



EDUCATION COMMITTEE REPORT TO EX-COM
Prague, July 7th, 2018

(10 FEBRUARY 2018-1 JULY 2018)

Reported by:

Gül GünerAkdoğan

Chair, FEBS Education Committee

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(Annex 5 D2)

1. Introduction

This report includes the plans and activities of FEBS Education Committee between 10 February 2018 and 1 July 2018.

2. Structure and Composition of the Committee

According to the latest version of FEBS Statutes, the Education Committee is composed of “a chair elected by Council, four ordinary members elected by Council and ex-officio members with voting rights, Secretary General of FEBS, Treasurer of FEBS, and Chair of Advanced Courses Committee”.

This year it is proposed to increase the number of the ordinary member number to five.

The ordinary members who have served on the Committee in 2018 are:

Jean-Luc Souciet (France) (Elected at Berlin FEBS Council 2015 and started as of 1st January 2016)

Ferhan Sagin (Turkey) (Elected at Berlin FEBS Council 2015 and started as of 1st January 2016)

Laszlo Dux (Hungary) (Elected at Berlin FEBS Council 2015 and started as of 1st January 2016)

Jason Perret (Belgium) (Elected at Munich FEBS Council in 2016 and started as of 1st January 2017)

The Committee agreed on increasing its number by one member and therefore a call was made for one new member for the Prague FEBS Council elections.

Chair: Gül-Güner Akdogan (Turkey) (Elected at Prague FEBS Council, 2009 and started as of 1st January 2010; reelected at Sevilla FEBS Council, 2012- started second term as of 1st January 2013); Re-elected for her third time at Berlin FEBS Council 2015 and started on 1st January 2016. Gül is rotating out on 31st December 2018. A call was made for a new Chair the nominated candidate is Prof. Ferhan Sagin. The Education Committee fully supports Ferhan Sagin.

Co-Opted and to be Co-Opted:

Keith Elliott (UK) (Since 01.01.2008) to contribute to Workshops and research and Career Skill. Keith is co-opted indefinitely.

Angel Herráez (Spain) to take care of the newly inaugurated FEBS Education web-site and the FEBS network. Angel is co-opted indefinitely.

Winnie Eskild (Norway): Winnie, who is of active support to educational activities, is proposed to be co-opted for one more year (Starting 01.01.2019)

Luciane V. Mello (UK): She is co-opted for her expertise in different educational fields, and is proposed to be co-opted for one more year (Starting 01.01.2019). Luciane is also a candidate for the new membership of the Committee. The Education Committee fully supports her.

Ex-Officio Members: Václav Paces (Czech Republic) (FEBS General Secretary), Frank Michelangeli (UK) (FEBS Treasurer), Beáta Vértessy (Hungary) (Chair, FEBS Advanced Courses Committee)

FEBS Education Committee proposes to have also, the Chair of the Working Group on Integration (Jerka Dunic) as an Ex-Officio member. The Education Committee and the Working Group on Integration have strong collaborations and this will be useful.

3. Education Committee Meeting and Budget Proposal for 2019

The Education Committee Meeting was held in Zagreb on April 5th, 2018, with full participation of the ordinary and co-opted members. The activities of 2018 were reviewed and the activities of 2019 were planned. The next Education Committee Meeting will take place in Izmir, on September 4th, 2018.

The budget proposal for the year 2019 was agreed and submitted as follows:

FEBS EDUCATION COMMITTEE BUDGET PROPOSAL FOR 2019

The detailed plan of educational activities for the year 2018 is not yet completely finalized. However, we foresee the following:

1. We will hold three Education WSs.
2. We will hold the 4th Ambassadors on Education Meeting in Tbilisi in April 2019.
3. We will hold two ED-COM Meetings.
4. During the FEBS 2019 Congress in Krakow in July 2019, we will organize two joint Education sessions with IUBMB and one joint WS with Publications Committee on Career Skills.
5. We will jointly hold two Career Skills activity with the Advanced Courses Committee.
6. We will fund four Education Workshops organised by Ambassadors with their Societies (on an application basis-deadline 1st September 2018).

Activity	Date	Approximative Cost
1. Three Education Workshops	2019	6 000 Euros X 2= + 4000 = 16, 000 Euros
2. Education Ambassadors' Meeting (Tbilisi)	April 2019	9 000 Euros
3. ED-COM Meetings (Two Meetings)	April 2019 and September 2019	7 000 Euros + 5 000 12,000 Euros
4. FEBS Congress Activities –Krakow	July 2019	12 000 Euros
5. Joint Activity with Advanced Courses (Research and Career Skills)	2019 (during two or three Advanced Courses)	4 000 Euros

6. Funding for Ambassadors to organise education events (4 Ambassadors)		6 000 Euros (4 X1500)
	TOTAL	59 000 Euros

FEBS Education Events in 2018:

4. Zagreb Workshop (4-5 April, 2018)

Zagreb Workshop was successfully organized by Jerka Dumic, Chair of FEBS WGI. Around 80 participants attended this Workshop. Two-thirds of the participants were faculty and one-third, young scientists. A booklet with slides was presented to each participant. The programme of the workshop was as follows:



**FEBS WORKSHOP on MOLECULAR LIFE SCIENCE EDUCATION:
Innovative Methods and Use of Technologies in Education**
April 4-5th, 2018 - Zagreb, Croatia



**FEBS Workshop on Molecular Life Science Education
April 4-5th, 2018
University of Zagreb, Croatia**

Hosted by the Croatian Society of Biochemistry and Molecular Biology (President: Tihomir Balog)

Coordinator of Workshop: Jerka DUMIC (FEBS WGI Chair)

Plenary Talks:

Michael Mulvany (Aarhus, Denmark, Chair of Labeling Committee of ORPHEUS)

Gus Cameron (Bristol, UK)

From FEBS Education Committee:

Jean-Luc Souciet (Strasbourg, France), Ferhan Sagin (Izmir, Turkey), Jason Perret (Brussels, Belgium), Keith Elliott (Manchester, UK), Angel Herráez (Alcalá de Henares, Spain),

Luciane V. Mello (Liverpool, UK), Frank Michelangeli (Chester, UK) (FEBS Treasurer),

Beata Vertessy (Budapest, Hungary) (Chair, FEBS Advanced Courses Committee), Jerka Dumic (Zagreb, Croatia) (Chair, FEBS WGI)

Gül Güner Akdogan (Izmir, Turkey) (Chair, FEBS Education Committee)

Programme

Wednesday, April 4th, 2018)

“Innovative Methods and Use of Technologies in Education (I)”

13:00-13:30	Registration			
13:30-13:45	Welcome Address by Host			Erka Dumic
13:45-14:00	Education Committee and Introduction to the Workshop			Mul Guner Akdogan
14:00-14:45	Plenary Talk: Successful PhD Supervision for Successful PhD Projects- ORPHEUS Recommendations”			Michael Mulvany
14:45-15:15	Tips for Success for PhD Students and Post-Docs”			Beata Vertessy
15:15-15:45	“Team-Based learning”			Ferhan-Sagin
15:45-16:00	Coffee break			
16:00-16:40	Problem Based Learning (PBL): Philosophy and Application”			Keith Elliott
16:45-18:15	Group Discussions (Each 45 minutes) (Two repetitions) Participants can choose two groups			
	Group 1 Problem-Based- Learning (Keith Elliott)	Group 2 Supervision (Michael Mulvany)	Group 3 Tips for Success for Young Scientists (Beata Vertessy)	Group 4 Team-Based- Learning (Ferhan Sagin)
18:15-18:30	General Discussion			
Thursday, April 5th, 2018 “Innovative Methods and Use of Technologies in Education (II)”				
9:00-09:45	Plenary Lecture: “Practical work in the biomedical sciences: a modern approach”			Gus Cameron
9:45-10:15	Use of Some Educational Technologies			Frank Michelangeli
10:15-10:30	Coffee Break			
10:30-11:00	Proteopedia in your teaching of biomolecular structure and function"			Angel Herráez
11:00-12:30	Small-Group Discussions (45 min each) (Two repetitions) (Participants can choose two groups)			
	Group 1 Practical work in the Biomedical Sciences	Group 2 Educational Technologies	Group 3 Using Proteopedia in Your Teaching	

	(Gus Cameron)	Michelangeli)	(Angel Herráez)
12:30-12:45	General Discusssion		
12:45-13:00	Feedback and Close		Jerka Dumic-Gül Güner

The feedback from the participants was found to be very positive.



**FEBS WORKSHOP on MOLECULAR LIFE SCIENCE EDUCATION:
Innovative Methods and Use of Technologies in Education**

April 4-5th, 2018 - Zagreb, Croatia



PARTICIPANT FEEDBACK FORM / Please rate all sessions on 1 ('needs improvement') – 5 ('excellent') scale

	1	2	3	4	5
○ Welcome Address (Jerka Dumic)				9	30
○ FEBS Education Committee and Introduction to the Workshop (Gül Akdogan)			2	14	23
○ Successful PhD Supervision for Successful PhD Projects- ORPHEUS Recommendations (Michael Mulvany)			2	20	17
○ There is a tide... How to make the best of a PhD and a postdoc? (Beata Vertessy)		1		15	22
○ Team Based Learning (TBL) - Where the Magic Happens with Group Work that Works!" (Ferhan Sagin)			2	5	30
○ Problem Based Learning (PBL): Philosophy and Application (Keith Elliott)			2	16	18
○ Small Group Discussions			1		2
<i>PBL – Keith Elliott</i>			1	9	10
<i>PhD Supervision – Michael Mulvany</i>				2	2
<i>Best of a PhD and a postdoc – Beata Vertessy</i>				2	14
<i>TBL – Ferhan Sagin</i>					24
○ Practical Work in the Biomedical Sciences: A Modern Approach (Gus Cameron)				2	35
○ Use of Some Educational Technologies (Frank Michelangeli)				1 1	24
○ Using Proteopedia in Your Teaching of Biomolecular Structure and Function		1	3	16	13

(Angel Herráez)					
○ Small Group Discussions					3
<i>Practical Work in the Biomedical Sciences – Gus Cameron</i>				6	25
<i>Educational Technologies – Frank Michelangeli</i>			1	7	9
<i>Using Proteopedia in Your Teaching - Angel Herráez</i>			1	5	7
○ General Discussion				3	13

OVERALL ORGANIZATION

	Not satisfied	Satisfied	Very satisfied
○ Communication before the meeting (program, accomodation, etc.)	2	17	19
○ Meeting materials (Abstract book, etc)		12	26
○ Meeting venue and facilities		17	21
○ Coffee Breaks		9	29

LAST but not LEAST...

- What was particularly HELPFUL in this meeting?

- ❖ Learning about alternative (non-classic) types of teaching
- ❖ Supervision tasks / Proteopedia / PhD candidates responsibilities
- ❖ Practical tips and practice examples that I'll transfer us their knowledge and experience. They showed us really up to date innovative methods used in teaching and stressed out their importance
- ❖ Workshops
- ❖ Seeing e-methods of student evaluation and interaction
- ❖ Beside practical work, explaining how marks (grades) are calculated
- ❖ Concrete examples of employing new educational strategies (instructions, resources)
- ❖ Small group discussions
- ❖ Practical examples
- ❖ All the knowledge that I acquired
- ❖ Some new methods in teaching, such as TBL and PBL
- ❖ Advices and samples given through small group discussions
- ❖ The idea to take a brave step and innovate the way we educate students: PBL, TBL, e-Biolabs
- ❖ All the very practical tips & resources given to improve the classes we give
- ❖ Introduction with new technologies and approaches in teaching biochemistry
- ❖ Meeting experts in education, having opportunity to talk with them, hear on some other possibilities in teaching
- ❖ It was very helpful to hear about alternative ways of teaching. I have learned couple of ways to keep students interested in lectures and laboratory practices
- ❖ Particularly helpful is the information that students worldwide are not different than our

- From some of the knowledge/techniques discussed during the meeting, is there any idea you INTEND TO PUT INTO PRACTICE?

- ❖ Would definitely try out problem-based learning approach
- ❖ Popularization of science → e-biolabs, Proteopedia
- ❖ Yes, example of PBL and virtual recordable whiteboard
- ❖ Yes, team based learning and videos in student practicals
- ❖ TBL and PBL are thought to be hard to implement but the speakers showed us the way of doing it easier. New educational technologies for lectures and for practicals are shown systematically and their implementation as well as the results are presented-very usefull
- ❖ Yes, I will use Proteopedia
- ❖ Yes, team based learning
- ❖ Possibly making educational videos and using Proteopedia
- ❖ Yes, PhD supervision, educational technologies, Proteopedia, PBL
- ❖ Yes, e-biolab (I will try with a few practical laboratory exercises): Show me (for explanation of the mechanisms of organic synthesis)
- ❖ Yes, TBL
- ❖ Team based learning, problem based learning, advices obtained on small group discussion, "Tips for young scientists", using e-technologies
- ❖ Yes, TBL
- ❖ Yes, I might and some of innovative ideas to my traditional lectures
- ❖ TBL, e-Biolabs
- ❖ Almost all of them. I will first reread the notes and then decide which technique will be best for each different course
- ❖ There are some
- ❖ Work in groups and problem solving
- ❖ Many ideas were presented, but it is necessary to see can it be and how integrated with modules that are taught on our department
- ❖ I am already familiar with most of the techniques presented but I found couple new information and I will try to apply that in my class

○ What could be done to make the meeting MORE VALUABLE?

- ❖ Maybe have some more open discussions not necessarily strictly held to any topic in particular
- ❖ This workshop was very valuable
- ❖ To invite people from academics who makes decisions and who have the power to change the old ways of teaching
- ❖ Have practical work
- ❖ Maybe advertise it on social network
- ❖ Maybe more examples in practice how to apply new methods in teaching. Award PhD students with ECTS points for participating workshop
- ❖ More frequent meetings on this topic, maybe even on national level (to make it slightly easier to organise)
- ❖ Wanted to attend PhD supervisors workshop as well , but had to choose between other great possibilities... perhaps repeat it on 2 days
- ❖ Attendees did not get an e-mail as a confirmation of payment nor an update on schedule & site
- ❖ As is, is interesting and very valuable... duration is just proper, not too long not too short
- ❖ Meeting as it was, is quite interesting and I can't think of any significant improvement that should be done.

- ❖ Have a longer practical small group discussions (50-60 minutes)

- Other comments and topics for the upcoming meetings

- ❖ Gus is a must for every meeting. On the 2 day, I was interested in all 3 small group discussions and wanted to attend all 3.
- ❖ Great timing, very usefull
- ❖ Very good organization! Good topics covered!

THANK –YOU

5. 3rd FEBS Education Ambassadors' Meeting, Zagreb, 6-7 April 2018

The 3rd FEBS Educaiton Ambassadors' Meeting was held in Zagreb, 6-7 April 2018 and kindly hosted by Jerka Dumic at the Rector's Hall of the University.

The Societies who sent delegates were the following:

Belorussia, Bosnia & Herzegovina, Croatia, Czech Republic, France, Germany, Georgia, Hungary, Italy, Latvia, Lithuania, Luxembourg (Visiting), Morocco (Associate member), Moldova, Norway, Poland, Portugal, Serbia, Slovenia, Spain, Switzerland, Turkey, Ukraine, and UK.

With the members of the Education Comittee, all together there were around 35 participants.

3rd EDUCATION AMBASSADORS' MEETING 6–7 April 2018 / Zagreb, Croatia

Rectorate of the University of Zagreb

Kindly hosted by: Jerka Dumic (University of Zagreb) (Chair of FEBS WGI)

AGENDA

Part 1 (April 6, 2018 - Friday / 13:00-18:30)

13.00-13:15 Opening

13.15-13:30 Welcome talks by hosts

13:30-13:50 'FEBS Ed-Com Activities' (*Gül Güner Akdoğan*)

13:50-15:00 "Best Practices"(Involvement of ambassadors with educational activities)

13:50-14:00 'Technologies to promote the diffusion of science' (*Xavier Coumoul, France*)

14:00-14:10 'FEBS Educ Com Kaunas Workshop' (*Vida Mildaziene, Lithuania*)

14:10-14:20'New Horizons in Biochemistry and Molecular Biology Education Conference by IUBMB and FEBS (*Gül Güner Akdoğan-Chair of FEBS Education Committee*)
14:20-14:30'FEBS Educ Com Sofia Workshop-Kliment's Days' (*Diana Petkova, Bulgaria*)
14:30-14:40'Active learning as a means to achieve better student involvement and results' (*Winnie Eskild, Norway*)
14:40-15:00 Open Floor for Other Contributions and Discussion 15:00-15:30 Coffee break
15:30-17:30 Ambassadors' Working Groups' Discussions (Part 1)
15:30-16:00 Short Reports from the Coordinators (*5 min. each, at most*)
16:00-17:30 Working Groups Session (*Facilitated by the Coordinators*)

17:30-18:15 "E-Biolabs" (Gus Cameron, Bristol University)
19:00-22:00 Dinner with Ambassadors (*Invitation of FEBS Education Committee*)

FEBS EDUCATION COMMITTEE / 3rd EDUCATION AMBASSADORS' MEETING

6-7 April 2018 / Zagreb, Croatia

Kindly hosted by: Jerka Dumic (University of Zagreb)

AGENDA

Part 2 (April 7, 2018- Saturday / 09:30-14:00)

09:30-10:00 'International Students' (Luciane V. Mello)
10:00-10:30 "Networking in FEBS" (Angel Herráez)
10:30-12:00 Ambassadors' Working Groups' Discussions (Part 2) (*Facilitated by the Coordinators*) (with Coffee Service)
12:00-12:45 Reports of the Working Groups and General Discussion 12:45-13:00 Feedback and Closing (*Gül Güner Akdoğan*)
13:00-14:00 Lunch

Four working groups of FEBS Education Ambassadors convened two times during the 3rd FEBS Education Ambassadors' Meeting, Zagreb, 6-7 April. The Reports of the Working Groups, as agreed by the members of the Group and FEBS Education Committee, are presented below.

Below are the reports of the Working Groups (also on FEBS Network):

Work Group 1 REPORT
"Key knowledge and skills expected from
a molecular life sciences undergraduate."

Members (In **bold** Members Present other members were excused):

Jürgen Alves, Marija Gavrovic-Jankulovic, **Günther Koraimann**, **Paweł Pomorski**, Erkki Raulo, **Lali Shanshiashvili**, Revaz Solomonias, **Lawrens van Meeteren**, **Natalija Polović**, Frank Michelangeli, **Carolin von Schultz**, **Luciane V. Mello**, Anat Yarden, **Jason Perret** (coord.), **Keith Elliott** (coord.),

Coordinators:

Keith Elliott, Frank Michelangeli & **Jason Perret**

Discussion on day 1

The aim was defined or redefined (following the 2nd Ambassadors WG 1 Meeting in Paris 2017), to propose an inventory of the minimal **"Key Knowledge and Skills Expected from a Molecular Life Sciences"**, but in a first sept at the **undergraduate "bachelors" level**.

This change in scope to initiate this work task was already evoked and accepted unanimously at the 2nd Ambassadors Meeting in Paris in 2017

Indeed, as previously observed, attempting to tackle the undergraduate (bachelors) and the graduate (masters) as a whole, was not realistic. Clearly, if the undergraduate level was the foundation of the **Molecular Life Sciences** training overall (we collegially excluded medical curricula), thereafter the possible outcomes and consequently the extent and content of the curricula were far too vast.

Discussion started therefore with a résumé of the conclusions from the previous WG1 meeting (2nd Ambassadors meeting in Paris 2017). We followed by going around the table, each member putting forward in a generic manner, the type of curricula and how they are organized (length, focus, etc...), using **Jürgen Alves's** documents as a starting point.

We, attempted to draft a list of central ("mandatory") subject matters , as well as satellite, transferable and soft skills (in figure 1 attempts to summarize what was discussed), that should be part of the undergraduate life science training, to respond to todays as well as the anticipated future needs.

The content underlying the subject matters will then have to be listed and content defined, and then stratified over a three year minimal undergraduate level period. Indeed, in many countries bachelor degrees are a 3 year curricula but in others they are 4 year packages, having extended subject matters and content; e.g. either because the masters package is shorter or the secondary schooling is shorter.

Additionally, the objectives of the bachelors training were also diverse, i.e. preparing for different outcomes either directly go to professional activities or training (e.g. hospitals, industry) or for further academic training i.e. masters or PhD (access to the latter is also variable amongst countries, whereby the bachelors degree may or may not allow direct access to a PhD training).

Indeed, the variability was striking after the WG went around the table for a synopsis of the various curricula and organization in the different member countries represented in the WG, i.e. Austria, Belgium, Georgia, Germany, Netherlands, Poland, Serbia and UK.

Another point discussed is the increasing use of "Virtual University" (VU) platforms. All WG members agreed that VU is now present and becoming a full-fledged tool for teaching and learning, offering students resources such as syllabus, outside links, media content, quizzes, tests, and interaction with instructors and supervisors, for reporting, questions, preparing for examinations and grading.

Discussion on day 2

We devoted this second session essentially, on how we should tackle pragmatically drafting a generic abacus to fulfill the work-groups objectives, i.e. the redefined objective "Key knowledge and skills expected from a molecular life sciences at the undergraduate level".

It became obvious, due to the variability of curricula, that the first step should be to put together a wide **inventory** of the various curricula, detailing subject matters and the content (chapters, depth, and stratification over the curricula's length), the transferable and soft skills that are included or offered (often on an elective basis or even outside the curricula schedules), as well as the outcome objectives of the various curricula.

☞ Important point stressed were:

- A certain number of "satellite" subject matters/skills need to be "tailored", in scope and depth, e.g. chemistry, organic chemistry, math, physics, language.
- The relative order of certain subject matters/skills to be given (e.g. chemistry – organic chemistry – biochemistry), may be required for adequate learning progression.
- Appropriate timing in the curriculum for subject matters/skills to be taken (e.g. statistics, bioinformatics), was considered important as well.

As an example and starting point of what an inventory should look like, we came back to the programs and subject matter lists as found in the documents of the University of Hannover, provided by **Jürgen Alves**.

The second step would be to then to **overlay** the inventories to extract a common denominator of the subject matters and their content (chapters, depth, and stratification over the curricula's length), the transferable and soft skills that should be included.

The third step, would then be to submit to a panel of colleagues involved in life science curricula, in each adherent country, to amend/correct/add/diversify the draft abacus of the "minimal" knowledge and skills expected from a molecular life sciences graduate.

Finally; a consensus proposal can be established that would be submitted to authorities as "**a reference curricula**" for modification/updating/constructing existing or future life science curricula

Ultimately, the work group felt that this could allow countries across Europe to build new/modify existing curricula so as to prepare life science undergraduates to move on out to industry or continue in an academic track (Masters, PhD).

Conclusions from discussions and Follow-up actions

The work group ended by defining the actions (2 main actions), to be taken over the next several months up to the next 4th Ambassadors meeting in 2019.

1. First, the members of the WG should obtain the list of the various life science curricula organized in their university or their country's universities. The documents and lists, such as those provided by **Jürgen Alves**, are usually available on the web site of the universities and can be downloaded/copied.

Attached is an Excel file, as an example of such web based curricula programs, as collected found on the web site of the "Université Libre de Bruxelles (U.L.B.)", at the faculty of medicine for the Biomedical Science Curricula, biology curricula at the faculty of sciences, pharmacology at the faculty of pharmacology and for the biomedical science curricula at the faculty of medicine of the *Université de Namur* (Belgium)..

This exercise can be redone for various faculty delivering "life science". This can also be done for the other Belgian universities (KUL, UAntwerp, UCL, UGhent, UHasselt, ULg, UMon, UNamur and VUB), by involving for example the members of the National Biochemical Societies to chip in.

☞ *We gave ourselves 6-8 months to collect this type of data (as found in Jürgen Alves documents and in the Excel file I put together).*

2. Second, we will harmonize the format and consolidate the information acquired by each member into this excel file.

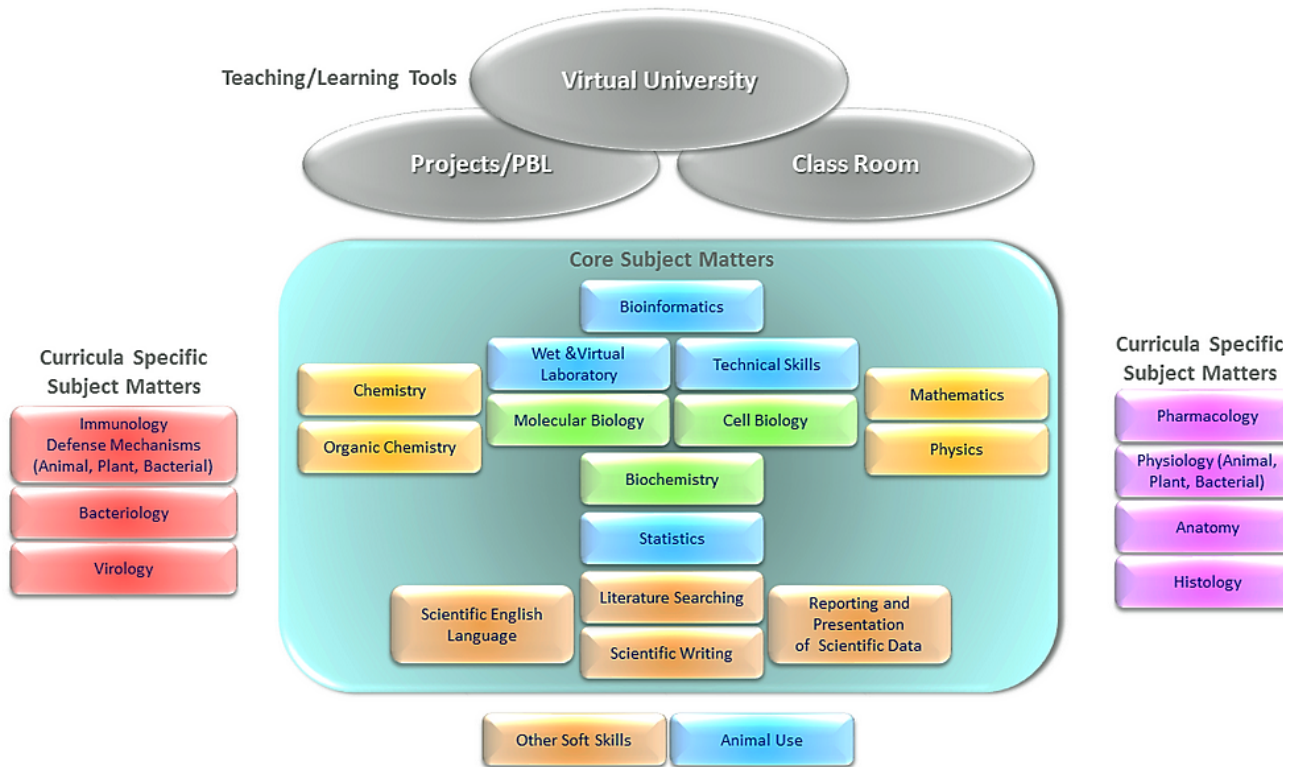
☞ *For this step, we allowed the remaining time until the 4th Ambassadors meeting in April 2019.*

3. Then the objectives of WG1 during the work group sessions to be held at the forthcoming 4th Ambassadors meeting in April 2019 will be to

☞ Overlay the information collected and formatted for the Life science curricula at the undergraduate level in as many different European countries as possible.

Future perspectives: The overlay should then allow us to extract and define a minimal set of Key knowledge and skills expected from a molecular life sciences at the undergraduate level; in terms of subject matter, content, depth, stratification over the undergraduate level time course, define "mandatory" technical, transferable and soft skills that are now and will become essential in the training of the undergraduate life scientists, regardless of they may do afterwards, but allow them not to be restricted as to their choice thereafter.

Figure 1: An organigram of the generic subject matters, satellite subject matters, technical, transferable and soft skills to be considered (this organigram does not attempt to be exhaustive but is a starting point for reflection).



Supplementary Information

- 1) **Jason PERRET** provides an Excel file "[UnderGrad Curricula Data Collection Jason-PERRET ULB 2018.xlsx](#)", as an example of the collection of (unformatted) curricula information from the University web sites – this data collection corresponds to the "first step" of the work Group 1 objectives between Ambassadors 3rd (meetings 2018) and the forthcoming 4th meeting (2019).

Supplementary Information Already Supplied Previously to the Workgroup 1

- 1) **Jürgens ALVES** provided us with a very concise but informative brochure addressing curriculum content, subject matters, ventilated across different bachelor levels and master curricula.

The brochure was issued under Jürgens ALVES's auspice by the Hannover Medical School Institute of Biophysical Chemistry and is entitled: "***Outline of the Subject Matters required for the Acquisition of Bachelor and Master Level Proficiency in the Life Sciences***".

This brochure is an ideal example of what would be necessary to clarify what is being done across Europe.

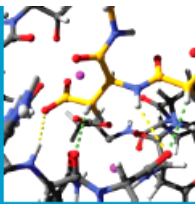
- 2) **Keith ELLIOTT** sent, following the 2nd Ambassadors Meeting in Paris 2017, links to several **UK** documents centered on Life Science Curricula, entitled:
 - a. *National Subject Profile for higher education programs in: Biochemistry - 2008* Document 1 (<https://www.heacademy.ac.uk/system/files/biochemistryfinal.pdf>)
 - b. *Subject Benchmark Statement Biosciences - November 2015* Document 2 (<http://www.qaa.ac.uk/en/Publications/Documents/SBS-Biosciences-15.pdf>)

In this document pages 11-15 are of particular interest to the workgroup objectives.

These extensive documents cover many aspects of curricula, cohorts, outcomes, etc...and will be valuable aids for addressing the goals set by the workgroup.

Below, are copies of the Table of Contents, and links to the PDF files.


Document 1: " National Subject Profile for higher education programmes in: Biochemistry –



National Subject Profile
for higher education
programmes in:

Biochemistry

2008



Members of the Biochemistry Panel

Keith Elliott (Chair)
University of Manchester

Tony Bradshaw
Oxford Brookes University

Kay Foster
University of Kent

Chris Kirk
The Biochemical Society

Sandra Kirk
Nottingham Trent University

Ian Hughes
Centre for Bioscience, University of Leeds

Lyn Ribeiro
AstraZeneca

Christopher Todd
University of Bath

Bruce Ward
Edinburgh University

Ed Wood
Centre for Bioscience, University of Leeds

Katherine Zuzel
Liverpool John Moores University

Secretary to the Panel
Jill Anderson-Clarke
Centre for Bioscience, University of Leeds

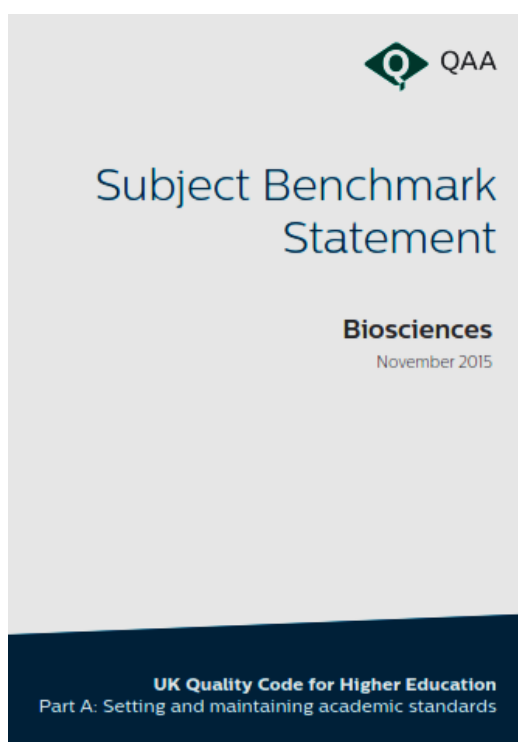
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2008"

Document 2: "Subject Benchmark Statement Biosciences - November 2015"

In this document pages 11-15 are of particular interest to the workgroup objectives.



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PAGE 11 & 12:

4 Graduate and key transferable skills

Intellectual skills

Analytical and data interpretation skills

Communication, presentation and information technology skills

Interpersonal and teamwork skills

Personal and professional development skills

PAGE 13 to 15:

5 Core biosciences knowledge, understanding and skills

5.1 Where the introduction states: "The range of subject areas covered by individual programs of study within the biosciences depends on the specific degree title offered. No single degree program can cover the entirety of the subject, and the rich diversity of curricula provides students with abundant choice."

5.2 Approaches to study and forms of subject knowledge likely to be common to all biosciences degree programs include:

Intellectual skills

Practical skills

Analytical and data

Session: GOOD PRACTICES ON EDUCATION

(** = document available on request)

1/ Brief introduction

New educational strategies are required.
Placing the students in the focus of all changes.
Making interactive education methods obligatory.
Improving interconnection between teaching and research.

2/ Brief self-introduction and relative background and experience

2-1/ Members:

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3/ Open discussion (Facilitated by the Coordinators)

3-1/ Short review from April 2017

- draft 08-04-17; 19 h 00 the notes of JLS for the team, to add, delete, ...to produce at the end a brief synthetic report. **
- the first report was sent to Gül Guner, 2017, August 16. **
- presentation at the FEBS E.C. Tel-Aviv, 2017, September 7. **
- new synthesis for an open discussion after a communication at the FEBS 3+, SEBBM, SPB, SFBBM « Good practices in teaching molecular biosciences, possible improvement » **
- publication de Nestor V. Torres Darias and J. Aguilera Mochon : « La necesidad de innovaren la enseñanza de las biociencias » 2017, December **
- Oslo University, a one day meeting on University Education. Plenary talk by Robin Wright title: "Scientific Teaching Using the science of teaching and learning to improve student engagement and outcomes".
Followed by a 3 hours workshop.

3-2/ Factors interfered with the realization and possible solutions

- diversity of student expectations among countries.
- diversity of Universities goals not only from country to country but within each country (ex: balance between research and education).
- for each teacher: difficulty to change the way of teaching.
- how to help teacher that want to change (not only a question of resource) but the general background about this question.
- propagation of the present discussions within each local Biochemical society and feed-back. Rotation or no rotation with the Ambassadors.
- student selection/ no student selection (cf. Bristol for example).

3-3/ Review and agreement on the main and alternative outputs (special focus on realistic outcomes)

3-3-1/ Short-term objectives (till FEBS Praha congress in 2 months!)

- too short for Praha.
- but if some members of this group plan to be present they are invited to have a meeting to exchange their respective works.

3-3-2/ Long-term objectives

- this is a never end goal.

- this topic « good practices » uncovered a large spectrum of diversity among Universities.
- solutions will be not multiples, but numerous and require a kind of minimal « common platform » because our students will be during their cursus in different European universities. Some kind of convergence is necessary.
- identify or create guideline for good practices relevant for European university education.
- several colleagues have started something new, without having to reinvent the wheel it will be interesting to analyse, compare these new pedagogical experiences: to do that efficiently our group propose to ask Angel for opening on the FEBS network (<https://network.febs.org/>) a devoted room where it will be possible to upload the corresponding data/results/comments, etc... Also a room for the introduction of relevant bibliography but with limits: what will be our policy?

4/ Task division and deadline setting for each task (task-time flow) (coordinators)
 - later

5/ Agreement on writing a report for FEBS Network (or FEBS Open-Bio)
 - yes of course, an efficient work should be finished by a printed report in a Journal for the community. However this require time!
 At this point it is difficult to prepare an agenda.

Report-Working Group No 3:
 Make Molecular Life Sciences Education in Europe Strong Again!

The Lisbon Declaration in 2000 set the goal for Europe to become the most competitive region by 2010. Now, in 2018 the FEBS Education Committee together with the Ambassadors on Education (from 33 different European countries) requests the support of the FEBS Council to promote a campaign, together with the involvement of other FEBS Committees, and Working Groups, as well as other European and/or international scientific societies to focus on the competitiveness goal, set in 2000 during the next EU election campaign in 2019.

Even the most contemporary research infrastructure or institutional system cannot be operated without the next generations of talented and motivated professionals. We are deeply convinced that excellent science teachers at all levels are essential to identify, motivate and fully support career followup of our future colleagues. The EU should promote both in member and candidate countries the

legislation for a better social and financial recognition of those willingness to serve the future of European life sciences research. Support for innovative education techniques, development of advanced learning materials, deeper inclusion of research into curricula should get the proper priority in the next EU budget planning as well.

Networking in the form of education workshops, advanced courses, e-communication techniques should be strengthened. In addition to the mobility grants set to help less affluent countries to send their talented youngsters abroad, a reverse grant system should be established for those willing to return to their home countries and initiate advanced research and education in molecular life sciences and in other areas on natural sciences there . This initiative will also favor networking and expand the diversity of foreign collaborations.

The FEBS Education Committee together with the network of Ambassadors on Education is willing to support this initiative to make Europe really the most competitive region leading in innovartive science education in the future.

Working group No 4: Learning Resources
Coordinators: Angel Herráez, Ferhan Sagin

Working Group No 1: Learning Resources

Coordinators:
Angel Herráez, Ferhan Sagin

Introduction and outline of the aims of the WG (Coordinators)

Prepare and share a collection, maybe repository, of resources to be used by any instructor and also students

Review of what has been done since Paris Ambassadors's Meeting

In the Paris meeting, the overall agreement was to find out the way and concerns for making a repository of resources, hosted within our control, hopefully within the soon-to-be-started platform of FEBS Network, and for the members of this WG to start contributing resources.

Since the FEBS Network was implemented and started working last Sept., it has become evident that it cannot host a repository. Little activity has been done along the lines planned.

Open discussion (Facilitated by the Coordinators)

Some issues were discussed:

Current content in the Educator Channel of the FEBS Network is a good start.

How to find resources?

Can we compile and have a database?

What kind of resources shall it include, and what shall we do with them?

Maybe tell about experiences or methods.

Prepare a monthly newsletter reporting on items posted in the Network, to be distributed by email to societies etc.

Creation of a logo for Learning Resources group was suggested.

Agreement on the main and alternative outputs

Short term objectives (till FEBS 2018 Prague Meeting)

Long term objectives (till next FEBS Education Ambassadors Meeting 2018-12 months)

We agreed to shift the approach and make a plan along the next 12 months for members of this WG contributing posts in the Educator Channel of the FEBS Network.

These posts (ideally two per month) will present, review and categorise some existing educational resource, without reproducing it. Add some consistency via a rubric

So we will be building a series of reviews on learning resources and innovative approaches in education.

The aims will be: sharing knowledge, facilitating awareness and supporting educators.

Task division and deadline setting for each task (task-time flow)

1. Coordinators will prepare a rubric based on the form currently existing in the Education Platform. This rubric will be a guideline to follow in each post/review, in order to have consistency.
2. Members of the WG have a commitment to author these posts, aiming at 2 per month among all. Other Ambassadors are welcome to propose or contribute.
 3. All WG members are encouraged to contribute comments to any post.
 4. Steps for each post:
 - a) One member prepares a post and distributes it by email to all members of the WG.
 - b) A few days for feedback and amendments.
 - c) The post is published in the Network.
 - d) Promotion: every Ambassador should disseminate the post, possibly using the newsletter that summarises that month's posts

5. Schedule:

May 2018: Todar and Ferhan

June 2018: Ferhan and Angel

July 2018: Magali (x2)

August 2018: Liliya

Sept. 2018: Tatiana and Kaspars

Oct. 2018: Steve and Aljosa

Nov. 2018: Aljosa and Angel

Dec. 2018: Liliya and Tatiana

Jan. 2019: Magali and Steve

Feb. 2019: Kaspars and ...

March 2019: Aljosa and ...

	Not useful	Useful	Very useful
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Education Ambassadors

FEBS Education Committee

April 6-7th, 2018 – Zagreb, Croatia

PARTICIPANT FEEDBACK FORM

PROGRAMME

1) April 6th Sessions

	Not useful	Useful	Very useful
○ 'FEBS Ed-Com Activities' (Gül Güner Akdogan)		10	16
○ Best Practices on Education & Discussions		6	12
'Technologies to promote the diffusion of science' (Xavier Coumoul)		11	7
'FEBS Educ-Com Kaunas Workshop' (Vida Mildaziene)	6	10	11
'New Horizons in Biochemistry and Molecular Biology Education Conference by IUBMB and FEBS' (Gül Güner Akdogan)		15	13
'Activities carried out by the education group within the SEBBM' (Nestor Vicente Torres Darias)	2	11	15
'Active learning as a means to achieve better student involvement and results' (Winnie Eskild)		9	19
'Biosafety and biosecurity teaching in Ukraine' (Tatiana Borisova)	5	12	11
○ Ambassadors' Working Groups' Discussions (Part 1)		5	23
○ 'Undergraduate Projects, Maximising Value' (Gus Cameron)		6	20
2) April 7th Sessions			
○ 'International Students' (Luciane V. Mello)	1	5	21
○ 'FEBS Network'		5	21
○ 'Ambassadors' Working Groups' Discussions (Part 2)		2	23
○ 'Reports of the Working groups and General Discussion'		7	16
○ 'Feedback and Close (Gül Güner Akdogan)		2	16

SOCIAL EVENTS

	Not satisfied	Satisfied	Very satisfied
○ Coffee Breaks		6	:
○ Dinner (Restaurant Vinodol)		1	:
○ Lunch (Open Buffets at Rectorate University of Zagreb)		3	:

OVERALL ORGANIZATION

	Not satisfied	Satisfied	Very satisfied
○ Communication before the meeting (program, accomodation, etc.)		7	21
○ Meeting packages (notebooks, agenda, name badges, etc.)		2	26
○ Meeting venue and facilities			27

LAST but not LEAST...

- What was particularly HELPFUL in this meeting?

- ❖ Possibility to share expericence and do/support contacts between national societies and individual members
- ❖ The wokshop discussion and several talks
- ❖ Exchanges... FEBS Network demonstration by A. Herráez
- ❖ Working group discussions and feedbacks
- ❖ Presentations on active learning and maximising value of undergraduate projects
- ❖ Presentations which were of high quality
- ❖ A. Herráez presentation & smalll group discussion
- ❖ Lectures
- ❖ WG1 discussion panel and lectures
- ❖ Getting to know new people in the field, facing the same problems
- ❖ Sharing of experiences
- ❖ The possibility to learn about the problems & experiences from other countries & university systems
- ❖ Exchange of experience in teaching methods and strategies in life sciences
- ❖ Information on informational reseources and programmes
- ❖ Interaction between ambassadors, internations students lecture by Luciane, FEBS network lecture by Angel, undergrduate Project by Gus
- ❖ Discussious general views and problems – realisation of this
- ❖ Learning the directions of education development in other countries
- ❖ Informal and structured discussions
- ❖ Interaction write other ambassadors, FEBS Network + Luciane Mello presentation + Gus Cameron lecture
- ❖ The host

- Within this meeting, was there something you learned that was particularly SURPRISING or IMPORTANT to you?

- ❖ The impact of seeing students contribution on UK economy (10,2 billion pounds/year)
- ❖ The difficulty (from the institutions) to recognize the importance of education
- ❖ To learn about international students and week of integration in

- Liverpool
- ❖ New ways to promote discussions on science (X. Coumoul)
- ❖ Yes, the network
- ❖ FEBS Network finally got a meaning
- ❖ Mechanisms for ? of the whole generation of students in UK
- ❖ Surprising-the extent of foreign students in UK & some other countries
- ❖ Information regarding surveys and studies about pedagogical approaches in teaching life sciences
- ❖ Well kept schedule
- ❖ Yes Lightboard studies as a technology tool
- ❖ How deeply research type projects are introduced in the undergraduate curricula
- ❖ No

- From some of the knowledge/techniques discussed during the meeting, is there any idea you INTEND TO PUT INTO PRACTICE?

- ❖ The approaches to attract and then adapt ??? teaching students. Few reports will be devoted to the issue???. It's really crucially important for life science education
- ❖ FEBS Networking
- ❖ Yes, the practical work presented by Frank
- ❖ Yes. The ones mentioned above.
- ❖ I will write a report on examinations in Italy
- ❖ Yes
- ❖ Preparing courses maybe other techniques I already use in some extent
- ❖ Yes, from the discussed topics I am going to put some of them in practice
- ❖ The idea of lecture interruption by short 5-3' activities
- ❖ Mentoring of new teachers by their more experienced colleagues
- ❖ The workshop on education in Belarus
- ❖ Lightboard studio room
- ❖ Yes, active learning strategies
- ❖ I will try to create some micro project during practicals
- ❖ FEBS Network
- ❖ Yes maybe similar projects as presented by Gus Cameron

- What did you like BEST about this meeting?

- ❖ Following the schedule. It really helps to resolve problems and generate ideas.
- ❖ The discovery of FEBS Network
- ❖ Examples (Bristol BLT) and increasing number of representing countries = more diversity in teaching aspects
- ❖ To share time between talks and working group
- ❖ Atmosphere –friendly, supportive, activating

- ❖ Everything
- ❖ People are great, but they should take more responsibility as Ambassadors
- ❖ Lectures
- ❖ Nice, competent and cooperative people
- ❖ Having the impression to make things go forward
- ❖ The open friendly atmosphere
- ❖ Exchange of practices in active learning
- ❖ Very positive atmosphere
- ❖ Interaction with Ambassadors and some lectures such as "Undergraduate Projects" and 'Technologies to Promote the Diffusion...'
- ❖ Friendly atmosphere
- ❖ Exchange of informations how people are teaching practical skills to undergraduate students. The speech about undergraduate project was excellent
- ❖ Diversity
- ❖ Exchange of information among ambassadors
- ❖ Time schedule was kept quite precisely

○ What did you like LEAST about this meeting?

- ❖ I suggest to pay more attention to some problems raised spontaneously (behind the programs) e.g. Pawel asked about evaluation mistakes (from government bureaucracy) this might have more attention in common discussions
- ❖ It finished
- ❖ Examples of good practise should be a 'good practice' not just a report on personal views
- ❖ Nothing, really
- ❖ Like any other meeting, not enough time to individual discussions with different members
- ❖ Sometimes the time limitations, not allowing the theme to be presented in full
- ❖ Divided into 2 half days. Better to do it in one full day or 1,5 days
- ❖ Some topics, best practices on education were not so interesting
- ❖ Reporting previous workshops could be done in the web
- ❖ Lack of time
- ❖ Nothing

○ What could be done to make the meeting MORE VALUABLE?

- ❖ To add contact data of all participants to some separate sheet (or maybe send it with e-mail in group)
- ❖ Working group reports over the whole year (which means they have to work as a group during the whole year)
- ❖ More examples, more results, less general ideas.

- ❖ Short reports on educational activities (most recent promotions) from national societies in printed version (e.g. 1/3 of page from 1 society)
- ❖ Each meeting should produce written conclusions, recommendations, etc.
- ❖ I can not judge that. This is my first meeting.
- ❖ Hopefully the web "room" will help in preparation of next meeting programme (some reports only there)
- ❖ Extend it to 2 full days and send ahead the presentations to prepare for the discussions
- ❖ Bullet points focus points for the discussions... the document provided was very useful, but maybe more details are needed to help to focus the discussions
- ❖ We should use web room more actively before the meeting
- ❖ Allow more time for discussions

- Are you likely to attend Ambassadors on Education Meeting again?
Yes No

Other Comments and Topics for the upcoming meetings

- ❖ Presentation on 'UK practice in 'Best Teacher Award'
- ❖ My main impression and gain from this meeting is that I met so many great people who care about molecular bioscience education!
- ❖ Good luck
- ❖ ???like

THANK YOU

6. A Biochemical Society and FEBS Training Event: 'Evolving Molecular Bioscience Education' Chester, UK; 12–13 April, 2018

http://bit.ly/MolBioSciEdu_Chester

This two-day course aimed to share best practice and novel ideas in bioscience higher education with those teaching or supporting teaching, from established professors to early-career researchers. This WS was coordinated by Frank Michelangeli. Around 50 participants attended this event. International speakers were from Stockholm, Aarhus, Madrid and Izmir (FEBS trainers and invitees). Topics included evaluating teaching practice through pedagogical research, engaging students in undergraduate research projects, teaching and assessing large cohorts using interactive and engaging methods, and teaching postgraduate and international students. FEBS Education Committee awarded two bursaries for young scientists (One from Zagreb and one from Ankara) to participate in this event. Applicants came from outside the UK, had no more than 5 years since their PhD, had some teaching experience, presented a poster on education .

Future Events in 2018

7. Prague FEBS Congress (7-12 July, 2018) Education Activities

FEBS Education Committee is organizing the following events during the Prague Congress:

Monday, July 9th 2018, 15:30-17:30

“Bioethics Education in Molecular Life Sciences”

Co-Chairs:

Tomas Zima (Prague, Czech Republic) & Gül Güner Akdogan (Izmir, Turkey)

15:30-15:35 Introduction

15:35-16:05 “Why Teaching of Bioethics Matters”
Chris Wilmott, University of Leicester, UK

16:05-16:35 "Towards the Relevance of Bioethics Education in Molecular Life Science- personal experiencereport"
olf Heumann, Ruhr- University Bochum, Germany

16:35-17:05 “Institutional Policy to Implement Bioethics Principles in Graduate Education” Hakan S. Orer, Koc University, Istanbul, Turkey

17:05- 17: 30 Panel Discussion (Lecturers and Chairs)

17:30-18:30 Workshop (with Coffee)

“Developing Case Studies in Bioethics”

Chris Wilmott, University of Leicester, UK, and John Bryant, University of Exeter, UK

Tuesday, 12 July; 17:30-18:30

“Selected Topics on Education”

Chair: Keith Elliott (Manchester, UK)

(Five speakers are selected for this session from the posters)

Wednesday, 11 July; 15:30-17:30 and 17:30-18:30

FEBS Special Session on Career and Research Skills: Networking

- Carolyn Elliss & Angel Herráez

- **Poster Session on Education, Training, and Career development in Molecular Life Sciences**

8. FEBS Izmir Workshop on Molecular Life Sciences Education (5-6 September, 2018)

TRAINING TOMORROW'S SCIENTISTS

FEBS Education Committee: Jean-Luc Souciet (France), Laszlo Dux (Hungary), Ferhan Sagin (Türkiye), Jason Perret (Belgium), Winnie Eskild (Norway), Luciane V. Mello (UK), Keith Elliott (UK), Angel Herráez (Spain) and Gül Güner-Akdoğan (Chair) (Türkiye)

FEBS Honorary Secretary General: Israel Pecht

FEBS Executive Committee Members (Attending) : Nazmi Ozer, Frank Michelangeli, Beata Vertessy, Jerka Dumic, Miguel de la Rosa and Manolis Fragoulis

- **With Kind Support of** Tomáš Zima, Past Chair of FEBS and Rector of Charles University, Félix M. Goñi (pending) Basque Centre for Biophysics, Spain, and Hakan Abacıoğlu, Dean, School of Medicine, Izmir University of Economics

President, Turkish Biochemical Society: Doğan Yücel

Workshop Co-Chairs: Ferhan Sağın (Vice-President, Turkish Biochemical Society)

Gül Akdoğan Güner (Director, Graduate School of Health Sciences, Izmir University of Economics)

Workshop Coordinator: Ali Burak Özkaya (Ass. Prof, School of Medicine, Izmir University of Economics)

(Tuesday September 4th, 2018: FEBS ED-COM Meeting)

SEPTEMBER 5-6, 2018

Wednesday and Thursday, Sept 5th-6th: Sessions on Education

Wednesday, Sept 5th:

Opening: 09:30-10:00

Session 1 / 10:00-13:30

Novel Educational Strategies and methods

- **Introduction (5min)**
- Establishing a New Educational Culture (Hakan Abacıoğlu) (25 min)
- Flipped Classroom (Jeremy Pritchard) (25 min)
- Team-Based Learning (Ferhan Sagin) (25 min)
- Interactive Teaching in Large Classes (Engaging Students in Large Classes) (Jason Perret) (25 min)

25 min to each speaker to each speaker (20 + 5min)

Coffee and Break Into Groups (15 min)

Three small groups (45 min each) (Participants will choose two groups) :

Flipped Classroom- Team-Based Learning- Large Classes

Lunch and Poster Viewing: 13:30 -15:00

Session 2 / 15:00-18:30

Using Electronic Technologies in Education

E-Med Activities in Charles University-Prague (Tomas Zima)

E-Med in IEU (Burak Ozkaya)

Using New Technologies in Education (Frank Michelangeli)

Using Proteopedia (Angel Herráez)

20 minutes to each speaker + 5 min

15 minutes coffee break and break into groups

Four small groups (45 min each) (Each participant can choose two groups)

E-MED-Prague – E-MED-IEU- New Technologies in Education-Using Proteopedia

Thursday Sept 6th:

09:00-10:00 Short Presentations from Selected Posters

Session 3 / 10:00-13:30 Graduate Education (MSc and PhD Training)

Introduction 5 min

MSc Studies in Biomedicine and Health Sciences in Europe (TBD) (20 + 5 min)

PhD Training-New Prospects (Gül Güner) (20 + 5)

Transferable Skills (Luciane V. Mello) (20 + 5 min)

Good Supervision for Good Research (Winnie Eskild) (20 + 5 min)

25 minutes to each speaker (20 + 5) – 4 small groups (45 min each) (Students can choose two groups – 15 minutes coffee break)

Small groups: MSc studies- PhD Training-Transferable Skills- Good Supervision

13:30-15:00 Lunch and Poster viewing

Session 4 / 15:00-17:45: Excellence in Education, Excellence in Research

Science Policy in Europe (Manolis Fragoulis) (20 + 5min)

A Research Training Center Model-Weizmann Institute (Israel Pecht) (20 + 5 min)

Research Ethics (Jean-Luc Souciet) (20 + 5 min)

Joint Research with the Industry (Jerka Dunic) (20 + 5 min)

Coffee : 15 minutes

Panel Discussion with the FOUR SPEAKERS (45 min)

Feedback and Close/ 17:45-18:00 : 15 minutes (Poster awards will be given)

9. Izmir Research and Career Skills Workshop for Young Scientists (Supported by IUBMB)

7 September 2018

It a one-day event which will be held in 7 September 2018 at the Faculty of Medicine in University of Economics (İzmir/TURKEY) following the FEBS WS on Molecular Life Sciences Education: Training for Research.

FEBS EC and ED-COM members are supporting this WS and IUBMB gives a support of 7600 S.

The main aim of this event is to help the development of research and career skills of young scientists. The event will specifically focus on transferable skills including CV preparation, writing research proposals and scientific articles, as well as the use of electronic tools to support career development. The targeted participant profile for the event includes MSc and PhD students as well as post-docs and junior/senior faculty members working in the field of life sciences and medicine with a focus on biochemistry and molecular biology. The reason we are also targeting the faculty is to provide them with a model programme on “how to train young scientists for these skills”. The event will take place right after “FEBS workshop on molecular life sciences education” and participants of either event will be encouraged to join both. The proposed event will consist of two distinct parts: presentation sessions and discussion sessions. In the presentation part, speakers will give the outline of the topic and will present useful career tips and tricks, and hints regarding what to discuss in round table

sessions. In the discussion part, participants will have the chance to discuss career-related questions or problems with experts of the field.

Upon completing the workshop, participants are expected to;

- Have a better understanding of career requirements of academia and industry after PhD training, and opportunities PhD students may have to be prepared for either career path,
- Be able to prepare a lean and to the point CV specifically designed either for academia or industry,
- Explain key points and important tips of scientific article publishing and writing research proposals,
- Remember how to access software and websites, which may be used to build an online scientific profile or enhance preparation of research proposals, publications, CVs and presentations.
- Apply the main principles of the transferable skills training in training their students (specially for junior/senior faculty)

The event programme is structured in such a way that each speaker will have the opportunity to interact in a smaller group of interested young scientists around a round table. Young scientists will have the opportunity to discuss issues of importance to them with the appropriate speaker.

Event program is given below:

PART-1 Presentation Session

09:00-09:30 Beata G. Vertessy (post-graduate academic path tips for young scientists)

09:30-10:00 Jerka Domic (post-graduate industrial path tips for young scientists)

10:00-10:30 Keith Elliott (CV preparation)

10:30-11:00 Coffee Break

11:00-11:30 Félix M. Goñi (how to write and publish a scientific article)
(Pending)

11:30-12:00 Miguel A. De la Rosa (how to write a research proposal)

12:00-12:30 Post-Graduate Electronic Tools of Trade (Ali Burak Özkaya & Merve Evren)

12:30-14:00 Lunch

PART-2 Round Table Discussions

TABLE-I Academic	TABLE-II Industrial	TABLE-III Publication	TABLE-IV Research	TABLE-V CV	TABLE-VI
---------------------	------------------------	--------------------------	----------------------	---------------	----------

Path	Path	Process	Proposal	Preparation	eTools of Trade
------	------	---------	----------	-------------	-----------------------

14:00-16:30 Round Table Discussions

10. FEBS Patras Workshop on Molecular Life Sciences (3 October, 2018)

This WS is supported by FEBS Education Committee on the Education Ambassadors' Support scheme.

The aim of this WS is to promote cell biology, biological chemistry and molecular biology education by introducing new trends in education as well as presenting important tips for the future scientists. The experts will provide knowledge to enhance excellence and innovations in biochemistry and molecular bioscience and tips for writing a successful manuscript. One of the goals of this workshop is to provide a forum for panel discussions and discussions into small groups with the experts for sharing current issues in molecular life sciences and skills necessary for a molecular life scientist.

- Key Knowledge and Skills for Molecular Life Sciences
- Quality assurance in education
- PhD training
- How to write a scientific paper

Organisers of the WS:

Prof.	Nikos Karamanos	University of Patras, Greece
Dr.	Dimitris Kletsas	National Centre of Scientific Research "Demokritos", Greece
	Zoi Piperigkou	University of Patras, Greece

Outline of the Workshop Workshop Programme		
60'	Registration	
15'	Welcome address by host	Nikos Karamanos

15'	FEBS Education Committee – Introduction to the Workshop	Gül Güner Akdoğan
	Session 1: Rethinking doctoral Education	
45'	Tasks and responsibilities of supervisors and young scientists during PhD	Beata Vertessy
45'	Core knowledge and skills for molecular life scientists	Gül Güner Akdoğan
	Introduction to Small-Group Discussions and divide into groups	Nikos Karamanos
60'	Small-Group Discussions (approx. Three groups/ 30min each) (Rotation in the groups)	Gül Güner Akdoğan – Nikos Karamanos – Beatta Vertessy
	General Discussion	
	Session 2: PhD training: new horizons	
45'	Trends in PhD training - Tips for success for a PhD student	Gül Güner Akdoğan
60'	“Publishing without perishing” - How to write a great manuscript - Navigate the submission process	Emilly Chenette
60'	Small-Group Discussions	Gül Güner Akdoğan – Emilly Chenette
	General Discussion	
	Session 3: Quality Assurance in Education	
60'	The quality assurance system related to student and teachers	Nikos Karamanos
75'	Horizontal skills of critical thinking	Athanasios Karalis
60'	Small-Group Discussions	Athanasios Karalis- Nikos Karamanos
15'	Reports of Groups – General Discussion	FEBS Team
30'	General Discussion, Feedback, Closing of the Workshop	Gül Güner Akdoğan - Nikos Karamanos

11. Contribution to FEBS Network

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.

12. FEBS Education Committee 2019 Planned Activities

The following activities are agreed and planned for 2019, and finalization of the programmes will take place at the Izmir ED-COM Meeting, 4 September 2018.

- FEBS Georgia Workshop on Molecular Life Sciences Education (Tbilisi, 4-5 April, 2019)
- 4th FEBS Education Ambassadors' Meeting (Tbilisi, 5-6 April, 2019)
- Joint Education Activities with IUBMB (two sessions) during Krakov 2019 FEBS Congress
- FEBS Moldova Workshop on Molecular Life Sciences Education (TBD)
- FEBS Rome Workshop on Molecular Life Sciences Education (September 2019).

13. Conclusions

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) and to FEBS Honorary General Secretary, Prof. Israel Pecht for his valuable leadership, wisdom, and support which made a significant impact on the development of the Committee.

Gül Güner Akdoğan
Chair, FEBS Education Committee (2009-2018)
Izmir, Turkey, 1st July 2018

14. Overview of FEBS Education Committee: Period (2009-2018)

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) , Gul Guner-Akdogan (Izmir, Turkey) , Jason Perret (Brussels, Belgium) , Jose Villalain (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 Drainas (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 Michelangelo (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).

I. 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.

II. 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.

III. 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 collaboration 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 Drinas)
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 has just 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).

IV. 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 Publication 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)	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 3. Workshop on “Problem-Based Learning” (Activity of the FEBS Working Group on Teaching Biochemistry)
2005-Budapest-30th FEBS Congress	<ol style="list-style-type: none"> 1. Workshop: “Laboratory Practicals” (Activity of the FEBS Working Group on Teaching Biochemistry)
2006-Istanbul-31th FEBS Congress	<ol style="list-style-type: none"> 1. Workshop on “New Approaches to Post-graduate Education” 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	<ol style="list-style-type: none"> 1. Symposium: “Post-Graduate Education” (With HSBMB)

Congress	<ol style="list-style-type: none"> 2. Workshop: "E-learning" 3. CV Clinics
2009-Prague 34th 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" 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

	<p>Learning Experience through Student Engagement”</p> <ol style="list-style-type: none"> 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 need 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 Herrez 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 Herrez and the FEBS Network Working Group deserve special mention.

V. 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, sharing, and friendship 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

