

**MB PhD Symposium**, March 8<sup>th</sup> 2007, 1pm, The Royal College of Pathologists, 2 Carlton House Terrace, London, SW1Y 5AH

**A summary of the objectives and outputs of the MB PhD Working Group, to inform discussion and stimulate debate.**

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### **Introduction**

The report from the Academy of Medical Sciences "Strengthening Clinical Research" (2003) highlighted the importance of addressing the translational gap between scientific discovery and clinical application. Among the priorities to be faced in rebuilding the capacity to undertake clinical research in the UK, the Academy has emphasised a continuing need to train clinical researchers as part of coherent career pathways. In its analysis of the issues for implementing new career pathways for Clinician Scientists (2002), the Academy noted the need to ensure appropriate integration of those who obtained a PhD via the UK MB PhD programme. The recent report of the Academic Careers sub-Committee of Modernising Medical Careers and the UK Clinical Research Collaboration (2005) recommended that a limited number of MB PhD schemes are maintained with appropriate funding and that progress of graduates from these programmes is tracked.

In 2006, the Academy's Clinical Careers committee initiated a study of UK MB PhD programmes as part of its ongoing analysis of clinical career pathways. The purpose of the present short paper is to summarise the objectives and outputs from this Working Group as an input to inform a symposium, to be held on March 8<sup>th</sup> 2007.

### **Remit of the Working Group**

The terms of reference of the Working Group<sup>1</sup>, chaired by Professor Mike Spyer are: 'To evaluate the MB PhD schemes that currently exist within the UK. To determine where the MB PhD fits within the portfolio of Academic Career pathways and to recommend how the scheme should be organised and sustained in the UK.' The specific tasks are to:

- Undertake a succinct, high-quality review of the existing MB PhD schemes in the UK
- Identify what currently does and does not work within UK programmes
- Make comparisons with the MB PhD programmes of other countries
- Consider appropriate ways of organizing and funding the scheme
- Identify the potential for developing the programme within the new Academic Career pathways
- Advise the UK Clinical Research Collaboration and other stakeholders of the findings of the report and, where appropriate, recommend action.

An open call for evidence invited views from the UK, elsewhere in Europe and the USA, collecting data on numbers and origins of students, PhD research fields, course curriculum, design and management, funding, subsequent career tracking and measurement of individual achievements and programme impact. The

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<sup>1</sup> Membership of the Working Group is listed in Annex A.

Working Group met on three occasions to consider the evidence<sup>2</sup> and identify key issues.

## **Key issues**

### **1. Current UK status and outcomes**

Integrated MB PhD programmes are run by Cambridge (started 1990, total students to date enrolled, 131) and University College London (UCL) (1994, 62) with a much smaller programme at Leicester. A significant proportion of students have transferred from other UK medical schools (for example, approximately 25% in the Cambridge programme).

The research subjects undertaken for the PhD are very diverse. Although the majority are in the relatively basic sciences with neurosciences, immunology, molecular genetics and cell biology the most frequent, a significant proportion of topics involve experimental work with whole animals or humans and there have been some non-laboratory areas (for example social sciences, primary care, public health, psychology).

The analysis available to date (primarily from the Cambridge cohorts) indicates that the clinical and scientific achievements of the group have met the expectations for high academic standards and that a large proportion of graduates will pursue a clinical academic career, including some in procedural specialities (for example, cardiology) and those associated with surgery, fields currently suffering from falling academic input and appointment in the UK.

Intercalated PhD MB programmes are run by other UK universities (for example, Imperial, Newcastle) but these are not usually regarded as integrated programmes in the same sense as the Cambridge, UCL and Leicester activities.

### **2. Timing of PhD component**

Some respondents to the call for evidence suggested that it was better to embark on PhD research after completion of medical training. Perceived problems associated with timing of the current UK integrated MB PhD programmes included: (i) Difficulties in maintaining contact with research after returning to medical training; (ii) Doubts about the direct relevance of the specific PhD project; individuals may develop different research interests during their subsequent clinical training; (iii) Concerns that candidates may have problems returning to an academic research career as they may not have a track record to enable them to compete for senior funding such as Clinical Fellowships.

However, those who have had most direct involvement with current MB PhD programmes (academic staff and students) observed that the early commitment in a PhD course is highly valuable in inculcating research culture, training and independence, that will enhance the subsequent medical training, and in providing research exposure to a cohort of students with similar long-term aspirations. Research skills are transferable and many graduates have continued in the same academic area as their PhD field. It is noteworthy that it is considered quite usual for those with a PhD in areas of science outside medicine to change scientific focus, perhaps several times, yet medical research careers seem to be increasingly inflexible. There is a good argument to be made that the narrowness of the standardised clinical research career model should be resisted.

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<sup>2</sup> A summary of the written evidence received will be published as an Appendix to the report of the symposium.

### **3. Duration of PhD**

Feedback from students indicated some concern. The duration of the PhD element (often less than three years) within the integrated programme may be too short for many projects and associated training needs, thereby placing students under additional pressure to perform.

### **4. Sources of funding**

Feedback from the major UK public sector PhD funders indicates a need to provide more systematic data on the success of the current scheme – particularly in terms of career development – in order to elicit new support via specifically-designated funds.

Currently, funding support is difficult to secure and often seems relatively arbitrary. A case for a nationwide, competitive scheme could be made, to ensure that funding is equitable and transparent. Some respondents also advised that there should be greater flexibility to provide funding extension, if required.

### **5. Views from industry**

Pharmaceutical and biotech companies in the UK recognise an important role for research-trained clinicians in industry and actively endorse the broad needs for the UK to promote translational research. Both larger and smaller companies express interest in MB PhD schemes and some of the larger companies have provided significant financial support for programmes and students. The biotech sector, through its involvement with the BioScience Innovation and Growth Team recommendations (BioScience 2015 report) has called for an expansion of the current scheme (to 30 new studentships annually in the short term, rising to 100 annually), to be jointly funded by The Office of Science and Innovation (OSI) and Higher Education Funding Councils (HEFCs).

Specific feedback from companies in the call for evidence recommended that PhD training should include in vivo pharmacology as well as molecular methods and that students would also benefit from a “sandwich year” or equivalent exposure to multidisciplinary projects devised in collaboration with industrial partners. Companies would be inclined to provide increasing financial support if opportunities for active collaborative engagement are identified. Some also called for training in project and people management skills.

### **6. Integration of MB PhD programmes into new academic training pathway**

One area of current uncertainty relates to how MB PhD programmes can fit into the new training pathways. The Working Group will seek further discussion with UKCRC and others to explore how the new F2 training programme and MB PhD course might be aligned, to enable MB PhD students to fit into the integrated career pathways, so enhancing the usefulness of the early research training.

### **7. Analysis of US MD PhD programmes**

The first US universities started programmes more than 40 years ago and many have been in existence for more than 30 years. The US programmes are comparatively well funded, with several hundred new entrants annually and a majority of students supported centrally via the National Institutes of Health (NIH) Medical Scientist Training Program (covering 45 degree-granting institutions). MSTP graduates are judged as extremely successful in pursuing research careers and obtaining research funding; the programmes are well regarded by students and by many companies. Participants in MD PhD programmes are often regarded as exceptionally able and a high proportion of clinical academics are recruited from this pool. It is, however, highly relevant that the subsequent US training pathways are well designed to accommodate and fast

track the supply of MD PhD graduates, something that has yet to be achieved in the UK.

One other valuable feature of some US programmes is the opportunity to enrol in a PhD field outside conventional bioscience disciplines, for example in engineering, maths or physics – such skills are increasingly important in medical research.

### **Emerging findings**

As an input for further discussion in the symposium the preliminary conclusions of the Working Group can be summarised:

- On the basis of the experience in the UK over the last 10 years, some strongly propound the value of the integrated MB PhD programme as one of the options for training clinical scientists. The integration of these graduates into the new academic training pathways for research merits further consideration and clarification (particularly with respect to entry on the fast track to clinical lectureship).
- There is a need to retain a diversity and flexibility of options. It is critically important to have clearly defined training programmes for those clinicians who wish to embark on a PhD later (i.e. post F2 Foundation Programme) and to avoid biasing any MB PhD programme to the competitive advantage of a privileged few students. The implications of the Bologna Agreement (which involves a significant number of European countries working towards greater consistency and portability across their higher education systems) on clinical research training may need further consideration.
- In all PhD programmes it is important to ensure support for student cohorts – encouraging interaction within MB PhD streams and with non-clinical students. This may become an important function in developing the Academic Medical Centres.
- It would be valuable to institute a nationwide mentoring scheme involving past and present students and this might usefully be developed within the framework of the Academy's clinical scientist mentoring scheme. Mentoring should be accompanied by other efforts to retain connections within the previous PhD cohorts (for example, a programme of meetings) and with the research environment.
- There is need to explore the options for a shared national database to track career outcomes (including the relative success rate of MB PhD graduates in their fellowship applications), which might be implemented as part of other proposals for tracking databases (for example, the Academy's "Freedom to Succeed" proposal, current Wellcome Trust-led discussion).
- It is also important to ensure that MB PhD graduates are able to continue to capitalise on opportunities for research in industry and the options for facilitating early exposure to the company research environment should be considered further. The Academy's Working Group "Careers in Industry" should be kept involved in the ongoing discussions on MB PhD options.
- Aside from the issues for PhD options, there is great general value in exposing all medical students to some aspects of scientific research

(including engagement with project work and research methodologies).  
The tendency to reduce the practical content of the curriculum throughout  
education must be reversed.

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For further information or to register for the symposium, please contact:

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## **Annex A**

### **Membership of the Working Group**

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**Professor Mike Spyer FMedSci (Chair)**

Vice-Provost (Biomedicine) & Dean, University College London

**Professor Tim Cox FMedSci**

Professor of Medicine, University of Cambridge

**Dr Robin Fears**

Senior Policy Adviser to the Academy of Medical Sciences

**Professor Ian Lauder FMedSci**

Dean, Leicester Warwick Medical School

**Professor Robert Lechler FMedSci**

Dean of School of Medicine Guy's, King's & St Thomas', King's College, London

**Mr Daniel Marks**

Current MB PhD student, University College London

**Professor Paul Morgan FMedSci**

Professor in Medical Biochemistry and Immunology, University of Cardiff

**Dr Rhys Roberts**

Past MB PhD student, University of Cambridge

**Mr Jonathan Roos**

Current MB PhD student, University of Cambridge

**Dr Katie Petty-Saphon**

Executive Director, Council of Heads of Medical Schools

**Dr Sarah Tabrizi**

Clinician Scientist Fellow, Clinical Senior Lecturer, Institute of Neurology, London

### **Secretariat**

**Ms Emma Bennett**

Biomedical Grants and Policy Officer, Academy of Medical Sciences

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