



The Francis Crick Institute Clinical Translation Meeting

Summary of Key Points

Introduction

- On 17 October 2011 the Executive of the Francis Crick Institute (the Crick) convened a group of experts to explore and discuss factors that contribute to, or impede, successful clinical translation, with an aim to informing the strategic development of these efforts at the Crick.
- Various areas of challenge and opportunity were identified and discussed, which led to a number of key insights and recommendations from the group of experts.
- These insights and perspectives will be taken into account by the Crick in further developing its Scientific Vision and Research strategy.

Key recommendations

Enabling and Driving Clinical Translation

1. Clinical translation is highly collaborative, involving close working of basic and clinician scientists, and engaging fields outside medicine and biology such as chemistry, physics and engineering, in dynamic and complex relationships. These interactions take place in basic research and clinical surroundings and in public and commercial organisations, all of which can vary significantly in cultures, aims, expectations and capability.
2. The Crick must ensure that the components of clinical translation are brought together and supported in a favourable environment and under conditions of aligned objectives and incentives. Management backing for clinical translation must be wholesale and manifest, and supported both in policy and practice, with clear processes and efficient governance structures.
3. The Institute culture should be one where translatable science and translation is integral and 'hardwired' into its research environment. However, the Crick should not lose sight of a broad focus on discovery science, the outputs of which are critical to provide the foundation for translational studies.
4. It is incumbent on the Crick to strategically manage intellectual property (IP), establishing policies and procedures that drive its exploitation and dissemination for the benefit of the UK. The Crick should manage its IP such that it facilitates interactions, avoiding overprotection and bureaucracy.
5. Clinical translation should be measured by robust endpoints, fulfil unmet patient need and provide benefit. Preferably the treatment will have impact on a large number of patients, or can be leveraged to do so; however, valuable translation outcomes will include those that enhance or provide new treatments for subsets of patients with a disease, or target rare diseases.

People

6. The long timescales (10+ years), as well as the team mode of working involved in translation, must be recognised and acknowledged in considering researcher outputs for appraisals.
7. Attribution and recognition of an individual's contribution and impact is particularly difficult because:
 - Translation is largely a group effort but there are few 'key' authorship positions in publications from large groups;
 - The long time frames can mean publication intervals are longer than for basic research;
 - Many translational studies of great importance do not command places in the high impact/high profile journals.
8. Promoting a flow of people across organisation boundaries allows movement of ideas and expertise, provides mentors, role models and advocates, delivers training opportunities and has a big impact on developing a translation culture. Staff at all levels should be encouraged to take up opportunities within industry and academic organisations, nationally and internationally. Similarly, opportunities for people from these organisations should be available at the Crick.

Activities to support this include:

- Joint faculty appointments;
 - Visiting researcher programmes;
 - Secondments and exchanges;
 - Staff and student rotations or experiences outside of the host or sponsoring institution, for example in industry;
 - Embedded 'external' research groups including those from industry.
9. Differences between basic and clinical researchers which arise from different training, research perspectives and career paths can impede translation collaborations. An environment needs to be developed where these differences can be accommodated and used to advantage.
 10. The Crick should facilitate interactions with clinicians and clinical scientists, within and outside of the Institute. There is a need to establish a 'clinical ecosystem' that includes clinically active researchers on staff as well as training for clinical scientists, extending across career levels.
 11. There will be a large number of PhD students in the Crick, a significant proportion of whom will be clinicians. The Crick should aim to maximise interactions between clinical and non-clinical PhD students, for example grouping them together in thematic programmes. All the PhD training programmes should include training in experimental medicine concepts and translation, and non-clinical students should be given exposure to clinical approaches.
 12. The Crick should provide opportunities for outstanding clinicians at all stages along the clinical academic training pathway. The Crick should have a clinical PhD training programme, in addition to hosting individuals who obtain *ad personam* fellowships.

It should provide opportunities for selected NIHR Academic Clinical Fellows (who have nine months research time over three years), which may be linked to a funded PhD fellowship. It should also provide post-doctoral fellowships for clinicians. The Crick will also train MB PhD students, and consideration should be given to increasing this cohort compared to the number currently hosted at LRI and NIMR (currently <3 per year in total across the two institutes).

13. The Crick, together with partner Higher Education Institutions and the NHS, will need to ensure that individuals across the clinical academic training pathway have appropriate mentoring and access to clinical training.
14. Clinicians, clinical scientists, and basic scientists from academia and industry, should be brought together outside the laboratory setting, through activities such as informal clubs, science focus groups and tailored meetings and conferences.

Collaborations and Partnerships

15. Translation partners will include basic and clinical research establishments (both academic and commercial), and other collaborative and funding organisations such as the research councils, charities, Academic Health Science Centres (AHSCs), the NIHR Biomedical Research Centres (BRCs), and the NHS. The Crick will need to develop institutional links that facilitate interactions and ensure close alignment with all partners involved in clinical translation.
16. Higher Education Institutions will provide access to clinical expertise, networks and resources as well as capability in disciplines such as engineering, chemistry and physics. Members of the Crick partnership will provide a vital link as will wider interactions across the UK university sector and beyond: it is critical that the Crick develops these relationships effectively.
17. The NIHR and the NHS will be key partners in clinical translation and delivery and particular attention should be paid by the Crick in developing collaborative relationships with these organisations.
18. Industry is nearly always an essential partner in translation, providing unique expertise and capability, and a translational 'pull'. A major point of emphasis for the Crick should be to develop innovative ways of working with industry. Working together, the Institute and partners in industry should identify and tackle mutually important short- and long-term challenges.
19. Clinical translation usually involves many different groups of people and at sites spread across a wide area. The impact of this should be minimised through transfer of individuals and groups, sharing of resources and infrastructure, and regular contact via personal and electronic means.

Resources and Infrastructure

20. Resources need to be provided within the Crick specifically to support clinical translation activities, including clinical trials regulatory expertise, research governance, coordinated technology transfer support and scientific project management.

21. To lower the barrier for clinical translation, significant and flexible institutional funds should be available for pilot projects, collaborative interactions and early stages of development.
22. The Crick will need to ensure the provision of, or access to, research facilities and infrastructure appropriate for translational activities. The Crick should explore establishing relationships with incubators and science parks which have the infrastructure to carry out translation.

Research Opportunities

23. Some research areas can be identified that are of particular value in enabling advances thorough clinical translation. In particular the pharmaceutical industry would benefit from advances in validating biological targets for therapeutic intervention (including improved *in vitro* and animal models) and means for patient stratification. The Crick should consider playing a major role in aligning and focusing activities on target validation.
24. Additional areas enabling clinical translation for the Crick to consider include human biology (*i.e.* using the human as a model research system); clinical pharmacology (both research and training); informatics (data collation, management and new analytical approaches) and development of instrumentation and devices.
25. Engaging the public in research by involving patients and families directly in clinical translation studies can provide a valuable resource, increase the awareness of researchers and the public, and allow individuals to contribute personally to research that has bearing on themselves and others. The Crick could aim to do this locally, working with clinical research partners.
26. Some of the Crick's public engagement could use the lecture theatre and public spaces to stimulate both participation in and an understanding of biomedical research.
27. The Crick should consider its role in public health and health economics research and translation, potentially working in conjunction with research and delivery organisations focused on these areas.

National Role

28. Many aspects of the Crick's support for clinical translation, such as its role in training, figure in the National role of the Institute. The Institute should be open to working with every other institution, in any relevant area, and aim to facilitate collaborations, exchanges and visitors. This openness should support the export and import of expertise and capability that will strengthen research nationally and internationally.
29. The Crick should consider becoming a hub to encourage connections and collaboration between basic, clinical and translational investigators in institutions across the UK and beyond.

Meeting Participants

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Chris Boshoff	UCL
Ross Breckenridge	MRC NIMR/UCL
John Collinge	UCL
David Cooksey	Crick
John Cooper	Crick
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Rebecca Fitzgerald	Cambridge
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Peter Johnson	Southampton
Nic Jones	Manchester
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Robert Lechler	KCL
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