

FEBS Education Committee

Overview (2008-2018)

I. Short History

The FEBS Education Committee had its roots in FEBS “Working Group on Teaching Biochemistry”, which was founded in 2001 by Prof. Jean Wallach (Lyon, France). Between 2001 and 2006, it was active in promoting educational events at yearly FEBS Congresses, with, as members, Keith Elliott (Manchester, UK) , Peter Ott (Bern, Switzerland) , Gül Güner-Akdogan (Izmir, Turkey), Jason Perret (Brussels, Belgium), José Villalaín (Alicante, Spain) (followed by Pilar Roca), Pedro Moradas-Ferreira (Porto, Portugal), and Ed J. Wood (Leeds, UK). During the Council Meeting held in Istanbul in 2006, the “FEBS Working Group on Teaching Biochemistry” was converted to “FEBS Education Committee”, with Prof. Edward J. Wood (Leeds, UK) as the founding Chair. Prof. Gül Güner-Akdogan (Izmir, Turkey) took over, following the sad loss of the Chair of the Committee, Prof. Edward J. Wood on December 14th, 2008 (FEBS News, July 2009 - A Tribute to Ed Wood). She was then elected as Chair of the Committee during the 2009 FEBS Council in Prague. Prof. Costas Drinas (Ioannina, Greece) served on the Committee from 2009 till his unexpected sad loss in 2011. Prof. Jason Perret (Brussels, Belgium)(2008-2011), Prof. Miguel Castanho (Lisbon, Portugal) (2008-2011), and Prof. Karmela Barisic (Zagreb, Croatia) (2009-2012) served on the Committee, each for one term, according to FEBS regulations for committee membership. Dr. Keith Elliott was co-opted on the Committee since the beginning. Prof. Peter Ott was also co-opted on the Committee and served as the web-site manager until 2014. Prof. Gül Güner Akdogan was reelected for a second term during 2012 Sevilla FEBS Council. Prof. Angel Herráez (Alcalá de Henares, Spain) (2012-2015), Prof. Tomas Zima (Prague, Czech Republic) (2012-2015), Prof. Wolfgang Nellen (Kassel, Germany) (2013-2015), and Prof. Frank Michelangeli (Birmingham, UK) (2013-2016) mainly served on the Committee during this period. Prof. Gül Güner Akdogan was reelected for her third term in Berlin FEBS (2015). Presently, the Committee members are: Prof. Jean Luc Souciet (France), Prof. Ferhan Sagin (Turkey), Prof. Laszlo Dux (Hungary), Prof. Jason Perret. The co-opted members are: Dr. Keith Elliott (UK), Prof. Angel Herráez (Spain), Prof. Luciane V. Mello (UK), and Winnie Eskild (Norway).

II. Mission and Aims

FEBS Education Committee has the mission of promoting education of the highest quality in Biochemistry and Molecular Biology in Europe at both the undergraduate and postgraduate levels.

In order to realize this important mission:

1. We encourage the development of innovative teaching methods.
2. We disseminate advice on educational resources.
3. We arrange education events at each FEBS Congress.

4. We arrange other educational events such as workshops on educational issues in FEBS member countries on request.

III. Overview of the Main Accomplishments of FEBS Education Committee (2009-2018)

The main accomplishments of FEBS ED-COM over the period 2009-2018 are:

- **Structuration of the Committee:** Membership, co-opted members, two official meetings of the Committee per year.
- **Workshops:** Establishment of the Workshop Organising Guidelines and promoting education workshops with the outcome of 2-3 Education workshops per year, in collaboration with both Eastern and Western European Constituent Societies as well as those associated to FEBS.
- **Collaborations:** In addition, FEBS Education Committee has strongly collaborated with bodies within and outside of 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.
- **FEBS Congresses:** Progress has been achieved on the offer of education events during FEBS Congresses. Mainly, one education session followed by a workshop; one joint event with the Publications Committee and/or FEBS Working Group on Networking. In addition, poster sessions on education have been inaugurated and this year (2018, Prague) a session on “Selected topics on education” has been organised.
- **Inauguration of FEBS Education Ambassadors Network** has had the outcome of collaborations within the framework of Working groups. This network actually comprised around 30 Societies from the FEBS region, meeting once a year since 2015 (Prague, Paris, Zagreb and, in 2019, Tbilisi).
- **Inauguration of fellowships for educational visits / events attendance.** For the celebration of the 50th Anniversary of FEBS, two awards were allocated as fellowships for visits of education training. In addition, travel fellowships have also been allocated to young scientists for attending FEBS Workshops on Education. The latest achievement has been the constitution of a support scheme for FEBS Education Ambassadors to organise Education Workshops in their home countries.
- **Inauguration of a “section on education” within the scope of FEBS Open Bio.** Collaboration with FEBS Publications Committee resulted in the inauguration of this section, which is significant to promote education not only throughout Europe, but also the whole world.
- **Establishment of FEBS Education Platform and integration into the newly established FEBS Network.** These initiatives strengthened the dissemination of educational concepts, methods, and resources throughout wider Europe in the field of education in molecular life sciences.

IV. Workshops on Education in FEBS countries - Overview of Workshops on Biochemistry and Molecular Biology Education (2008-)

These Workshops have been organised by FEBS Education Committee with collaboration of the FEBS Constituent and/or Associated Society of the country where the workshop is held. A typical workshop lasts one or two days and focuses on the current thinking and innovations in education that have been explored and found to be useful for enhancing learning. The specific topics to be covered are selected by the Constituent Society according to their needs, from the array of 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 / Bioethics 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
- Networking

1. Organization of FEBS Education Workshops (2008-):

The first Workshop was planned by Ed Wood to take place in Sofia, on 17-18th October 2008, with Keith Elliott and Gül Güner Akdogan as co-trainers. Unfortunately, due to the illness of Ed Wood, Gül and Keith had to run the workshop without Ed (as he had planned it). Prof. Ganka Kossekova (Sofia Medical University) coordinated the workshop.

The first workshop being successful, many others followed:

1. (Sofia, Bulgaria, 17-18 October 2008)
2. Cluj-Napoca, Romania, September 2009
3. Athens, Greece, May 14th, 2010
4. Opatija, Croatia, 18-19th September, 2010
5. Tallinn, Estonia, 13th May, 2011

6. Bratislava, Slovakia, 12-13th September, 2011
7. Ljubljana, Slovenia, November 3-4th, 2011
8. Izmir, Turkey, March 29-30th, 2012
9. Yerevan, Armenia, 8-9th October, 2012
10. Cambridge, UK, 17-18th December, 2012 (In Memory of E.J. Wood)
11. Gdansk, Poland, 13th July, 2013
12. Tbilisi, Georgia, 8-9th October, 2013
13. Sofia, Bulgaria, 22nd November, 2013
14. Debrecen, Hungary, 24–25 August 2014
15. Belgrade, Serbia, 18–19 September 2014
16. PhD training (During World-Lab), Istanbul, 2014
(In collaboraiton with IFCC and ORPHEUS).
17. Cambridge, UK, 30–31 March 2015
18. Sarajevo, Bosnia and Herzegovina, 3–4 September 2015
19. Oslo, Norway, 18–19 September 2015
20. Athens, Greece, 8–9 October 2015 (In Memory of Costas Drainas)
21. Riga, Latvia, 24–25 November 2016
22. Kaunas, Lithuania, 26–27 June 2017
23. Sofia, Bulgaria, 17 November 2017
24. Zagreb, Croatia, 4-5 April 2018
25. Chester, UK, 12-13 April 2018 (Jointly with the Biochemical Society)
26. Future: Izmir, Turkey, 5-6 September 2018
27. Future: Patras, Greece, 3 October 2018

The Workshop education team was identified and invited by FEBS Education Committee, either from the Committee members, or experts at large, depending on the topics to be covered. The Workshop could stand alone or be associated with a Congress of the Constituent Society and/or any other scientific event.

2. Who Attends these Workshops?

Faculty, researchers, post-docs, and PhD students, administrators, (and high-school teachers where appropriate) from biochemistry, molecular biology, medicine, pharmacy, science education, and all disciplines of basic sciences attend the Workshop from the host country or other European countries.

3. Planning and Distribution of Responsibilities

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 therefore attended largely by the members of the host Society, any FEBS members from different countries may attend these workshops in case of interest. From the Education Committee usually the Chair takes the responsibility. The venue, time and duration, as well as the topics of the workshop are suggested by the local hosts.

4. Responsibilities of the Constituent Society:

All activities related to the local aspects of the workshop - dissemination of Workshop information within the country (web-site, electronic and/or written dissemination) venue (suitable venue with the requested educational and technical assets), registration of participants (lists, name-badges), logistics, coffee breaks, lunches, transport, social programme, certificates (*signed by FEBS Education Committee Chair and the President of the Constituent Society*) are in the hands of the Constituent Society. If a poster session is programmed, the selection and organisation of posters will be done by the Hosts with help from the FEBS Education Committee. In addition, the wrap-up of the Workshop, including the final list of participants is done by the Constituent Society.

5. Responsibilities of FEBS Education Committee:

All activities related to the “programme” of the workshop- trainers, their organisation, their flights, preparing the Workshop Booklet, photocopies to be distributed, preparing feedback forms and taking feedback, running of the FEBS Education Platform (uploading of slides and necessary materials) are in the hands of FEBS Education Committee. The Workshop is also disseminated through FEBS channels by the Education Committee (FEBS web-site, FEBS Network, electronic distribution to FEBS Constituent Societies, etc). The final report of the Workshop is prepared by the Education Committee, with input from the Constituent Society.

FEBS has no liability on any accident that could occur during the workshop and liability disclaimer form should be signed by the Organisers.

6. Programme

The scientific (educational) programme is based on the topics selected by the Hosts. The session is organised using different educational techniques depending on the character of the topics. These will include lectures, small-group discussions, meet the expert sessions, panel discussions, and, if requested, selected short talks and poster sessions. The posters are expected to be based on educational issues.

7. *The types of workshops conducted may be categorized into three groups:*

- *Workshops to “promote molecular life sciences education” in the Eastern European countries , bringing together both young scientists and experienced faculty to reflect on educational issues of the country, in particular, 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.*

- **Workshops on “Innovations in Education”** - the type that the Education Committee successfully run in Cambridge - to bring together faculty and young scientists from all over Europe to discuss together innovations in teaching and learning, in the area of molecular life sciences and biosciences (Example: Cambridge Workshop 2012).
- **“Revisit Workshops”**: It was generally felt that a “revisit” could be performed to the same country where the workshop was first held, in order to discuss what has been done and to reflect on what could be done in the future. This type of workshops could be pursued in 4-5 years after the first experience (Example: Sofia Workshop 2008- Sofia Workshop 2013).

V. Educational Activities During Yearly FEBS or FEBS/IUBMB Congresses

The first Congress educational activities were organised by the Working Group on Teaching Biochemistry, during the Istanbul FEBS Congress (2002). In the following years, these events were organised with an increasing impact- organised either by FEBS education Committee, or, in case of a common topic, in collaboration with IUBMB Education Committee, with FEBS Sciences and Society Committee, FEBS Publicaiton Committee etc.

It is interesting to note the variety of topics and their evolution:

EDUCATION EVENTS ORGANISED DURING FEBS CONGRESSES (2002-)

The events presented in the table below were organised by the following:

FEBS Working Group on Teaching Biochemistry (Chaired by Prof. Jean Wallach (Lyon) (2001-2006)

FEBS Education Committee (Chaired by Prof. E.J. Wood (Leeds) (2007-2008)

FEBS Education Committee (Chaired by Prof. Gül Güner Akdogan (Izmir) (2009- 2018)

FEBS/ IUBMB-FEBS Congresses	FEBS Education Committee (ED-COM) Event(s)
2002-Istanbul-28th FEBS Congress (organised by ISBMB)	1. Symposium on “Virtual Learning” 2. Computer-Lab Activity on “Virtual learning” (Activity of the FEBS Working Group on Teaching Biochemistry)
2004-Warsaw-29th FEBS Congress	3. Workshop on “Problem-Based Learning” (Activity of the FEBS Working Group on Teaching Biochemistry)
2005-Budapest-30th FEBS Congress	1. Workshop: “Laboratory Practicals” (Activity of the FEBS Working Group on Teaching Biochemistry)
2006-Istanbul-31th FEBS Congress	1. Workshop on “New Approaches to Post-graduate Education”

	<ol style="list-style-type: none"> 2. Workshop on “How to Write Successful Research Grants” 3. Data-base Searching-Computer Lab (Activity of the FEBS Working Group on Teaching Biochemistry)
2007-Vienna-32nd FEBS Congress	<ol style="list-style-type: none"> 1. Symposium: “How to go from Biochemistry Research to Commercial Biotechnology” 2. CV Clinics
2008-Athens IUBMB-33th FEBS Congress	<ol style="list-style-type: none"> 1. Symposium: “Post-Graduate Education” (With HSBMB) 2. Workshop: “E-learning” 3. CV Clinics
2009-Prague34th FEBS Congress	<ol style="list-style-type: none"> 1. Workshop: “Teaching Systems Biology” 2. Workshop: “Bioethics”(Co-funded with IUBMB) 3. CV Clinics
2010-35th Gothenburg FEBS Congress	<ol style="list-style-type: none"> 1. Workshop: “Research in Undergraduate Education” (Co-funded by IUBMB) 2. Workshop on “Research Oriented Education in High Schools” 3. Practical Systems Biology Workshop (With the SSBMB) 4. CV Clinics
2011-Turin 36th FEBS Congress	<ol style="list-style-type: none"> 1. Workshop: “PhD Training in Europe: Where Are We Heading?” 2. Workshop on “Integrating Molecular Bioscience Education with Medical Training” 3. CV Clinics
2012-Seville-22nd IUBMB-37th FEBS Congress	<ol style="list-style-type: none"> 1. Workshop: "Research into Effective Learning Strategies: What Biochemistry Is Learning from the Other Sciences" (Co-funded with IUBMB Education Committee) 2. Workshop: “Teaching Molecular Evolution: A Unifying Principle of Biochemistry” (Co-Funded with IUBMB and FEBS Science and Society Committee) 3. Workshop: “Science in School: Biodiversity and Evolution ”Co-funded with FEBS Science and Society Committee) 4. CV Clinics 5. Poster Session on Biochemistry and Molecular Biology Education
2013-St. Petersburg 38th FEBS Congress	<ol style="list-style-type: none"> 1. Workshop: “Molecular Life Sciences Education for the Needs of the Industry” 2. CV Clinics 3. Poster Session on Education in Molecular Life Sciences
2014-Paris FEBS-EMBO Congress	<ol style="list-style-type: none"> 1. “Skills and Key Knowledge for a Molecular Life Scientist”

	<ol style="list-style-type: none"> 2. “New Educational Technologies” 3. CV Clinics 4. Poster Session on “Education, Training, and Career Planning in Molecular Life Sciences”
2015- Berlin FEBS Congress	<ol style="list-style-type: none"> 1. Workshop on “Research in Undergraduate Education” Tuesday, July 7th, 2015 (1-3pm) 2. Poster session on “Education, Training, and Career Planning in Molecular Life Sciences”. 3. CV Clinics
2016-Kusadasi, Cancelled	<ol style="list-style-type: none"> 1. FEBS Special Session on Education — “Improving the Learning Experience through Student Engagement” 2. FEBS Special Session on “Research and Career Skills — How to Write and Publish a Scientific Article “ 3. Poster Session on “Education, Training, and Career Planning in Molecular Life Sciences” 4. CV Clinics
2017 Jerusalem FEBS Congress	<ol style="list-style-type: none"> 1. Session on “Practicals in Molecular Life Sciences”(With a Plenary Lecture from Bruce Alberts) 2. Workshop on “Practicals: Useful Tips” 3. Session on “How to Write and Publish a Scientific Article” (Jointly with FEBS Publications Committee) 4. Poster Session on “Education, Training, and Career Planning in Molecular Life Sciences” 5. CV Clinics
2018 Prague FEBS Congress	<ol style="list-style-type: none"> 1. “Bioethics Education” Session 2. Workshop on “How to Write Bioethics Cases” 3. Session on “Selected topics on education” 4. Session on “Networking” (Joint session with networking WG) 5. Workshop on Networking (Joint session with networking WG) 6. Workshop on Networking 7. Poster Session on Education, Training, and Career Planning in Molecular Life Sciences 8. CV Clinics

VI. Web-Site of the Education Committee

1. First Step (2009-2015) (Interactive Web Site)

FEBS Education Committee has firstly maintained an interactive web site (Virtual Classroom) where information material relevant to the Education Events were posted. Several discussion forums related to the topics of the workshops have been available for discussion among participants and with the lecturers and moderators. In addition, slides from the Congress education events have also been uploaded, with the approval of the speakers. The site has been available at <http://edu.febs.unibe.ch>. To access the site, participants had to go through a short registration process explained on the opening page of the site. The Education Committee appreciates the time and expertise offered by Prof. Peter Ott who has successfully managed this site up until 2015.

2. Second Step: 2015- presently functional (FEBS Education Platform)

Description of the New Platform

The guiding idea was to be able to author and maintain a simple website that would be under immediate and full control by the ED-COM for quick updates at any moment and any kind of content we need. In addition, people are expecting FEBS ED-COM to provide resources. We could start working on it if we had a flexible enough platform that may be updated quickly with any kind of material.

Structured Contents of the New Platform:

- A full description of FEBS Education past, current and future activities (workshops, sessions within the FEBS Congresses, etc.)
- Documents and resources for participants in each event (as was done in the former Platform). The access was either free or restricted, depending on the situation.
- A collection of Biochemistry Education resources for the general public (this is a project that will needed to be developed further but could be built gradually).
- A repository of documents restricted to members of the Committee (such as meeting minutes, guidelines, reference documents, etc.)

A server has been hired and a domain registered, <http://FEBS-edu.eu>

The ED-COM is thankful to Angel Herráez for successfully running this platform.

3rd Step: 2017- Integration into FEBS Network

While still keeping the FEBS Education platform, FEBS Education Committee has been actively using the FEBS network for its activities. Specially, the Workshop Trainers and Education Ambassadors Working groups display their outcomes on the network. A “learning resources” room has been inaugurated. Angel Herráez and the FEBS Network Working Group deserve special mention.

VI. Education Section on FEBS Open Bio

Following a proposal from the FEBS Education Committee, the open access journal *FEBS Open Bio* has started a new section devoted to original and valuable publications in biochemical and molecular life sciences education. The overall aim of this initiative is to foster good educational practices, stimulate the development of innovative teaching methods, and disseminate advice on educational techniques and resources. For further details, including about the appointed Editors, peer review and how to submit, the [FEBS Open Bio editorial](#) announcing this initiative. And be consulted. Publication costs are covered by FEBS.

VIII. Collaborations

As it was generally agreed, collaborations within and outside of FEBS were continued and new collaborations solicited. Within FEBS, collaborations with Science and Society Committee, with the Working Group on Integration and with the Publications Committee have been fruitful. Within the framework of Paris 2014 FEBS-EMBO Congress, a new collaboration was started with the French Society of Biochemistry and Molecular Biology, while Worldlab 2014 offered a platform for collaboration with IFCC and with ORPHEUS.

FEBS Education Committee has been continuing its fruitful collaborations with its Constituent Societies. The workshops and educational events offer a platform for these collaborations.

- **Ambassadors to FEBS Education Committee from FEBS Constituent Societies:**

In order to promote these collaborations further, FEBS Education Committee asked all Constituent Societies to assign an ambassador for FEBS Education Committee. The ambassador could either be the leader of the local education group of the Constituent Society, or, in case the group is not yet formed, a person who is involved in molecular life sciences education at a higher level than only teaching.

IX. Conclusions and Future Prospects

FEBS Education Committee has made an effort to fulfil its mission of promoting molecular life sciences education throughout Europe. In spite of the transitory reduction of budget due to the general economy strategy of FEBS, a number of high impact educational events have been successfully carried on, due to collaborations within and outside of FEBS.

In addition, FEBS Education Committee has succeeded to reflect constantly on its future path.

The evaluation of what the Committee has accomplished so far has been done periodically. It is generally agreed that we have established an infrastructure and an acceptable standard for Workshops on Biochemistry and Molecular Biology Education at the European level, on innovative topics on education, and many Constituent Societies from all over Europe expressed interest. In line with the Statutes and By-laws of FEBS Education Committee, with

the mission of promoting Biochemical Education to the highest level within Europe, further development in the exchange of learning resources and further dialogue with bodies within and outside of FEBS have been started. On top of continuing these activities, the Committee thought on “European Strategies for High Quality Undergraduate and Post-Graduate Education” . The FEBS Education Ambassadors initiative has been fostering this mission. Further enhancement of the synergy of cooperation within the Committee, among all Constituent Societies of FEBS, and other international organisations was promoted. In order to provide a wider network and stronger funding to attain the mission of FEBS Education Committee of promoting molecular life sciences education throughout Europe, the possibility of submitting a project to the EU was 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 social cohesion of European society. Standards and content of molecular life sciences education programmes are inconsistent, and the transparency and comparability of qualifications are limited. This plan has unfortunately not yet been fulfilled. However, FEBS Education Committee support has been given to two EU project proposals composed by FEBS Education Ambassadors/ members of FEBS Constituent Societies.

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 molecular scientists should be equipped with the transferable scientific skills and be capable of training students in this aspect, as well.

FEBS Education Committee is committed to continue fulfilling the vision and mission of FEBS in the area of education.

The Chair of the Education Committee presents her deep appreciation and thanks to FEBS ED-COM members (past and present) to FEBS EC members (past and present), to FEBS Officers (past and present) for their valuable collaboration and to FEBS Honorary General Secretary, Prof. Israel Pecht for his leadership, wisdom, and support which had a significant impact on the development of the Committee.

Gül Güner Akdoğan

Chair, FEBS Education Committee (2009-2018)

Izmir, Turkey, 1st July 2018