up to US \$2000 for trainees to relocate to a new host lab to continue their research. Applications are reviewed immediately upon receipt and decisions made within one week. Our first Award was issued to Kseniia-Oksana Zhukrovska who relocated from Ukraine to Italy and is able to continue her training towards her PhD. We would like to help as many trainees as possible, and for this, I ask you to help us help the trainees. You can help in three tangible ways:

1. If you know of labs in Eastern Europe or other areas with displaced trainees, please forward the information on our [Relocation Support for Displaced Trainees](#).
2. If your lab is able to host a displaced student because of the war in Ukraine, please add your name to one of the lists below:
  - [EMBO Solidarity list](#) – A list of life scientists across Europe and beyond offering to host Ukrainian researchers in their labs
  - [#ScienceForUkraine](#)
  - [Global Research Groups Supporting Ukrainian Scientists](#)
3. You can also help by making a charitable donation to the IUBMB, with funds directed specifically to the Displaced Trainee Program (see below).

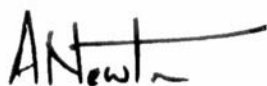
Another way we are helping is by waiving the deadline for Wood Whelan Fellowships for any displaced trainees. The Wood Whelan Fellowship is our most popular program and provides funds for students and postdoctoral fellows to travel to a lab in a different country to advance their training. We have supported close to 400 fellows from Africa, Europe, the Americas, and Oceania/Asia since 1983. For many awardees, this opportunity was a key stepping stone in their path to successful career in biochemistry and molecular biology. We have been highlighting past awardees on our Wood Whelan Wednesdays on the IUBMB social media, and you can read about their experiences [here](#).

I am also pleased to announce the creation of the IUBMB Trainee Initiative in early 2022. Trainees are our future and the best investment we can make is to nourish their interests, provide opportunities for their research, education, and career development, and engage their passion in biochemistry and molecular biology. I am thus thrilled to welcome the leaders of tomorrow to the international biochemistry and molecular biology community. The IUBMB Trainee Initiative is run by trainees for trainees, with the full support of the IUBMB. I thank every member from Africa, Europe, the Americas, and Oceania/Asia for volunteering their time, energy, and ideas to engage trainees around the world and wish them much success as they rise to the challenge of building and shaping the initiative. I invite you to read more about the Trainee Initiative on our [website](#).

Lastly, I am grateful to Sannie Cuberston, the editor TIBS, for her enthusiasm in embracing the IUBMB in the mission of this journal, which was founded by the late Bill Whelan. TrendsTalks in the July issue highlights the IUBMB leadership and TrendsTalks in the August issue highlights the IUBMB Trainee Initiative.

I look forward to meeting you at the upcoming IUBMB Congress in Lisbon! And as always, I welcome suggestions from the global community of biochemists and molecular biologists on how the IUBMB can better serve you.

Sincerely,

A handwritten signature in black ink, appearing to read 'ANewt', with a long horizontal stroke extending to the right.

Alexandra Newton, PhD  
President, IUBMB



Did you know you can make [charitable donations to the IUBMB](#) and that 100% of your funds go directly to our programs? The leadership of the IUBMB is 100% on volunteer basis. Please consider donating to the IUBMB to help in our mission of providing research and education opportunities to our members around the globe. You can make tax-deductible contributions in the US or in Europe. Select from these programs:

## Donation Options



**IUBMB Relocation Support for Displaced Trainees  
(with special emphasis to Ukrainian trainees)**



**General Contribution to the Society**



**Fellowship Programs to Visit Lab in Different Country**



**Diversity, Equity, and Inclusion Program Fund**

# KICKSTARTING THE IUBMB TRAINEE INITIATIVE

Last fall, Prof. Alexandra Newton, the current IUBMB president, assembled a team of early career scientists located across the world to form the first global initiative to support trainees in biochemistry and molecular biology. [The IUBMB Trainee Initiative \(IUBMB TI\)](#) is run by trainees for trainees and aims to provide every trainee with a chance to engage with educational, technical and professional development opportunities to nourish and shape their careers.



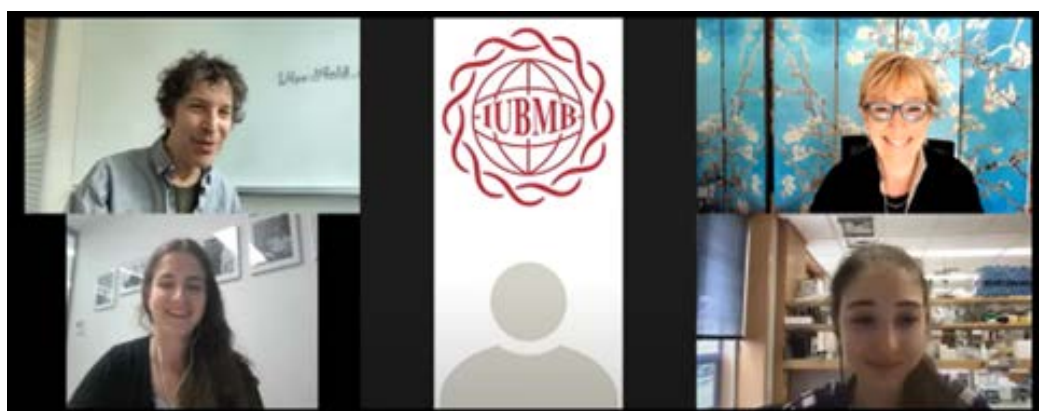
## Building up the Initiative

The initial members of the TI Leadership Committee have been working hard to build up a diverse and passionate team of representatives. Recently, Réka Mizsei, who is originally from Hungary, and is now a postdoctoral fellow at the Dana-Farber Cancer Institute at Harvard Medical School, joined the TI's FEBS team. Réka is particularly passionate about building a peer mentoring community that breaks down barriers to trainee support. Ryan Lintao, an MD-PhD candidate, joins the FAOBMB team, and hopes to open up and link opportunities for skills development and training to other scientists-in-training not just in his country, the Philippines, but also in other low- to middle-income countries. Marta Orlowska, a final year PhD at Queensland University of Technology and QIMR Berghofer Medical Research Institute in Brisbane, Australia, also joins the FAOBMB team. She is a passionate science communicator, supporter of women in STEM and firm believer of developing hard and soft skills.

# KICKSTARTING THE IUBMB TRAINEE INITIATIVE

## The TI's first events!

On March 30th, the IUBMB TI held their first virtual webinar, hosting Drs. David Baker and Brian Koepnick who taught trainees about protein folding and design. With more than 350 registrations by early career researchers from over 40 different countries, the webinar has set a great precedence for future events. A recording of the webinar was posted [online](#), allowing access to anyone who was not able to attend live.



### The Foldit CoV challenge: Anti-viral design

**Design a SARS-CoV-2 antiviral protein**

- Target the viral S protein
- Compete with hACE2

hACE2

SARS-CoV-2 S

COVID-19

Image from CDC @https://covid.cdc.gov/CovidDetail.aspx?cid=72313

On May 30th, the IUBMB TI's team of African representatives hosted the TI's second webinar of the year, with the goal of bridging the gap between life sciences and computer sciences. In a rapidly advancing field of research and development, the TI wishes to encourage and uplift young African scientists with resources, opportunities and potential growth in linking computational methods with biology. The webinar focused on the prospects and importance of bioinformatics from an African context with distinguished guest speakers Drs Verena Ras and James Otieno discussing how genomic data and diversity will shape and impact the world of life sciences globally.

# KICKSTARTING THE IUBMB TRAINEE INITIATIVE

## Hot off the press! IUBMB TI on Trends in Biochemical Sciences

The Trainee Initiative Leadership Committee was also invited to share their vision on supporting trainees around the world in the journal *Trends in Biochemical Sciences*. Each representing one of the four IUBMB regions, Elyse, Osvaldo, Bri, and Victoria shared their personal stories and experiences as budding scientists, and how they plan to use their platform to help fellow trainees.



Trends in Biochemical Sciences  
@TrendsBiochem

Are you a [#biochemistry](#) [#molecularbiology](#) trainee seeking educational, technical, and professional development opportunities? Then check out the [@iubmb\\_trainee](#) Initiative!

Here, four members share their passions for supporting trainees around the world.

[bit.ly/3LLwrOu](https://bit.ly/3LLwrOu)



## Stay Tuned!

Follow the IUBMB TI on [Instagram](#), [Twitter](#), or subscribe to their [mailing list](#) to access all their resources and stay tuned on all their exciting events. Any question or concerns or ideas for how the TI can better support trainees can be sent to [trainee.initiative@iubmb.org](mailto:trainee.initiative@iubmb.org).



Trainee Initiative



@IUBMB\_TRAINEE



@IUBMB\_TRAINEE



# KICKSTARTING THE IUBMB TRAINEE INITIATIVE

## Gearing up for our next event!

Graduate school season is here and our team of Asian and Oceanian representatives at the IUBMB Trainee Initiative are set to host their first event and our first-ever roundtable discussion – **The Graduate School Roadmap: A Roundtable Discussion**.



**Osvaldo Contreras  
(Co-Chair)**  
FAOBMB Region  
Postdoctoral Scientist  
VCCRI | Australia



**Marta Orlowska**  
FAOBMB Region  
PhD Candidate  
QIMR Berghofer, QUT | Australia



**Ryan C.V. Lintao**  
FAOBMB Region  
MD-PhD Candidate  
University of the Philippines Manila | Philippines



**Zainab Rafat**  
FAOBMB Region  
BSc Student  
Aligarh Muslim University | India

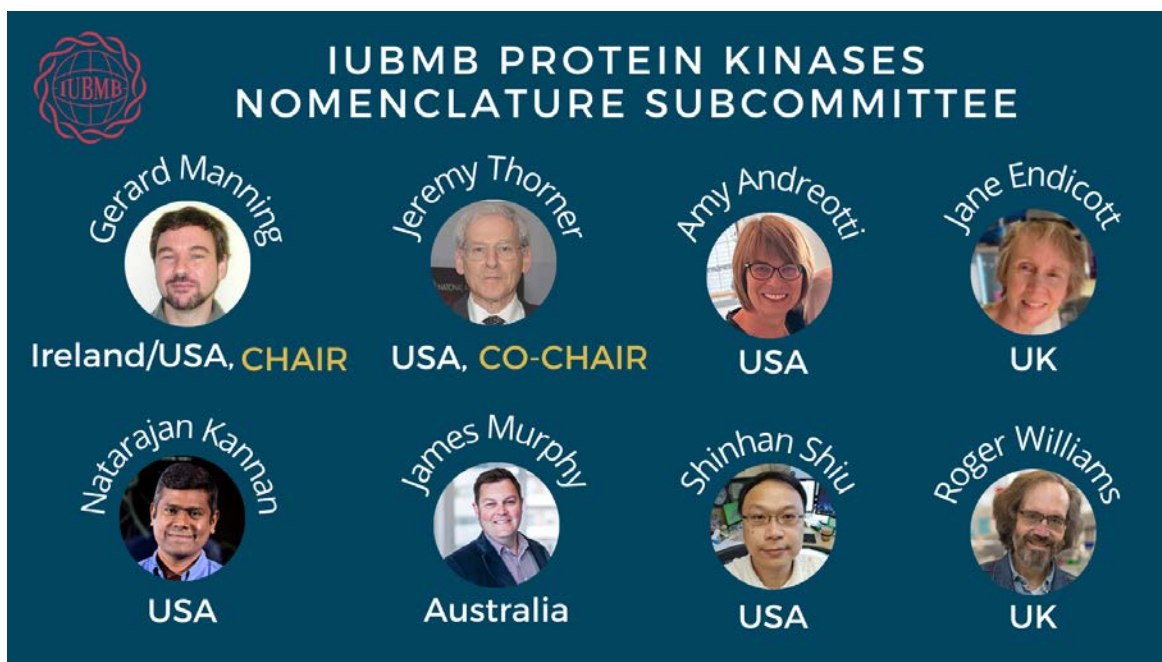


The program features students who have graduated recently and are on their way to a successful research career in Biochemistry or a related field. In addition, there will also be distinguished professors who can provide information about supervision during graduate research, as well as, how a prospective graduate student can approach them regarding supervision.

In today's increasingly competitive world, the TI aims to support and inspire young Asian and Oceanian students with the knowledge and resources for a successful graduate school application and journey, eventually leading to a triumphant career in research.

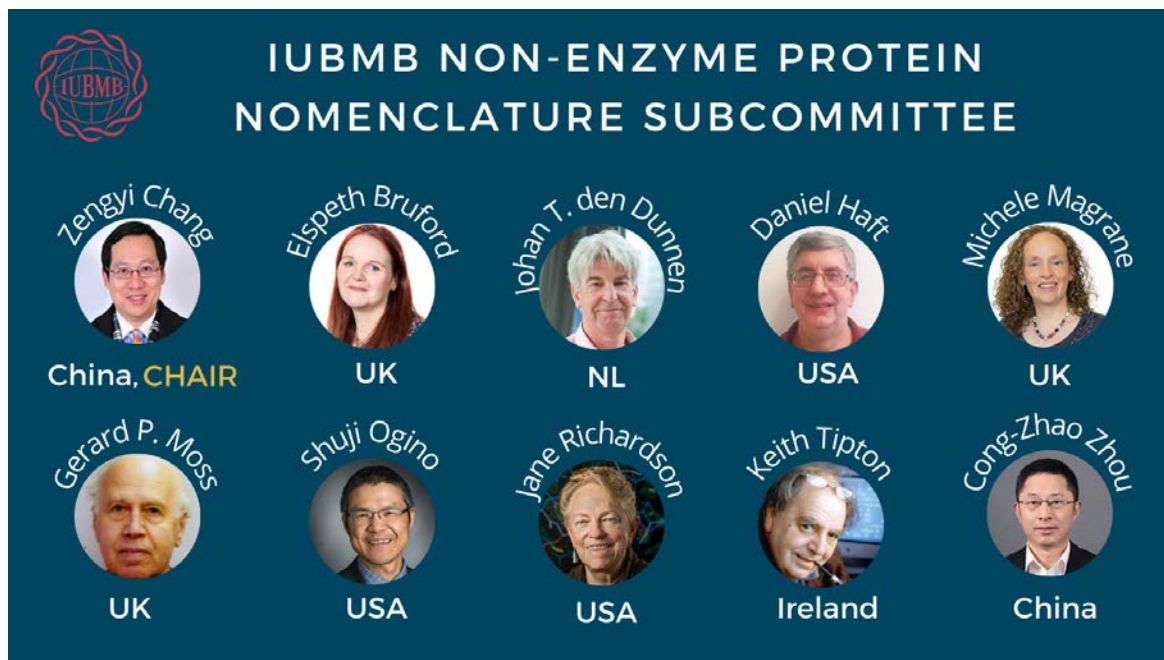
The event is scheduled for **July 31st, at 10 AM Arabian Standard Time / 7 PM New Zealand Standard Time**, and we welcome you to submit your questions either through [Google Forms](#) or in the comments of our [Instagram](#) or [Twitter posts](#).

# ANNOUNCING NEW IUBMB SUBCOMMITTEES



The [Protein Kinases subcommittee](#) is charged with better parsing protein kinases into logical classes, considering genome sequencing, bioinformatics, and structural and biochemical properties, and, on that basis, appropriately allocating EC numbers. As background, the nomenclature and EC designations for protein kinases have not kept up with the enormous advances in genome sequencing and bioinformatics, or with the rapid pace of the biochemical and structural characterization of members of this class of phosphotransferases. Current analysis indicates that the human genome encodes 538 protein kinases, at least a quarter of which have clearly recognizable counterparts even in unicellular eukaryotes. Conversely, unique groups of protein kinases, such as some of those found in bacteria and plants, also need to be considered. Hence, it has become important to more systematically categorize protein kinases.

# ANNOUNCING NEW IUBMB SUBCOMMITTEES



The [Non-enzyme Protein Nomenclature Subcommittee](#) of the International Union of Biochemistry and Molecular Biology (IUBMB) has been formed for the purpose of finding out ways to standardize the often hardly meaningful and confusing nomenclature of a tremendous number of proteins so far revealed by the international biochemical community. We welcome colleagues who have good ideas on this matter either to join us (after being approved by the IUBMB Executive Committee) or share with us your thoughts on this challenging matter.

# The Non-Enzyme Protein Nomenclature Subcommittee of IUBMB

## Meeting Report

The current Non-enzyme Nomenclature subcommittee of IUBMB includes the following members:

**Zengyi Chang (Chair)**, Peking University, China

**Elsbeth Bruford**, HUGO Gene Nomenclature Committee (HGNC), UK

**Johan T. den Dunne**, Leiden University Medical Center, Netherlands

**Daniel Haft**, National Center for Biotechnology Information (NCBI), USA

**Michele Magrane**, EMBL-EBI, UK

**Gerard P. Moss**, Chairman of both JCBN and NC-IUBMB; NC-JCBN Member; Queen Mary University of London, UK

**Shuji Ogino**, Harvard Medical School, and Brigham and Women's Hospital, USA

**Jane Richardson**, Duke University School of Medicine, USA

**Keith Tipton**, NC-IUBMB and JCBN Member, Trinity College Dublin, Ireland

**Cong-Zhao Zhou**, University of Science and Technology of China, China



The first meeting of the Non-enzyme Protein Nomenclature Subcommittee of IUBMB was held online on January 21, 2022.



# The Non-Enzyme Protein Nomenclature Subcommittee of IUBMB

## Meeting Report

The following consensuses were reached from the first meeting:

- Gene symbol should be kept, but we should decide whether we should start with one system or a few.
- When grouping proteins by their functions, we need to pay attention to the fact that one gene may encode multiple proteins (via alternative splicing, RNA editing, etc) and one protein (multisubunit one) may be encoded by multiple genes, and that many proteins may have multiple functions.
- Learning about protein function is a dynamic process; many proteins have no known functions yet.
- Protein names should be identical across all species

### **The second meeting of the Non-enzyme Protein Nomenclature Subcommittee of IUBMB was held online on April 22, 2022.**

The following consensuses were reached from this second meeting:

- Proteins are defined at this stage as those having more than 50 amino acid residues, those smaller than 50 residues will be considered case by case.
- Those peptides derived from polypeptide precursors that are synthesized by ribosomes may be considered in the future at certain time point.
- Given that gene symbols are largely unified among vertebrates, but not in other organisms, we may use those set for vertebrates; It remains a problem on what gene symbols to use for non-vertebrate genes.
- Names for proteins should be established as ones that are the same across all species.
- Proteins can be classified into eight categories as follows:

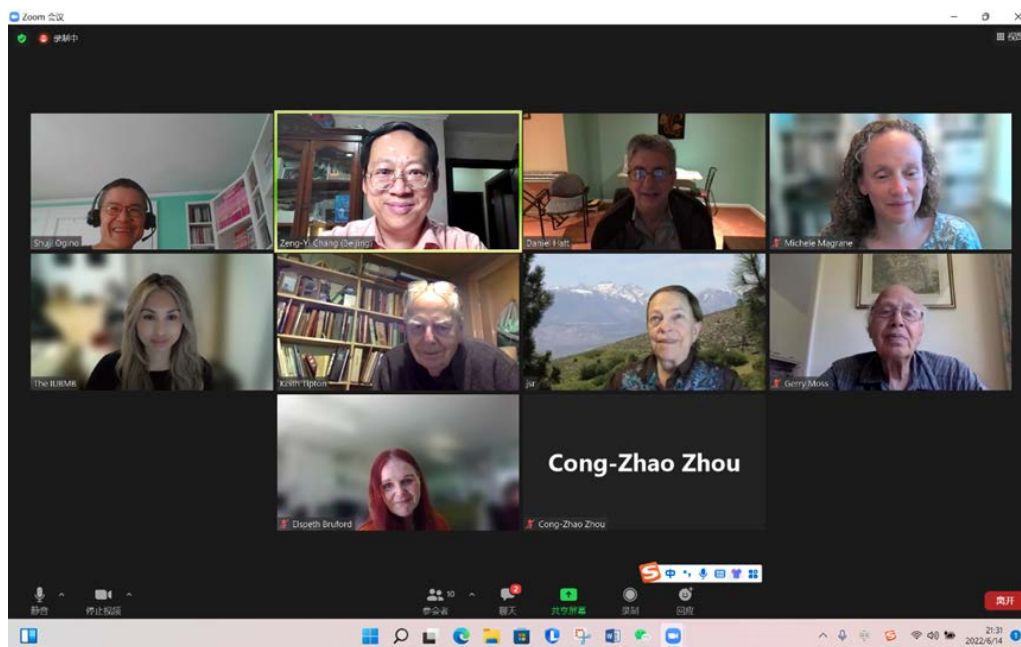
1) Structure 2) Catalysis 3) Transport 4) Movement 5) Regulation 6) Defense 7) Storage 8) Miscellaneous

- The protein names might be designed hierarchical, with “parental” and “children” levels, etc.
- We need to learn more about the protein names already given to all proteins by examining all kinds of sources, including protein or gene databanks. With the goal of choosing the best ones as our starting basis.

# The Non-Enzyme Protein Nomenclature Subcommittee of IUBMB

## Meeting Report

The third meeting of the Non-enzyme Protein Nomenclature Subcommittee of IUBMB was held online on June 14, 2022.



At this meeting, Dr. Daniel Haft, a member of the subcommittee, gave a detail report on the current status of protein names provided by major protein databases.

The consensus reached at this meeting include the following:

- A certain group of proteins should be selected as a test before working on all the proteins. This group of proteins should have homologs across all species. One group could be proteins regulating gene expressions.
- The International Protein Nomenclature Guidelines, as formulated by a group of experts, should be discussed at a future meeting of this Subcommittee, be revised and be made as an official guideline from this subcommittee, if approved.
- Before this online meeting, members of this subcommittee conducted more discussions via written communications. In particular, Dr. Keith Tipton sent a long comment reflecting his concerns in many aspects. The issues he raised were discussed by the members via Email exchanges.

The Non-enzyme Protein Nomenclature Subcommittee of IUBMB welcomes all types of comments and suggestions from the International community (please send to Dr. Zengyi Chang: [changzy@pku.edu.cn](mailto:changzy@pku.edu.cn)).

## DR FRANCIS AMARA IUBMB Ambassador for FASBMB

### STEM Outreach in Sierra Leone



The K-STEM Centre has started hands-on science activities to teach elementary school pupils about cells, as the unit of living organisms. The kids can visualize different type of cells from human tissue slides under the light microscopy. They are so excited to learn that the human body is made of diverse cells performing several different functions.

These kids are the lucky ones to have the opportunity to see a microscopy in real life, not to mention to touch and work with it!

Sierra Leone is an extremely poor country. There are no microscopes in schools and most colleges and universities. In fact, the only medical school in the country can hardly boast of more than 3 working light microscopes in good conditions.

These activities have made the kids curious about the human body and to become interested in bioscience.

A class 4 student said: “I wonder why the cells in the dog's intestine look so different in shape and size.”

Another student asked: “when are we going to see cells from a human intestine.”

Their teachers and parents are telling us how attendance of the class 4 pupils has increased since they have started coming to the K-STEM Centre, because only those students who attend class regularly can join the Science Buddies Clubs.

The parents too tell us that their kids seem to like school much better now, since they have started doing the hands-on activities at the K-STEM Centre.

They are also making new friends in their groups, as they learn to collaborate and share equipment.

## DR FRANCIS AMARA IUBMB Ambassador for FASBMB



Dr. Francis Amara teaching basic microscopy to primary school pupils.



**STEM Outreach in  
Sierra Leone, West Africa**



## BRIANNA BIBEL

### IUBMB Trainee Ambassador



Your weekly [Bri-fings from the bench](#) are coming from a new bench! And from a postdoc. But, don't worry, they'll still be from the Bri you know and (hopefully) love! Yep, I am now officially a postdoc! "Postdoc" is short for postdoctoral scholar/researcher/fellow etc. and it's where, after you earn your PhD, you go to a different lab (typically) to get more training and experience. Postdoc positions are great ways to learn new skills and techniques, explore new research areas, and gain practice mentoring and potentially teaching. But the whole concept of a "postdoc" can be kinda confusing (especially since the word can be used to refer to the person or the position...) so if anyone's

interested in learning more about them, I did a Bri-fing on them you can find [here](#).

In April, I started a postdoc in the lab of Dr. Danica Fujimori at the University of California, San Francisco. That Bri-fing I linked to above was a first-week update from my new position, and one in what I'm sure will be many posts helping take you behind the scenes of a postdoc! Over the course of my postdoc, I will be diving more into the world of "chemical biology" - looking at the more chemistry-ish side of biochemistry - in order to study ribosomes (our cells' protein-making machinery). You'll surely hear more about ribosomes as I learn more about them. And you'll also hear more about other enzymes as I continue introducing you to the IUBMB's classification system for these reaction mediators/speed-uppers (aka catalysts). I kicked off that enzyme series in March with a Bri-ring on [EC \(enzyme commission\) numbers and the ExplorEnz database](#). And I plan to do more Bri-fings highlighting the different classes of enzymes in the weeks and months ahead.

The first half of 2022 also saw the launch and blossoming of the IUBMB Trainee Initiative (IUBMB TI). As a member of the IUBMB TI Leadership Committee, I have had the privilege of working with trainee scientists from around the world to help unite fellow trainees and provide access to resources. We had our first event in March, which was a webinar on Protein Design and FoldIt featuring talks by Drs. David Baker and Brian Koepnick. It was a huge success and you can learn more about it [here](#), as well as [watch the whole recording](#) on the IUBMB's YouTube channel.

I feel so incredibly fortunate for all of the amazing opportunities I have had and continue to have. But many are not so fortunate. This includes countless training scientists who are displaced from their labs through events outside of their control (war, natural disaster, etc.). So I would like to end by asking those who are in a position to do so, to donate to the IUBMB Relocation Support for Displaced Trainees to help trainees travel to other labs to continue their training. You can find more information about this initiative in this [February Bri-fing](#).

# BRIANNA BIBEL

## IUBMB Trainee Ambassador

### when diving into new project...

identify, get familiar with (and take  
(referenced) notes on)

**key researchers/labs**

**key techniques**

**key papers**

**key journals**

**key compounds**

**key proteins/nucleic acids**

and remember you're not expected to  
know it all right away!

enjoy the chance to learn new things!

### EC numbers

Enzyme Commission

**each enzyme has a 4-part numerical ID**  
more than just a name, it gives you information  
about what the enzyme does & how

**EC 1.1.1.1**

**main class**

1. oxidoreductases
2. transferases
3. hydrolases
4. lyases
5. isomerases
6. ligases
7. translocases

**subclass**

often tells you often what type of  
compound or bond it acts on

**sub-subclass**

further classification

**serial number**

"just" makes it so each  
enzyme has its own  
unique EC number

### a quick class in enzyme classes

- 1 oxidoreductases** catalyze oxidation & reduction (redox) reactions  
 $AH_2 + B = A + BH_2$
- 2 transferases** transfer functional groups (such as amino or methyl groups)  
 $AX + B = BX + A$
- 3 hydrolases** use water to break bonds (catalyze hydrolysis)  
 $A-B + H_2O = AH + BOH$
- 4 lyases** add or remove things to make (or break) bonds (often double bonds, but not always)  
 $A=B + X-Y = \begin{matrix} A-B \\ X \quad Y \end{matrix}$
- 5 isomerases** help molecules rearrange their atoms  
 $A = B$
- 6 ligases** join 2 molecules with the help of a nucleotide triphosphate (such as ATP)  
 $A + B + NTP = A-B + NDP + P$  (or  $NMP + PP$ )
- 7 translocases** move things (ions, etc.), often across a membrane  
 $AX + B \parallel = A + X + \parallel B$   
(side 1) (side 2)

### Explore Enzymes with ExplorEnz!

#### ExplorEnz - The Enzyme Database

Home Search Enzymes by Class New/Revised Enzymes Statistics Forms News Information Downloads

Look up EC number:  Go

Search by name:  Go

searchable by name or #

#### About ExplorEnz

ExplorEnz contains the approved International Union of Biochemistry (IUBMB) Enzyme nomenclature and classification list. It was developed at Trinity College Dublin in 2005 as a new way to access the data of the IUBMB Enzyme Nomenclature List. The data, which are stored in a MySQL database, preserve the formatting of chemical names according to IUPAC standards. A simple, easy to use, web-based query interface is provided (Search), along with an advanced search engine for more complex queries (Advanced Search).

ExplorEnz is developed and maintained by Andrew McDonald.

Please use the forms provided to submit suggestions for new enzyme entries or to report errors in existing entries.

Downloads of the database are available as SQL or XML.

#### Citing ExplorEnz

McDonald, A.G., Boyce, S. and Tipton, K.F. ExplorEnz: the primary source of the IUBMB enzyme list. *Nucleic Acids Res.* 37, D583-D587 (2009). [DOI: 10.1093/nar/gkn052]

This work was funded primarily by Science Foundation Ireland (Grant no. SFI 02/IN 16043-Tipton). We are very grateful for this support.



this is the main, official, IUBMB-based  
database, but there are also a number of  
other databases that make use of the data

# ENABLE 2022



**16-18 November 2022**  
The Institute of Biomedicine of Seville, Spain



**FEBS-IUBMB-ENABLE**  
1<sup>st</sup> International Molecular Biosciences  
PhD & Postdoc Conference

The perfect tandem:  
How **technology** expands the frontiers of **biomedicine**

**Registration is now open!**  
**Early bird discount until 29<sup>th</sup> of July**

## Keynote Speakers

With 8 renowned international speakers sharing their expertise and experience.

## Workshops

Join workshops on personal and professional development.

## Career Chats

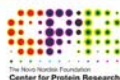
Engage in conversations with professionals about career opportunities.

## Networking

Meet other young scientists and build yourself a network by joining social activities throughout the conference.



**Institute for Molecular Life Sciences**  
**Radboudumc**  
Today's molecules for tomorrow's medicine



For more information visit:  
[www.enablenetwork.eu](http://www.enablenetwork.eu)

[Twitter](#) [Facebook](#) [Instagram](#) [LinkedIn](#) @EnableNetworkEU



We are delighted to invite you to the **1st FEBS-IUBMB-ENABLE International Molecular Biosciences PhD and Postdoc Conference** entitled “**The perfect tandem: How technology expands the frontiers of biomedicine**”, which will take place in **Seville (Spain)** on **16-18 November 2022**.

The FEBS-IUBMB-ENABLE conference is an international, interdisciplinary three-day event entirely organized by and for young researchers –PhD students and postdocs– from the molecular life sciences disciplines, bringing together Biomedicine and Technology. The FEBS-IUBMB-ENABLE conference series is a joint initiative of the Federation of European Biochemical Societies (**FEBS**), the International Union of Biochemistry and Molecular Biology (**IUBMB**) and four leading biomedical research institutes across Europe: the Institute for Research in Biomedicine - **IRB** (Barcelona, Spain), the Radboud Institute for Molecular Life Sciences - **RIMLS** (Nijmegen, The Netherlands), the Novo Nordisk Foundation Center for Protein Research - **NNF CPR** (Copenhagen, Denmark), and the European School of Molecular Medicine - **SEMM** (Milan, Italy), together with the Institute of Biomedicine of Seville - **IBiS** (Seville, Spain), where the 2022 event will be held.

**Registration for this event opened on 1 June 2022. Early bird discounts are available until July 29th, 2022. A considerable number of travel grants are available for participants who actively participate via poster presentation or a short talk. The deadline to apply for travel grants is also July 29th, 2022.**

# ENABLE 2022

Join us for three days of **FEBS-IUBMB-ENABLE 2022** and have the opportunity to participate in:

## Scientific symposium

Two full days (*16th & 17th*) during which young scientists from all over Europe will learn about different biomedical fields and cutting-edge techniques through scientific talks and informal chats with renowned scientists. Also, the scientific symposium provides an excellent platform for young researchers to present their own work in **short talks and posters**, which are selected from the abstracts. Participants will also have the chance to talk to speakers during the **gala dinner** on *Thursday, 17th November*.

## Outreach activities

An important part of ENABLE is focused on bridging the gap between scientists and society. To this end, FEBS-IUBMS-ENABLE organizes outreach activities that allow participants to explain biomedicine to the general public and bring science closer to society. Particularly the **pub talks** on *Wednesday, 16th November*, organized in pubs in the city of Seville, are an excellent opportunity for young researchers to bring their science to the public.

## Science career day

A full day (*Friday, 18th November*) during which participants will be able to attend **workshops** and **career chats** with professionals. Also, participants will have the chance to learn about career opportunities at the “**Job Fair**”, where various companies from different sectors (publishing, biotech, pharma) will be present.

To encourage the engagement of participants, FEBS-IUBMS-ENABLE has also planned an optional Seville city tour and a visit to the science museum the evening before the conference (*Tuesday, 15th November*). Additionally, this year a scientific photography contest will be run throughout the conference, and there will be prizes for the best and the favorite photos.

For more information, visit our [website](#), where you can also watch videos of previous editions and remember to follow us on [Instagram](#), [LinkedIn](#), [Facebook](#) and [Twitter](#)!

We look forward to meet you in Seville,

Sincerely,

the Scientific Organizing Committee of FEBS-IUBMB-ENABLE 2022





# FEBS-IUBMB-ENABLE 2022 Conference

## Schedule

	Scientific Symposium		Career Day
	WEDNESDAY 16 <sup>TH</sup> NOVEMBER	THURSDAY 17 <sup>TH</sup> NOVEMBER	FRIDAY 18 <sup>TH</sup> NOVEMBER
MORNING	8.00-8.30: Registration 8.30-9.00: Opening & Official welcome	8.30-9.00 Welcome	8.30-9.00 Welcome
	<i>Computational biology and artificial intelligence</i>	<i>Basic research</i>	
	9.00-9.45 Keynote: Mihaela van der Schaar	9.00-9.45 Keynote: José López-Barneo	9.00-9.50 Round table
	9.45-10.30 Short talks	9.45-10.30 Short talks	9.50-10.00 Presentation of career day
	COFFEE BREAK & POSTER SESSION		COFFEE BREAK & JOB FAIR
	11.30-12.15 Keynote: Elena Papaleo	11.30-12.15 Keynote: Daphne Cabianca	11.00-13.00 Workshops Career chats Opportunity fair
	12.15-13.00 Short talks	12.15-13.00 Short talks	
	LUNCH		LUNCH & JOB FAIR
	<i>Clinical and translational biomedicine</i>	<i>Innovation</i>	14.30-16.30 Workshops Career chats Opportunity fair
	14.30-15.15 Keynote: Laura Cancedda	14.30-15.15 Keynote: Matteo Iannacone	
AFTERNOON	15.15-16.00 Short talks	15.15-16.00 Short talks	16.30-17.00 Closing ceremony & Prizes
	COFFEE BREAK & POSTER SESSION		
	17.00-17.45 Keynote: Petter Brodin	17.00-17.45 Keynote: César de la Fuente	
	17.45-18.30 Short talks	17.45-18.30 Round table	
	Pub Talks	Gala Dinner	



FEBS-IUBMB-enable

# ENABLE 2023



## Hosting institution: University of Cologne

After onboarding the Institute of Biomedicine of Seville (IBiS) last year, we now welcome the University of Cologne (UoC) to embrace the ENABLE initiative and join the FEBS-IUBMB-ENABLE consortium. As a new partner, the UoC will be hosting the FEBS-IUBMB-ENABLE conference in 2023. “The University and the City of Cologne will profit from the FEBS-IUBMB-ENABLE 2023 conference”, say Debora Grosskopf-Kroiher and Isabell Witt who applied to FEBS-IUBMB-ENABLE to become a host.

The UoC has two well-established life-science-oriented graduate programs providing high-level training and covering disciplines ranging from molecular medicine, molecular biology, biochemistry, biophysics, bioinformatics, and genetics, including microbial, animal, and plant models organisms. These programs serve as an umbrella structure for over 550 doctoral researchers, with ca. 40% being international, and for over 12 third-party-funded graduate programs in specific research fields.

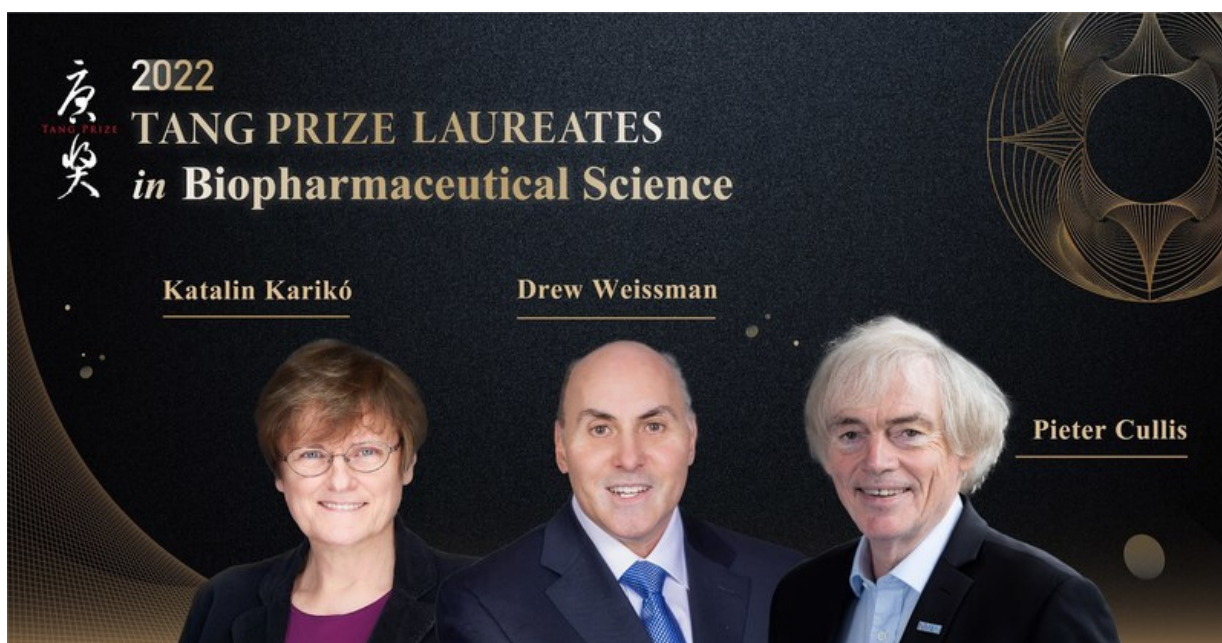
A vibrant interdisciplinary Life Sciences Campus and a proven track record of success with extensive practical experience in managing international conferences, including close cooperation with young researchers, make the University of Cologne an ideal partner to host the conference in 2023.

On May 12-13, 2022 the FEBS-IUBMB-ENABLE consortium has met in Cologne for a kick-off meeting.

“This was a fantastic experience. We, the Cologne PhD students and the PhD students of the previous host institutions are extremely motivated and we are already working intensively together to deliver an exciting conference in 2023”, say Franziska Baumann and Julia Glebe the SOCs from Cologne.

# TANG PRIZE FOUNDATION

Tang Prize in Biopharmaceutical Science honors  
three scientists for developing  
COVID-19 mRNA vaccines (June 18, 2022)



To promote worldwide visibility of the IUBMB, the [Tang Prize Foundation](#), an international prize and education foundation, is invited to provide financial support for major undertakings of the IUBMB. The Tang Prize in Biopharmaceutical Sciences continue to garner much attention worldwide. This year's award went to three scientists for developing COVID-19 mRNA vaccines. Read more in this [article](#).



## IUBMB Focused Meeting / FEBS Workshop Crosstalk between Nucleus and Mitochondria in Human Disease 22-25 March 2022 | Sevilla, Spain

Report by Irene Diaz-Moreno, Co-Chair of the Organizing Committee (Spain)

*Co-Chairs: Dr Irene Diaz-Moreno, (University of Seville - CSIC, Spain) and  
Dr Miguel A. De la Rosa (University of Seville - CSIC, Spain)*

The IUBMB Focused Meeting / FEBS Workshop titled “Crosstalk between Nucleus and Mitochondria in Human Disease” (*CrossMitoNus*) has been supported by the International Union of Biochemistry and Molecular Biology (IUBMB) and the Federation of European Biochemical Societies (FEBS). Due to the coronavirus pandemic and after careful consideration, *CrossMitoNus* was postponed from 19–22, 2020 to 22–25 March 2022. The event’s programme was entirely at the Ribera de Triana Hotel, a modern and updated hotel with multifunctional rooms equipped with the necessary technical and audiovisual means for holding congresses.

*CrossMitoNus* has been focused on the communication that exists between mitochondria and cell nucleus, first described as retrograde signaling between mitochondrial and nuclear genomes. The relevance of mitochondria in metabolism centers on the core of cell signaling pathways, including those taking part in cell-fate decisions. Indeed, multiple nuclear-encoded factors control essential processes in mitochondria dynamics: fusion (for instance, OPA1), fission (DNM1L), transport (RHOT1), and mitophagy (PINK1). Hence, cells have developed communication between mitochondria and the nucleus. Indeed, mitochondrial factors are now emerging as response elements to cell nucleus performance. For this reason, a large assortment of diseases — including neurodegenerative disorders, diabetes, cancer, and an assortment of rare syndromes — relate to mitochondrial dysfunctions. Thus, unraveling the whole connectivity between the biomolecules involved in all this regulatory mitochondria-nucleus crosstalk and its relation to cell fate and physiological state is nowadays a major challenge. Indeed, as a supra disciplinary field, it demands collaborative efforts involving Cell Biology, Biochemistry, Biophysics, Structural Biology, and Cancer Biology, and new approaches in which experimental and computational are used.

The Scientific Program of *CrossMitoNus* was organized in **16 Plenary Lectures** focused on the following topics: Mitochondrial Metabolism, Cell Death Signaling, Networks in Cells and Cancer Biology. To address these hot topics, *CrossMitoNus* brought together international experts in the field of Biochemistry, Molecular Biology, Cell Biology, and Molecular Medicine who provided a comprehensive and critical view (**Table 1**). The restrictions from traveling to China have impaired the attendance of Prof. Quan Chen in person at the *CrossMitoNus* meeting. For this reason, his Plenary Lecture was on streaming (**Fig. 1**).



**Figure 1.** Plenary lectures addressed by Prof. Shazib Pervaiz (SG), Dr. Maria Luisa Génova (IT), Prof. Ángeles Almeida (ES), Dr. Alberto Luis Baena-López (UK), Prof. Quan Chen (CN) and Prof. Maik Hüttemann (USA).



**Table 1. List of invited speakers and the titles of their lectures.**

Name	Affiliation	Title
Almeida, A. (F)	CSIC - University of Salamanca, ES	Mitochondrial-Nuclear p53 Trafficking Regulates Neuronal Survival in Stroke
Baena-López, A.L. (M)	University of Oxford, UK	Caspase-Dependent Interkinetic Nuclear Movement in Apoptotic Cells
Brunner, T. (F)	Konstanz University, DE	Crosstalk between Nuclear Receptors and Mitochondria: Implications for Inflammation, Cancer and Cell Death
Campanella, M. (M)	University of London, UK	The Mitochondrial Sites of Contact with the Nucleus
Chen, Q. (M)	Nakai University, CN	Molecular Regulation of Mitophagy and Mitochondrial Homeostasis
Díaz-Moreno, I. (F)	University of Seville - CSIC, ES	Emerging Functions of Mitochondrial Cytochrome c in the Cytoplasm and Nucleus
Enriquez, J.A. (M)	CNIC, ES	Handling Conflicting Demands of Mitochondrial DNA
Genova, M.L. (F)	University of Bologna, IT	Complex I Function in Mitochondrial Supercomplexes
Hüttemann, M. (M)	Wayne State University, USA	Molecular Mechanisms of Brain Ischemia/Reperfusion Injury Outwitted by a Novel Non-Invasive Mitochondria-Targeted Therapy
López-Barneo, J. (M)	University of Seville - CSIC, ES	Role of Mitochondria in Acute Oxygen Sensing
Martínez-Fábregas, J. (M)	University of Dundee, UK	STAT3: a Transcriptional Factor Controlling Life and Death
Medina, M. (F)	University of Saragossa, ES	The Apoptosis-Inducing Factor Family in the Crosstalk between Mitochondria and Nucleus
Pervaiz, S. (M)	National University of Singapore, SG	Cancer Redox Metabolism and Mito-Nuclear Crosstalk
Ros, J. (M)	University of Lleida, IRB Lleida, ES	Mitochondrial Alterations Caused by Frataxin Deficiency in Neuronal Models of Friedreich Ataxia
Scorrano, L. (M)	University of Padova, IT	The Mitochondrial Protein Opa1 Controls a Nuclear Program of White Adipocyte Browning
Shoshan-Barmatz, V. (F)	Ben-Gurion University, IL	Pro-Apoptotic Proteins with Anti-Apoptotic Activity in Cancer: Nuclear Localization and Function

F: female, M: male.

In an effort to give preference to young researchers, **11 Oral Short Communications** were selected from the submitted abstracts (**Table 2**). In this regard, to enhance networking and fruitful and lively discussions between early-career scientists and the experts, several activities were scheduled in a relaxed atmosphere. The **1-min Flash Presentations** sessions, which consisted of a brief presentation of the poster using a single slide, were before the **Guided Poster** and **Poster Sessions**. During the **Poster Party** sessions, several Invited Speakers were available for informal discussions and debate.

**Table 2. Summary of Session Type and Gender Balance**

	Female	Male
Posters by Students/Postdocs	21 (64%)	12 (36%)
Talks by Students/Postdocs	6 (55%)	5 (45%)
Plenary Lectures by Speakers	5 (31%)	11 (69%)

One of the aims of the *CrossMitoNus* workshop was to encourage young scientists to communicate and discuss their work during 1-min poster presentation and poster parties. Two prizes —of 200 EUR each— were awarded to the best poster presentations during Poster Party sessions with the support of *FEBS Open Bio*. *FEBS Open Bio* is an open-access journal for the rapid publication of research articles across the molecular and cellular life sciences. The high quality of all poster presentations was very remarkable so the decision of the Selection Committee was very difficult. The winners were **Linda Diamante** (female, IT) and **Ana Paredes** (female, ES) (**Fig. 2**).



**Figure 2.** Pro. Miguel A. de la Rosa (co-chair of the meeting and Editor-in-Chief of *FEBS Open Bio*) with the winners Linda Diamante (left) and Ana Paredes (right).

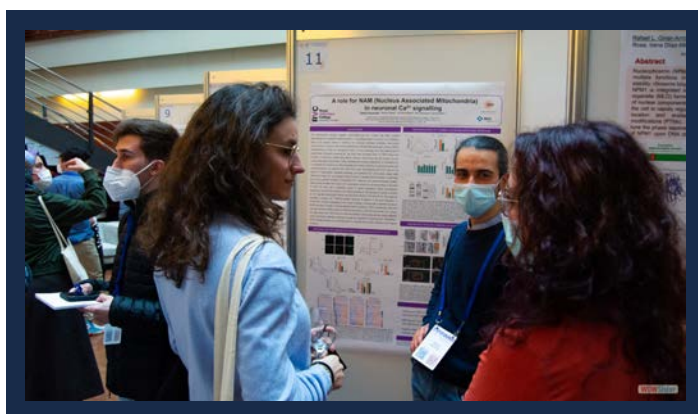
Moreover, a **Round Table** was planned to discuss new challenges in the crosstalk between the nucleus, mitochondria and other organelles. The **Discussion Session & Concluding Remarks** served to inform students and discuss with them about the European grants at hand and the novel opportunities of the HorizonEurope Program.

In summary, *CrossMitoNus* provided participants an excellent opportunity for a rewarding scientific and personal experience, including exchanging ideas with colleagues and establishing new acquaintances (**Fig. 3**).



**Figure 3.** Group photo of the meeting. Ribera de Triana Hotel, 23 March 2022.







## IUBMB Focused Meeting on Hemoglobin Switching 22<sup>nd</sup> Hemoglobin Switching Conference 5-9 May 2022 Kalimera Kriti Resort, Crete

Report by Douglas Higgs, Chair of the Organizing Committee (UK)

The IUBMB Focused Meeting Workshop titled “Hemoglobin Switching” was supported by the International Union of Biochemistry and Molecular Biology (IUBMB) and smaller donations from NIH, MRC(UK), and various commercial companies. This biennial meeting was originally established in 1978 and hitherto was held either in the US or the UK. This year’s meeting was held in Europe for the first time and located in the Kalamari Kriti hotel and Conference Centre in Crete, Greece. This was an excellent venue for the conference, attracting a large international audience in a beautiful environment which fostered relaxed, collegiate and informative discussions about this critical subject of importance to basic scientific research and its application to current medicine.

The Scientific Program of the Hemoglobin Switching Meeting opened with a prize lecture in memory of Dr George Stamatoyannopoulos. This was delivered by Dr Tom Maniatis who reviewed “Hemoglobin switching and the emergence of the field of eukaryotic gene regulation”. This was followed by seven scientific sessions covering Hematopoiesis and Erythropoiesis; Advances in our understanding of the regulation of globin gene expression and of gene expression in general; The Erythroid Transcriptional and co-Factor Program; The Transcriptional and Epigenetic Pathways Influencing Hemoglobin Switching; Small Molecule Approaches to Modifying Hemoglobin Switching; Genetic and Cellular Approaches for Improving the Management of Haemoglobinopathies and a Roundtable Discussion on These issues including various Companies that attended the meeting. Following two poster sessions, the meeting was concluded with a “Quickfire session” which focused on the work of young investigators and those from less well represented regions of the world.



**Figure 1.** Quickfire session from poster presentations. Dr Mohsin Badat, Dr Edward Tunnacliffe & Ms Alexandra Preston



The invited speakers who presented their lab's findings are summarized in **Table 1** and a summary of session types for students/postdocs and gender balance is shown in **Table 2**.

**Table 1. List of invited speakers and the titles of their lectures.**

Name	Affiliation	Title
Bauer, D (M)	Harvard Stem Cell Institute, USA	Combined +58 and +55 BCL11A enhancer editing yields exceptional efficiency, specificity and HbF induction in human and NHP preclinical models
Blayney, J (M)	University of Oxford, UK	Comprehensive genetic dissection exposes additive, synergistic and redundant cooperation within a single superenhancer
Blobel, G (M)	Children's Hospital of Philadelphia, USA	HIC2 controls developmental hemoglobin switching by repressing BCL11A transcription
Bresnick, E (M)	Wisconsin Blood Cancer Research Institute, USA	An integrated transcriptional, metabolic and signaling mechanism in erythroid Biology and Pathology
Cherone, J (F)	University of Washington, USA	Reversal of hemoglobin switching by <i>cis</i> -regulatory interference
Crisan, M (F)	University of Edinburgh, UK	PDGFR $\beta$ + cells play a dual role as hematopoietic precursors and niche cells during mouse ontogeny
Crossley, M (M)	University of South Wales, Sydney, Australia	Elements across the globin locus work together to mediate fetal globin silencing
Cull, A (F)	University of York, UK	Clonal dynamics after gene therapy in sickle cell disease
Davies, J (M)	University of Oxford, UK	Defining genome architecture at base pair resolution at the globin loci
Feng, R (M)	St Jude Children's Research Hospital, USA	Activation of $\gamma$ -globin expression by hypoxia-inducible factor 1 $\alpha$
Ferrari, G (F)	University of Milan, Italy	Gene therapy for beta-thalassemia: from bench to clinic and back
Frayne, J (F)	University of Bristol, UK	Human cellular model of CDA IV enables comprehensive analysis revealing underlying dysregulated proteome and processes that elucidate the disease phenotype
Ghaffari, S (F)	Icahn School of Medicine, USA	Mitochondria in the regulation of terminal erythropoiesis
Gnanapragasam, N (F)	Cleveland State University, USA	Pumilio-1, a new player in human hemoglobin switching
Hardison, R (M)	Pennsylvania State University, USA	Systematic integration of epigenomic profiles in human and mouse blood cells to predict activity and targets of regulatory elements
Huang, S (M)	Penn State Cancer Institute, USA	The role of RNA-dependent CTCF chromatin boundary in normal and malignant hematopoiesis
Kassouf, M (F)	University of Oxford, UK	A functional overlap between actively transcribed genes and chromatin boundary elements

Name	Affiliation	Title
Khandros, E (M)	Children's Hospital of Philadelphia, USA	Dissecting the role of the BAF chromatin remodeling complex in globin gene regulation
Kucinski, I (M)	University of Cambridge, UK	Self-renewal and differentiation dynamics of native hematopoietic stem and progenitor cells at single-cell resolution
Lam, C (F)	Monash University, Australia	Novel immediate direct targets of EPO signaling in human erythropoiesis
Malik, P (F)	Cincinnati Children's Hospital, USA	Improving homing and engraftment of genetically modified stem cells
Maniatis, T (M)	University of Columbia, USA	Hemoglobin switching and the emergence of the field of eukaryotic gene regulation
Manis, J (M)	Harvard Medical School, USA	Flipping the Switch: post-transcriptional genetic silencing of BCL11A to treat sickle cell disease
Martell-Smart, D (F)	Harvard Medical School, USA	RNA polymerase II pausing coordinates stage-selective cell cycle progression and erythroid differentiation
Mehta, S (F)	University of Boston, USA	PROTAC-mediated depletion of BCL11A protein identifies its very limited primary targets and reveals that reactivation of HbF occurs independent of demethylation of the $\gamma$ -globin gene promoter
Miccio, A (F)	Institute Imagine, France	Base editing strategies for beta-hemoglobinopathies
Moshi, G (F)	National Cancer Centre, Singapore	Gene therapy for sickle cell disease In Africa: Progress in Tanzania
Mukherjee, K (M)	Mount Sinai, New York, USA	EKLF/Klf1 regulates erythroid transcription by its pioneering activity and subsequent control of RNA Pol II pause-release
Myers, G (M)	University of Michigan, USA	The splicing factor MBNL1 participates in gamma globin silencing during terminal erythroid differentiation
Orkin, S (M)	University of Boston, USA	Control of Hemoglobin Switching through BCL11A
Pimanda, J (M)	University of South Wales, Sydney, Australia	Mesoderm-derived PDGFRA <sup>+</sup> cells regulate the emergence of hematopoietic stem cells in the dorsal aorta
Rivella, S (M)	Children's Hospital of Philadelphia, USA	A mouse model of severe alpha-thalassemia with abnormal iron metabolism, erythropoiesis and coagulation can be rescued by a novel gene therapy approach
Rossmann, M (F)	Harvard University, USA	TIF1 $\gamma$ regulates nucleotide and mitochondrial metabolism, and counteracts ferroptosis to drive erythroid progenitor differentiation
Sauntharajah, Y (M)	Cleveland Clinic, USA	Translating an HPFH-mechanism into oral small molecule therapy for $\beta$ -hemoglobinopathies: clinical proof-of-principle
Socolovsky, M (F)	University of Massachusetts, USA	EpoR-induced spike in ribosome biogenesis and protein synthesis rates coincident with activation of erythroid terminal differentiation

Name	Affiliation	Title
Stamatoyannopoulos, J (M)	University of Washington, USA	Single molecule analysis of chromatin dynamics and DNA repair
Townes, T (M)	University of Alabama, USA	Why transplant newborn sickle patients with corrected, autologous cord blood stem cells?
Verheul, T (M)	Erasmus University, The Netherlands	A robust high-throughput screening system for discovery of HbF-inducing compounds
Weiss, M (M)	St Jude Children's Research Hospital, Memphis, USA	Loss of miR-451 alleviates $\beta$ -thalassemia by stimulating ULK1-mediated autophagy of free $\alpha$ -globin
Wilkinson, A (M)	University of Oxford, UK	Ex vivo hematopoietic stem cell expansion technologies
Xu, J (M)	Southwestern University, USA	A metabolic switch regulates normal and ineffective erythropoiesis
Zon, L (M)	Harvard University, USA	m6A epitranscriptome mediated RNA stress granule assembly governs blood development and regeneration

F: female, M: male.

The Hb Switching meeting concentrates on understanding how the alpha- and beta-like globin gene clusters are regulated as hematopoietic stem cells undergo lineage specification and differentiation to form 1-2 million mature red blood cells every second. These genes are amongst the most fully characterized multigene clusters in the mammalian genome and the transcriptional and epigenetic programs that control expression of these genes is understood in great detail. Consequently, many of the principles underlying mammalian gene expression have been originally discovered using these model systems in a variety of species. The 2022 meeting advanced our understanding of the transcriptional and epigenetic programs and particularly advanced our understanding of the relationship between genome 3D structure and function.

Importantly, mutations affecting the structure and regulation of the globin genes underlie the world's most common forms of inherited anemia including alpha and beta thalassemia and sickle cell disease. Much of the work presented in this conference addresses how our understanding of globin gene regulation can be used to improve the diagnosis and treatment of these diseases. More than 300,000 infants with severe haemoglobinopathies are born each year. A major focus is to reactivate the fetal (gamma) and embryonic (zeta) globin genes to compensate for abnormal beta and alpha globin gene expression that occurs in the haemoglobinopathies. Recent, very promising developments in this area combined with technical advances in delivering new forms of drug and gene therapy for these conditions were presented.

**Table 2.**

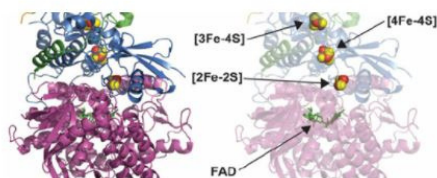
	Female	Male
Posters by Students/Postdocs	32	23
Talks by Students/Postdocs	15	11

In summary the Hemoglobin Switching Meeting continues to be the premier conference discussing gene regulation, how it is perturbed in human genetic disease and how our knowledge can be translated into meaningful clinical benefit.



**Figure 2.** Group photo of the meeting. Kalimera Kriti Hotel and Village Resort, Crete, 8 May 2022





## IUBMB ADVANCED SCHOOL

COFACTOR ASSEMBLY, TRANSPORT AND INSERTION  
Novel insights into their relevance to human health and well-being

Report by Stefania Iametti, Co-Chair of the Organizing Committee (Italy)

*Co-Chairs: Dr Maria Barile (University of Bari Aldo Moro, Italy) and  
Dr Stefania Iametti (University of Milan, Italy)*



The IUBMB Advanced School on “Cofactor Assembly, Transport and Insertion – Novel insights into their relevance to human health and well-being” organized by Mariella Barile (Bari, Italy) and Stefania Iametti (Milan, Italy) was held in the IUBMB Brian Clarke Hall at the Spetses Hotel in Greece from May 16 to May 20. About 30 people from various European countries (Denmark, France, Italy, Portugal, Spain) attended in presence, enjoying the sun-blessed location, the warm Greek hospitality, the good food and the lively company. Two additional lecturers were participating online from the US and Canada. Of note, Cure RTD – a Canadian charity devoted to support research on Riboflavin Transporter Deficiencies – also offered support to the School. Although other interested people were unable to attend due to travel limitations in some countries, they were able to offer significant and extensive contributions to a Special Issue of “IUBMB-Life”, devoted to the same scientific challenges tackled in this Advanced School. The Special Issue that is already in the printing stage and should appear pretty soon.

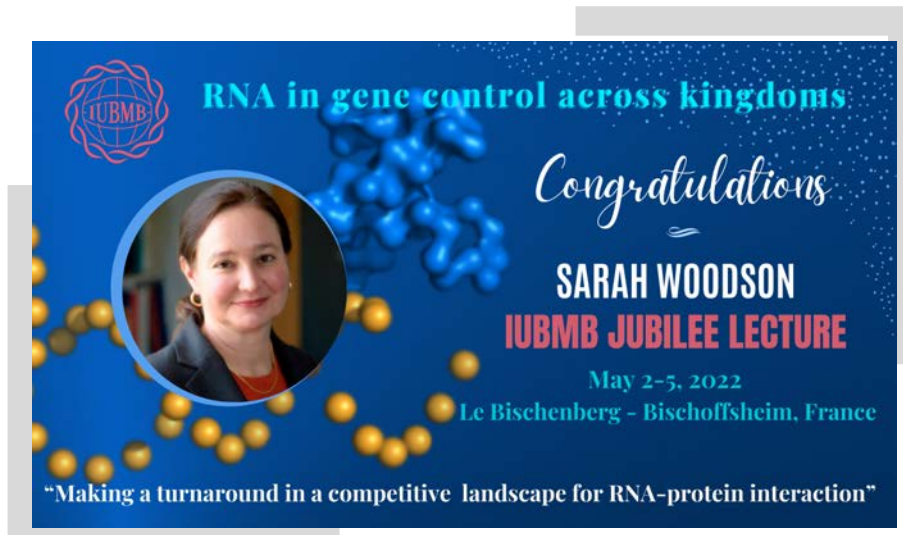
School topics covered transport and assembly of various cofactors, with a particular focus on flavins and iron-containing proteins, with ample “side trips” into pathways related to other types of redox and non-redox cofactors. Mid-afternoon discussions followed presentations by junior participants and offered comments on the emerging role of pathologies increasingly related to alterations in these pathways or on species-specific traits that may be conducive to make these pathways relevant as therapeutic targets, as well as the always much welcome methodological updates (and transfer of methodologies across apparently unrelated research areas). The former IUBMB Treasurer, Prof. Francesco Bonomi, was in charge of the opening lecture (focused on the changing role cofactors during evolution) and of the closing remarks, that included some highlights on the role of IUBMB in fostering science at the supranational level.





# Congratulations to

## IUBMB Jubilee Lectures



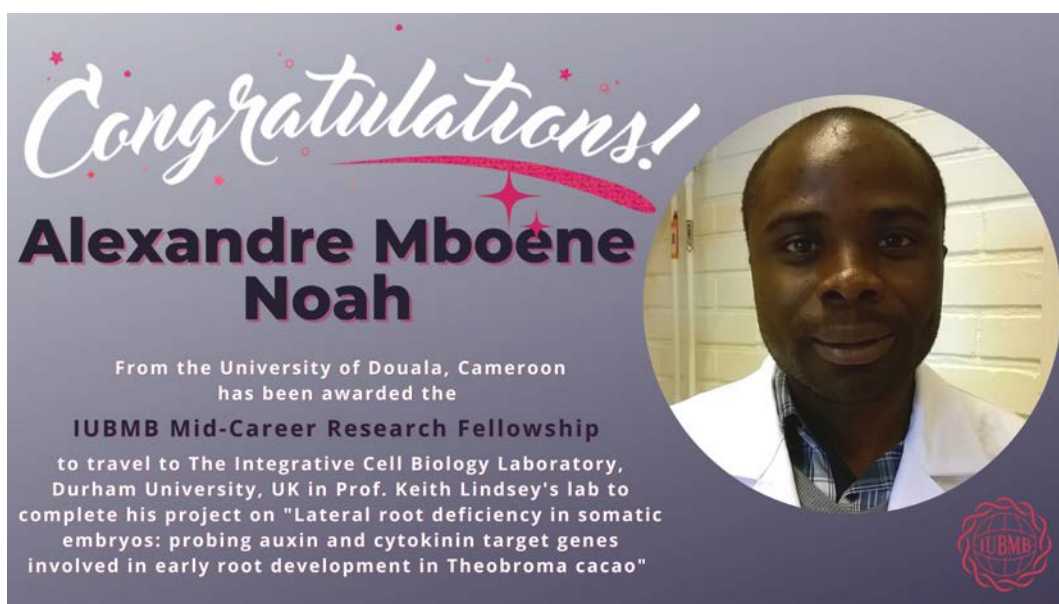
Congratulations to Professor Sarah Woodson from Johns Hopkins University – Baltimore, USA who presented the IUBMB Jubilee Lecture at the [RNA in gene control across kingdoms](#) on “Making a turnaround in a competitive landscape for RNA-protein interactions”. She honored for her outstanding contributions to RNA structure, dynamics, and assemblies.



Congratulations to Professor Rommie E. Amaro from UC San Diego, USA who will be presenting the IUBMB Jubilee Lecture at the joint meeting of the [25th IUBMB Congress, 46th FEBS Congress, and 15th PABMB Congress](#) in Lisbon, Portugal from July 9-14, 2022 on “Computational Microscopy of SARS-CoV-2 In Situ”. She is honored for her outstanding contributions in computational biology to understand SARS-CoV-2.

# TRAINING FELLOWSHIPS RESUME!

After what felt like an eternity, April 2022 finally brought the long-awaited return of the IUBMB training fellowships. These short-term fellowships support the international travel of trainees and mid-career faculty so that they can receive the training they need to complete a critical part of their research project. The IUBMB Fellowship Committee is happy to announce that we have awarded twelve Wood-Whelan Research Fellowships and one Mid-Career Research Fellowship from the April 2022 applicant pool. The successful fellows represent eight countries across four continents, with host labs scattered around the world.



Do you or a trainee require access to equipment or expertise not available in your home institution or country? If so, please consider applying for the next round of Wood-Whelan or Mid-Career Research Fellowships. **The next deadline is October 1, 2022.** For more information, please visit <https://iubmb.org/activities/fellowship-programs/>.



# Congratulations to

## IUBMB FELLOWSHIP AWARDEES

### April 2022

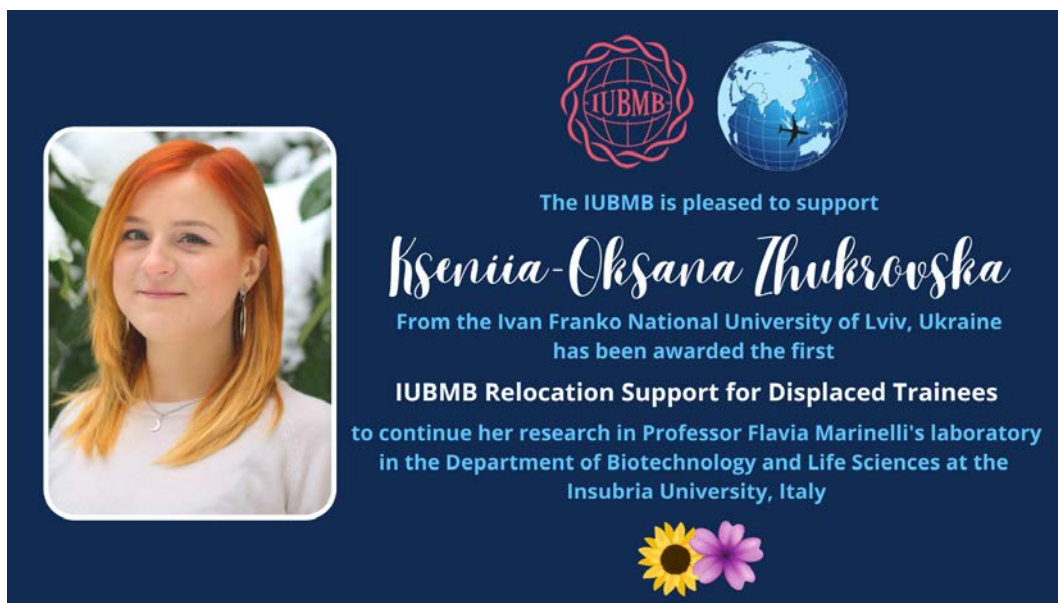


Our recent Travel Fellows received fellowships to travel and attend a meeting in the IUBMB region. **The next deadline is October 1, 2022.** For more information, please visit <https://iubmb.org/activities/fellowship-programs/iubmb-travel-fellowships/>.

# Congratulations to

## IUBMB FELLOWSHIP AWARDEES

### April 2022



Ukrainian PhD student Kseniya-Oksana Zhukrovska tells us about her research activity ([click on video below](#)) in the lab of Flavia Marinelli, University of Insubria, Italy, which she reached with [IUBMB Relocation Support for Displaced Trainees](#).



From left to right: Dr. Flavia Marinelli, Kseniya-Oksana Zhukrovska, Dr. Loredano Pollegioni

# WOOD WHELAN WEDNESDAY

## Past awardees from all over the world share their experiences with you

The IUBMB has supported over 350 fellows since 1983, many of whom continued on to successful careers in biochemistry and molecular biology. You can read about them [here](#).



The opportunity to visit a lab in a different country could transform your *career* and change your *life!*



# Congratulations to

## PROLAB AWARDEES OF 2022



Since 2012, 93 biochemists have received travel awards.

Congratulations to the jointly-funded PROLAB awardees between the Pan-American Association for Biochemistry and Molecular Biology ([PABMB](#)), the International Union of Biochemistry and Molecular Biology ([IUBMB](#)) and the American Society for Biochemistry and Molecular Biology ([ASBMB](#)). The 10 young scientists will use the awards to conduct research in academic laboratories in the United States and Canada.

This year's PROLAB travel grants are going to Ph.D. students and postdoctoral fellows from Argentina, Brazil, and Uruguay. View article [here](#).

Delfina L. Borús, Argentina  
Karina Flores Montero, Argentina  
Sabrina A. Foscardi, Argentina  
Joaquin Garat, Uruguay  
Geovana S. Garcia, Brazil


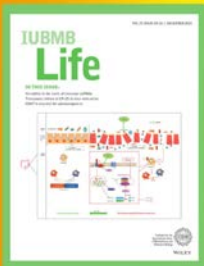
Bruno Hernández Cravero, Argentina  
Horacio Martín Pallarés, Argentina  
Haydé Saracho, Argentina  
Juliana Topalian, Argentina  
Harmonie Vallese Maurizi, Argentina



# Congratulations to


## IUBMB Poster Prize Awardees

### 16th FAOBMB Congress

### Congratulations

#### Dhiman Chakravarty



From the Bhabha Atomic Research Centre, India, is the winner of the **IUBMB Life Best Poster Award** titled "Adaptation to salinity stress: role of a cyanobacterial Mn-catalase" at the virtual FAOBMB 16th Congress of the Federation of Asian and Oceanian Biochemists and Molecular Biologists held on 22 - 25 November 2021


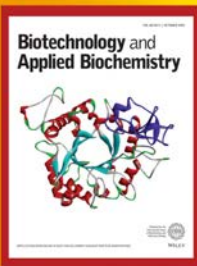



### Congratulations

#### Kai Xin Ooi




From the Universiti Tunku Abdul Rahman, Malaysia, is the winner of the **BioFactors Best Poster Award** titled "Oncostatic Property of Maslinic Acid against Colorectal Cancer via NF- $\kappa$ B Pathway Inhibition" at the virtual FAOBMB 16th Congress of the Federation of Asian and Oceanian Biochemists and Molecular Biologists held on 22 - 25 November 2021






### Congratulations

#### Madinat Hassan




From the Airforce Institute of Technology, Nigeria, is the winner of the **Biotechnology and Applied Biochemistry Best Poster Award** titled "Anticonvulsant Effect of Flavonoid-rich Fraction of *Ficus platyphylla* Stem Bark on Pentylene-tetrazole Induced Seizure in Mice" at the virtual FAOBMB 16th Congress of the Federation of Asian and Oceanian Biochemists and Molecular Biologists held on 22 - 25 November 2021


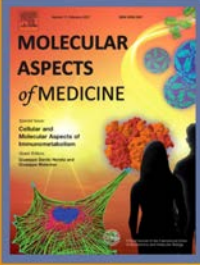



### Congratulations

#### Markus Brent Arevalo




From the University of Santo Tomas, Philippines, is the winner of the **Biochemistry and Molecular Biology Education Best Poster Award** titled "In silico analysis of antihyperuricemic properties of maslinic acid as urate anion transporter-1 (URAT-1) inhibitor" at the virtual FAOBMB 16th Congress of the Federation of Asian and Oceanian Biochemists and Molecular Biologists held on 22 - 25 November 2021

### Congratulations

#### Ishola Afeez Adekunle



From the National Yang Ming Chiao Tung University and Academia Sinica / Taipei Veterans General Hospital, Taiwan, is the winner of the **Molecular Aspects of Medicine Best Poster Award** titled "CRISPR / Cas13a-mediated Targeting of Oncogenic CircRNA (*hsa\_circ\_0000190*) Suppresses NSCLC Progression" at the virtual FAOBMB 16th Congress of the Federation of Asian and Oceanian Biochemists and Molecular Biologists held on 22 - 25 November 2021

# *Congratulations*

## WILEY- BIOFACTORS

### YOUNG INVESTIGATOR AWARD



Dr Pradeep Manuneedhi Cholan is the winner of the Wiley-BioFactors Young Investigator Award for an outstanding original study on the acceleration of hyperlipidaemia by Gram positive cell wall components.

The study has been published in the paper “Transplantation of high fat fed mouse microbiota into zebrafish larvae identifies MyD88-dependent acceleration of hyperlipidaemia by Gram positive cell wall components,” authored by Cholan, Pradeep Manuneedhi; Morris, Simone; Luo, Kaiming; Chen, Jinbiao; Boland, Jade; McCaughan, Geoff; Britton, Warwick; Oehlers, Stefan, First published on 19 October 2021 <https://doi.org/10.1002/biof.1796>.

Dr Pradeep Manuneedhi Cholan is a post-doctoral fellow at the Macquarie University, Australia. He earned his Doctor of Philosophy from University of Sydney in 2019. His field of interest include studying the role of gut microbiome in various pathological conditions using germ-free zebrafish models. He is currently researching the impact of motor neuron disease on the gut microbiome.

## NEW EDITOR-IN-CHIEF for *Biotechnology and Applied Biochemistry*

Welcome **Kaiming Ye**  
incoming Editor-in-Chief

**Biotechnology and  
Applied Biochemistry**



WILEY

It is a tremendous pleasure to welcome the incoming Editor-in-Chief of *Biotechnology and Applied Biochemistry (BAB)*, Professor Kaiming Ye (Binghamton University, SUNY, New York). Professor Ye brings extensive experience in the biotechnology sector, and has held leadership roles at several journals, including *Cellular and Molecular Bioengineering* and *BMC Biotechnology*, in addition to serving as an Associate Editor of *BAB* over recent years. We are delighted to welcome Professor Ye to lead *BAB* in the next phase of *BAB*'s already lengthy history, which dates back to 1979. We also pay tribute to Professors Gianfranco Gilardi and Jian-Jiang Zhong, who have led the journal over the past 10 years. We thank Professors Gilardi and Zhong for their custodianship of the journal, which has cemented *BAB* as one of the key journals in this field, and we wish them well for their future endeavours.

# IUBMB JOURNALS



ELSEVIER



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Did you know? Wiley and Jisc just signed an agreement that allows UK authors to publish Open Access in the IUBMB Journals at no cost to them.

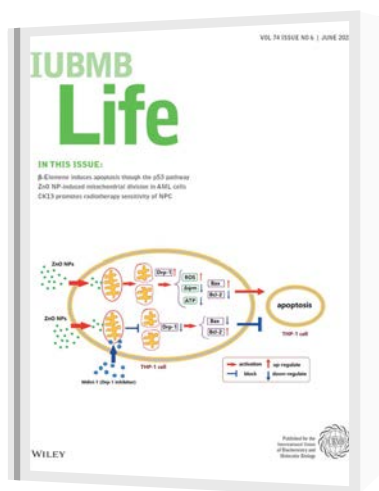
Thanks to a partnership our publisher Wiley has signed with Jisc, certain UK institutions now have full access to journals published by Wiley, including the IUBMB Journals. Further, the partnership enables authors at [participating UK institutions](#) to **publish open access at no cost to them** in the IUBMB Journals. Payment of the associated Article Publication Charges (APC) would be covered via the partnership, and authors will not need to cover the APCs from their own pockets.

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# IUBMB JOURNAL HIGHLIGHTS



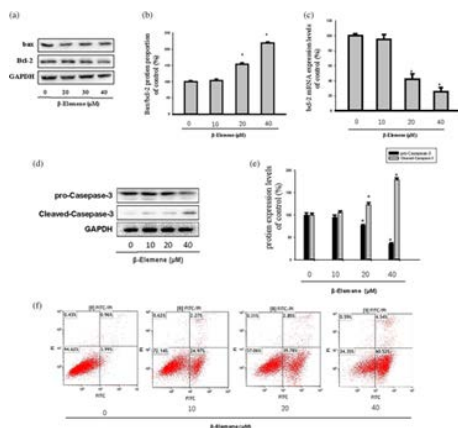
Follow the IUBMB Life account on Twitter [@IUBMB\\_Life](#) for the journal's latest news and updates.

## New Issue: Volume 74, Issue 6

### [β-Elemene induces apoptosis by activating the P53 pathway in human hypertrophic scar fibroblasts](#)

Qin Guo, Yujia Li, Yuan Chen, Jin Ji, Shizhong Zheng, Xuefen Xu, Biyun Zhang, Jianzhou Ye

First published: 16 March 2022



Hypertrophic scar (HS) is a condition characterized by excessive synthesis and deposition of collagen. There are many clinical methods to alleviate HS, but most of them are accompanied by many complications. To investigate the effects of  $\beta$ -Elemene, extracted from the ginger family plant *Wenyujin*, on human hypertrophic scar fibroblast (hHSFs). Cultured hHSFs and human normal fibroblasts, observed the effect of  $\beta$ -Elemene on apoptosis, extracellular matrix, and endoplasmic reticulum stress (ERS) by western blot, Real Time-Polymerase Chain Reaction (RT-PCR), and flow cytometry. Based on our

findings, it is clear that  $\beta$ -Elemene could inhibit the expression of  $\alpha$ -smooth muscle actin ( $\alpha$ -SMA), collagen I, and fibronectin, reduced collagen deposition. Further studies had found that  $\beta$ -Elemene could increase the expression of ERS-related proteins CHOP and Calnexin in a dose-dependent manner, thereby promoting the aggregation of cleaved-caspase-3 and inducing hHSFs to undergo apoptosis. This process may depend on the regulation of P53. The results of our study indicates that  $\beta$ -Elemene induced hHSFs to undergo apoptosis through ERS pathway in a P53-dependent manner, which means that our research provided a new strategy for the development of drugs for the treatment of HS.

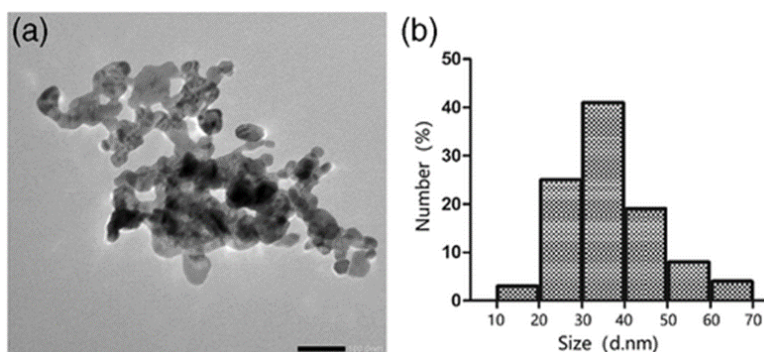
# IUBMB JOURNAL HIGHLIGHTS

## Induced effect of zinc oxide nanoparticles on human acute myeloid leukemia cell apoptosis by regulating mitochondrial division

Xuewei Yin, Zonghong Li, Chunyi Lyu, Yan Wang, Shumin Ding, Chenchen Ma, Jingyi Wang, Siyuan Cui, Jinxin Wang, Dadong Guo, Ruirong Xu

First published: 05 April 2022

Zinc oxide nanoparticles (ZnO NPs) have exhibited excellent anti-tumor properties; the present study aimed to elucidate the underlying mechanism of ZnO NPs induced apoptosis in acute myeloid leukemia (AML) cells by regulating mitochondrial division. THP-1 cells, an AML cell line, were first incubated with different concentrations of ZnO NPs for 24 hr. Next, the expression of Drp-1, Bcl-2, Bax mRNA, and protein was detected, and the effects of ZnO NPs on the levels of reactive oxygen species (ROS), mitochondrial membrane potential ( $\Delta\psi_m$ ), apoptosis, and ATP generation in THP-1 cells were measured. Moreover, the effect of Drp-1 inhibitor Mdivi-1 and ZnO NPs on THP-1 cells was also detected. The results showed that the THP-1 cells survival rate decreased with the increment of ZnO NPs concentration and incubation time in a dose- and time-dependent manner. ZnO NPs can reduce the cell  $\Delta\psi_m$  and ATP levels, induce ROS production, and increase the levels of mitochondrial division and apoptosis. In contrast, the apoptotic level was significantly reduced after intervention of Drp-1 inhibitor, suggesting that ZnO NPs can induce the apoptosis of THP-1 cells by regulating mitochondrial division. Overall, ZnO NPs may provide a new basis and idea for treating human acute myeloid leukemia in clinical practice.



# IUBMB JOURNAL HIGHLIGHTS

## Cytokeratin 13 promotes radiotherapy sensitivity of nasopharyngeal carcinoma by downregulating the MEK/ERK pathway

Ming Shi, Jia Wan, Huan Wang, Hong Yu

First published: 15 April 2022

### Background

Radiation therapy is the first treatment choice for nasopharyngeal carcinoma (NPC), while radiation resistance and recurrence have become the primary factors and are associated with poor prognosis in the clinical treatment of NPC patients. The purpose of the present study was to explore the sensitivity and molecular basis of cytokeratin 13 (CK13) that regulates NPC radiotherapy.

### Methods

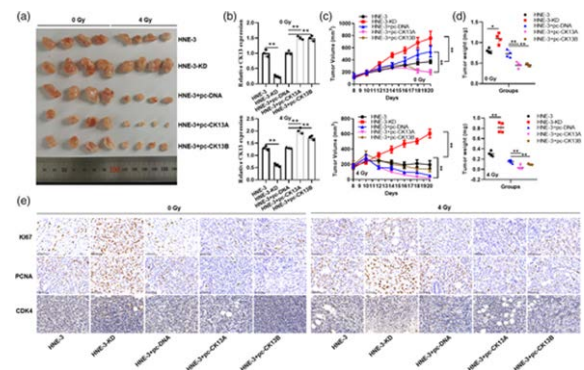
HNE-3 or C666-1 cell line was used for overexpression and knockdown tests. Under radiotherapy conditions, CCK-8 assay, clone formation assay, and flow cytometry analyzed the effects of CK13 overexpression on cell proliferation, apoptosis, and cell cycle, respectively. In addition, Western blotting detected CK13-mediated downregulation of cell cycle-related genes. The mouse subcutaneous tumor-bearing experiment identified the effects of CK13 overexpression on the treatment of NPC in vivo. Further, Western blotting, CCK-8 assay, and flow cytometry investigated whether the CK13-mediated cell apoptosis involves the MEK/ERK signaling pathway.

### Results

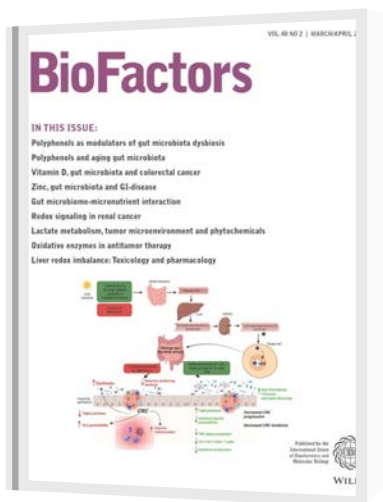
Overexpression of CK13 significantly inhibited the survival of HNE-3 cells under radiotherapy in vitro and in vivo, and there was a substantial decrease in cyclin-dependent kinase 4 and 6 (CDK4/6) levels promoting the cell percentage number in the G2/M phase and, subsequently, the ratio of the apoptotic cells. In contrast, the knockdown of CK13 showed the opposite partial regulatory effect. Interestingly, CK13 overexpression also showed a reduction in the survival of C666-1 cells and an increased ratio of the apoptotic cells under radiotherapy treatment. Furthermore, higher levels of CK13 downregulated the MEK/ERK signaling pathway, resulting in decreased HNE-3 cell proliferation and increased apoptosis. However, ERK activators were able to rescue the process partially.

### Conclusions

Together, these results showed that CK13 promoted the radiosensitivity of NPC cells by downregulating the MEK/ERK signaling pathway. Thus, targeting CK13 provided insights into the treatment of NPC radiotherapy.



# IUBMB JOURNAL HIGHLIGHTS

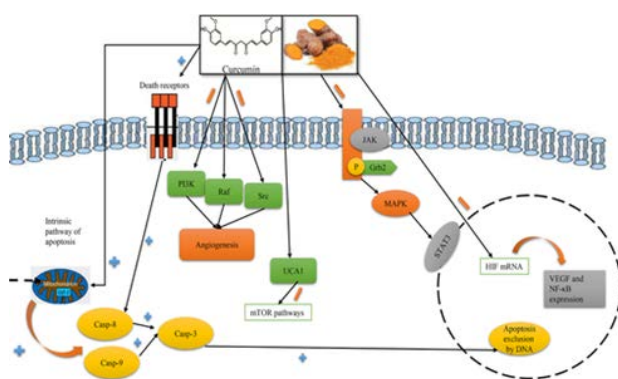


## New Special Issue: Volume 48, Issue 2

### Curcuma longa and curcumin affect respiratory and allergic disorders, experimental and clinical evidence: A comprehensive and updated review

Arghavan Memarzia, Saeideh Saadat, Sepideh Behrouz, Mohammad Hossein Boskabady

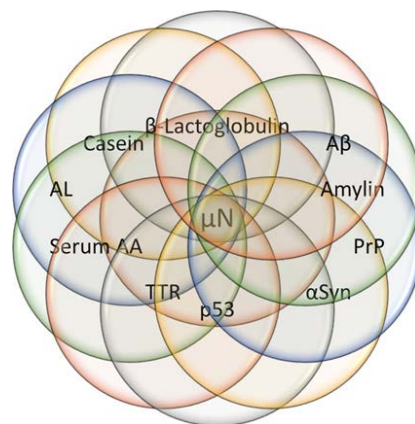
First published: 21 December 2021



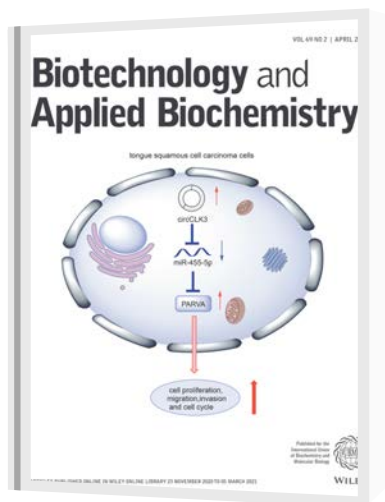
Curcuma longa and its constituents, mainly curcumin, showed various of pharmacological effects in previous studies. This review article provides updated and comprehensive experimental and clinical evidence regarding the effects of C. longa and curcumin on respiratory, allergic, and immunologic disorders. Using appropriate keywords, databases including PubMed, Science Direct, and Scopus were searched until the end of October 2021. C. longa extracts and its constituent, curcumin,

curcumin, showed the relaxant effect on tracheal smooth muscle, which indicates their bronchodilatory effect in obstructive pulmonary diseases. The preventive effects of extracts of C. longa and curcumin were shown in experimental animal models of different respiratory diseases through antioxidant, immunomodulatory, and anti-inflammatory mechanisms. C. longa and curcumin also showed preventive effects on some lung disorders in the clinical studies. It was shown that the effects of C. longa on pulmonary diseases were mainly due to its constituent, curcumin. Pharmacological effects of C. longa extracts and curcumin on respiratory, allergic, and immunologic disorders indicate the possible therapeutic effect of the plant and curcumin on these diseases.





# IUBMB JOURNAL HIGHLIGHTS

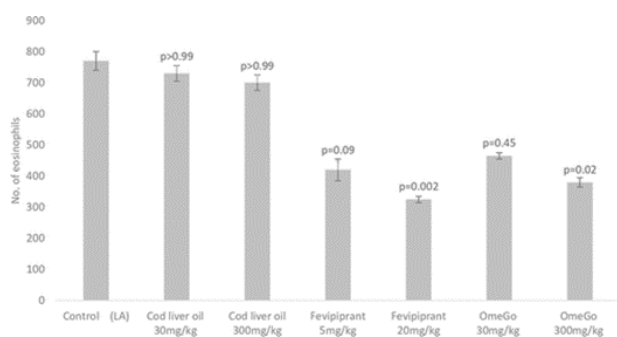


## New Issue: Volume 69, Issue 2

### Pharmacological evaluation of the effects of enzymatically liberated fish oil on eosinophilic inflammation in animal models

**Crawford Currie, Bomi Framroze, Dave Singh, Deepali Sharma,  
Christian Bjerknes, Erland Hermansen**

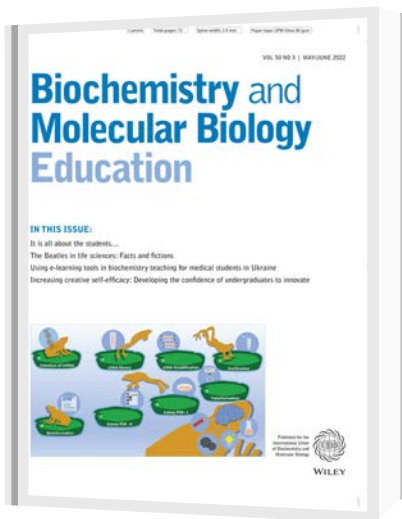
First published: 30 March 2022



The inappropriate activation of eosinophils is a well-recognized driver of various human inflammatory diseases including asthma, chronic rhinitis, and various gastrointestinal diseases, including eosinophilic esophagitis. Steroids, both topical and systemic, remain a cornerstone of treatment and can be highly effective. However, some individuals suffer side effects, unresolved symptoms, or both. OmeGo, an enzymatically liberated fish oil, has demonstrated

anti-inflammatory and antioxidant properties as well the reduction of the activation, migration, and survival of eosinophils. Two animal models of eosinophilic inflammation were used to further assess OmeGo's profile. A house dust mite model of induced asthma showed a significant reduction in eosinophilic lung inflammation compared to the negative control, linoleic acid. The CRTH2 antagonist fevipiprant showed a similar eosinophilic inhibitory profile to OmeGo. In contrast, cod liver oil had no impact on any measure of inflammation. A guinea pig model of mild intraperitoneal eosinophilia showed a significant reduction in eosinophil activity by OmeGo, assessed by chemotaxis and chemokinesis. Apolipoprotein A-IV, an endogenous human protein with anti-inflammatory actions, showed a similar but numerically lower effect. OmeGo therefore combines a consistent antieosinophilic action with the known anti-inflammatory effects of polyunsaturated fatty acids. Proof-of-concept studies in asthma are warranted.

# IUBMB JOURNAL HIGHLIGHTS



## New Issue: Volume 50, Issue 3

### Teaching the process of science through COVID-19 pandemic themes

**Meghan Ward, Fiona Rawle**

First published: 16 March 2022

Several predominant themes have emerged during the COVID-19 global pandemic that intersect with the nature and process of science. This paper identifies three such themes and briefly explores how they can be used as case studies and narrative cornerstones in teaching and learning. The themes include: (1) the understanding that science is cumulative and ever-changing, meaning that new findings may cause us to reconsider previous understandings; (2) the importance of citation tracking in the process of science; and (3) the need for accessible and purposeful science communication.

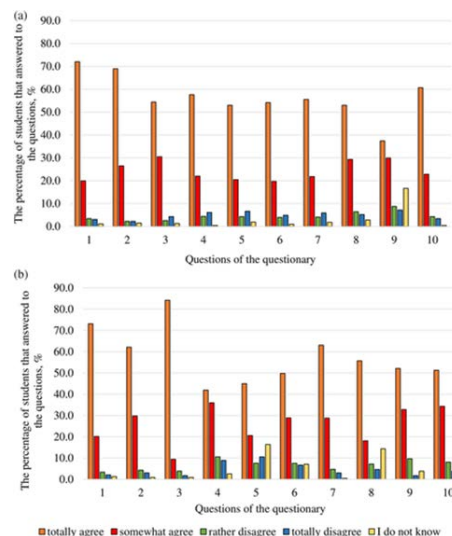
### New Virtual Issue on Teaching in the Time of COVID-19

### Using e-learning tools in biochemistry teaching for undergraduate medical students in multicultural environment in Ukraine during COVID-19 crisis

**Svitlana Volodarets, Nataliia Chernousova, Hanna Peleshenko, Hanna Maslak, Anastasiia Savchenko, Olha Netronina**

First published: 01 April 2022

Through the special situation like the COVID-2019 lockdown, interactive techniques play a prime role in the study process. The strategy of lockdown ways of higher education was provided in Ukraine as well as in other countries since March 2020. Our investigation was performed at the Department of Biochemistry and Medical Chemistry of Dnipro State Medical University during the first lockdown of COVID-19 from March to June 2020. The main aim of the research was the evaluation of the students' attitudes to studying Biochemistry using Google classrooms and Moodle. Four hundred and sixty-three students studying in English, French, and Ukrainian took part in the survey. Our results reveal that majority of the students found Google classrooms and Moodle as useful e-learning tools. However, questions dealing with the technical issues of using the Google classrooms on laptops and mobile phones and submitting the replies to the Google classrooms cause difficulties among the students.

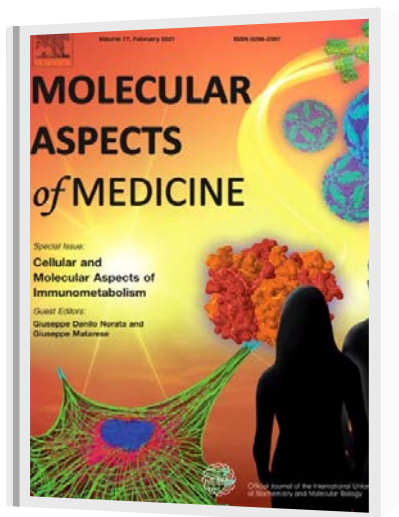




# IUBMB JOURNAL HIGHLIGHTS

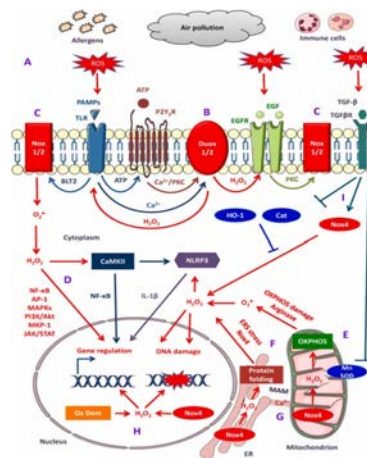
## Molecular Aspects of Medicine: three special issues have just been published

By Angelo Azzi, Editor-in-Chief, Molecular Aspects of Medicine, Tufts University, Boston, USA



Molecular Aspects of Medicine traditionally publishes six issues a year, each consisting of a single invited review article on topics that link molecular sciences to related clinical aspects. Instead of a single review, several shorter ones are also published, on a single theme, invited and coordinated by a guest editor. With this aim in mind, in the last months focus has been given to important topics such as asthma, haemoproteins and drug delivery. The issues have been just published and I have shortly commented below on their contents.

Asthma is a serious and frequent disease. Approximately 25 million Americans have asthma. This equals to about 1 in 13 Americans, including 8 percent of adults and 7 percent of children. There is no known cure for asthma and more understanding about its pathogenesis is of great importance as a basis to develop treatments. The issue dedicated to asthma contains several reports on the molecular mechanism at the basis of asthma (Asthma COPD overlap: Insights into cellular and molecular mechanisms Article 101021 and Corticosteroid resistance in asthma: Cellular and molecular mechanisms Article 100969) and especially those related to allergy (Cellular and molecular mechanisms of allergic asthma Article 100995, Molecular allergology approach to allergic asthma Article 101027). A new aspect of asthma is related to the oxidative damage of respiratory airways that may be a component of asthma (Molecular mechanisms of oxidative stress in asthma Article 101026).



*The illustration above, from Article 101026 shows an overview of the pathways involved in asthma pathogenesis triggered by air pollution, allergens and lung inflammatory cells. The complexity and redundancy of these pathways explains the difficulty of treating the disease*

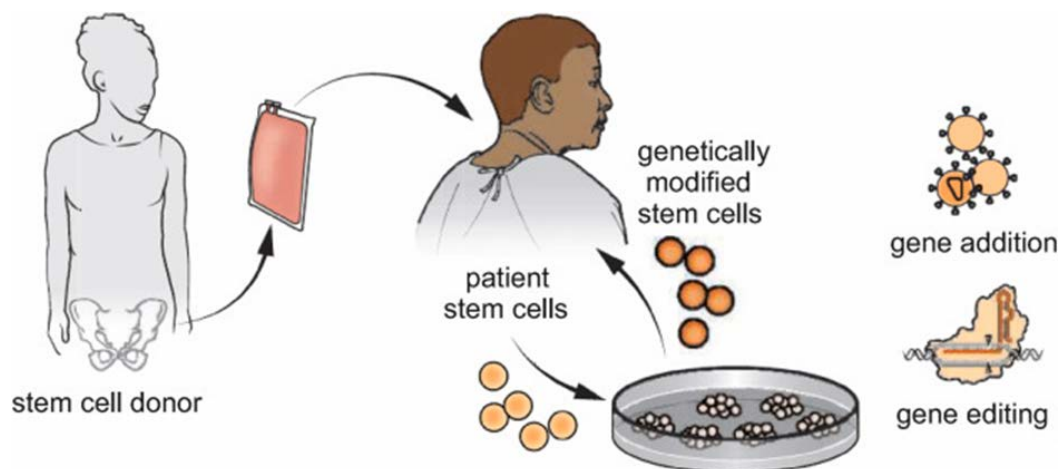
# IUBMB JOURNAL HIGHLIGHTS

## Molecular Aspects of Medicine: three special issues have just been published

By Angelo Azzi, Editor-in-Chief, Molecular Aspects of Medicine, Tufts University, Boston, USA

The papers of this issue on hemoglobin and myoglobin have not only revisited these proteins but have gone deeper into the molecular detail of their function. (Role of hemoglobin structural-functional relationships in oxygen transport Article 101022; The functional role of the hemoglobin-water interface Article 101042; Kinetic mechanisms for O<sub>2</sub> binding to myoglobins and hemoglobins Article 101024; Multiple molecular interactions and multiple functions. An example of energy optimization and global molecular organization Article 101040; From hemoglobin allostery to hemoglobin-based oxygen carriers Article 101050; Neuroglobin, clues to function and mechanism Article 101055; The enzymatic function of the honorary enzyme: S-nitrosylation of hemoglobin in physiology and medicine Article 101056).

Also their role in pathology has been dealt with (Nicotinic receptors: From protein allostery to computational neuropharmacology Article 101044; Altitude acclimatization, hemoglobin-oxygen affinity, and circulatory oxygen transport in hypoxia Article 101052; The peroxidatic activities of Myoglobin and Hemoglobin, their pathological consequences and possible medical interventions Article 101045; Truncated (2/2) hemoglobin: Unconventional structures and functional roles in vivo and in human pathogenesis Article 101049; Hemoglobin allostery and pharmacology Article 101037; Thalassemias: from gene to therapy Article 101028; and Impact of hemoglobin biophysical studies on molecular pathogenesis and drug therapy for sickle cell disease Article 100971) In the latter article, how gene therapy to substitute for a defective hemoglobin in sickle cell anaemia is well illustrated by the figure below from Article 100971).



*Transplantation from bone marrow stem cells from an immunologically matched normal can be used. Alternatively, the patient's own bone marrow cells are modified either with the addition of a  $\beta$ -globin gene that codes for a polymerization inhibitory  $\beta$  globin or by using Crispr-Cas technology to edit the  $\beta 6$  locus or reactivate HbF synthesis.*

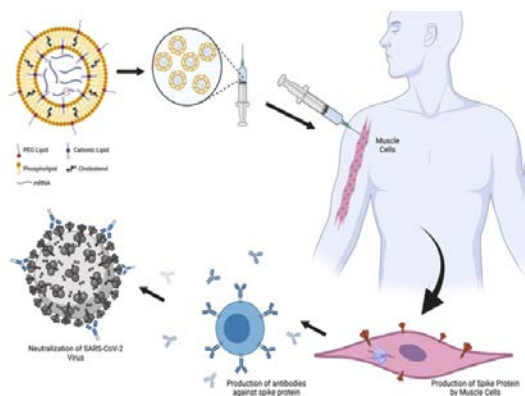
# IUBMB JOURNAL HIGHLIGHTS

## Molecular Aspects of Medicine: three special issues have just been published

By Angelo Azzi, Editor-in-Chief, Molecular Aspects of Medicine, Tufts University, Boston, USA

An entire issue of Molecular Aspects of medicine has been dedicated to drug delivery. Pharmacology and therapeutic interventions have made in recent years giant progress. More and more specific cell pathways have been discovered that, when modified, lead to disease; they represent ideal targets for drug delivery. Nanomaterials are uniquely capable of providing delivery of therapeutics to diseased tissues; because of their ability to achieve high, local concentrations of drugs at a target site they offer the opportunity for improved performance and patient outcomes along with reduced systemic dosing.

An example of the recent developments of drug delivery is given by the mRNA COVID-19 vaccine which is an mRNA encoding for spike protein of SAR-CoV-2 virus in a lipid nanoparticle.



*COVID-19 mRNA vaccine encoding for spike protein of SAR-CoV-2 virus is injected in a lipid nanoparticle. (Drug delivery: Challenges and nanotechnology-based solutions Article 101051)*

The articles published in this issue describe the design of novel nanocarriers, understanding biological mechanism of drug delivery, interactions of materials with cells, nano-formulations, targeted delivery of various drug types, etc. In the review by Chung et al. Strategies are devised to deliver RNA by nanoparticles for therapeutic potential (Article 100991). The paper by Zhang et al. the nano-delivery of STING agonists is described against cancer and infectious diseases (article 101007). Novel magnetoelectric nanocarriers

encapsulated with gels and liposomes as promising delivery approaches for therapeutic and diagnostic applications is reviewed by Kolishetti and Nair et al. (Article 101046). In a paper by Mukherjee et al., different mechanisms of endocytosis essential for the delivery of molecules are discussed followed by how physio-chemical properties of nanoparticles could be manipulated to achieve enhanced intracellular uptake. (Revealing macro-pinocytosis using nanoparticles, Article 100993). Dhar et al. highlighted that the design of controlled release nano-formulations of approved chemotherapeutics, can enhance efficacy, reduce side effect, and achieve targeted delivery against different cancer types. (Controlled release nanoplatfroms for three commonly used chemotherapeutics, Article 101043). The review by Lanzoni et al. focuses on the latest approaches for targeting and delivering therapeutic materials to the pancreatic islet cells and in vivo imaging of beta cells. (Delivery of therapeutic agents and cells to pancreatic islets: Towards a new era in the treatment of diabetes, Article 101063).

Needless to say, although the chapters of the special issues presented above are novel and up to date, the topics they discuss cannot cover the vast fields they have touched upon. They are intended to activate the interest of the curious scientists to broaden their knowledge and to indicate to the clinician that progress of science is not only continuous but that it offers new opportunities for advanced diagnosis and therapies.

Should you have a proposal or an idea for a thematic issue for *Molecular Aspects of Medicine*, please complete the thematic issue [proposal form](#) and send it to Dr. Angelo Azzi ([angelo.azzi@tufts.edu](mailto:angelo.azzi@tufts.edu)).



# IUBMB JOURNAL HIGHLIGHTS

## Trends in Biochemical Sciences



**Trends in Biochemical Sciences**  
@TrendsBiochem

Also in the June issue is a TrendsTalk where leaders of @IUBMB share their engagement with and support for the biochemistry and molecular biology community.

@NewtonLab @ilonaconcha @pseudokinase Dario Alessi



If you've ever looked closely at the cover and table of contents of Trends in Biochemical Sciences, you'll have noticed its affiliation with the International Union of Biochemistry and Molecular Biology (IUBMB). Indeed, TIBS was founded by Dr Bill Whelan at a time when he was the General Secretary of IUB(MB) and Editor in Chief of IUBMB Life. In a TrendsTalk titled "Meeting the IUBMB leadership", TIBS revisits this relationship and meet the current leadership team at IUBMB, learning about their engagement with, commitment to, and support for the biochemistry and molecular biology community.

[https://www.cell.com/trends/biochemical-sciences/fulltext/S0968-0004\(22\)00074-3](https://www.cell.com/trends/biochemical-sciences/fulltext/S0968-0004(22)00074-3)



**Trends in Biochemical Sciences**  
@TrendsBiochem

Also in the July issue, a TrendsTalk with representatives from the @iubmb\_trainee initiative - read about their goals for supporting trainees around the world!

@ElyseFischer7 @osvaldoics @Victoria4\_za @biochem\_bri



In another TrendsTalk at TIBS titled "The Global IUBMB Trainee Initiative", four members of the IUBMB Trainee Initiative committee share their passions and perspectives for supporting trainees throughout the globe. Scientific careers are often nourished and shaped by engaging with educational, technical, and professional development opportunities. However, these opportunities are not equally distributed. The newly established IUBMB Trainee Initiative wants to ensure every trainee has access to these experiences and a chance to foster their passion in biochemistry and molecular biology by providing a diverse and supportive environment.

[https://www.cell.com/trends/biochemical-sciences/fulltext/S0968-0004\(22\)00087-1](https://www.cell.com/trends/biochemical-sciences/fulltext/S0968-0004(22)00087-1)

# IUBMB LIFE JOURNAL DEADLINES

## Special Issues - Open Call for Papers



### Extracellular Matrix: The Dynamic Structural and Functional Network in Health and Disease

GUEST EDITORS: Nikos Karamanos (Univ. of Patras), Sylvie Ricard-Blum (Univ. of Lyon), Dimitris Kletsas (NCSR Demokritos, Athens)

Manuscripts should be submitted by **30 June 2022**  
*Expected issue publication will be October 2022*

We invite investigators to contribute original research articles that address the ECM as a key player in health and disease, in cell functional properties and behaviour, in disease diagnosis and pharmacological targeting/treatment approaches, as well as in bioengineering and biotechnology. Themes related to development, evolution, tumour biology, therapeutics, omics and aging are also welcomed. Research approaches could address either ECM networks or macromolecules such as collagens, proteoglycans, glycosaminoglycans, integrins, cell-matrix receptors, matrix-degrading and modifying enzymes and matrix-related proteins/glycoproteins. Critical reviews in areas not recently covered are also welcomed upon invitation or approval of proposals by the guest editors.

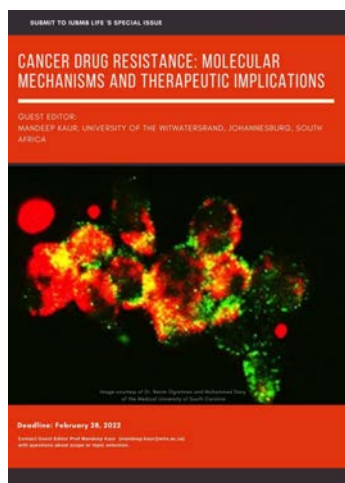


### Multicellular Microenvironment Effects on the Modulation of Cell Functions

GUEST EDITOR: Xiangya Ding, (Nanjing Medical University)

Manuscripts should be submitted by **30 June 2022**  
*Expected issue publication will be November 2022*

We invite investigators to contribute original research articles, as well as review articles that address the multicellular microenvironment, using basic and translational experimental models. Suggested potential topics include but are not limited to the following: Characterization of multicellular microenvironment, applications for cell-microenvironment strategies in pathological conditions, tumour microenvironment and its implications for cancer, the role of immune microenvironment in diseases, therapeutic strategy based on multicellular microenvironment etc.



### Cancer drug resistance: molecular mechanisms, and therapeutic Implications

GUEST EDITORS: Mandeep Kaur, (University of the Witwatersrand)

Manuscripts should be submitted by **30 September 2022**  
*Expected issue publication will be spring 2023*

The proposed special topic will be dedicated to compiling a collection of articles focusing on exploring different aspects of cancer drug resistance in in vitro, in vivo, cancer stem cells and 3D cultures models. The topic would also solicit submissions on latest therapeutic developments in this area of research and ways to reverse drug resistance in cancer cells. The types of articles can be review articles, original research (basic research or translational studies), and clinically relevant biomarkers for monitoring the therapeutic response of patients to drugs etc.

# IUBMB JOURNAL DEADLINE



The International Union of Biochemistry and Molecular Biology (IUBMB) seeks a new Editor-in-Chief for **BioFactors**, a journal devoted to the rapid publication of discoveries and reviews describing the structures, functions, identification and interactions of macromolecules and metabolites. BioFactors encourages the submission of studies that use biochemistry, biophysics, cell and molecular biology and/or cell signaling approaches.

The successful candidate will be a leading member of the biochemistry and molecular biology community. They will

have an outstanding publication record; extensive experience in peer review and/or editorial roles; an extensive, global network; an appreciation of diverse methodologies and biological systems within the journal's scope; and will represent the diversity within the IUBMB global community.

The successful candidate will have an outstanding opportunity to further develop the journal over a maximum three 3-year terms in the role. They must demonstrate a clear vision for its future growth and position in the publishing landscape. The appointee will bring extensive experience in peer review and/or editorial roles, high ethical professional standards, innovation, enthusiasm, strong leadership, and organizational and communication skills to the journal.

The appointed Editor-in-Chief will be responsible for: the vision, strategy and practical development of the journal; defining content and commissioning papers for regular and special issues; maintaining editorial standards; providing strong and inspiring leadership to the journal's editorial board; appointing new board members to grow the journal; promoting the journal; and working closely with IUBMB and the publisher (Wiley) to manage publication. This important leadership role will require a significant time commitment and will be recompensed accordingly. Associate Editors are appointed to limited terms by the Editors-in-Chief to handle some functions, subject to approval by the IUBMB Executive Committee. The Editor-in-Chief of *BioFactors* will receive an annual honorarium and is supported by professional editorial office assistance.

Applications should include the following

- 1) A full CV, including details of peer review and/or editorial roles and the applicant's publication record
- 2) A brief statement describing your vision for *BioFactors*
- 3) A cover letter outlining your suitability for the Editor-in-Chief role
- 4) Two reference Letters

Please send any queries relating to this appointment and applications, in confidence, to: Assoc. Prof. James Murphy ([jamesm@wehi.edu.au](mailto:jamesm@wehi.edu.au)), Chair of the IUBMB Publications Committee. **Application deadline extended to June 30, 2022.** The Publications and Executive Committees of IUBMB will make the final selection. The appointed candidate would commence as Editor-in-Chief on January 1, 2023.

***IUBMB upholds the principles of equity, diversity and inclusion.***

# UPCOMING IUBMB DEADLINES

## IUBMB FELLOWSHIPS

- Wood-Whelan
- Mid-Career
- Tang Education
- Travel

Deadline Oct 1



- [Wood-Whelan Research Fellowships](#) supports up to 4 months in a lab and up to a maximum of US \$4,000 for travel expenses.
- [Mid-Career Research Fellowships](#) support up to 2 months in a lab and up to a maximum of US \$5,000 for travel expenses.
- [Tang Education Fellowships](#) supports educators visiting another institution to either advise/teach or learn up to 2 months and up to a maximum of US \$4,000 for travel expenses.
- [Travel Fellowships](#) are designed to support travel to meetings for trainees attend meetings in the IUBMB region.



**IUBMB Relocation Support for Displaced Trainees**  
Newest Program

The [IUBMB Relocation Support for Displaced Trainees](#) has no deadline submission.



**OPEN DEADLINE**

**IUBMB MilliporeSigma**  
**Virtual Meeting Fellowships**



Meeting you'd like to attend from anywhere in the world? In response to the pandemic, we have collaborated with MilliporeSigma to offer [Virtual Meeting Fellowships](#) with **OPEN DEADLINES**.



# UPCOMING IUBMB DEADLINES



## Funding for Educational Activities changed to allow funding for online (virtual) activities

The deadline for funding for [Educational Activities](#) is October 1st 2022 and includes funding for both face-to-face and online (virtual) workshops, meetings or symposiums.

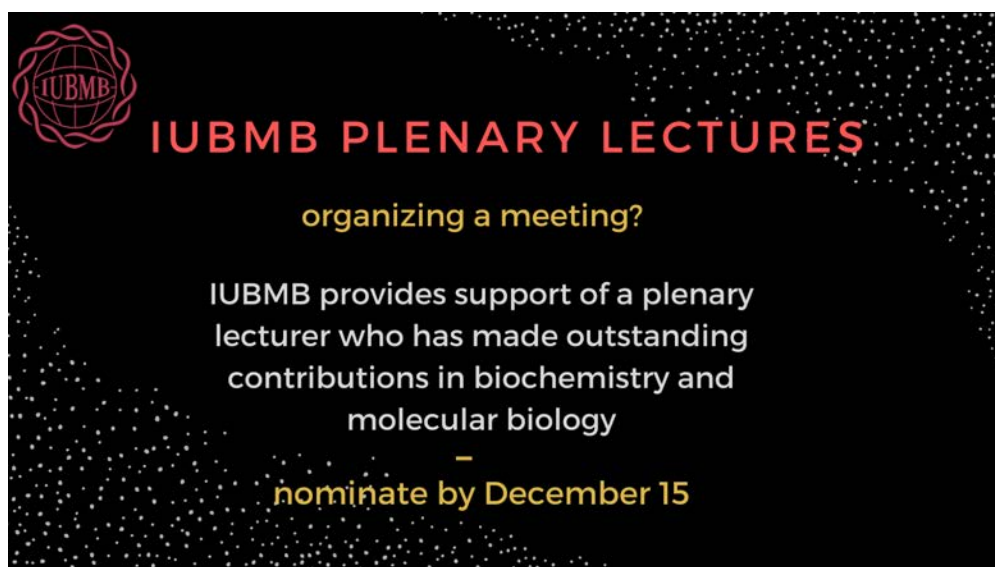
A banner for IUBMB Advanced Schools. It features a photograph of a coastal town with white buildings and a large tree, situated on a beach with people. The IUBMB logo is in green at the bottom center. Below it, 'Advanced Schools' is written in a cursive script. Underneath that, 'DEADLINE OCTOBER 1' is written in a white box. At the bottom, a paragraph states: 'For meetings in Europe, IUBMB automatically covers the expense for use of the "IUBMB/Brian Clark lecture hall" in the month of May for Spetses island, Greece for the organization of Special Meetings, Symposia, Advanced Schools etc.'

[IUBMB Advanced Schools](#) support training of grad students and postdocs on specific topics in molecular biosciences. One more way we support training the next generation.

# UPCOMING IUBMB DEADLINES



[IUBMB Jubilee Lecture Awards](#) recognize outstanding contributions in biochemistry and molecular biology. Nominate your Plenary Speaker (in person or virtual).



Organizing a meeting? IUBMB provides support of a [plenary lecturer](#) who has made outstanding contributions in biochemistry and molecular biology.

# UPCOMING MEETINGS 2022

## YOUNG SCIENTISTS' FORUM AT IUBMB CONGRESS

The [2022 IUBMB–FEBS–PABMB Young Scientists' Forum \(YSF 2022\)](#) is held just ahead of and in conjunction with the joint 25th IUBMB, 46th FEBS and 15th PABMB Congress. The exciting YSF 2022 will take place at Vimeiro, located on the Portuguese coast alongside a peaceful beach with a fantastic view of the endless Atlantic Ocean.



**IUBMB–FEBS–PABMB  
Young Scientists' Forum**  
July 7, 2022 • Vimeiro, Portugal • 11:30h

Session Chair: Alexandra Newton


**IUBMB WHELAN YOUNG  
INVESTIGATOR AWARD LECTURE**

**Élyse Fischer, UK**

*"Molecular mechanisms of mitotic checkpoint  
complex assembly at kinetochores"*




**IUBMB–FEBS–PABMB Young Scientists' Forum**  
July 8, 2022 • Vimeiro, Portugal • 11:30h & 16:45 h



**CAREER SKILLS – PRACTICAL EXERCISES**  
Value of a well-run lab book

**Élyse Fischer, UK**  
**IUBMB Chair Trainee Initiative Committee**



# UPCOMING MEETINGS 2022

The 25th IUBMB Congress, the 46th FEBS Congress  
and the 15th PABMB Congress



The [25th IUBMB Congress, the 46th FEBS Congress and the 15th PABMB Congress](#) will be held in Lisbon, Portugal from 9 -14, July, 2022. *The Biochemistry Global Summit* will take place at Lisboa Congress Centre, located in the historical area of Belém, by the Tagus River.

The program of the Congress will cover the latest discoveries in biomolecular sciences and is a great opportunity to interact with scientists from all over the world.



# UPCOMING MEETINGS 2022

## The 25th IUBMB Congress, the 46th FEBS Congress and the 15th PABMB Congress

### NAMED LECTURES AND AWARD TALKS

We invite you to attend one of the many named lectures and award talks from a great selection of biochemists reflecting the modern biomolecular sciences and the advances in their field.




July 9, 2022 • Lisbon, Portugal • 17:00 – 18:00h




**SARAH TEICHMANN**  
Wellcome Sanger Institute  
Cambridge, UK

**IUBMB CLAUDINA RODRIGUES-POUSADA LECTURE - OPENING PLENARY LECTURE**  
**Human Cell Atlas: Mapping the human body one cell at a time**

Sarah Teichmann is interested in global principles of regulation of gene expression and protein complexes, with a focus on immunity. She did her PhD at the MRC Laboratory of Molecular Biology, Cambridge, UK and was a Beit Memorial Fellow at University College London. She started her group at the MRC Laboratory of Molecular Biology in 2001, discovering stereotypical pathways of assembly and evolution of protein complexes during this time. In 2013, she moved to the Wellcome Genome Campus in Hinxton Cambridge, jointly with the EMBL-European Bioinformatics Institute and the Wellcome Sanger Institute (WSI). In February 2016 she became Head of the Cellular Genetics Programme at the WSI and co-founded the Human Cell Atlas international initiative which she continues to lead. Sarah Teichmann was elected a member of EMBO in 2012, a fellow of the Academy of Medical Sciences in 2015 and a fellow of the Royal Society in 2020.



*Congratulations*





**JAMES MURPHY**

**BIOCHEMICAL SOCIETY  
INTERNATIONAL AWARD LECTURE**

July 11, 2022 • Lisbon, Portugal • 13:30h

*"The Kiss of Death: understanding how the zombie protein, MLKL, is triggered to kill cells by necroptosis"*


July 12, 2022 • Lisbon, Portugal • 11:30 – 12:30h



**COSTANTINO IADECOLA**  
Cornell University  
NY, USA

**IUBMB E.C. SLATER LECTURE**  
**Neurovascular pathobiology of vascular cognitive impairment and Alzheimer's disease**

Costantino Iadecola, MD is the Director and Chair of the Feil Family Brain and Mind Research Institute and the Anne Parrish Titze Professor of Neurology at Weill Cornell Medicine, New York. His research focuses on the basic mechanisms of neurovascular function and on the cellular and molecular alterations underlying ischemic brain injury, neurodegeneration and other conditions associated with cognitive impairment. A pioneer in establishing the concept of the neurovascular unit, Costantino Iadecola has championed the involvement of neurovascular dysfunction in neurodegenerative diseases, and the role of innate immunity and the microbiome in ischemic brain injury. He has been involved, as editor or editorial board member, in several journals. Costantino Iadecola has received two Javits Awards from the NIH, the Willis Award (the highest honor in stroke research bestowed by the American Heart Association (AHA)), the Zenith Fellow Award from the Alzheimer's Association, and the Excellence Award in Hypertension Research from the AHA, and he was elected to the Association of American Physicians. Clarivate Analytics lists him as one of the world's Highly Cited Researchers for ranking in the top 1% of the most-cited authors in neuroscience and behavioral science. In 2019 he was elected Distinguished Scientist by the AHA and in 2021 was the first neuroscientist to receive the Basic Research Prize from the AHA.



July 13, 2022 • Lisbon, Portugal • 11:30 – 12:30h



**MASAYUKI YAMAMOTO**  
Tohoku University Graduate  
School of Medicine, Japan

**IUBMB KUNIO YAGI LECTURE**  
**Molecular basis of the KEAP1-NRF2 system function**

Masayuki Yamamoto graduated from Tohoku University School of Medicine in 1979 and Graduate School of Medicine in 1983. In 1983–1986, he was a postdoctoral fellow at Northwestern University, IL, USA with Professor Doug Engel. In 1989, Masayuki Yamamoto revisited the Engel laboratory and in collaboration identified the GATA family of transcription factors, which are now widely studied as one of the prototype transcription factor families regulating lineage commitment and cell differentiation. In 1991, Masayuki Yamamoto returned to Japan and started a series of analyses on the CNC-XMAF family of transcription factors, and in 1999 he identified the KEAP1-NRF2 system regulating the cellular response against electrophilic and oxidative stresses. Since then, he has been addressing many questions related to this important regulatory pathway. He also established the Tohoku Medical Megabank organization in 2012 aiming to support constructive regeneration of the tsunami-devastated area from the Great East Japan Earthquake and has been serving as a Founding Executive Director.



*Congratulations*



**ROMMIE E. AMARO**

**IUBMB JUBILEE LECTURE**

July 13, 2022 • Lisbon, Portugal


*"Computational Microscopy of SARS-CoV-2 In Situ"*





**FEBS-IUBMB Special Session "Unlocking SARS-CoV-2"**

July 13, 2022 • Lisbon, Portugal • 16:00 – 18:00h


Session Organizers & Chairs: Alexandra Newton and Alexander Wlodawer




**ROMMIE E. AMARO** **IUBMB JUBILEE LECTURE**  
"Computational Microscopy of SARS-CoV-2 In Situ"




**ANA CAROLIMA ZERI**  
"New lights on the structural biology of the SARS-CoV-2 - insights and perspectives at the 4th generation Synchrotron source Sirius"



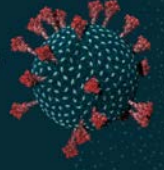
**DAREN FEARON**  
"From crystallographic fragment screen to preclinical candidate: Open science discovery of SARS-CoV-2 antivirals"



**MARC F. LENSINK**  
"High-resolution interaction prediction in the CAPRI covid-19 open science initiative"



**ANA MITROVIĆ**  
"Cysteine peptidase inhibition: The way to impair SARS-CoV-2 infection and replication"

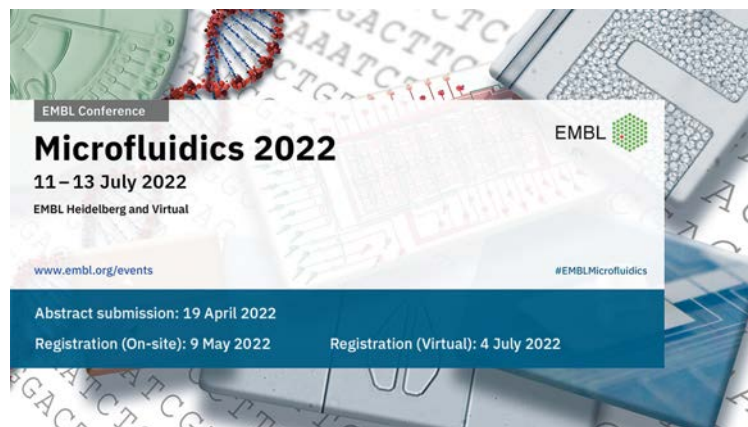




# UPCOMING MEETINGS 2022



**\*\*Postponed from 2021\*\*** | [Meeting\\_Link](#)



[Online Poster](#) | [Meeting\\_Link](#)



[Online Poster](#) | [Meeting\\_Link](#)



[Online Poster](#) | [Meeting\\_Link](#)



[Online Poster](#) | [Meeting\\_Link](#)



[Online Poster](#) | [Meeting\\_Link](#)

# UPCOMING MEETINGS 2022



Molecular Targets for Anti-aging Interventions  
26 Sept. - 1 Oct. 2022 | Spetses Island, Greece



**AUG 30:** Applications and Registration Deadline  
[online poster](#) | [Meeting Link](#)



[online poster](#) | [Meeting Link](#)



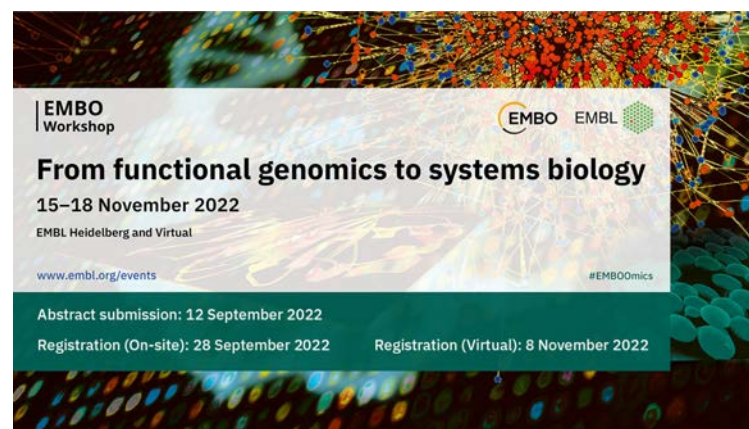
[Meeting Link](#)



[online poster](#) | [Meeting Link](#)



[online poster](#) | [Meeting Link](#)



[online poster](#) | [Meeting Link](#)

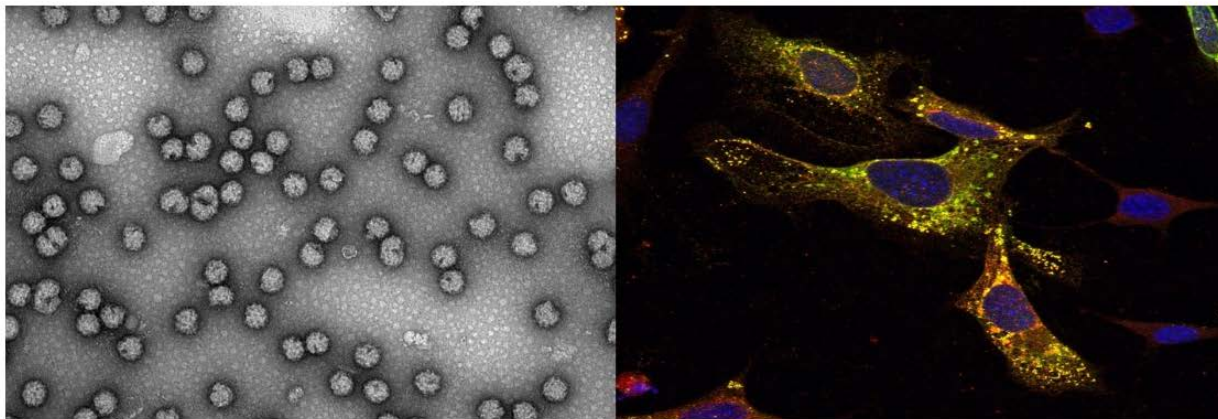


# UPCOMING MEETINGS 2022

## IUBMB Focused Meeting on Biochemistry & Molecular Biology of RNA Viruses

15th November, 2022- 18th November, 2022

Venue: Regional Centre for Biotechnology, Faridabad



Registration to open by July 15th | [Meeting Link](#)

***\*\*Meeting Postponed from 2021\*\****

### About the Conference

The ongoing COVID19 pandemic has made it abundantly clear that infectious diseases due to pathogenic viruses with RNA genomes represents a global public health problem. Mortality and morbidity due to known RNA viruses are high and the problem is compounded due to the appearance of new viruses due to animal-human conflicts. RNA viruses such as SARS-CoV-2, Influenza, Japanese Encephalitis Virus, Dengue virus, Chikungunya virus and HIV may cause death or result in long-term sequelae in recovered patients. A number of laboratories in different parts of the world are engaged in research to identify critical intervention points in the life cycle of these viruses and exploit this knowledge to develop effective therapeutic and prophylactic strategies. To encourage a productive discussion and to disseminate knowledge about new advances in this area, we have organized, with support from the IUBMB, a focused meeting on the Biochemistry & Molecular Biology of RNA viruses.



# UPCOMING MEETING 2023



## Miami Winter Symposium 2023 Molecular Neuroscience: Focus on Sensory Disorders

**\*\*Meeting Postponed from 2021\*\***

January 30 – February 1, 2023 | Hyatt Regency Miami, FL, USA

### Abstract submission open

Submit abstracts for short talks and posters by **September 16, 2022**

To protect the health and safety of all our conference attendees, Elsevier requires proof of Covid-19 vaccinations or a negative lateral flow test (taken under the supervision of authorized health professionals, within 48 hours) to be eligible to attend. This will be coupled with mask wearing throughout the conference.

For full information on the Elsevier conferences Covid-19 requirements, please visit the [Covid-19 delegate safety page](#).

Call for Abstracts on the following session topics:

- Hearing
- Vision
- Olfaction
- Taste
- Touch
- Pain
- Itch

**SEP 16:** [Abstracts](#) for short talks and Posters Deadline | **NOV 18:** [Early-booking Registration Deadline](#) | [Meeting Link](#)



The [IUBMB-EMBO Focused Meeting on Emerging Concepts of the Neuronal Cytoskeleton](#) is the sixth edition of a long-running workshop intended to expose students and fellows to cutting edge research in the neuronal cytoskeleton field, and to help them forge closer ties with the international community that would lead to future opportunities.

**Registration will be open by September 2022** | [Meeting Link](#)

# UPCOMING MEETING 2024



AUSTRALIAN SOCIETY  
FOR BIOCHEMISTRY AND  
MOLECULAR BIOLOGY

26<sup>TH</sup> CONGRESS OF THE  
INTERNATIONAL UNION FOR  
BIOCHEMISTRY AND  
MOLECULAR BIOLOGY 2024

22-26 SEPTEMBER 2024  
MELBOURNE CONVENTION  
AND EXHIBITION CENTRE

MELBOURNE, AUSTRALIA



We are thrilled to announce that Melbourne will host the [26th Congress of International Union of Biochemistry and Molecular Biology](#) (IUBMB) from 22-26 September 2024. We look forward to seeing you there!

# ANNOUNCEMENT

*Thank you for the many years*

*Thank you*  
FRANCESCO BONOMI  
ITALY

FOR 9 YEARS SERVICE AS  
TREASURER  
IUBMB



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# ANNOUNCEMENT

THE  
ROYAL  
SOCIETY  
PUBLISHING

*Open Biology* is the Royal Society's open access journal that welcomes original, high impact research in cell and developmental biology, molecular and structural biology, biochemistry, neuroscience, immunology, microbiology and genetics. Articles submitted to *Open Biology* benefit from its broad scope and readership and dedicated media promotion and we also aim for a turnaround time of 4 weeks from submission to first decision.



**OPEN  
BIOLOGY**

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**Short Communications**

Our new report-style article enables authors to communicate findings of broad interest in a shorter and concise format.

Image: Thousands of Velella velella (Chidaria: Hydrozoa) stranded in Malva-rosa beach, València, after a massive blooming event, by Mr Joan Josep Sola Angel.

We are encouraging submissions to our new article category '*Short Communications*' that gives authors the opportunity to submit an article covering a single topic of significance presented clearly in a shorter format. Find out how to submit: <https://royalsocietypublishing.org/rsob/submit>

For more information, please contact Felicity Davie at:

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# IUBMB Programs and Benefits of Membership

**Vision. Enhancing pedagogy and discipline-based knowledge in biochemistry and molecular biology through international collaboration.**

The IUBMB is committed to improving education in biochemistry and molecular biology at all levels. The IUBMB Committee on Education and Training provides sponsorship for a range of activities which contribute to this goal. The Committee considers applications from all IUBMB Adhering Bodies and Associated Adhering Bodies. When an activity is to take place at a meeting of one of the Regional Organizations (FAOBMB, FASBMB, FEBS and PABMB), it is often appropriate for the application to be made through that organization.

In addition to funding activities which are organized through these organizations, the Committee on Education and Training takes a lead in organizing specific IUBMB Education Workshops around themes which are seen to be of strategic importance for BMB education. Prior advice about these initiatives and their outcomes will be widely disseminated through this website and through IUBMB social media channels.

Providing opportunities for the next generation of biochemists and molecular biologists is a primary mission of the IUBMB. In addition to specific Education initiatives described below, the IUBMB supports trainees through Research Fellowships such as the Wood-Whelan and Mid-Career Fellowships, and by providing funds to Focused Meetings to be used for travel awards to trainees.

**IUBMB Programs.** The wide range of programs available to scientists resident in IUBMB member countries, include:

**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\$30,000 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. This competitive funding covers support for the school related to travel, accommodation and meals for successful applicants.

**Educational Activities.** The IUBMB is involved in a broad range of educational programs. The Union 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.

**Tang Education Fellowships.** The IUBMB Tang Education Fellowships provide opportunities for the development of both biochemistry and molecular biology educational programs and educators with the specific aims of: increasing expertise and capability in biochemistry and molecular biology education, supporting engaged educators, promoting change/innovation in approaches to education, improving student learning experiences, outcomes, and engagement with biochemistry and molecular biology, building an evidence base on which to make future recommendations on biochemistry and molecular biology education and supporting biochemistry and molecular biology education in developing countries.

**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.

**PROLAB Fellowships.** This collaboration between the IUBMB, PABMB, and ASBMB allows Latin American graduate students and postdoctoral fellows to spend short stays (1-6 months) in the laboratory of a scientist affiliated with ASBMB, in order to develop part of his/her thesis research work.

**Travel Fellowships.** are available for young scientists in or from developing countries who wish to attend the Miami Winter Symposium.

**MilliporeSigma Virtual Meeting Fellowships.** This collaboration between IUBMB and MilliporeSigma provides support to trainees to attend virtual meetings in the IUBMB region.

**Relocation Support for Displaced Trainees.** This programme was established to allow IUBMB to respond rapidly to any natural disasters and acts of war that results in loss of infrastructure and resources at universities and research institutions. This program provides financial support of up to three months for trainees to relocate to a new host lab to continue their research.

# IUBMB Programs and Benefits of Membership

**Vision. Enhancing pedagogy and discipline-based knowledge in biochemistry and molecular biology through international collaboration.**

**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 Jubilee and Plenary Lectures are intended as important 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 Events.** 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 (TIBS), IUBMB Life, Biochemistry and Molecular Biology Education (BAMBE), 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. The IUBMB is strongly committed to diversity and opposes any type of discrimination.

More details about the extensive list of IUBMB programs can be found on the Union's website: [www.iubmb.org](http://www.iubmb.org)

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# IUBMB EXECUTIVE COMMITTEE

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(from left to right) Ilona Concha Grabinger, Alexandra Newton, Zengyi Chang, Dario Alessi, Charysse Austria (*Secretariat*), M. Iqbal Parker, Francesco Bonomi (*past Treasurer*), Loredano Pollegioni, Andrew H.-J. Wang, Yang Mooi Lim