



# **EDUCATION COMMITTEE REPORT TO BERLIN COUNCIL, 2015**

**September 2014- July 2015**

**Reported by:**

**Gül Güner Akdogan**

**Chair, FEBS Education Committee**

**July 9th, 2015**

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## 1.Introduction

This report includes the activities of the Education Committee realized between 01.09.2014 and 01.07.2015.

## 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”.

### **The ordinary members who served on the Committee in 2014 are:**

Tomas Zima (Czech Republic) (Elected at Turin FEBS Council, 2011 and started as of 1<sup>st</sup> January 2012). He will be rotating out as of 1<sup>st</sup> January 2016.

Angel Hérreaez (Spain) (Elected at Turin FEBS Council, 2011 and started as of 1<sup>st</sup> January 2012). He will be rotating out as of 1<sup>st</sup> January 2016.

Wolfgang Nellen (Elected at Sevilla FEBS Council, 2012 and started as of 1<sup>st</sup> January 2013).

Wolfgang Nellen served partly in 2014 and had to leave the Committee (resigned) in November 2014, due to his retirement and departure to Indonesia.

Francesco Michelangeli (Elected at Sevilla FEBS Council and started as of 1<sup>st</sup> January 2013).

**Chair:** Gül-Güner Akdogan (Turkey) (Elected at Prague FEBS Council, 2009 and started as of 1<sup>st</sup> January 2010; reelected at Sevilla FEBS Council, 2012- started second term as of 1<sup>st</sup> January 2013).

### **Co-Opted:**

Keith Elliott (UK) (Since January 1st, 2008). He is supporting the Committee for Workshops, CV clinics, and other educational activities.

Peter Ott (Switzerland) (Since May 14th, 2010). Peter Ott informed the Committee that he would no longer continue the FEBS Education platform, due to his retirement some time ago. He left the Committee as of 31<sup>st</sup> December 2014. Angel Hérreaez, who is rotating out as of 1<sup>st</sup> January 2016, will be co-opted to take care of the FEBS Education web-site.

**Ex-Officio Members:** Israel Pecht (FEBS General Secretary), Alan Fersht (FEBS Treasurer), Winnie Eskild (Assistant to FEBS Treasurer) and Beáta Vértessy (Acting Chair, FEBS Advanced Courses Committee and became Chair through election at the FEBS Council in September 2014 in Paris)

### **Election at 2015 Berlin FEBS Council:**

Tomáš Zima and Angel Hérreaez will rotate out in 31 December 2015. Wolfgang Nellen resigned, due to his retirement and commitment in Indonesia.

*There will be elections for three new members during Berlin FEBS Council.*

**Chair:** Gül-Güner Akdogan (Turkey) (Elected at Prague FEBS Council, 2009 and started as of 1<sup>st</sup> January 2010; reelected at Sevilla FEBS Council, 2012- started second term as of 1<sup>st</sup> January 2013). Gül Güner's second term is ending on December 31<sup>st</sup>, 2015.

*There will be election for Chair of FEBS Education Committee during Berlin FEBS Council.*

## 3. Representation of the Committee by its Chair

Gül Güner Akdogan, Chair of the Committee, represented the Committee during the WGI visit (organised by the Chair of the Working Group on Integration) to Sarajevo, Bosnia and Herzegovina in September 2014 and to Riga, Latvia in November 2014. During these visits, the possibility of organising education workshops in these countries was explored; and it was agreed with the hosts in Sarajevo, to organise one, on September 3-4th, 2015. For Riga, it is agreed to hold one in 2016.

In addition, Gül Güner Akdogan is invited to join a Congress in Belarus, to take place in Grodno, 30 September-2 October 2015 and hold an education session.

## **4. Education Committee Meetings**

### **4.1. Education Committee Meeting(s) during Paris Congress, 2014**

According to the decision of FEBS Education Committee to hold only one meeting per year (to comply with the budget limitations), in 2014, FEBS Education Committee meeting took place, in two parts, during Paris Congress, on Tuesday, September 2<sup>nd</sup>, 09:00-12:30 and on Wednesday, September 3<sup>rd</sup>, 12:00-15:30 in FEBS Room.

The Agenda was follows:

#### **Education Committee Meeting Part 1:**

**Tuesday, September 2nd, 09:00-12:30, FEBS Room**

##### **Participants:**

##### **Ex-Officio Members:**

Israel Pecht  
Winnie Eskild  
Beata Vertessy

##### **Committee Members:**

Gül Güner Akdogan  
Keith Elliott  
Angel Hérreaez  
Francesco Michelangelo

##### **Invited:**

Jean-Luc Souciet, Education Chair, SFBMB  
Wolfgang Trommer, German Society for  
Biochemistry and Molecular Biology  
Mathias Sprinzl, Chair of WGI

##### **Apologies:**

Tomas Zima  
Wolfgang Nellen

##### **Part 1:**

- 1. Welcome, Apologies**
- 2. Minutes of the previous ED-COM Meeting (Prague)**
- 3. Short reports from past activities:**

St Petersburg (8th July, 2013), Gdansk (13-14th July, 2013), Tbilisi (8-9th October, 2013), Sofia (22nd November 2013), Istanbul (25th June, 2014)

*The feedback from these workshops was discussed. It was suggested to explore if some of these workshops could be credited. A discussion ensued on the possibility of gearing these workshops either to young scientists or to faculty members; the general view was that it was*

advantageous to have the two groups together- to have more interaction and sharing of experiences.

#### **4. FEBS Education Platform (Web-site)-New Perspectives**

*The possibility of integrating into the prospect KNODE expertise portal proposed by Wiley, in the light of the Workshop attended by GG and AH was discussed. We needed to see how it developed. AH would look into other possible solutions.*

#### **5. Promotion of Learning resources throughout Europe-What can be done?**

*A new effective web-site working like a platform would help.*

#### **6. Discussion on the prospect EU Project: “Core Knowledge, Skills, and Career Planning for a Molecular Life Scientist”**

*JLS pointed out that FEBS could be a catalyser for such a project. KE pointed out that each university reaches its own programme and therefore it cannot be obligatory; however, this project could enhance the “recognition” of the universities which comply. The ongoing pilot mini-workshops on “Core Knowledge, Skills, and Career Planning for a Molecular Life Scientist” during the FEBS Education Workshops were discussed and it was agreed to continue with these workshops.*

#### **7. Project: Ambassador’s (from Constituent Societies) to FEBS Education Committee**

*GG explained that such a project would facilitate lining, networking and mobility between the Constituent Societies and thus enhance collaboration and interaction across Europe and would create a platform to design educational projects at the EU level. GG gave the information that Tomas Zima, the Rector of Charles University (Prague) was ready to host such a meeting.*

#### **8. Discussion on the evaluation criteria (and form) for the Poster Award**

*A poster evaluation sheet was created, involving the following criteria: Quality of pedagogic science (20 points); Appropriateness and description of methods (20 points), presentation of results (20 points); poster format (20 points); oral defence (10 points); potential impact on education (10 points). The jury would consist of the ED-COM members.*

**9. Discussion on the organisation of the small group discussions of the Workshop on “What Skills and Core Knowledge Expected from a Molecular Life Scientist” Tuesday September 2nd, 18:00-19.30**

*The moderators for the small-group discussions were assigned. The organisation of this Workshop-latest tips- was discussed.*

#### **10. Any other item**

*As Wolfgang Trommer was present during this time, representing the German Society, the possibilities of Education Workshop topics for the Berlin 2015 Congress was discussed. Issues suggested:*

*“Systems Biology”, “Research in Undergraduate Education”, “High School Teacher event”; A workshop in which “the two trends of Education in Germany: Research (Humboldt) and teaching” would be discussed. It was decided to go forward with the second topic (Research in Undergraduate Education) and also to wait for the response from the German Society for the Humboldt issue, as a second activity. Inviting a junior society member for these workshops was suggested. He suggested that the Humboldt panel discussion would be timed on the Thursday afternoon, after the Congress (which was later found not to be practical by the Council- due to the Council Meeting on Thursday).*

### **Education Committee Meeting Part 2**

**Wednesday, September 3rd, 12:00-15:00, FEBS Room**

## Participants to the ED-COM Meeting, Part 2:

### Ex-Officio Members:

Winnie Eskild  
Beata Vertessy

### Committee Members:

Gül Güner Akdogan  
Keith Elliott  
Angel Hérreaez  
Francesco Michelangelo  
Tomáš Zima

### Invited:

Jean-Luc Souciet, Education Chair,  
SFBMB

## Part 2:

### 1. 2015 Activities:

- Educational session(s) during Berlin Congress (4-9th July, 2015)

*(Already discussed in the first part).*

- Cambridge Workshop (30-31st March, 2015)

*FM updated the Committee on the programme and organisation of the Cambridge workshop. It was agreed that the contribution to the workshop in terms of lecturers/trainers should involve more input from Europe. New names were suggested: Jan Glatz (Maastricht), Angel Herraiez (Spain), Robert Harris (Sweden)... FM would try to accommodate these names into the programme.*

- Other activities? (Athens Workshop was briefly discussed)

### 2. 2016 Activities

- Educational session(s) during Kusadasi (Turkey) FEBS Congress (3-8th September, 2016)

*It was suggested to have a plenary speaker on education at the 2016 Kusadasi Congress: Bruce Alberts was suggested (his talk in Sevilla had a big impact). For a workshop topic, it was decided to ask the Turkish Society of Biochemistry for suggestions.*

### 3. Continuation of the discussion on the EU Project (GG, FM)

*The main issue was to find a coordinator for this project. FM agreed to explore the possibility of coordinating such a project from Birmingham University. The members of the Committee were willing to participate in some way.*

### 4. Future Collaborations: with the FSBMB and other bodies

*JLS, who coordinated the educational events from the SFBBM, was willing to enhance collaboration with FEBS. He suggested working more efficiently with the related Societies (Belgium, Germany, Spain) in sharing resources and information.*

### 5. Preliminary feedback from first Paris Education Workshop

*The feedback from the first workshop on "What Skills and Key Knowledge to Expect from a Molecular Life Scientist?" was excellent. It was attended by about 120*

participants. In addition, delegates from some of the Constituent Societies, Lithuanian, Serbian, German, Spanish, Croatian, Slovenian, and Belgium were present.

#### **6. Latest Details for the WS on New Technologies (JLS, AH)**

JLS updated the Committee on this workshop. The Clickers from Turning Technologies had been received.

#### **7. Joint Project with FEBS Advanced Courses Committee**

BV and GG informed the committee on a pilot project designed to enhance the “scientific skills” of young scientists, with the implementation of a session during the FEBS Advanced Courses. Some of the topics/names suggested: “How to Write a Scientific Article” (Mathias Sprinzl, Felix Goni) “Processes involved in Scientific Publishing” (Mary Purton), “How to Write a Scientific Project” (Vicente Rubio, Miguel de la Rosa), “How to Write a CV (Keith Elliott). It was decided to elaborate on this issue and bring it to the next meeting of the Committee.

#### **8. Next Meeting of the ED-COM: Date and Place**

The next meeting of the Committee would take place in Cambridge (March 29<sup>th</sup>, 2015), before the workshop.

### **4.2. FEBS Education Committee Meeting, Cambridge, 1<sup>st</sup> April 2015**

The Meeting of the Education Committee was held after the Cambridge Workshop, in the green parlour of Gonville and Caies College, on 1st April 2015, from 09:00 to 17:00.

The agenda and the main points discussed were the following:

#### **1. Welcome, Apologies**

Tomas Zima, Francesco Michelangeli, Angel Herraiez, Keith Elliott, Winnie Eskild, and Gul Guner Akdogan attended the meeting. Apologies were received from Israel Pecht and Beata Vertessy.

#### **2. Composition of the Committee –Elections**

Composition of the committee and the candidates for the three open positions were discussed as described under Section 2 of this report.

#### **3. Review of the Minutes of Paris Meeting (July 2014)**

Uncorrected Minutes of the Paris Education Committee Meeting were agreed as true minutes of the Meeting.

#### **4. Report of past Workshops (Paris, Debrecen, Belgrade)**

The reports of the Paris (Please see under Section 5.1), Debrecen (Please see below) and Belgrade (Please see under section 5.2) workshops were discussed.

The Report of Debrecen Workshop was as follows:

### **Workshop on Education in Molecular Life Sciences (Debrecen, Hungary)**

**24-25<sup>th</sup> August, 2014**

The Hungarian Society of Biochemistry and Molecular Biology had proposed include the workshop within the framework of the next year annual conference of the Hungarian Biochemical Society, to be held in Debrecen, between August 24 and 28. It was decided to hold it as an “annex” to the Congress, to provide more focused time on education. It was a one-and a half-day workshop. The main topics were: curriculum planning, designing laboratory practicals, problem-based learning, and research in undergraduate education. The coordinator for this

*Workshop from Hungary was Prof László Dux, and both Profs. Vértessy and Fésüs were in charge of the Hungarian Congress 2014 of Biochemistry. The workshop trainers were from FEBS Education Committee as well as from Hungary.*

***The programme of the workshop was as follows:***

*Venue: University of Debrecen*

*Hosted by Hungarian Biochemical Society*

**Coordinator from HBS:**

*Prof. László Dux (University of Szeged)*

*Prof. Beáta Vértessy (Budapest University of Technology)*

**From FEBS Education Committee:**

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*Prof. Gül Güner Akdoğan (Chair) (Izmir, Turkey)*

**Workshop Trainers:**

*Prof Matthias Sprinzl (Bayreuth, Germany)*

*Prof Gül Güner Akdoğan (Izmir, Turkey)*

*Dr Anikó Görbe (Szeged, Hungary)*

*Dr Margit Keresztes (Szeged, Hungary)*

*Dr Tamás Csont (Szeged, Hungary)*

***With Kind Support of***

*Prof. Mathias Sprinzl, Chair, FEBS WGI (Bayreuth, Germany)*

*Prof. László Fésüs, Chair, FEBS Publications Committee (Debrecen, Hungary)*

*Prof. Beáta Vértessy, Chair, FEBS Advanced Courses Committee (Budapest, Hungary)*

## Programme

<b>DAY 1</b> <b>Sunday, August 24<sup>th</sup>, 2014</b>		
09:00-09:15	Introduction to the Workshop	László Dux
09:15-10:30	Problem-Based-Learning (PBL)-Talks on Manchester, Izmir and Szeged Experiences	Gül Güner/Anikó Görbe
10:30-10:45	Introduction to PBL Small-Group Sessions	Gül Güner
10:45-11:00	Coffee and Break Into Two Groups	
11:00-11:45	First PBL Session	Güner/Anikó Görbe
11:45-12.30	Second PBL Session	Güner/Margit Keresztes
12:30-13:00	General Discussion on PBL	Güner/Dux
13:00-14:00	Lunch	



14:00-14:30	<i>Designing Laboratory Practicals: Introduction and General Concepts</i>	<i>Mathias Sprinzl</i>
14:30-15:00	<i>Wet Labs</i>	<i>Anikó Görbe</i>
15:00-15:30	<i>“Skills and Key Knowledge Expected from a Molecular Life Sciences Graduate-FEBS Education Comm. Project”</i>	<i>Gül Güner Akdogan</i>
15:30-15:45	<i>Coffee and Break into Groups</i>	
15:45-16:30	<i>Small Group Discussions</i>	<i>(Discussion on what skills and key knowledge) 4-5 groups depending on the number Güner/Sprinzl/Dux/Vértessy/Fésüs</i>
16:30-17:00	<i>Report from Groups</i>	<i>(A report will be given from each group)</i>

<b>DAY 2</b> <b>Monday, August 25<sup>th</sup>, 2014</b>		
09:00-09:45	<i>“How to Write a Scientific Article”</i>	<i>Mathias Sprinzl</i>
09:45-10:00	<i>Discussion</i>	
10:00-10:25	<i>Involvement of undergraduate students in research activities: experiences in the Department of Biochemistry, University of Szeged</i>	<i>Tamás Csont (Univ Szeged, Szeged)</i>
10:25-10:30	<i>Discussion</i>	
10:30-10:45	<i>TBA</i>	<i>Mihály Kovács (Univ Eötvös Loránd, Budapest)</i>
10:45-10:50	<i>Discussion</i>	
10:50-11:10	<i>Coffee break</i>	
11:10-11:35	<i>“Special Study Modules: An Innovative Laboratory</i>	<i>Gül Güner Akdoğan (Dokuz Eylul University, Izmir)</i>

	<i>Research Practice for Medical Students"</i>	
<i>11:35-11:40</i>	<i>Discussion</i>	
<i>11.40-11:55</i>	<i>"Research in undergraduate education in University of Debrecen"</i>	<i>Ferenc Erdődi (Univ Debrecen, Debrecen)</i>
<i>11:55-12:00</i>	<i>Discussion</i>	
<i>12:00-12:15</i>	<i>"Research in undergraduate education in Univ Pecs"</i>	<i>Ferenc Gallyas (Univ Pécs, Pécs)</i>
<i>12:15-12:20</i>	<i>Discussion</i>	
<i>12:20-12:40</i>	<i>General Discussion and Close</i>	

#### *POSTER SESSION*

*(with discussions from senior scientists)*

#### **Attendance:**

*This workshop was very well attended, with around 60 participants at all career stages and with representatives from different Hungarian universities. The sessions were highly interactive, with lively small-group discussions.*

#### **5. Workshops in 2015**

*These workshops were discussed and some were finalised. Please see, under the Sections indicated below:*

- Berlin (Section 5.1)*
- Sarajevo (Section 5.2)*
- Oslo (Section 5.2)*
- Athens (Section 5. 2)*

#### **6. Workshops in 2016**

*Plan was made for the workshops to take place in 2016, as well as during the Kusadasi (Ephesus) FEBS 2016 Congress. Please see under section 6.2.*

#### **7. EU Project- Update (FM)**

*Frank Michelangeli updated the Committee on the scope of the envisaged EU project. It was decided that a coordinator from Birmingham would be identified.*

#### **8. Report- FEBS Education Platform (AH)**

*Please see under Section 7.*

#### **9. Education Committee Budget for 2016**

*Preliminary discussion was done and it was agreed to discuss the budget further.*

#### **10. Discussion on the vision and mission for the future**

*Please see under Section 8.*

## 11. Date and Lieu of the next meeting

*It was agreed to have an informal Education Committee Meeting during Berlin FEBS Congress.*

## 5.1 Educational Activities during FEBS Congresses

- **Educational Activities during Paris FEBS-EMBO Congress:**

During the Paris Congress, two workshops on education were realized, one by FEBS Education Committee, and the other by collaboration between FEBS Education Committee and the French Society for Biochemistry and Molecular Biology (SFBMB). In addition, a poster session on education was organised. As traditionally, CV advising clinics were run by Dr. Keith Elliott.

### **Workshop 1: Tuesday, September 2nd, 2014, 18:00-20:00**

#### **“What Skills and Key Knowledge to Expect from a Molecular Life Scientist?”**

Organised by FEBS Education Committee

Co-Chairs: Gül Güner Akdoğan, Francesco Michelangeli

#### **18.00-18.05 Introduction**

**18.05-18:25** Prof. Francesco Michelangeli (Birmingham, UK)

“What Skills to Expect from a Molecular Life Scientist?”

**18.25-18.45** Prof. Jean Luc Souciet (Strasbourg, France)

“What to teach in biochemistry? Results and prospects of a brief survey in French universities”

#### **18.45-19.30 Small Groups Discussions**

Moderated by members of FEBS Education Committee

#### **19.30-20.00 Presentations and Panel Discussion**

*Report by Francesco Michelangeli, Member of FEBS Education Committee:*

*“This session was chaired by Gül Güner Akdoğan and Francesco Michelangeli of the FEBS Education Committee. The first talk, by Francesco (Birmingham University, UK), highlighted the findings from several recent reports on education and graduate-level employability skills by major multinational employers and pharmaceutical industries. These findings appear to highlight that these employers are concerned by lack of a number of skills that they would require of their graduate employees. The areas of concern included lack of practical abilities as well as detailed subject-specific knowledge, and more importantly transferable skills, such as numeracy, communication skills, team working and problem-solving skills. To address this lack of skills and knowledge, Frank described how in the UK a number of learned societies with input from these employers were involved in defining key criteria that should be incorporated within degree programmes through accreditation processes.*

*The second talk, by Jean-Luc Souciet (Université de Strasbourg, France) presented the results from a recent survey undertaken across several French universities to look at what is taught in biochemistry degrees. The survey identified many of the skills and subject-specific knowledge mentioned earlier, but also highlighted that ethical issues relating to bioscience such as food safety and animal welfare should also be embedded within biochemistry degree programmes. The talks were followed by a ‘small’ group discussion session where more than 100 participants contributed to discussions regarding what constituted competent practical skills, transferable skills and essential molecular bioscience knowledge. In addition, some participants contributed ideas regarding how careers, employability skills and bioethics could be incorporated into molecular bioscience undergraduate degree programmes. The main points raised from these discussions is published on the FEBS Education Platform”.*

## Summary of discussions in small groups

The session was attended by about 100 participants. They split into 4 groups to discuss specific topics related to this session, as listed below. Some of the main points that were raised during the specific discussions are collected in this report.

### Group 1: What are the key practical skills that molecular life science students should learn?

The group came up with an extensive list of techniques, procedures and good practice:

- Making buffers, solutions and being able to understand concentrations.
- Using a pH meter and adjust pH of buffers.
- Knowing how to dilute solutions.
- Training in good laboratory practice (especially lab safety)
- Keeping a detailed lab book.
- Designing an experiment to test hypothesis and consideration of control and replicates.
- Being able to perform and analyse the results from SDS PAGE.
- Being able to perform and analyse the results from DNA agarose gels.
- Concepts of protein purification, i.e. size exclusion and ion exchange chromatography.
- UV-VIS spectrometry and use of calibration curves.
- Enzyme assays and following rates of reactions.
- Basic microbiology techniques also expose to other model organism systems ie yeast or flies, etc.
- Undertaking PCR reactions and analysing products.
- Searching scientific literature data bases.

### Group 2: What are the key transferable skills that molecular life science students should learn?

- Mathematical competency. Being able to use and manipulate simple equations.
- Being able to plot and interpret data in the form of graphs and tables.
- Statistics and its uses. Being able to utilise statistical software, i.e. Excel, SPSS, Minitab, etc.
- Communication skills, oral presentations and in writing.
- Scientific writing, how to write a scientific report or paper.
- Problem solving skills – i.e. critical analysis, experimental design and setup.
- Team working skills.
- Independency and time management.
- Leadership and managerial skills.

### Group 3: Careers and improving employability prospects

- Have an extensive period of workplace experience as part of the degree. This could take the form of a “sandwich year” where the students spend one academic year working in an industrial setting such as for a pharmaceutical company.
- Coaching and mentoring.
- Helping with CV writing.
- Helping to develop interview skills.
- Employ or utilize specific careers officers within the university to help students with applications.
- Organise careers fairs for the students and invite past graduates to talk about their careers following graduation.

### Group 4: Subject-specific knowledge

- Proteins
- DNA / RNA / Genetics
- Enzymes
- Metabolism
- Regulation

- Cell biology
- Molecular biology
- Bio-energetics
- Membranes
- Cell signaling
- Biotechnology
- Microbiology
- Molecular pharmacology

## **Workshop 2: Wednesday, September 3rd, 2014**

### **"New technologies to teach molecular life science"**

#### **Organised by FEBS Education Committee and SFBMB**

Co-Chairs: Jean-Luc Souciet and Angel Herraes

#### **18:00-18.05** Introduction

#### **18.05-18.35** Quentin Vicens (Nice, France)

"Peer Instruction: General view and Application to Specificity of Molecular Life Sciences"

#### **18.35-19.05** Michael. E. Caspersen (Aarhus, Denmark)

"The role of Peer Instruction in Educational Development"  
(Getting more scientists to revamp teaching)

#### **19.05- 19.35** Neil Morris (Leeds)

"Using technology to engage with students"

#### **19.35-20.00** General discussion

Supported by the company "Turning Technologies": This company will provide free technology rental that included all receivers and Response Cards for presenters and participants.

*Report by Jean-Luc Souciet*

*Université de Strasbourg and SFBBM Education Committee*

*"The FEBS–EMBO 2014 Conference was a perfect opportunity to promote and to compare innovative ideas and teaching experiences for the best training of our undergraduate students. This workshop was organized to present in real time an interactive teaching strategy: 'peer instructions using clickers' (as defined by Eric Mazur and Turning Technologies). Each workshop participant received a clicker (courtesy of Turning Technologies) – a small handheld voting device – to simulate the experience of a student attending a lecture using this teaching strategy. The first speaker, Quentin Vicens (Université de Strasbourg, France), presented the general strategy: (1) a biological problem is set; (2) the right answer, with four possible choices, is requested using clickers; (3) the results of the survey (but not the right answer) is shown, initiating discussions between opposite proposals; and (4) step 2 is now repeated, with the correct answer. This elegant demonstration was very well received.*

*The second speaker, Michael Caspersen (University of Aarhus, Denmark), reported quantitatively how efficient this method is to improve student results and the main gains: the concepts developed during the lecture are understood; the curiosity of students is stimulated; and with this feedback the teacher is immediately informed about what is understood or not.*

*The third speaker, Neil Morris (Leeds University, UK), presented the projects and results related to Blended and Digital Learning conducted at Leeds University, encompassing the use of tablet computers and e-Books, and the*

*integration of video lectures, podcasts and mobile technology. It was a fruitful workshop that raised numerous comments and advice from the participants, including many young graduates”.*

### **Poster session on “Education, Training, and Career Planning in Molecular Life Sciences”.**

*Reported by Gul Guner, FEBS Education Committee*

*Sixteen posters were displayed in this category and the best poster on education was selected by the jury formed of the members of FEBS Education Committee. The criteria used in assessment were: quality of pedagogic science, methods, results, evaluation of the data, quality of the poster set-up, oral defence of the work, and potential impact.*

*The name of the laureate of the education Poster Prize was:*

**MON-520**

***"Multidisciplinary biochemistry laboratory education; student centered real learning process"***

***A. Sepici DINCEL, Y. OZKAN, M. SELVİ, F. ERKOC***

***Gazi University, Ankara, Turkey***

*The winners were offered a plaque from FEBS Education Committee. In addition, the organisers of Berlin FEBS Congress offered the waiving of the registration fee for one of the authors of the winner poster.*

*FEBS Education Committee plans to follow this initiative, which attracted great interest from the participants.*

- **CV Advising Activity:**

*Finally, in the traditional collaborative activity between the FEBS Education Committee and the Young Scientists' Forum (YSF), Keith Elliott provided CV advice to around 50 YSF participants, which will help the young scientists in their bright future careers.*

- **Education Session during Berlin FEBS Congress 2015**

The FEBS Education session is entitled ‘Research in Undergraduate Education’. It is increasingly accepted that an introduction to research should start earlier in the education of young scientists. But what is the best way of achieving this to benefit the student’s skills and insight while providing a manageable and cost-effective process for research groups? The aim of this workshop is to share experiences on different ways of involving and training undergraduate students in research from across Europe, and a student voice will also be heard.

### **Research in Undergraduate Education**

**Tuesday 7 July • 13:00–15:00 • Room A/B**

*Bridging the gap between class practicals and research projects*

*Frank Michelangeli (Birmingham, UK)*

*Setting research projects that involve undergraduate students*

*Laszlo Dux (Szeged, Hungary)*

*The student perspective on research in undergraduate education*

Estafanía Mucino Castillo (Paris, France)

Panel Discussion with speakers and chairs

Chairs: Tomás Zima (Prague, Czech Republic), Gül Güner Akdoğan (Izmir, Turkey)

In addition, a poster session on 'Education, Training, and Career Planning in Molecular Life Sciences' is organised, where there will be a prize of free registration to the Kusadasi 2016 Congress for the best poster!

## 5.2 Workshops (realized)

- **Workshop on Molecular Life Sciences Education (Belgrade, Serbia)**

This workshop was conceived during the WGI visit to Belgrade, which took place in October 2013.

### **FEBS Workshop on Molecular Life Science Education**

**September 18-19<sup>th</sup>, 2014**

**Belgrade, Serbia**

**Hosted by Serbian Biochemistry Society (SBS) (President: Professor Dr Mihajlo Spasić)**

**Coordinator from SBS: Prof. Marija Gavrovic-Jankulovic**

**Venue: Faculty of Chemistry University of Belgrade, Studentski trg 12-16**

**From FEBS Education Committee:**

Prof. Keith Elliott (Manchester, UK) Prof. Gül Güner Akdoğan (Chair) (Izmir, Turkey)

With Kind Support of Prof. Mathias Sprinzl, Chair, FEBS WGI (Bayreuth, Germany)



A large group of people, including students and faculty, posing for a group photo on the stone steps of a building entrance. The group is diverse in age and attire, with some individuals wearing name tags. The building features large columns and a covered walkway above the stairs.

DAY 1		Thursday, September 18 <sup>th</sup>	
08:30-09:00	Registration		
09:00-09:30	Opening of Workshop		
09:30-10:00	General Discussion: “ Issues on Molecular Life Sciences Education in Serbia”	Moderator: Prof. Mihajlo Spasic	
10:00-10:30	“Skills and Key Knowledge Expected from a Molecular Life Sciences Graduate-FEBS Education Comm. Project”	Keith Elliott	
10:30-10:45	Coffee and Break into Groups		
10:45-11:45	Small Group Discussions	Sprinzl/Elliott/Güner/Gavrovic-Jankulovic	
11:45-12:45	Report from Groups		



12:45-14:00	Lunch	
14:00-14:45	“How to Write a Project Proposal”	Gül Güner-Akdogan
14:45-15:00	Discussion	
15:00-15:30	“Funds and Programmes”	Keith Elliott
15:30-16:00	Coffee Break	
16:00-16:45	“How to Read and Write a Scientific Article”	Mathias Sprinzl
16:45-17:00	Discussion	

<b>DAY 2</b>		
<b>Friday, September 19th, 2014</b>		
09:00-09:30	Designing Laboratory Practicals: Introduction and General Concepts	Keith Elliott
09:30-10:00	Applications: “An Innovative Laboratory Research Practice in a Medical School”	Gül Güner-Akdogan
10:00-10:30	Coffee and Break into Three Groups	
10:30-12:00	Small Group Sessions with rotation-(Each session -30 minutes)	
<i>In Silico Practicals (Gül Güner-Akdogan)</i>	<i>Dry Practicals (Keith Elliott)</i>	<i>Wet Practicals (Mathias Sprinzl)</i>
12:00-12.30	General Discussion on Practicals	Güner/Elliott/Sprinzl
12:30-14:00	Lunch	
14:00-14.45	“Molecular Life Sciences Education for the Needs of Industry”	Mathias Sprinzl
14:45-15:00	Discussion	
15:00-15:30	“How to Make the Best of Yourself: How to Write a CV”	Keith Elliott
15:30-16:00	Coffee Break	
16:00-17:00	General Discussion and Close	



### Discussion Group Reports:

The reports below have been composed by the Reporters selected in each discussion group.

#### Group Report 1

##### Moderator: Gül Güner

- *Is it worthwhile to apply for an EU project "What Skills and Core Knowledge Expected from a Molecular Life Scientist"?*

We believe it is.

Molecular life sciences graduates (both bachelor and master) would benefit from the European level project related to the subject. The main outcome of such project would be a set of standards in the field of molecular life science education that would promote mobility of molecular life science graduates. Such standards would, of course, be introduced and accepted on voluntary basis.

#### ***What basic skills should graduate have at the end of 1st and 2nd cycles?***

We concluded that, so called, transferable skills are as important as practical skills. Team work, time management and communication skills (oral, written, electronic communication) should be introduced at bachelor level. We emphasized the importance of the promotion of molecular life science in the community ( e.g. Festival of science ) and in the population of undergraduate students (e.g. Student congresses). Bachelors should also adopt practical skills such as basic principles and techniques required for laboratory work. They should be introduced to the principals of dealing with biological samples and corrosive, toxic and flammable chemicals, as well as their disposal, laboratory safety hazards and measures. They should also be informed about the work in specific ( e.g. sterile) conditions and with techniques that are used to maintain those.

Bachelors should also adopt basic laboratory techniques and methods such as pipeting, solution preparing, pH measuring, weight measuring, spectrophotometry, light microscopy, chromatography etc.

Skills regarding writing scientific paper and statistics should be introduced at master level, and skills such as project writing and fund management are in our opinion appropriate for PhD level. Practical skills that in our opinion should be adopted at master level are specific laboratory techniques such as PCR, blotting, electrophoresis, flow cytometry, HPLC, LC MS. However, in our opinion they should be introduced in general (core modul) and further specialization should be in the field of the methods required for the thesis.

### ***What core knowledge should they have?***

In our opinion, interdisciplinary approach is the key in teaching and understanding molecular life science. Bachelor should adopt general knowledge about the normal structure and function of the living cell (biomolecules, enzymes, cell organization, organelles, metabolism, cell signalisation and communication, ECM, nuclear processes, cell cycle and apoptosis), tissues, organs, systems and organism as a whole and about disturbances in the structure and function that represent molecular basis of disease itself. We found the theoretical knowledge crucial for understanding cellular processes and molecular life science.

### ***What are the problems in delivering these?***

We found the structure of curricula and interpretation of Bologna process to be the problem. Burocracy and the structure of the administration in the field of education that prevent collaboration and interdisciplinarity, as well as the lack of funding are the crucial obstacle in the development of molecular life science in Serbia.

## **Group Report 2:**

**Moderator: Mathias Sprinzl**

Life science education in Serbia that we discussed is organized in three levels (4+1+3) at Faculty of Chemistry (Biochemistry) and Faculty of Biology (Molecular biology) University of Belgrade. We decided to accept the model 4+1 for graduate studies due to employers' attitude not to hire Bachelors with 180 ETCS. Having in mind that more than 50% of both Bachelors and Masters pursue scientific career in Serbia or abroad, we concluded that basic Life science curriculum and obtained skills should be strongly science oriented. The beginning of curriculum should include all natural sciences, before focusing on life sciences. The core knowledge with special attention on accepting scientific critical thinking, rather than reproduction of facts, should enable young colleagues to solve problems and to be successful in any area they chose during MS studies. The knowledge and specific skills that a molecular life science student must have are presented elsewhere, but simple reproduction is useless without deeper understanding, ability to collect, analyze and report data. However, the main problem in achieving this goal lies in the lack of critical thinking of students-to-be. Fact based learning is widespread in both elementary and high schools, so to fulfill the goal we need to encourage teachers (at all levels) to insist on problem solving approach. We hope that the Society can provide a frame for such an activity.

## **Group Report 3**

**Moderator: Keith Elliott**

### 1. Basic skills

BSc

Students should be acquainted with:

1. Basic skills such as: making solvents, dilutions, proper pipetting, pH measurements, chromatography techniques, electrophoresis, spectrophotometry
2. Handling biological materials:

Macromolecule solutions (e.g. protein)/cell cultures/animals

3. Good laboratory practice (GLP)
4. Communications skills
5. Presentation skills
  - a. Abstracts
  - b. Poster presentations
  - c. Oral presentations
6. Management in Science
7. Skills of self-reflection – what do they want to after obtaining BSc – career in academia or non-academia sector

## MSc

Students will develop specific skills (practical) depending on MSc projects they will choose. During Master studies students should be introduced to Writing projects.

### 1. Core knowledge

Students are coming to University with different backgrounds, so core knowledge among them differs. Although, they pass exam (which is consisted from basic of Math, Biology and Chemistry) to enroll University, often they are not able to show that when courses at University starts, which brings us to problems in education starting even from primary school. This is global problem and requires serious reorganization of total education system.

In the meanwhile, we have to encourage our student to use their capacities and develop critical thinking.

In order to adjust differences among student (their previous knowledge) we agreed that basics in Mathematics, Physics, Chemistry and Cell Biology should be mandatory at first year of studies. Regarding Basic in Biochemistry, focus should be on Integration. They should be able to use their knowledge operatively to cross Biology and Chemistry easily, in order to understand fundamental principles easily.

- 4 types of macromolecules
- Structure – function relationship
- We used proteins as example:
  - o Group of proteins – They should be able to recognize group of proteins, how they work e.g enzymes – structure, structure-function relationship (example: pH optimum, T optimum, inhibitors) Great example of showing how chemistry influence biology and vice versa
  - o Genetics
  - o Integration – metabolism! All this molecules work together, even our investigation approaches are usually focused on particular ones.

### 2. Problems

We discussed about current problems regarding career future of Biochemists (From Faculties of Natural Sciences) since they are not able to join medical laboratories (even they finish PhD at Medical faculty or Faculty of Pharmacy - purpose of doing those PhDs?). This is a rare opportunity for biochemist to work in Serbia, due to lack of industry etc. This discussion emphasized problem of University structure, isolation of Faculties and future of Biochemistry as individual discipline in Serbia. Consequently, young people nowadays decide not to study Molecular life sciences (for comparison number of students enrolled at Faculty of Belgrade-Biochemistry is around 40-50) due to their uncertain career prospective. We believe that this issue is worthwhile to be solved and the contribution of FEBS as well as FEBS constituent societies may be of crucial importance.

## Feedback from the Participants:

From the written feedback taken, 90 % of the participants rated the workshop as “excellent” and 10%, as “very good”.

Some of the comments and suggestions:

- “Very inspiring and useful. Thanks”
- “The talks were very useful to me as a PhD student”
- “I got a lot of information regarding methods in teaching that will be very helpful in work with students. Thank-you”
- “Hope that your next workshop will be successful as this one! Thank-you!”
- “Thank-you all, you were very good! I cannot agree more about the way how a biochemist should be educated.”
- “I learned so much from you; thank-you for your time. It is very important for PhD students to visit this workshop because it is very helpful and inspiring.”
- “The Workshop covered a broad range of topics regarding education in life sciences, although it was mixed for those who teach and who are students. I would like to suggest a Workshop for PhD students and post-docs where it would be more words about mobility and opportunity for career development.”
- “More on how to get students interested in biochemistry and less on how to organise practicals, would be my suggestion”.

## 5.2. FEBS Cambridge Education Workshop in Collaboration with the Biochemical Society (30-31st March, 2015)



This workshop took place on March 30-31<sup>st</sup>, 2015, in collaboration with the Biochemical Society. The first of these workshops was organised in December 2012 and was highly successful, with participation from all over Europe. It was then agreed to hold these workshops once in every two years. The WS was coordinated by Frank Michelangelo, member of FEBS Education Committee.

### Organizers:

**Frank Michelangeli** (University of Birmingham, United Kingdom)

**Helen Watson** (University of Exeter, United Kingdom)

**Steve Minchin** (University of Birmingham, United Kingdom)

**Gerhard May** (University of Dundee, United Kingdom)

**Gül Güner** (Dokuz Eylül University, Turkey)

**Mark Roberts** (Queen Mary University of London, United Kingdom)

**Monday 30 March 2015**

**09:00 - 10:45 Registration**

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**Scientific Programme:**

**Session 1: Supervision, mentoring and personal development**

**Chair:**

**Frank Michelangeli** (University of Birmingham, United Kingdom)

**Monday 30 March 2015**

**10:45 - 11:00 Welcome and greetings**

**Frank Michelangeli**

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11:00 - 11:30

**S001**

The transition to university: getting the most out of universities' support for learning

**Harriet Jones** (University of East Anglia, United Kingdom)

11:30 - 12:00

**S002**

Final year capstone projects: The different types of projects, different types of supervision

**Malcolm East / Mark Coldwell** (University of Southampton, United Kingdom)

12:00 - 12:30

**S003**

Developing your teaching, learning from colleagues and gaining professional awards

**Dilly Fung** (University College London, United Kingdom)

**12:30 - 14:00 Lunch and networking**

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**Session 2: Alternative methods of learning**

**Chair:**

**Angel Herráez** (University of Alcalá, Madrid, Spain)

**Monday 30 March 2015**

14:00 - 14:30

**S004**

Problem-based-learning: Philosophy and experience in Maastricht University

**Jan Glatz** (Maastricht University, The Netherlands)

14:30 - 15:00

**S005**

Problem Based Learning (PBL): Izmir Experience

**Gül Güner** (Dokuz Eylül University, Health Sciences Institute, Department of Molecular Medicine, Turkey)



15:00 - 15:30

**S006**

Using team based processes to consolidate learning

**Helen Watson** (University of Exeter, United Kingdom)

15:30 - 16:00

**S007**

Lecture flipping in Biosciences

**Jonathan Green** (University of Birmingham, United Kingdom)

16:00 - 16:30

**S008**

The many benefits of PeerWise for collaborative online learning

**Heather McQueen** (University of Edinburgh, United Kingdom)

**16:30 - 17:00 Coffee/tea break**

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**17:00 - 18:00 Group discussion and interactive sessions**

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**18:00 - 19:30 Drinks, poster session 1 and networking**

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**19:30 - 22:00 Dinner**

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### **Session 3: Alternative modes of delivery**

**Chair:**

**Helen Watson** (University of Exeter, United Kingdom)

**Tuesday 31 March 2015**

09:30 - 10:00

**S009**

Creating video clips for teaching and feedback

**Peter Klappa** (University of Kent, United Kingdom)

10:00 - 10:30

**S010**

MOOCS: What are they? Who are they for? How do you set one up?

**Alison Cooper** (University of Birmingham, United Kingdom)

10:30 - 11:00

**S011**

Enhancing Graduate employability: Alternatives to traditional Final Year research projects

**David Lewis** (University of Leeds, United Kingdom)

**11:00 - 11:30 Coffee/tea break**

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**11:30 - 12:30 Discussion groups / demonstrations / interactive sessions**

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**12:30 - 14:30 Lunch and poster session 2**

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**Session 4: Integrated bioscience teaching across backgrounds and abilities**

**Chair:**

**Gül Güner** (Dokuz Eylül University, Health Sciences Institute, Department of Molecular Medicine, Turkey)

**Tuesday 31 March 2015**

14:30 - 15:00

**S012**

Strategies to improve learning across the ability spectrum

**Nick Freestone** (Kingston University London, United Kingdom)

15:00 - 15:30

**S013**

Teaching maths effectively to biosciences students

**Dawn Hawkins** (Anglia Ruskin University, United Kingdom)

15:30 - 15:45

**S014**

Teaching biosciences to non-bioscience undergraduates

**Frank Michelangeli** (University of Birmingham, United Kingdom)

**15:45 - 16:00 Concluding remarks**










**Dissemination:** Widely disseminated on WS website, (Biochemical Society and FEBS), through FEBS Secretariat to FEBS Constituent Societies, and through the Biochemical Society membership network.

## Enhancing Molecular Bioscience Education







- Supervision and mentoring
- Alternative methods for teaching
- Mixed ability teaching
- Engaging with large teaching groups
- Interactive sessions with tablets

**30 – 31 March 2015**  
Cambridge, UK

**[www.biochemistry.org](http://www.biochemistry.org)**

Abstract deadline: 26 January 2015

Early bird registration deadline: 2 March 2015

Bursary deadline: 5 January 2015

*The letter sent to FEBS Constituent Societies (kind support of FEBS General Secretariat), is presented below:*

**Subject: Cambridge Workshop on Enhancing Molecular Bioscience Education- 30-31 March 2015**

*To the Attention of FEBS Constituent Societies,*

*Dear Colleagues,*

*It is a great pleasure for us to inform you about the upcoming FEBS-Biochemical Society Cambridge Workshop on Enhancing Molecular Bioscience Education, to take place on March 30-31st, 2015.*

*The excellent programme structured with experts in the field will provide opportunities for interaction between the participants. The deadline for poster abstracts will be in two weeks.*

*We are looking forward to the participation of not only young scientists, but also experienced faculty in order to share our experiences and help promote molecular bioscience education throughout Europe.*

*See you soon in Cambridge!*

*Gül Güner- Akdogan*

*Chair, FEBS Education Committee*

*gul.guner@deu.edu.tr*

#### **Participation:**

About 80 delegates from the UK and from all over Europe participated. The proportion of participants coming from FEBS Constituent Societies was about 1/3rd. The 2/3rds came from the UK. This distribution was similar, as for the Cambridge WS run in 2012.

**Bursaries:** Three bursaries were granted by FEBS Education Committee to young educators from outside of the UK.

#### **The Guidelines for FEBS Education WS Bursaries were as follows:**

*Three awards are available to young scientists to enable participation in this workshop in Cambridge. These grants cover the registration fee, accommodation and meals for the selected young scientists, and may also support their travel costs up to a maximum of Euro 400.*

*The candidates*

*will be selected on merit, subject to the eligibility criteria set by FEBS (see below). The applicants should send their completed applications (see below) together with documented proof of their eligibility and a recommendation letter from the current or previous supervisor (if applicable) to the Chair of FEBS Education Committee by **5 January 2015** ([gul.guner@deu.edu.tr](mailto:gul.guner@deu.edu.tr)).*

*The selected candidates will receive a FEBS Treasury award form, to be returned to the FEBS Treasury for approval at least 8 weeks before the event's start date.*

#### **Eligibility criteria**

- *The applicant should be registered as a post-doctoral scientist, assistant professor or similar, or as a PhD student, at an institute of higher learning in a country where there is a FEBS Constituent Society;*
- *The applicant must be a member of a FEBS Constituent Society (for FEBS Constituent Societies, see the [Our Members](#) section of the website);*
- *The applicant cannot be a resident of the country hosting the event;*

- *The applicant must have at least two years and at most ten years of education experience;*
- *Only travel within the FEBS area from the applicant's current country of residence to the country hosting the FEBS event is supported;*
- *Preference will be given to eligible applicants who have not received support from FEBS to attend a FEBS Advanced Course or to participate in the FEBS–EMBO 2014 Conference (via a bursary) or YSF (Young Scientists' Forum) in 2014.*

#### **Information to include in application**

- *Current or previous supervisor's (head of department's) letter (if applicable) or equivalent, giving information on the educational experience of the candidate;*
- *Maximum of one side of A4 giving reasons for application for bursary including details about education experience;*
- *A poster abstract on education (to be communicated at the Workshop);*
- *Proof of membership of a FEBS Constituent Society;*
- *Proof of country of residence;*
- *Details of previous grants received from FEBS*

### **Report from Frank Michelangeli, (FEBS News 2015 April Issue)**

#### **Cambridge 2015**

After the great success of the first education workshop jointly organized by FEBS and the UK Biochemical Society at the end of 2012, it was decided that similar education workshops should be organized on a regular basis. The second joint event, entitled 'Enhancing Molecular Bioscience Education', was held from 30th to 31st March 2015 at Gonville and Caius College, Cambridge, and attracted about 80 participants from all over Europe.

The main theme of this workshop was improving molecular bioscience education through alternative forms of learning and delivery of knowledge and skills. The workshop was spread over two days and split into four themed sessions: 'Supervision, mentoring and personal development'; 'Alternative methods of learning'; 'Alternative modes of delivery'; and 'Integrated bioscience teaching across backgrounds and abilities'. A wide range of topics was covered within these sessions, and some highlights are illustrated below to give a flavour of the event. Harriet Jones discussed the problems associated with the transition from school to university, and clearly demonstrated the limited preparation of high-school students in the key skills that would prepare them for university education. At the other end of the spectrum Dilly Fung described the importance of continuing professional development amongst academics in order to evolve and improve our teaching skills. Jan Glatz and Gül Güner Akdogan informed us of the usefulness of problem-based learning approaches in teaching bioscience and medicine, while Helen Watson and Heather McQueen highlighted how team work and peer assessment could be used to improve student performance. Jon Green, described his research into the use of 'lecture flipping' and Peter Klappa gave us a highly informative and amusing presentation about creating and using video clips for teaching. Peter has also kindly recorded this presentation and posted it on YouTube ([https://youtu.be/9qSELJ7\\_Pao](https://youtu.be/9qSELJ7_Pao)). Alison Cooper gave her personal perspective of developing a successful MOOC (massive open online course), and several alternatives to final-year projects were described by both Mark Coldwell and David Lewis. In the final session, Dawn Hawkins described ways of teaching maths to bioscience students in a more engaging way, while Frank Michelangeli and Nick Freestone described some strategies for teaching students from different scientific disciplines and different abilities.

The other major feature of this workshop was the opportunity to participate in small-group interactive and discussion sessions. We were lucky enough to have 30 iPads available so that participants could have hands-on experience of using a range of free educational apps, from virtual white-board recorders to presentation and audience participation apps as alternatives to clickers. Topics covered by the discussion groups also included mentoring, practical skills, problem-based learning and employability skills.

A highlight of the workshop was the formal dinner held in the Great Hall of the college, and several participants could not help but say they felt they were in Hogwarts given the long banqueting tables and candelabras! There was a definite feel-good factor by the end of the workshop, with many already making plans to come again for our next one. So let us hope that we can obtain backing to run another education workshop in Cambridge in 2017.

*Frank Michelangeli*

*FEBS Education Committee*

Workshop Organizing Committee: F. Michelangeli, G. Güner Akdogan, H. Watson, S. Minchin, M. Roberts & G. May

Further details of the event are available from the FEBS Education Platform (<http://FEBS-edu.eu>)

## **6. FEBS Education Activities (planned)**

### **6.1. Education Activities planned for 2015**

- **Sarajevo Workshop, 3-4 September 2015**

This workshop was decided during the WGI visit to Sarajevo in 2014. It will be hosted by Dr. Jadric Radivoj, Head of the Department of Medical Biochemistry, School of Medicine, Sarajevo University, who is inaugurating the Bosnian and Herzegovinian Society for Biochemistry and Molecular Biology.

The main themes will be:

- Postgraduate education
- Curriculum planning
- Designing laboratory practicals
- Biochemistry education for the needs of industry
- Research experience in undergraduate education

- **“IUBMB-FEBS Workshop on Education in Molecular Life Sciences”**

**Hosted by the Norwegian Society of Biochemistry and Molecular Biology**

**Oslo, Sept 18-19<sup>th</sup>, 2015**

IUBMB-FEBS Workshop on Molecular Life Sciences Education will take place in Oslo, on September 18-19<sup>th</sup>, hosted by Winnie Eskild, the President of the NSBMB. This workshop is co-sponsored by FEBS and IUBMB. The application for co-sponsorship from IUBMB has been made by Winnie Eskild and Gül Güner (Please see annex) and it has been successfully approved.

**Coordinator:** Prof. Winnie Eskild, University of Oslo

**Web-site of the Workshop :**

<http://www.febs.org/news/iubmbfebs-oslo-workshop-on-molecular-life-sciences-education>

## Programme

### Friday Sept 18th

12:15-12:30: Welcome

#### **"New Trends in Teaching and Learning"**

12:30-13:10 "Student-Centred Learning"

13:10-13:50 "The Bologna System- Integrated curriculum vs intensive course blocks"

13:50-14:20 "The ECTS system, how to calculate credits".

14:20-14:40 "What key knowledge and skills are required from a Molecular Life Scientist?"

14:40-15:00 Coffee and Break into groups

15:00-15:50 **Small group discussions (1)**

(Key Knowledge, Laboratory Skills, Generic Skills, Ethics)

15:50- 16:20 Presentation of small groups

16:20-16:40 "Integration of research in undergraduate education"

16:40-17:20 "Student feedback and evaluation"

17:20-18:20 **Small group discussions (2)** (Integrated curriculum-Integration of Research-Student Feedback and Evaluation-How to Calculate ECTS credits)

### Saturday Sept 19th

#### **"New methods and technologies available in molecular life science education"**

09:30-10:10 "Peer instruction" (clickers/discussion)

10:10-10:50 "Flipped lectures" (using podcasts and more)

10:50-11:20 Coffee break

11:20-12:00 "Project based learning" (student driven) + practicals

12:00-12:40 "MOOCs"

12:40-13:30 Lunch

13:30-14:30 **Small group discussions (3)** (one group on each of the four topics:peer instruction, flipped lectures, project based learning, MOOCs)

16:00-16:40 "Center of Excellence in Biology Education" Vigdis Aas, University of Bergen: "Strategies and experience"

16:40-17:20 "Designing laboratory practicals"

1) Wet lab

2) Dry lab (w/hands-on)

3) In silico lab (w/hands-on)

17:20-18:20 Small group discussions on Laboratory Practicals (each group 20 minutes)

18:20-18:30 Feedback and Close

- **Athens Workshop in Memory of Costas Drinas, 8-9th October 2015**

A Workshop on Molecular Life Sciences Education in Memory of Costas Drinas (member of FEBS Education Committee, who sadly passed away in July 2011) will be held in Athens in October 2015, hosted by Dimitris Kletsas, President of the HSBMB.

## 6.2. Education Events planned for 2016

- **Meeting “Ambassadors to FEBS Education” from FEBS Constituent Societies, 7-8 April 2016, Prague**

FEBS Education Committee is asking all Constituent Societies to assign an ambassador for FEBS Education Committee. The ambassador can 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.

An Ambassador Meeting will be arranged in Prague, April hosted by Prof. Tomas Zima, Rector of Charles University and member of FEBS education Committee. This Meeting will take place 7-8 April 2016, in Karolinum.

The main aim of this meeting is to promote molecular life sciences education in Europe through the networking and collaborations of the FEBS Constituent Societies. The (tentative) main themes to be discussed are:

- Skills and Key Knowledge expected from a molecular life sciences graduate
- Problems encountered in undergraduate and graduate molecular life sciences education
- Possible solutions to these problems

- **FEBS Education Workshop in Riga, Latvia**

This Workshop was conceived during the WGI visit to Latvia in 2014, with the President of the Latvian Society for Biochemistry and Molecular Biology, Prof. Renate Ranka (Head of the Laboratory of Molecular Microbiology, Latvian Biomedical Research and Study Centre). The exact date and programme will be agreed.

- **Education Workshop during FEBS Kusadasi (Ephesus) Congress, 3-8 September 2016**

The educational activities during the Kusadasi Congress will firstly encompass a Workshop on “New Paradigms and Methods on Molecular Life Sciences Education”. Secondly a Workshop on “How to Write and Publish a Scientific Article” will be organised, in collaboration with Prof. Lazslo Fesus, President of FEBS Publications Committee. In addition, a poster session on education in molecular life sciences will also be held.

## 7. Web-Site of the Education Committee

(Reported by Angel Herráez, Member of FEBS Education Committee)

### **Introduction**

*FEBS Education Committee has been running an "Education Platform" –kindly managed by Peter Ott– which was useful for posting support documents (talk handouts, reading material, complimentary*



access to selected books by Wiley) related to the workshops and events of the EdCom. Access was typically restricted to registered participants of each event. This has proved an important and much appreciated feature of the workshops.

Due to Peter's retirement as well as technical issues with the server, the Platform stopped to be functional and can no longer be maintained in 2015. Therefore, a new solution had to be found, as agreed during the Paris EX-COM Meeting.

The main FEBS website can hold a limited information about the education activities, given the need to stay simple enough and to give a balanced coverage for the different sections. That is reasonable, but does not cover all which the Education Committee may offer to the community. Hence, we decided, during the Paris Meeting (2014) of the Education Committee, to set up a separate website for the Education Platform that, among other things, will serve as a "working area" for the educational activities. We discussed this idea with Carolyn Elliss and agreed on some major issues.

### **Description of the New Platform**

The guiding idea is 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 can start working on it if we have a flexible enough platform that may be updated quickly with any kind of material.

Planned contents of the new Platform:

- A full description of FEBS Education past, current and future activities (workshops, sessions within the FEBS Congresses, etc.) This is already in place.
- Documents and resources for participants in each event (as was done in the former Platform). The access could be free or restricted, depending on the situation. Next event where this will be started is Cambridge in March.
- A collection of Biochemistry Education resources for the general public (this is a project that will need to be developed later but can 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 cost of domain registration is 8.41 €/year, hosting service is 30.25 €/year, total 38.66 €/year (current prices, VAT included; the first year is already being run at a discount rate of 17.48 EUR total). The cost will be easily covered from FEBS ED-COM budget.

That gives us 1 GB space and 12 GB traffic/month, which should be ample for our needs. If the site proved to be a success with high user demand, the hosting plan may be expanded.

There is no maintenance cost for the website as currently Angel Herráez is volunteering to make and keep the contents. This management may be easily transferred to another person in the future.

The visual style and design has been agreed with Carolyn Ellis so it goes along with the main FEBS website. Links are already in place between both sites.

*We believe this is the best solution for our needs –and the cheapest too. It will allow to upload updates and documents in minutes, even while we are running a workshop or event, without resorting to service by third parties and the subsequent delays.*

**(The new FEBS Education platform has been running successfully since January 2015).**

## **8.Collaborations:**

Ongoing collaborations have been strengthened during the last year, both with FEBS Constituent Societies and also, with FEBS Committees and Working groups.

### **8.1. Collaboration between WGI and Education Committee**

The ongoing collaboration was continued effectively during this period, as well. The Chair of FEBS Education Committee participated on some of the WGI visits (Bosnia and Herzegovina and Latvia), whereas the Chair of the WGI participated at the Education Workshop in Belgrade.

### **8.2. Collaboration between FEBS Advanced Courses and Education Committees**

During the late meeting of the Education Committee, the Advanced Course and Education Committees have agreed to provide state-of-the-art educational content for Advanced Courses if needed. The offer of the Education Committee could also include the „transferable skills” for young scientists. A pilot study is planned with one selected course. Experience will be evaluated and then the scheme is planned to be enlarged.

### **8.3. Collaboration between FEBS Education Committee and the Hellenic Society for Biochemistry and Molecular Biology**

The President of the Hellenic Society of Biochemistry and Molecular Biology (Prof. Dimitris Kletsas) would like to host a FEBS Education Workshop in Athens, in Memory of Costas Drinas, who was a beloved member of FEBS Education Committee and whom we sadly lost in 2011. The Workshop has been designed and more detailed information is given under Section

### **8.4. Collaboration with the FEBS Congress Counselor and the Science and Society Chair**

It was agreed to have more specific information in the New Guidelines for Organising FEBS Congresses and a proposal was prepared and approved (through electronic communication) by the Education Committee and agreed with the Chair of Science and Society Committee. This proposal was discussed with Miguel de la Rosa (and Israel Pecht), who, with minor modifications, kindly considered it for implementation in these Guidelines.

The final proposed text is the following:



## **ORGANISATION OF EDUCATION /SCIENCE AND SOCIETY ACTIVITIES DURING FEBS CONGRESSES**

*FEBS Education Committee and FEBS Science and Society Committee organise (and finance) specific activities during FEBS Congresses, upon consultation with the Organising Society for suggestion(s) of topics. The web-site of the Congress should have a specific “box” named “Education” and a specific box named “Science and Society” and the respective specific activities should be assembled together. In addition, the congress programme should also include these activities. The invitations to the speakers/chairs/moderators/tutors will be sent from the Organising Secretariat, under the condition that the content of the letters will be checked with the Education Committee/Science and Society Committee Chair in order not to miss some specific points. The organisers will waive the registration fee for these invited contributors and take care of the finances at the same rate as for the other invited speakers and the contributors will later be reimbursed from FEBS Treasury, from the respective committee’s budget (registration fee, accommodation and travel expenses, at the same rate as the invited speakers). The Committee Chairs should inform FEBS Treasury about the reimbursement scheme and the invoices should be sent to FEBS Treasury by the Organisers, no later than six weeks after the Congress.*

### **The Educational Activities organised are the following:**

#### **1. A Plenary Lecture on Education**

*This activity will take place only if the invited speaker is a name with great impact on education on molecular life sciences and the topic will be outstanding. The abstract of the plenary talk will be included in the Congress (electronic) Abstract Book. The expenses will be taken care of, as described above.*

#### **2. Workshop(s) on Education**

*FEBS Education Committee will organise and finance one Workshop on Education. A second Workshop may also be organised, if it is co-financed by the organisers. The theme of the Workshop(s) will be selected upon consultation with the Organisers. The duration of the education workshops is typically two hours, allowing time for panel discussions. The abstracts of the talks will be compiled in the Congress (electronic) abstract book. The organisers will allocate time and logistics for these workshops. These activities should not finish later than 18:00. The expenses will be taken care of, as described above.*

#### **3. Poster Session on “Education, Training, and Career Planning in Molecular Life Sciences”**

*In order to receive the poster abstracts electronically, the organisers will include this theme among the list of “Topics of the Poster Session”-announced on the abstract submission section of the Congress web-site. In addition, all educational posters should be assembled together in one single time and place, before the Workshop on Education. The Organisers will provide specific space and time for these posters, before the Workshop on Education.*

#### **4. “Poster on Education” Award**

*FEBS Education Committee will coordinate a jury who will select the best poster on education. The awardees will be announced during the Workshop on Education taking place during the Congress. The organisers of the following FEBS Congress will waive the registration fee for one of the authors of the best poster award. Reimbursement of this registration fee will be made from FEBS Treasury from the Education Committee budget.*

### **8.5. Collaboration Between the FEBS Education Committee and the IUBMB – Application for a Joint Funding (From Paris EC meeting)**

During the Paris EC Meeting which was attended by Prof. G. Petsko, the President of IUBMB, it was agreed that collaboration between FEBS Education Committee and IUBMB would be re-initiated and supported.

Winnie Eskild and Gül Güner met together with the President Prof. Petsko and agreed on a joint Workshop to take place in Oslo in 2015, to be proposed to IUBMB for a joint funding

The programme of the Workshop is excellent: composed of two main themes:

“New Trends in teaching” and “New methods and technologies available in molecular life science education”, with participation from experts in the field, and the FEBS Education Committee members: Frank Michelangeli, Angel Herraez, and Gül Güner.

The budget requested from IUBMB is 7,840 Euros and the same will be covered from FEBS Education Committee budget.

In addition, the Faculty of Mathematics and Natural Sciences of Oslo University is supporting the local expenses.

More information on this workshop is given under Section 6.1.

## **9. 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 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.

The evaluation of what the Committee has accomplished so far is 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 are aimed. On top of continuing these activities, the Committee has started thinking on “European Strategies for High Quality Undergraduate and Post-Graduate Education”. Further enhancement of the synergy of cooperation within the Committee, among all Constituent Societies of FEBS, and other international organisations will be 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 is considered. It is thought that such a Project on 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. 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 elections at the Berlin FEBS Council in 2015 will make –up for those members who have very efficiently served for the Committee.

The “Ambassadors on Education” Meeting to take place in Prague in 2016 will also provide a platform for further thought.

## **10. Acknowledgement**

The Chair of FEBS Education Committee is thankful to all FEBS Education Committee members, particularly those who are rotating out (Tomas Zima and Angel Herraiez), who have made outstanding contributions to the Committee. The contribution of Wolfgang Nellen (who stepped out due to his retirement), to the area dealing with the dissemination of science, is also acknowledged.

She wishes to thank deeply Peter Ott, who has volunteered to structure a FEBS Education platform, and who ran it successfully for long years.

She greatly acknowledges the strong, effective, and continued support of the General Secretary, the Honorary Treasurer, all FEBS EX-COM members and the assistants.

In addition, she wishes to thank FEBS Constituent Societies for their valuable and motivating support, which has made a great impact on the Committee’s activities over the years and she hopes that their support will continue.

## **Annex: (Successful) Application to IUBMB for Oslo Workshop support**

### **IUBMB Committee on Education**

#### **Application Form for IUBMB Educational Events**

**All applications for funding must be made using the form below.** The completed application should

be submitted electronically to:

**Prof. Paulo S. L. Beirão**

Dept. of Biochemistry and Immunology - ICB

Universidade Federal de Minas Gerais

Av. Antonio Carlos 6627

31270-250 Belo Horizonte, MG - Brazil

Phone/Fax: +55 31 3409 2663

e-mail: [pslb@ufmg.br](mailto:pslb@ufmg.br)

**Submission deadlines (for funding in 2015): First round: October 31, 2014**

**Second round: April 1, 2015**

#### **Name and position of applicants**

1) Gul GUNER-AKDOGAN (Prof. Dr.) (Chair, FEBS Education Committee)

2) Winnie Eskild, prof. (Deputy Treasurer of FEBS)

**Institutional addresses** 1) Dokuz Eylul University-Graduate School of Health Sciences, Department of Biochemistry, School of Medicine, Inciralti/ IZMIR- TURKEY

2) Department of Biosciences, University of Oslo, Norway

**Zipcode** 1) 35340 2) 0316

**Telephone: (include country and area code)**

1) + 90 232 412 44 03 mobile: + 90 533 749 17 96

2) + 47 22856170 mobile: +47 97696883

**Fax: (include country and area code)**

1) + 90 232 277 65 84

2) + 47 22 85 47 26

**Email:** 1) [gul.guner@deu.edu.tr](mailto:gul.guner@deu.edu.tr)

2) [winnie.eskild@ibv.uio.no](mailto:winnie.eskild@ibv.uio.no)

**Name of person responsible for receipt and expenditure of funds  
(if different from Applicant)**

FEBS Treasurer (Sir Alan Fersht)

(His Secretary: Barbara Baron)

**Institutional address**

University of Cambridge

**Zipcode** CB2 1EW

**Telephone: (include country and area code)**

+44 01223 336300

**Fax: (include country and area code)**

+44 01223 336362

**Email:** [arf25@cam.ac.uk](mailto:arf25@cam.ac.uk)

**Detailed description of activity** (if necessary continue on separate page)

Higher education institutions constantly need to renew and adapt their approaches to education in order to achieve the best possible outcome with regard to student learning. The aim is that students after graduation, will be able to meet the demands of a work-life in continuous development successfully. To meet these requirements, FEBS in collaboration with The Norwegian Biochemical Society, has planned an Education Workshop with focus on practical skills to be held in Oslo next fall. The programme, as presented below, is structured including stimulating topics on education; to be treated by experts in their fields, as well as giving opportunity to students to express their views; and allocating sufficient time for interactive sessions. The "Small group discussion" are components which are designated for allowing ample interaction between the participants. In addition, sufficient time is accorded for coffee breaks, buffet dinner on the first day, and lunch on the second day in order to facilitate communication and networking between the participants.

**"IUBMB-FEBS Workshop on Education in Molecular Life Sciences"**

**Hosted by the Norwegian Society of Biochemistry**

**Oslo, Sept 18-19, 2015**

**Friday Sept 18th**

12:15-12:30: Welcome

**"New Trends in Teaching and Learning"**

12:30-13:10 "How do people learn" Robin Wright, University of Minnesota, USA

13:10-13:50 "Think-pair-share" and "peer instruction" Michael Caspersen, University of Aarhus, DK

13:50-14:30 "Story of a paper" Jane Saffell, Faculty of Medicine, Imperial College, London, UK

14:30-15:10 "What key knowledge and skills are required from a Molecular Life Scientist?"  
Francesco

Michelangeli, University of Birmingham, UK

15.10-15.20 Introduction to the Small Group Discussions  
15:20-15:40 "Coffee and Break into groups  
15:40-16:40 **Small group discussions (1)**(Education approaches, student involvement, integration of research, Key Knowledge, Generic Skills)  
16:40-17:20 Presentation of small group discussions and panel discussion.  
17:20-17:40 "Student wishes for efficient education" A representative from the student council of IBV/BIO  
and Estafania Mucino Costillo, The German Society of Biochemistry.  
17:40-18:20 "The Bologna Process and the ECTS system, how to calculate credits". Trine Meza, NOKUT, Oslo, NO  
Buffet dinner

### **Saturday Sept 19th**

#### **"New methods and technologies available in molecular life science education"**

09:00-09:40 "Flipped lectures" and "recorded lectures" Jeremy Pritchard, University of Birmingham, UK  
09:40-10:00 "Problem-based-learning-Philosophy and Manchester Model" Keith Elliott  
10:00-10:20 "Applicaition of PBL- Izmir Model" Gül Güner, Dokuz Eylul University, Turkey  
10:20-11:00 "Different methods of giving students feedback, Julian Park, University of Reading, UK  
11:00-11:20 Coffee and break into groups  
11:20-12:00 **Small group discussions (2)** (one group on each of the four topics: Flipped lectures, recorded lectures, problem-based learning, student feed-back)  
12:00-12:30 Presentation of small group discussions and panel discussion.  
12:30-13:20 Lunch  
13:20-13:50 "Centre of Excellence in Biology Education" Vigdis Vandvik, University of Bergen, Norway  
13:50-14:50 "Designing laboratory practicals"  
1). eBioLabs (w/hands-on) Gus Cameron, University of Bristol, UK  
2) Labster Virtual Laboratories (w/hands-on) Tamara Tjitrowirjo, Labster, Copenhagen, DK  
14:50-15:50 **Coffee and small group discussions (3)** (Virtual laboratory excersises)  
15:50-16:20 Presentation of small group discussions and panel discussion.  
16:20-17:00 Feedback and close.

**Invited contributors, with addresses** (if necessary continue on separate page)

Co-chairs of the workshop:

**Prof. Gül Güner-Akdogan, Dokuz Eylul University, Izmir, Turkey.**

Department of Biochemistry, School of Medicine, Dokuz Eylül University, Izmir, Turkey  
gul.guner@deu.edu.tr

Gül Güner-Akdogan is holder of BS and MSc in Biochemistry from Geneva University, Switzerland. After completing her PhD degree in Istanbul University in 1980, she had a post-doctoral period engaged in research and in biochemistry education. She was appointed to Assoc Prof degree in Izmir, Dokuz Eylül University School of Medicine, Department of Biochemistry in 1987 and to professorship in the same institution in 1992. Her first introduction to the Science of Biochemical Education was in 1988, during an IUBMB Workshop in Ankara, conducted by Frank Vella, Alan Mehler, and Ed Wood. In 1994, she translated the book entitled "Biochemistry in Medical Sciences: An Integrated-Case-Based-Approach" (SJ HIGGINS, AJ TURNER, EJ WOOD) into Turkish.

**Role in Medical School:** She has had an active role in the practice and in management of education in her medical school. In 1996, she was awarded an ECFMG (USA) fellowship (Educational Commission for Foreign Medical Graduates) and was invited as a visiting professor to the Department of Biochemistry, Health Sciences Center, School of Medicine, West Virginia University, USA. She was first introduced to and had the opportunity of practicing Problem-Based Learning system to medical students. On her return to Izmir in 1997, she was incorporated into the PBL Committee of Dokuz Eylül Medical School, the first medical school in Turkey to apply PBL. Gül was reinvented to the USA medical school for a short-term “revisit” in 2001. She also served as the Vice- President of the School of Medical Biology between 1988-94. In 1999, the infrastructure Project which she coordinated: “Learning Resources Centre” was supported by the Governmental Planning Body at Ankara, and gave the Medical School the opportunity to modernise its infrastructure for PBL.

The R-LAB (Research Laboratory) designed in 1999 for providing laboratory facilities for the Special Study Modules of the PBL students has been working efficiently since then and a recent paper has been published in BAMBED (January 2011) reviewing this activity. Since 2002, Gül has been directing the Central Research Laboratory of Dokuz Eylül Medical School.

**Role in Post-Graduate Education:** Gül Güner Akdoğan has been actively working in promoting the postgraduate education in health sciences and from 2000 to 2010, she was the Director of the Graduate School of Health Sciences responsible for the coordination and management of MSc and PhD degrees. Linked to this role, Gül is serving as the coordinator of Dokuz Eylül University on the Doctoral Council of EUA (EUA-CDE). She hosted the EUA-CDE Workshop on PhD training in Dokuz Eylül University in January 2014. She is on the Executive Committee of ORPHEUS (Organisation for PhD education for biomedicine and health sciences in the European System) and organised the 6<sup>th</sup> ORPHEUS Conference in Izmir in April, 2011. Gül has been elected as the General Secretary of Orpheus during the Orpheus Conference in Lausanne, in March 2014.

**Research Activity:** Gül Güner Akdoğan’s research activity is focused on the extracellular matrix in health and disease and its communication with cells including fibroblasts, and lately, endothelial cells. She has over 75 publications on her research, cited in SCI, extended SCI, Index Medicus, etc. Gül was invited by FEBS (Federation of European Biochemical Societies) to join the FEBS Working Group on Teaching Biochemistry as a founding member in 2001. Since then, she has worked in this group and from 2008, on the FEBS Education Committee founded by late Prof. Edward Wood (Leeds). Gül organised, coordinated, or served as a trainer in over forty workshops, symposia, and meetings mostly including FEBS, IUBMB, etc. She is on the Editorial Board of BAMBED (Biochemistry and Molecular Biology Education Journal) and on the Editorial Board of “Bioscience Education”. Since 2009, Gül Güner Akdoğan has been serving as Chair of FEBS Education Committee and was reelected for a second term during FEBS Council in 2012. She is also the General Secretary of ORPHEUS since March 2014 (<http://www.orpheus-med.org/index.php/about-us/orpheus-exec-committee-2>)

**Publications on Education:**

1. Güner-Akdoğan, G, Musal, B, Tuncal, P. PROBLEM-Based Learning in a Turkish Medical School: 15 years of experience In, Molecular Life Sciences Education (Eds Michelangeli, F., Güner-Akdoğan, G. & Castanho, M.) In press.
2. Güner-Akdoğan, G. Postgraduate Education Workshops as a Model of Education and Discussion Platforms. In: The Researching, Teaching, and Learning Triangle (Miguel A.R.B.

Castanho & Gül Güner- Akdogan, Eds.), Springer, New York, Dordrecht , Heidelberg, London, 2012, pp.35-54.

3. Güner-Akdogan, G, Cavdar, Z, Yener, N, Küme,T, Yüksel-Egrilmez, M, Resmi H. Special-study modules in a problem-based learning medical curriculum: An innovative laboratory research practice supporting introduction to research methodology in the undergraduate curriculum. *Biochemistry and Molecular Biology Education* 2011; 39(1):47–55.

4. Çavdar, Z, Oktay, G, Egrilmez, MY, Genc, S, Genc, K, Altun, Z, İlekel, H, Güner, G. In vitro reoxygenation following hypoxia increases MMP-2 and TIMP-2 secretion by human umbilical vein endothelial cells. *Acta Biochim Pol* 2010;57(1):69-73.

5. Kossekova, G & Güner-Akdogan, G. Creation of web-based clinical case simulations and PBL tutorials in medical biochemistry: Turkish-Bulgarian collaboration. *Procedia Social and Behavioral Sciences* 2010;2 1597–1604.

6. Güner,G. “A Model of a Biochemistry Dry Practical in a Problem-Based Medical Curriculum”- “Educational Session on Biochemistry Practicals”, 2-7 July 2005, FEBS Meeting, Budapest (Abstract Book).

7. Harris, CL, Güner, G, Arbogast, CL, Salati, L, Shumway, JM, Conners, J, Beattie, D.: Integrated problembased learning for first-year students- Does it teach biochemical principles? *Biochem Educ* 1997; 25(3):146- 150.

8. Güner, G, Sakizli, M, Erdamar, D, Onvural, B, Ceryan, K.: Preclinical medical training using the integrated system in Dokuz Eylul University Medical School. *Biochemical Education* 1995; 23(19): 21 – 24.

**Dr. Winnie Eskild, Department of Biosciences, University of Oslo, Norway.**

**Winnie Eskild** is professor at the Department of Biosciences and has taught biochemistry at bachelor and master levels for 19 years. She has continuously sought to improve the methods of teaching to enhance student learning and understanding. During the same years she has had an active research group with responsibility for the education of numerous master and PhD students. She was chair of the MBK-Bachelor Program Board, University of Oslo from 2003 till 2007.

1. Kong XY1, Nasset CK, Damme M, Løberg EM, Lübke T, Mæhlen J, Andersson KB, Lorenzo PI, Roos N, Thoresen GH, Rustan AC, Kase ET, Eskild W. 2014 Loss of lysosomal membrane protein NCU-G1 in mice results in spontaneous liver fibrosis with accumulation of lipofuscin and iron in Kupffer cells. *Disease Models and Mechanisms*, 7, 351-362.

2. Steffensen, KR, Bouzga, M, Skjeldal, F, Kasi, C, Karahasan, A, Matre, V, Bakke, O, Guérin, S, Eskild, W 2007 Human NCU-G1 can function as a transcription factor and as a nuclear receptor co-activator. *BMC Mol Biol* 8, 106-122.

3. Sporstøl, M, Mousavi, SA, Eskild, W, Roos, N, Berg, T 2007 ABCA1, ABCG1 and SR-BI: hormonal regulation in primary hepatocytes and human cell lines. *BMB Mol Biol* 8, 5-14.

4. Malerød, L, Sporstøl, M Jyvet, L, Mousavi, SA, Gjøen, T, Berg, T, Roos, N, Eskild, W 2005 Bile acids reduce SR-BI expression in hepatocytes by a pathway involving FXR/RXR, SHP and LXR-1. *Biochem Biophys Res Commun*, 336, 1096-1105.

Plenary speakers of the workshop:

**Dr. Robin Wright, College of Biological Sciences, University of Minnesota, USA.**

**Professor and Associate Dean Robin Wright** has led the development of the Student Learning Outcomes, which are now the approved standards by which undergraduate education at the University of Minnesota is measured. This has been based developing the effectiveness of



team-based collaborative learning for more than 10 years. She is also very interested in how active learning classrooms support student learning and development of professional identities. Through her work with the Nature of Life program, she has begun to explore when and how students develop identities as biologists and how that identity impacts retention and graduation. Finally, through her work with the National Academies Alliance for Scientific Teaching and the new CourseSource journal, she is interested in faculty development and dissemination/adoption of specific teaching strategies.

Recent references:

1. Wright, R. 2014. It's not about you: A Simple Proposition for Improving Undergraduate Biology Education. *Genetics (in press)*.
2. Wright, R. 2014. The Science Behind Parthenogenesis: Interesting things happen when meiosis goes "wrong". *CourseSource (in press)*.
3. Wright, R., A. Conover, and R. Schnell. 2014. The Magic of Doctopus: A quick and easy way to deliver pre-named, pre-shared Google documents directly to your students' Google drive. *Course Source (in press)*.
4. Pfund, C., S. Miller, K. Brenner, P. Bruns, A. Chang, D. Ebert-May, A. Fagen, J. Gentile, S. Gossens, I. Khan, J. Labov, C. M. Pribbenow, M. Susman, L. Tong, R. Wright, W. Wood, R. Yuan, J. Handelsman. 2009. Summer Institute to Improve Undergraduate Science Teaching. *Science* 324:470-471.
5. Wright, R., S. Cotner, and A. Winkel. 2009. Minimal impact of organic chemistry prerequisite on student performance in Introductory Biochemistry. *Life Sci Educ.* 8:44-54.
6. Wright, R. (2005) Points of View: Content versus Process: Is This a Fair Choice? Undergraduate Biology Courses for Nonscientists: Toward a Lived Curriculum; *Cell Biology Education* 4:189 -196.
7. Wright, R. and J. Boggs. 2002. Learning Cell Biology as a Team: A Project-based Approach to Upper-division Cell Biology. *Cell Biology Education* 1: 145-153.

**Dr. Michael Caspersen, Centre for Science Education, University of Aarhus, Denmark.**

**Associate professor Caspersen** is the director of the Centre for Science Education, which works to stimulate development oriented learning environments within technical and science related fields. Hence, its core activities are to initiate and participate in research and development activities that can motivate and qualify science teachers for developing their teaching and implementing new methods in their teaching. His work is based on a foundation of theory and evidence focusing on identifying, understanding and accommodating needs for educational development at the university, in upper secondary school and in other relevant parts of the educational sector.

Selected references:

1. Vicens, Q. and Caspersen, M.E. 2013 "Getting more scientists to revamp teaching" *Journal of College Science Teaching*
2. Jens Bennedsen, Michael E. Caspersen, and Michael Kölling (Eds.) 2008 *Reflections on the Teaching of Programming: Methods and Implementations* Lecture Notes in Computer Science, Volume 4821 Springer-Verlag

**Dr. Jane Saffell, Faculty of Medicine, Imperial College, London, UK.**

**Professor Saffell** is a Senior Lecturer in the Department of Medicine and has been appointed Faculty of Medicine Academic Lead for Postgraduate Taught Courses. Dr Saffell is responsible for implementing the revision of the Faculty's Postgraduate Taught Courses programme and ensuring good communication channels between Departments, Faculty and the Graduate

School. Dr. Saffell's considerable experience from her time in the Faculty of Natural Sciences and, more recently, in the Faculty of Medicine, has been central to enhancing the quality of the student experience.

**Recent publications:**

1. Neural cell adhesion molecule stimulates survival of premyelinating oligodendrocytes via the fibroblast growth factor receptor, 2009, Anne L. Palser, Adele L. Norman, Jane L. Saffell, Richard Reynolds, *Journal of Neuroscience Research*, 87, pp.3356-3368.
2. Morphoregulation by acetylcholinesterase in fibroblasts and astrocytes, 2008, Alexandra A. Anderson, Dmitry S. Ushakov, Michael A. Ferenczi, Ryoichi Mori, Paul Martin, Jane L. Saffell, *Journal of Cellular Physiology*. 215, pp. 82-100
3. Ligand concentration is a driver of divergent signaling and pleiotropic cellular responses to FGF, 2006, Mitla Garcia-Maya, Alexandra A. Anderson, Claire E. Kendal, Anna V. Kenny, Laura C. Edwards-Ingram, Andrew Holladay, Jane L. Saffell, *Journal of Cellular Physiology* 2, pp. 386-393
4. Elevated levels of neural recognition molecule L1 in the cerebrospinal fluid of patients with Alzheimer disease and other dementia syndromes, 2006, Helen Strekalova, Carsten Buhmann, Ralf Kleene, Christian Eggers, Jane Saffell, John Hemperly, Cornelius Weiller, Tomas Müller-Thomsen, Melitta Schachner, *Neurobiology of Aging* 1, pp. 1-9

**Dr. Francesco Michelangeli, School of Biosciences, University of Birmingham, UK.**

**Professor Michelangeli** Senior Lecturer. He is the current head of Biochemistry degree programmes and teaches many aspects of biochemistry / biomedical sciences to undergraduates studying for degrees in Biochemistry, Biological Sciences, Medicine, Dentistry, Nursing studies and Biomaterial sciences.

More recently he has developed a compulsory final year biochemistry module, which trains the students in key analytical and problem solving skills, as well as giving all students an experience of 'real' research in a practical class setting prior to undertaking their research project.

**Recent publications:**

1. P. Lai & F. Michelangeli 2012 Bis(2-hydroxy-3-tert-butyl-5-methyl-phenyl)-methane (bis-phenol) is a potent and selective inhibitor of the secretory pathway  $\text{Ca}^{2+}$  ATPase (SPCA1) *Biochem. Biophys. Res. Comm.* 424, 616-619.
2. S. Costello, W. Alasari, J. Correia, S.K. Oxenham, L. Fernandes, J. Kirkman-Brown, F. Michelangeli, C. Barratt & S. Publicover 2013  $\text{Ca}^{2+}$  signalling through CatSper and  $\text{Ca}^{2+}$  stores generates functional diversity in human sperm behavior. *J. Biol Chem.* 288, 6248-6258.
3. VKW Wong, T Li, BYK Law, EDL Ma, NC Yip, F Michelangeli, CKM Law, MM Zhang, KYC Lam, PL Chan, & L Liu 2013 Saikosaponin-d, a novel SERCA inhibitor induces autophagic cell death in apoptosis-defective cells. *Cell Death & Disease* 4, e720 .
4. F. Al-Mousa & F. Michelangeli 2014 The sarcoplasmic-endoplasmic reticulum  $\text{Ca}^{2+}$ -ATPase (SERCA) is the likely molecular target for the acute toxicity of the brominated flame retardant, hexabromocyclododecane (HBCD) *Chemico-Biological Interactions* 207; 1-6 .
5. O.A. Ogunbayo & F. Michelangeli 2014 Related flavonoids cause Cooperative inhibition of the the sarcoplasmic reticulum  $\text{Ca}^{2+}$ ATPase by multimode mechanisms. *FEBS Journal* 281, 766-777.

**Dr Estefania Mucino** is a master student at Université Pierre et Marie Curie UPMC-Paris VI, Sorbonne Universities, Paris, France

**Dr Mucino** is member of The German Society for Biochemistry and Molecular Biology and represents the bachelor students at this meeting.

**Professor Vigdis Vandvik, Department of Biology, University of Bergen, Norway.**

**Professor Vigdis Vandvik** chairs the recently inaugurated Centre for Excellence in Biology Education (bioCEED), which explores learning methods and approaches across situations varying in theoretical and practical content, goals, and exposure to societal pressures and demands. The centre actively explores, encourages and supports the often called for shift from a teacher -centered to learner-centered education and helps change the focus from what instructors do to how students learn.

Recent publications:

1. Bargmann, Tessa; Måren, Inger Elisabeth; Vandvik, Vigdis. 2014. Life after fire: smoke and ash as germination cues in ericads, herbs and graminoids of northern heathlands. *Applied Vegetation Science*. 17: 670-679.
2. Esaete, Josephine; Eycott, Amy; Reiniö, Jenny; Telford, Richard; Vandvik, Vigdis. 2014. The Seed and Fern Spore Bank of a Recovering African Tropical Forest. *Biotropica*. 46: 677-686.
3. Meineri, Eric Pierre F; Skarpaas, Olav; Spindelböck, Joachim; Bargmann, Tessa; Vandvik, Vigdis. 2014. DUBLETT: Direct and size-dependent effects of climate on flowering performance in alpine and lowland herbaceous species. *Journal of Vegetation Science*. 25: 275-286.
4. Paulsen, Torbjørn Rage; Högstedt, Göran; Ken, Thompson; Vandvik, Vigdis; Eliassen, Sigrunn. 2014. Conditions favouring hard seededness as a dispersal and predator escape strategy. *Journal of Ecology*. 102: 1475-1484

**Dr. Tone Fredsvik Gregers, University of Oslo, Oslo, Norway**

**Dr Gregers** is senior lecturer at The Laboratory School in Biology, University of Oslo.

Recent publications:

1. Sand, KM, Landsverk, OJ, Berg-Larsen, A, Bakke, O, Gregers, TF 2014 The human specific invariant chain isoform Iip35 modulates Iip33 trafficking and function. *Immunol Cell Biol* 92, 791-798.
2. Wälchli S, Kumari S, Fallang LE, Sand KM, Yang W, Landsverk OJ, Bakke O, Olweus J, Gregers TF 2014 Invariant chain as a vehicle to load antigenic peptides on human MHC class I for cytotoxic T-cell activation. *Eur J Immunol*. 44, 774-84.
3. Berg-Larsen A, Landsverk OJ, Progida C, Gregers TF, Bakke O 2013 Differential regulation of Rab GTPase expression in monocyte-derived dendritic cells upon lipopolysaccharide activation: a correlation to maturation-dependent functional properties. *PLoS One*. 8, e73538.
4. Malmstrøm M, Jentoft S, Gregers TF, Jakobsen KS. 2013 Unraveling the evolution of the Atlantic cod's (*Gadus morhua* L.) alternative immune strategy. *PLoS One*. 2013, 8, e74004.

**Dr. Trine Meza, The Norwegian Competence Centre for education, NOKUT, Oslo, Norway**

**Dr. Meza** is Assistant Deputy Director General – Department of Quality Assurance (Higher education – programmes)

**Dr Gus Cameron, Department of Biochemistry, University of Bristol, UK**

**Dr. Gus Cameron** is a Research Fellow in the Department of Biochemistry at the University of Bristol. He obtained his BSc and PhD degrees at the South Bank University in London and worked there as a Lecturer in Biochemistry before leaving to undertake research in the USA. Dr. Cameron returned to the UK to take up a position in the Department of Biochemistry at Bristol, where he has worked as Lecturer and Unit Organiser as well as the Faculty e-Learning

Advisor. In 2008 Dr. Cameron led a successful bid for funding to develop [eBioLabs](#), a Dynamic Laboratory Manual for the biosciences, and became the second Bristol ChemLabS University Teacher Fellow.

Recent publications:

1. Rothnie, A, Clarke, AR, Kuzmic, P, Cameron, G. Smith, CJ. 2011 A sequential mechanism for clathrin cage disassembly by 70-kDa heat-shock cognate protein (Hsc70) and auxilin. *Proc Natl Acad Sci USA* 108, 6927-6932.
2. Chaikuad, A, Shafqat, N, Al-Mokhtar, R, Cameron, G., Clarke, AR, Brady, R. L., Oppermann, U, Frayne, J. & Yue, WW 2011 Structure and kinetic characterization of human sperm-specific glyceraldehyde-3- phosphate dehydrogenase, GAPDS. *Biochem J* 435, 401 – 409.
3. Frayne, J., Taylor, A., Cameron, G., Hadfield, AT. 2009 Structure of insoluble rat sperm glyceraldehyde- 3-phosphate dehydrogenase (GAPDH) via heterotetramer formation with *Escherichia coli* GAPDH reveals target for contraceptive design. *J Biol Chem* 284, 22703 – 22712.

**Dr. Jeremy Pritchard, School of Biosciences, University of Birmingham, UK**

**Professor Jeremy Pritchard** is Senior Lecturer and Head of Education, School of Biosciences. He is involved in the development of knowledge transfer at a national level and chairs the Society of Experimental Biology (SEB) Education and Public Affairs Committee (EPA). I speak on outreach and PuS policy issues nationally (e.g. ASE, BSF, Wellcome Trust Science Engagement). In addition he is a school admissions tutor for Biology and heavily involved in various school liaison projects that aim to address the public understanding of science.

Recent publications:

1. Shakesby AJ, Wallace IS, Isaacs HV, Pritchard J, Roberts DM, Douglas AE . (2009) A water-specific aquaporin involved in aphid osmoregulation: *Insect Biochemistry and Molecular Biology* **39**: 1-10.
2. Kerton M, Newbury HJ, Hand D. Pritchard J. (2009) Accumulation of calcium in the centre of leaves of coriander (*Coriandrum sativum* L.) is due to an uncoupling of water and ion transport. *Journal of Experimental Botany* 60: 227-235.
3. Tseng, HM; Gattollin, S; Pritchard, J, Newbury HJ, Barrett DA (2009) Analysis of mono-, di- and oligosaccharides by CE using a two-stage derivatization method and LIF detection *Electrophoresis* **30**: 1399-1405.
4. Daniels M, Bale JS, Newbury HJ, Lind RJ, Pritchard J. (2009). A sublethal dose of thiamethoxam causes a reduction in xylem feeding by the bird cherry-oat aphid (*Rhopalosiphum padi*), which is associated with dehydration and reduced performance. *Journal of Insect Physiology* **55**: 758-765
5. Gattolin, S Hunt, E Newbury, HJ Bale, JS Tseng, HM Barrett, DA Pritchard, J (2010) A mutation in amino acid permease AAP6 reduces the amino acid content of the Arabidopsis sieve elements but leaves aphid herbivores unaffected *Journal of Experimental Botany* **61**: 55-64.

**Dr. Julian Park, School of Agriculture, Policy and Development, University of Reading, UK**

**Professor Julian Park** is Head of School and Director of Teaching and Learning at University of Reading.

In 2008 he was appointed National Teaching Fellow. As well as being an award-winning lecturer, Julian has been associated with a range of pedagogic projects linked to assessment, including the development of web resources. He was one of the founding members of the Applied Undergraduate Research Skills Centre of Excellence in Teaching and Learning.

Recent publications:

1. McFarlane, I., Park, J. and Ceddia, G. (2014) The extent to which potential benefits to EU farmers of adopting transgenic crops are reduced by cost of compliance with coexistence regulations. *AgBioForum*, 17, pp. 37-43.
2. Arpaia, S., Messéan, A., Birch, N. A., Hokannen, H., Härtel, S., Van Loon, J., Lovei, G., Park, J., Spreafico, H., Squire, G. R., Steffan-Dewenter, I., Tebbe, C. and Van der Voet, H. (2014) Assessing and monitoring impacts of genetically modified plants on agro-ecosystems: the approach of AMIGA project. *Entomologia*, 2, 79-86.
3. Gadanakis, Y., Bennett, R., Park, J. and Areal, F. (2014) Evaluating the sustainable intensification of arable farms. *Journal of Environmental Management*. ISSN 0301-4797 (In Press)
4. Mauchline, A. L., Peacock, J. and Park, J. R. (2013) The future of bioscience fieldwork in UK higher education. *Bioscience Education*, 21, 7-19.
5. Welsh, K. E., Mauchline, A. L., Park, J. R., Whalley, W. B. and France, D. (2013) Enhancing fieldwork learning with technology: practitioner's perspectives. *Journal of Geography in Higher Education* 3, 399-415.
6. Orsmond, P., Maw, S. J., Park, J. R., Gomez, S. and Crook, A. C. (2013) Moving feedback forward: theory to practice. *Assessment & Evaluation in Higher Education*, 38, 240-252.
5. Gomez, S., Andersson, H., Park, J., Maw, S., Crook, A. and Orsmond, P. (2013) A digital ecosystems model of assessment feedback on student learning. *Higher Education Studies*, 3.

#### **Explain how this activity fits the vision and funding priorities of IUBMB Education**

(see <http://www.iubmb.org/index.php?id=70>)

This Education Workshop will contribute to improving the way life science is taught to students in this field at the university level. Experienced scientists/educators from USA, Europe and Scandinavia have confirmed their participation thus bringing together highlevel expertise from around the world. During the workshop speakers and participants will spend time discussing the various alternatives to traditional teaching and have the opportunity to experiment with virtual laboratory exercises.

The applicants:

Dr. Gul Guner-Akdogan, in the name of FEBS Education Committee, is the Chair of this Committee. FEBS is, actually, a regional associated organization for IUBMB.

Dr. Winnie Eskild is Deputy Treasurer of FEBS and has served as Secretary General of The Norwegian Biochemical Society (2005-2012).

IUBMB is not the sole supporter of the event. If the proposal is accepted, IUBMB will be co-sponsoring with FEBS and The Norwegian Biochemical Society, a member of FEBS.

An application for support will also be submitted to The Faculty of Mathematics and Natural Sciences, University of Oslo. This money would be spent Young Scientist Travel Awards. There will be a number of participants who will receive a Young Scientist travel award from FEBS- the number is not predictable at the moment. FEBS will also cover the dissemination costs of the Event- in FEBS News (both before and after the event), on posters in many lecture halls, and in the scientific program of the FEBS Congress. IUBMB will contribute to the travel and accommodation expenses of some of the invited speakers. The Norwegian Biochemical Society will be offering the coffee breaks, the opening reception, and the second day lunch. In summary, there will be "co-sponsorship".

**Breakdown of budget (itemise all costs of the activity, and show all sources of funding support)**

**Announcements € 500**

Workshop hall and group rooms € 800  
Tables and computers € 700  
Audiovisual and teaching  
Material € 1130  
Travel cost of:  
Gül Guner-Akdogan € 650  
Francesco Michelangeli € 450  
Jeremy Pritchard € 450  
Mikael Caspersen € 350  
Jane Saffell € 450  
Robin Wright € 2400  
Estafania Mucino Castillo € 350  
Gus Cameron € 600  
Vigdis Vandvik € 250  
Tamara Tjitrowirjo € 300  
Julian Park € 450  
Accommodation costs:  
Eleven persons for three days  
(11 X 3 X €150) € 4950  
One person for six days  
(1 X 6 X 150) € 900  
SUBTOTAL FEBS and IUBMB € 15680  
To be covered by FEBS € 7840  
**Requested from IUBMB € 7840 (= \$ 9763)**