Dear Professor Richard

**NST Pharmacology Part II Examinations**

I was pleased to act as external examiner for this year’s part 2 Pharmacology examinations in the Natural Sciences Tripos, some twenty four years since I took the same examination myself. There were thirty-nine candidates split between medical and science undergraduates.

I perused the draft examination papers in February supplied by the Senior Examiner, and reported that I was satisfied with their coverage of the course.

The examination consisted of four three hour papers, two in Molecular and Cellular Pharmacology, and two in Systems Pharmacology. In addition, students submitted a dissertation outlining an experimental project they had carried out over the course of one term. Students had previously given an illustrated oral account of their project to the Examiners, for which I was not present.

Furnished with the mark sheets, I looked over the written scripts and experimental project write-ups over two days in Cambridge in June. Generally the quality of the answers was of a very high standard, as had expected. With the four internal examiners, I conduct viva voce examinations of five students. Two were vivaed to determine the winner of the experimental project prize, two were vivaed since they were judged by their written work to be on the First class/ upper Second boundary, and one was vivaed since they were deemed to be on the Upper/Lower second border.

The Senior Examiner, Dr Margery Barrand provided me with extensive information, including copies of past papers and summaries of examiners’ comments on the papers of those to be vivaed. This was most useful and showed a great deal of thought and organization, well above that which I have encountered elsewhere.

The answers concerning the x-ray crystallography of ion channels and cystic fibrosis were particularly well addressed. In the case of the former, I have seldom seen such answers of particular clarity and understanding on this difficult topic.

I would like to recommend that more material dealing with experimental techniques might be introduced into the lecture course since no general practical classes are at present offered. It became apparent by reading scripts, and in particular during the viva voce examinations, that some of the students had only a cursory grasp of some key experimental techniques such as how calcium signals are measured. This presents difficulties for some students when critically assessing the scientific literature. I would recommend that such material is introduced into existing lectures, since stand-alone technical lectures are often rather “dry”. However, I should add...
here that the winner of the Experimental project prize showed an exceptional grasp of the technical issues that his project addressed. Secondly, although the lecture course rightly does not seek to be a comprehensive survey of contemporary pharmacology, but rather reflects the research strengths and interests of the Faculty members, certain areas might be over-examined. For example, the areas of obesity, diabetes and appetite appear in several lecture series, and consequently there are several questions in these areas. This potential degree of overlap may in some cases lead to excessive repetition in the various answers which the candidates offer. These lectures might be looked at to see if potential overlap could be reduced. Thirdly, I would recommend that the length of the project write-up be shortened or more rigorously regulated. In several cases, these were prefaced by long introductions in the general area of study, but often bore little relevance to the actual experimental work carried out. Fourthly, it may be useful and desirable to put on a series of lectures dealing with advanced receptor pharmacology, this is a fundamental area of this discipline.

In summary, the candidates generally showed an impressive grasp of the topics offered in this excellent and rigorous degree. The examination questions set were challenging yet fair. The breakdown in the final class list was approximately 20% Firsts, 65% Upper Second, 15% Lower Seconds and no Third class candidates. This is certainly comparable to Medical Sciences in the Final Honours Schools of the University of Oxford.

Finally, I would like to express my sincere thanks to the examiners, Dr Barrand (Senior Examiner), Dr Henderson, Dr Hiley and Dr Morton for making my task so enjoyable and rewarding. They were exceptionally helpful, insightful and judicious in their deliberations with me. The comprehensiveness of the material made available to me is a testament of their professionalism as examiners. I would also like to record my thanks for their excellent hospitality, and for my enjoyable stay at Downing College.

This was my first year as external examiner, and I look forward to two further years of working with Cambridge’s excellent Department of Pharmacology.

Yours sincerely

Antony Galione

Professor and Head of Pharmacology
University of Oxford
25 June 2009

Dear Professor Richard,

Medical and Veterinary Tripos Part IB - Mechanisms of Drug Action

I am writing to report my findings as external examiner on the above examination. I attended the Department of Pharmacology on 9 June to look at scripts from this examination and to agree the pass list with the internal examiners. Once again I was happy with the way the examination had been conducted and was able to approve the marks awarded by the internal examiners as an appropriate reflection of the candidates' abilities. The quality of the top students in this examination is extremely high and the format of the examination enables one to evaluate the depth of understanding of pharmacology and their ability to apply this to problem solving (data handling) questions.

This examination serves two purposes. Firstly it is part of the Medical and Veterinary Sciences Tripos and secondly it is a professional examination (2nd MB / VetMB) determining whether the candidates have sufficient knowledge and understanding of the subject as a basis for their subsequent professional qualifications. This makes the assessment process and setting of standards for these two purposes difficult.

At the examiners meeting we explored some of the issues raised. Paper 1 (multiple choice questions) tests breadth of knowledge. Staff were aware of the problems of ambiguous and unreliable questions and some questions (very few) were judged to be unreliable on this paper for this year, although this appears to be assessed by eye rather than systematically which may be appropriate for true/false questions. There does not appear to be a bank of 'reliable' questions that has been accumulated over the years which have been tested in previous examinations. I would recommend that this be considered since this would be an excellent resource. We also discussed the possibility of introducing different multiple choice question formats (other than true / false) which might enable testing understanding of key concepts as well as factual knowledge. Finally, this paper contributes 75% of the marks for the 2nd MB and 25% of the marks for the Tripos. The questions are negatively marked and the pass mark is set at 50%. This may be appropriate although on discussion there does not appear to be a process of standard setting to determine the appropriate pass mark, which I believe to be standard practice.

Paper 2 (data handling paper) seemed to be the paper which caused the weaker students the most problems this year. The second of two questions in retrospect was too long and the marks for this
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question were adjusted to reflect this. Under the circumstances, this was an appropriate course of action to take in my opinion. At the time I was asked to approve these questions, I commented that there should be a marking scheme and a model answer provided when each question is set. The students should be aware of the relative allocation of marks for such multipart questions in my opinion – this would be standard practice in our institution where we use problem solving and data handling questions. We also discussed the relative merit of students being able to remember and apply formulae to work out binding affinity constants versus being able to interpret the significance of the data and its implications for use of the drug therapeutically (if appropriate). If the marking scheme were made clear at the time the questions were set it would be easier to discuss the relative allocation of marks for these two skills being assessed by this format of question.

The third paper (essay paper) only contributes towards the Tripos on the understanding it is testing depth of knowledge and understanding rather than breadth of knowledge. Clearly this free format allows the really good students to demonstrate their grasp of the subject and is appropriate for the Tripos. We debated whether the omission of the essay completely from the 2nd MB examination meant that there was a lack of questions which test understanding of pharmacology to level that is necessary to practice medicine or veterinary medicine. This could be achieved by the introduction of different formats of MCQs (other than true / false questions above as suggested above). I do think this merits consideration.

I hope this short report is helpful to you and to the Department of Pharmacology. Please do not hesitate to contact me if I can provide further clarification on the points made above.

Yours sincerely

[Signature]

Professor Jonathan Elliott MA VetMB PhD CertSA DipECVPT MRCVS
Vice Principal (Research)
24 June 2009

Dear Professor Richard,

**Medical and Veterinary Tripos Part II - Mechanisms of Drug Action**

I am writing to report my findings as external examiner on the above examination. I attended the Department of Pharmacology on 28th September to look at scripts from this examination and to agree the pass list with the internal examiners. Once again I was happy with the way the examination had been conducted and was able to approve the marks awarded by the internal examiners as an appropriate reflection of the candidates' abilities.

This was the professional (2nd MB / Vet MB) examination for students who had failed to reach the required standard in June to progress with their medical or veterinary studies. I gave my detailed comments on the course and examination procedures in the summer and have nothing more to add to these at this stage.

Yours sincerely,

[Signature]

Professor Jonathan Elliott MA VetMB PhD CertSA DipECVP MRCVS
Vice Principal (Research)