

FEBS EDUCATIONAL ACTIVITIES

FEBS EDUCATION COMMITTEE

by Gül Güner Akdoğan, Chair of the FEBS Education Committee

The FEBS Education Committee has its roots in the FEBS Working Group on Teaching Biochemistry, which was founded in 2001 by Jean Wallach (Lyons, France) as he describes below. Between 2001 and 2006, this group was active in promoting educational events at the annual FEBS Congresses, with, as members, Keith Elliott (Manchester), Peter Ott (Bern), Gül Güner Akdoğan (Izmir), Jason Perret (Brussels), Jose Villalain (Alicante) (followed by Pilar Roca), Pedro Moradas-Ferreira (Porto) and Ed Wood (Leeds).

At the FEBS Council Meeting in Istanbul in 2006, the FEBS Working Group on Teaching Biochemistry became the FEBS Education Committee, with Ed Wood (Leeds, UK) as the first chair. Costas Drainas (Ioannina, Greece) served on the Committee from 2009 until his unfortunate death in 2011. Jason Perret (Brussels, Belgium) (2008–2011), Miguel Castanho (Lisbon, Portugal) (2008–2011) and Karmela Barišić (Zagreb, Croatia) (2009–2012) served on the Committee, each for one term, according to FEBS regulations for committee membership. Gül

Güner Akdoğan (member from 2007) took over as chair after the sad death of Ed Wood on 14 December 2008 ('A Tribute to Ed Wood', *FEBS News*, July 2009). Gül Güner Akdoğan was elected as chair of the Committee at the FEBS Council Meeting in Prague in 2009 and then re-elected for a second term at the FEBS Council Meeting in Seville in 2012. Keith Elliott (Manchester) was co-opted onto the Committee from the outset and Peter Ott (Bern) was also co-opted and served as the website manager.

Educational Activities during the Annual FEBS Congresses

The first educational activities of FEBS were organized by the Working Group on Teaching Biochemistry during the 28th FEBS Congress in Istanbul in 2002. In the years that followed, these events have had an increasing impact. The organization was taken over by the FEBS Education Committee from 2007 onwards, sometimes in collaboration with other groups, including the IUBMB Education Committee and the FEBS Science and Society Committee, when working on a common topic.

It is interesting to note the variety of topics and their evolution (*see Table 1*).

TABLE 1: EDUCATIONAL ACTIVITIES AT FEBS CONGRESSES

FEBS Congress*	FEBS Education Committee Event(s)†
2002 Istanbul: 28th FEBS Congress (organized by ISBMB)	Symposium: 'Virtual Learning' Computer-Lab Activity: 'Virtual learning'
2004 Warsaw: 29th FEBS Congress	Workshop: 'Problem-Based Learning'
2005 Budapest: 30th FEBS Congress	Workshop: 'Laboratory Practicals'
2006 Istanbul: 31st FEBS Congress	Workshop: 'New Approaches to Post-graduate Education'; Workshop: 'How to Write Successful Research Grants'; Data-base Searching-Computer Lab
2007 Vienna: 32nd FEBS Congress	Symposium: 'How to go from Biochemistry Research to Commercial Biotechnology'; CV Clinics
2008 Athens: 33rd FEBS Congress & 11th IUBMB Conference	Symposium: 'Post-Graduate Education' (With HSBMB) Workshop: 'E-learning'; CV Clinics
2009 Prague: 34th FEBS Congress	Workshop: 'Teaching Systems Biology'; Workshop: 'Bioethics' (Co-funded with IUBMB); CV Clinics
2010 Gothenburg: 35th FEBS Congress	Workshop: 'Research in Undergraduate Education' (Co-funded by IUBMB); Workshop: 'Research Oriented Education in High Schools'; Practical Systems Biology Workshop (With the SSBMB); CV Clinics
2011 Turin: 36th FEBS Congress	Workshop: 'PhD Training in Europe: Where Are We Heading?'; Workshop: 'Integrating Molecular Bioscience; Education with Medical Training'; CV Clinics
2012 Seville: 37th FEBS & 22nd IUBMB Congress	Workshop: 'Research into Effective Learning Strategies: What Biochemistry Is Learning from the Other Sciences' (Co-funded with IUBMB Education Committee); Workshop: 'Teaching Molecular Evolution: A Unifying Principle of Biochemistry' (Co-Funded with IUBMB and FEBS Science and Society Committee); Workshop: 'Science in School: Biodiversity and Evolution' (Co-funded with FEBS Science and Society Committee); CV Clinics
2013 St Petersburg: 38th FEBS Congress	Workshop: 'Molecular Life Sciences Education for the Needs of the Industry'; CV Clinics
2014 Paris: FEBS EMBO Conference	Skills and Key Knowledge for a Molecular Life Scientist; New Educational Technologies; CV Clinics

* Including joint events with IUBMB and EMBO; † Events prior to 2007 were organized by the FEBS Working Group on Teaching Biochemistry

Mission and Aims

The FEBS Education Committee has the mission of promoting education of the highest quality in biochemistry and molecular biology in Europe at both undergraduate and postgraduate levels. To do this:

1. we encourage the development of innovative teaching methods;
2. we disseminate advice on educational resources;
3. we arrange at least one education event at each FEBS Congress;
4. we arrange other educational events such as workshops on educational issues in FEBS member countries on request;
5. we collaborate with bodies within and outside FEBS: the Working Group on Integration, the Science and Society Committee, the IUBMB Education Committee, Working Group on the Careers of Young Scientists, the Constituent Societies of FEBS, IFCC and ORPHEUS.

Education Workshops in FEBS member countries: origins and development

Ed Wood, the first chair of the FEBS Education Committee, wrote to the Constituent Societies of FEBS in March 2008:

Successful education is not just about 'giving' information to passive students and then assessing whether they can repeat the information in an examination ... Some years ago the Committee on Education of the International Union of Biochemistry and Molecular Biology (IUBMB) was in the habit of offering Workshops on Education on request from member Societies. These Workshops, organized by Professor Frank Vella, typically took place over three days, were held in many countries of the world ... There was no set formula for the activities and the issues discussed were very varied. The Workshop 'team' usually consisted of three individuals from



Organizers (centre front) and participants at the FEBS Education Workshop in Sofia, Bulgaria, 2013.



Education Workshop in Sofia, Bulgaria 2013 (from l-r): Bojidar Galutzov (Sofia University), Mathias Sprinzl, Genoveva Nacheva (Bulgarian Society of Biochemistry), Gül Güner Akdoğan, Diana Petkova (Bulgarian Society of Biochemistry), Mariek Odjakova (Sofia University and course organizer) and Keith Elliott.

different countries who had some expertise in teaching. Usually members of the visiting team gave one 'scientific' lecture on their research topic, and often some local individuals (for example at the post-doc level) were invited to speak about their research or prepare a brief critical summary of a current paper from the literature for presentation. The main activity however, was not 'scientific' – it was concerned with the process of teaching, sometimes called 'pedagogy', and how the activity could be made more effective.

The Education Committee of FEBS now proposes to try to offer similar Workshops and may do this in collaboration with IUBMB. Since

the original IUBMB Workshops mentioned above, things have moved on considerably in the world of university education [and] there are many 'new' issues in pedagogy to be dealt with alongside the 'old' ones.

The FEBS Education Committee is still discussing how Workshops might be run and what the financial implications might be. In the IUBMB-sponsored Workshops, typically IUBMB provided the travel money for the visiting team, and accommodation was paid for locally, often in campus guest houses, sometimes in modest hotels ... If you, through your local Biochemical Society, would be interested in discussing the possibility of

a Workshop – perhaps with a view to reviewing the teaching methods used in your institution, then in the first instance please contact me and we can begin to consider the possibilities and feasibility of a visit.

The first workshop was planned by Ed Wood to take place in Sofia, on 17–18 October 2008, with Keith Elliott and Gül Güner Akdoğan as co-trainers. Unfortunately, owing to Ed's illness, Gül and Keith had to run the workshop without him. Ganka Kossekova (Sofia Medical University) coordinated the workshop. The first workshop being successful, many others have followed (*see Table 2*).

The education team for a proposed workshop is identified and invited by the FEBS Education Committee, either from Committee members or experts at large, depending on the topics to be covered. The workshop can stand alone or be associated with another scientific event such as a Congress of the Constituent Society.

Those attending the workshops include university faculty, postdocs, PhD students, administrators and high-school teachers where appropriate. They may be working in the areas of biochemistry, molecular biology, medicine, pharmacy, science education and all disciplines in the basic sciences.

Organization of the Workshops

The workshops are organized by the FEBS Education Committee in collaboration with the FEBS Constituent and/or Associated Society of the country where the workshop is to be held. A typical workshop lasts one or two days and focuses on the current thinking and innovations in education that have been found to be useful for enhancing learning. The specific topics to be covered are selected by the Constituent Society according to their needs, and taken from the array of topics offered by the FEBS Education Committee (*see Table 3*).

TABLE 2: WORKSHOPS ORGANIZED BY THE FEBS EDUCATION COMMITTEE

Cluj-Napoca, Romania, September 2009
Athens, Greece, May 2010
Opatija, Croatia, September 2010
Tallinn, Estonia, May 2011
Bratislava, Slovakia, September 2011
Ljubljana, Slovenia, November 2011
Izmir, Turkey, March 2012
Yerevan, Armenia, October 2012
Cambridge, UK, December 2012
<i>(In Memory of E.J. Wood)</i>
Gdansk, Poland, July 2013
Tbilisi, Georgia, October 2013
Sofia, Bulgaria, November 2013

The workshop is agreed between the Constituent Society and FEBS Education Committee at least one year before the event. The Constituent Society assigns a local coordinator for the workshop – typically the person responsible for the educational activities of the society. Although the workshops are intended to target the needs of the Constituent Society members and those attending are, for the most part, members of the host society, any FEBS member from a different country may attend these workshops if interested.

The chair of the Education Committee usually takes overall responsibility, but the venue, time and duration, as well as the topics of the workshop, are suggested by the local hosts. The programme is based on the topics selected by the Constituent Society hosts and the sessions are organized using different educational techniques depending on the character of the topics. These will include lectures, small-group sessions, panel discussions and, if requested, selected short talks and poster sessions based on educational issues.

All local arrangements are the responsibility of the host Constituent Society: advertisement within the country, name badges, transport, social programme and so on. The FEBS Education Committee assumes responsibility for the workshop trainers, their flights, booklets and photocopies to be distributed, visual aids and collection of feedback information, advertisement on the FEBS website and suchlike.

The website provides an interactive environment (Virtual Classroom) where relevant information and material is accessible. The Committee is grateful for the effort and expertise of Peter Ott who has successfully managed the site (available at edu.febs.unibe.ch).

TABLE 3: TOPICS OFFERED BY THE FEBS EDUCATION COMMITTEE

Discussion on skills and knowledge expected from a molecular life science graduate
Quality assurance in education
Postgraduate education
Distance or e-learning
Curriculum planning
Designing laboratory practicals
Student-centred learning
Problem-based learning
Ethics education
Biochemistry education for the needs of industry
Assessment and feedback
Teaching molecular evolution
Research experience in undergraduate education
How to write a scientific paper
Scientific communication to non-scientists
How to write a research proposal
Funds and programmes

Types of Workshop

Workshops undertaken fall into three main categories:

1. workshops to 'promote molecular life sciences education': in Eastern European countries, these bring together young scientists and experienced faculty to reflect on educational issues in the country – in particular, to discuss what could be done – and also to set an example of how to train young scientists for professional scientific skills. In addition, workshops focused on particular topics such as 'teaching molecular evolution' could also be designed with similar aims.
2. workshops on 'Innovations in Education': these bring together faculty and young scientists from all over Europe to discuss innovations in teaching and learning in the area of molecular life sciences and biosciences. One of these workshops was successfully run in Cambridge in 2012.
3. 'revisit' workshops: it was generally felt that a 'revisit' could be held in a country that had previously hosted a workshop, in order to discuss progress and to reflect on what could be done in the future. This type of workshop can be pursued four to five years after the first experience. An example is the Sofia Workshops in 2008 and 2013.

Future Prospects

The work of the Committee is evaluated periodically. It is generally agreed that we have established an infrastructure and an acceptable standard for workshops on innovative topics and educational issues in biochemistry and molecular biology at a European level. Many Constituent Societies from all over Europe have expressed interest. Further development in the exchange of learning resources and further dialogue with bodies within and outside FEBS are being sought. In addition, the Committee has started thinking on 'European Strategies for High Quality

Undergraduate and Post-Graduate Education.' Further enhancement in the synergy of cooperation within the Committee, among all the Constituent Societies of FEBS and other international organizations, will be promoted.

In order to acquire a wider network and stronger funding, the possibility of submitting a project to the EU is being considered. It is thought that such a project at the European level is needed because the education and training of molecular life scientists to a high standard is critical to the advancement of science, innovation, productivity, wealth and the social cohesion of European society. Standards and content of molecular life sciences education programmes are uneven, and the transparency and comparability of qualifications is limited. There is a growing need to train contemporary scientists who are well qualified not only in science and research, but also in the educational aspects of scientific research. Therefore, the new generation of molecular scientists should be equipped with transferable scientific skills and also be capable of training students in this aspect. The FEBS Education Committee is committed to continue fulfilling the vision and mission of FEBS in this area of education.

THE CREATION OF THE WORKING GROUP ON TEACHING BIOCHEMISTRY

by Jean Wallach, Chair of the FEBS Working Group on Teaching Biochemistry

As a member of the Editorial Board of the journal *Biochemical Education* from 1992, I had many discussions with Ed Wood about the opportunity of creating a European Education Committee, like that of the IUBMB. We had earlier organized a successful practical and session on various applications of gel filtration in biochemistry in 1976 in Hamburg. It took another 20 years to succeed in our project!

As I was in charge of the Education Committee in the French Society for Biological Chemistry, I suggested

to the organizers of the FEBS Meeting in Nice in 1999 that they put forward the proposal to create an education group within the Federation. The idea, supported by the French delegates and in particular Guy Dirheimer, was accepted and Julio Celis (FEBS Secretary General) and Iain Mowbray (FEBS Treasurer) entrusted me with the task of creating a Working Group on Teaching Biochemistry. After contacting well-recognized experts in biochemical education in Europe, I was able to propose the first Working Group, comprising Pedro Morradas-Ferreira, Jose Villalain, Peter Ott, Keith Elliott and Gül Guner together with Iain Mowbray and myself. Iain's role was essential as he was in a position to convince the FEBS Council of the benefits of creating such a group. The official launch came in Birmingham in 2000 during the FEBS Meeting. To begin with, we organized yearly Meetings of the group in Lyons, which were characterized by the quality of debate and the conviviality of its members. As a result, we proposed organizing an education session at each FEBS Congress. The first one took place in Istanbul in 2002 on the topic 'Multimedia Approach on Teaching Biochemistry' (see Table 1 on p.71 for a list of topics covered in subsequent years). At this point, we were joined by Jason Perret and by my friend Ed Wood, which was for me a very great pleasure after the decades during which we were both associated with *Biochemical Education* and attending many Meetings together.

The recognition of our work culminated in 2006 when our Working Group was converted into the FEBS Education Committee, which remains very active.

Although I am no longer a member of the Committee, I am involved in *Biochemical Education* and recognize the quality of the recent education sessions. All the 'pioneers' of the Working Group can be proud of the work being done today by the members of the current Education Committee.

I wish them all the best for its future.

MAKING A DIFFERENCE TO THE TEACHING OF BIOCHEMISTRY

by Miguel Castanho, Member of the FEBS Education Committee (2008–2012)

I served on the FEBS Education Committee from 2008 to 2012. During this period I had the opportunity to learn about the best innovative practices taken across Europe by the Committee. Under the coordination of first Ed Wood and then Gül Güner, the FEBS Education Committee assembled a series of workshops that could be taken to any university in Europe to help local teachers and researchers to improve teaching and learning. In this way, the Committee has been a very dynamic facilitator in the implementation of educational strategies, from problem-based learning to PhD supervision. If I had to highlight a particular activity, I would choose the selection of the themes for educational symposia and workshops in FEBS Congresses, and their organization. These symposia and workshops are unique for the timeliness of the themes and their impact is immense, with practical examples being replicated in different universities around the globe. Interestingly, many educational activities in FEBS Congresses are jointly organized with IUBMB, which contributes to their high quality and high impact.

In short, the FEBS Education Committee has made, and continues to make, a great difference to improving the teaching and learning of biochemistry. I am proud to have had the opportunity to make a contribution to this.

DEVOTED TO IMPROVING BIOCHEMICAL EDUCATION

Karmela Barišić, Member of the FEBS Education Committee (2009–2012)

I was a member of the FEBS Education Committee from 2009 to 2012. During that time, I had the opportunity to work together with many colleagues who were devoted to the improvement of higher education in biochemical and molecular biological sciences across and beyond Europe.

I participated in many Education Committee Meetings and workshops (in Lisbon, Izmir, Athens, Tallinn and Ljubljana). I appreciated the atmosphere of all the sessions I was involved in, notably the openness of discussions, the friendliness of the work environment, and the willingness of all Committee members to achieve more.

The meeting and workshop in Opatija was a big challenge for me and for the Croatian Society of Biochemistry and Molecular Biology. I was honoured to have been given an opportunity to host the Education Committee meeting and organize a workshop. The two-day workshop programme covered the following topics: postgraduate education (student abilities and supervisor skills, role of supervisory committees, PhD curricula, experimental research-based theses); ethics education (different approaches to ethics education, interactive session on ethics education); and problem-based learning. To judge from subsequent feedback, the workshop was successful and important for the Croatian biochemical community.

I wish much further success to the Education Committee in its mission. Keep up the good work!



FEBS Education Workshop: 'Teaching Molecular Evolution Gdańsk', Poland, July 2013.

CV SUPPORT FOR YOUNG SCIENTISTS

by Keith Elliott, Member of the FEBS Education Committee

When the FEBS Education Committee was first established, we were looking for ways to make a quick impact and particularly to help young scientists. I approached the organizers of the Young Scientists' Forum (YSF) for the Vienna Congress in 2007 with an offer to run a CV advice session based on those I had been involved with for many years as part of the Careers Conferences run by the Biochemical Society in the UK. After some discussion with the chair of YSF and the local organizers, this offer was accepted.

Although I had alerted the participants by email, I was only able to give a very brief introduction to the CV support sessions at the 2007 YSF (bad weather in Vienna caused my flight to be delayed). I collected CVs to be reviewed during the main Congress and was amazed by the uptake – 30 of the 100 participants brought their CVs to be assessed by me, with the help mainly of Ed Wood, but also Gül Güner and Jason Perret.

The following year in Athens at the joint 33rd FEBS Congress & 11th IUBMB Conference I was invited to attend the whole YSF and participate in the Careers Round Table. I gave a short talk and was a member of the panel for the round-table discussion. This was particularly useful as it enabled interaction with the other round-table

participants, often with complementary presentations and experience. It also provided me with the opportunity to get to know a lot of the participants and talk to them informally before actually discussing their CVs in detail. This has been the format at all YSFs and Congresses since.

Each year between 30 and 50% of the YSF participants have brought along a CV; thus over 300 have been seen in the seven years of the project to date. I estimate that we have seen CVs from participants working in over 40 different countries and probably even more nationalities. I provide all participants with an annotated copy of an extended version of my PowerPoint presentation, including hyperlinks to a number of specific Web resources for CV and cover-letter writing – important because many of the general resources on the Web are not appropriate for research science or academic posts.

After Ed Wood's death in 2008 I was primarily helped by Jason Perret while he was a member of the Education Committee, but generally dealt with 70–80% of the CVs myself, and all of them at the FEBS Congress in St Petersburg in 2013. I have spent most of the Congresses on the FEBS stand running 'drop-in' sessions for individuals (or occasionally two or three friends). Discussion is vital, as usually considerably more is learned about the person than is presented in the CV. The most common 'faults' are those of omission –

Keith Elliott (left) and Jason Perret (right) assessing the CVs of YSF participants.



FEEDBACK FROM THOSE ATTENDING CV SUPPORT SESSIONS

'I'd never had any advice on my CV before, because it isn't usual to consider a CV at scientific institutions in Russia. So it was helpful.'

Ilya Akberdin, Russia

'It gave me a lot of confidence, because I never had the chance to evaluate my CV. I also came to know about some weak points, and got some useful advice on how to improve them. I think these things are very important when a person like me is in the middle of his PhD and looking for future options.'

Gautam Chaurasia, Germany

'I will pass on your talk to my working group, because I would like to pass on your knowledge!'

Iris Magler, Austria

'I found your presentation and especially discussion with you very fruitful. It was the first time I have discussed my CV with an expert and I was impressed and applied all your suggestions. I'm about to finish my PhD so I'm aware how important a good CV is. However, many people from YSF were not interested in having a good CV at all, maintaining that it was too early for them to prepare a CV but in my opinion it is never too early.'

Paweł Zawadzki, Poland

'I completely rewrote my CV after hearing your advice, and it has shaped how I've been thinking about my career since. It was missing several important pieces of information, and since I've put them in there, I think it "sells me" much better.'

Sarah Dombernowsky, Denmark

mainly a concentration on detailed academic records (but sometime omitting information on the PhD project) without reference to anything that tells the reader about the person. All too often, interesting information (like teaching in a school or organizing an international conference) only came out during the discussion. However, we have been amazed at some of the skills the young scientists have acquired, including setting up companies, journalism and even being an international basketball player. With each discussion taking about 15 minutes, this means a total time of at least 12.5 hours per Congress, usually rather longer!

There have been spin-offs from the YSF sessions. In 2011 one of the participants who organized the symposia for research students at the Friedrich Miescher Institute in Basel asked me to run a workshop at the Institute; I did this over two days. Since then I have run similar workshops in the CNR Institute of

Protein Biochemistry in Naples and the Faculty of Pharmacy in the University of Zagreb (and am always open to more offers!). Sessions on CV preparation are now also often included in the workshops run by the Education Committee. These have allowed me to reach and help an even wider group of young scientists.

Overall I believe the CV support sessions have been extremely successful. The feedback has been excellent, with quotes often included in the reports for *FEBS News* after the Congresses. Most PhD students and postdocs I have seen say that no one has ever talked to them about how to write a CV; they are also not aware of the way that CVs are handled by large (or even small) companies, where the CV will first be seen by a human resources department or even a recruitment agency and not initially by the scientists and so have to pass 'the 30-second test'. The sessions are valued by the participants, the YSF organizers and FEBS as a whole.