Teaching Portfolio

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Formal educational training

1997	Adjunktpædagogikum, Odense University

Administrative duties related to teaching

2004-2007	Member of the Bachelor and Master Program Teaching committee at Dept. of Biochemistry and Molecular Biology
2004-2010	Chairman of the PhD study committee at Dept. of Biochemistry and Molecular Biology
2004-2010	Member of the PhD study board of Natural Science
2003-2012	Co-founder and member of the Executive board of the Danish PhD School of Molecular Metabolism
2013-2014	Member of the Educational Committee of the Danish Diabetes Academy

Teaching experience

Undergraduate courses

1997-2007	BM25 - Advanced experimental molecular biology (12 ETCS), responsible teacher
2008	BMB528 - Advanced experimental molecular biology (10 ETCS), responsible teacher
2000-2005	Bio101/BB08 – Biology A (10 ECTS), responsible for lectures in cell and molecular biology
2007	BMB504 – Fundamental molecular biology (5 ECTS)
2008	NAT501 - First year project (10 ECTS)
2011-2015	Modul 4 - Basic biochemistry (10 lectures per semester)
2015-	BMB508 – Advanced Molecular Biology (10 ECTS)

Graduate courses

2004/2006	Advanced applied fluorescence microscopy (6 ECTS), co-responsible teacher
2004/2005	Molecular mechanisms of the metabolic syndrome (3 ECTS), lectures on the role of PPARs in insulin resistance
2003-2012	PhD summer school of the Danish PhD School of Molecular Metabolism (3 ECTS), organizer
2013	PhD summer school of the Danish Diabetes Academy (3 ECTS), organizer
2009-2010	BMB804 - Molecular mechanisms of eukaryotic metabolism (10 ECTS), one of 4 teachers
2014-2017	BMB822 - Modern trends and technologies in molecular cell biology

Teaching at recent international PhD/post doc courses

2007-	Summer School on Nuclear Receptor Signalling: From Molecular Mechanisms to Integrative Physiology (Island of Spetses, Greece August 26 - 31, 2007; August 23 - 28, 2009; August 28 – September 2, 2011; August 25 - 30, 2013; August 23-27, 2015; August 27- Sept. 2, 2017)

Supervision

Principal supervisor of

1999-	18 post docs
1999-	35 PhD students
1999-	47 master students
1999	81 bachelor students

Examiner

Evaluator of numerous Master theses and 36 PhD theses

Methods, material, tools

Teaching philosophy

The most important we teach our students are not the facts and methods they learn from books and scientific papers. This type of knowledge is necessary in the process, but it turns over quite rapidly. Rather, the most important our students should take from their studies, is the good scientific approach to questions, including strong analytical skills and good scientific practice. This is obviously particularly true for students who choose a research career.
Another important skill we teach our students is good laboratory craftsmanship, which they learn mainly by being apprenticed to older students and postdocs. This is important, because it is impossible to be a good experimental scientist without being able to design and perform experiments with high precision. A similar type of craftmanship is also required in computational biology, although in this case it is computational knowhow rather than manual precision. Thus, for the education in Biomedicine or Biochemistry and Molecular Biology one needs to acquire both skills in scientific thinking and technological craftsmanship.
For these reasons, I greatly support project-based teaching, where we teach the students how to solve problems rather than teaching them the answers. In addition, my experience is that this way of teaching is also highly stimulating, especially for the better half of the students. I acknowledge that it is rational to teach the students some basic knowledge during lectures and seminars, but I think project-based learning should be introduced as early as possible. A good example is the enormous success of the first-year project at the Science Faculty.

Teaching responsibilities and methods

Lectures at the undergraduate level

For lectures I rely mostly on power point presentations, which I make available to the students through e-learn. I build my power points around the figures from the book and add comments, important definitions etc. In addition, I add examples and better figures from other sources, if adequate. I prefer to use figures to illustrate all explanations, and I make only very limited use of the blackboard. If possible, I try to involve the students by asking one or two questions, but my experience is that one should be careful not to do that too often; as some students think it is “waste of time” and would rather hear it from the teacher.
The choice of books is clearly very important for basic courses. In my view, a lot of the basic books make the mistake of wanting to introduce too many principles and terms without giving sufficient examples or explanations. Other books focus on biochemical details instead of properly introducing and giving examples of the principles. Where the book is insufficient and outdated it is important that the teacher provide good and examples that are easy to understand in the lecture PowerPoint.

Seminars at the undergraduate level

The great advantage here is the lower number of students, which makes it easier to get the students involved and a dialog going. I use this format during the BMB526 course and for all more advanced courses. I rely also here a lot on power point presentations, but I interrupt these with discussions with the students. In addition, I use of student presentations, e.g. by having the students present original papers or by having them present experimental work they have performed. In general, I think this format works very well; however, I am constantly trying to find ways to get the students further involved.

Experimental courses at the undergraduate level

Experimental courses offer an excellent opportunity to train creative thinking and analytical skills, but sometimes these chances are missed because everything is prepared in a way such that the students do not need to think much. In BMB526, which is an optional summer course that I established in 1998, we require that the students plan their own experiments using the theoretical background and the technologies we have taught them. The students should also understand the technologies in depth, meaning understanding the advantages and limitations of the different procedures as well as the theory behind each step in the procedures and behind the use of most chemical components. An important component in the course is also presentations by the student groups of their own experimental results as well as of scientific papers that we read during the course. It is a time consuming to teach; however, the feedback from the students is extraordinarily positive, and it is very rewarding to observe the development the students undergo during the course.

PhD courses

I have been one of the main organizers of the summer schools of the Danish PhD School of Molecular Metabolism (2003-2012), and subsequently the same summer school in the frame of the Danish Diabetes Academy (2012-2017). Each year we had multiple international speakers who gave talks and organized small specialized workshops. All students presented their work either by a short talk or by oral poster presentation. These summer schools are an outstanding opportunity for the students to get training in presenting and discussing with international top scientists as well as student fellows.
I have also been involved as a teacher at several local as well as international PhD courses and summer schools. For instance, I have been teaching at the Nuclear Receptor Summer School organized at Spetses every second year since 2007.

Supervision

Of all teaching responsibilities I am involved in, the supervision of students and postdocs in my own group is the most time consuming but also by far the most rewarding. To me it is one of the best parts of my work. It is obvious that one cannot easily discriminate between teaching and research, and it is also obvious that there is a mutual benefit in the interaction between the student and the supervisor. However, although the interests of the student and supervisor often converge, to

me a good supervisor is one who thinks of the career of student before he/she thinks of his/her own research project.

My main goals as a supervisor are to teach the students:
•to master as many technical skills as possible
•to conceive novel ideas for research
•to think analytically and sort the important from the unimportant
•to express themselves orally as well as in writing in a good scientific English language
•to give oral presentations summarizing their work
•to interact and communicate with other researchers in a proper way through e-mails and at meetings
•to take responsibility in the laboratory
•to get as much publication credit out of their work as possible

For PhD students and postdocs, I furthermore train them in giving talks at international meetings, writing drafts of scientific papers, grant writing, and in international networking. Postdocs should furthermore be trained in leadership.
All students and postdoc in my group work in small teams where they collaborate on projects. I supervise the students through scheduled meetings with few students, and in larger group meetings. However, I also keep an open-door policy, where students can just drop in. I make an effort to have students and postdocs exposed as much as possible to national and international collaborators and to scientists in different fields during local and international meetings and conferences, visitors in the group and through e-mail discussions.