



# The Francis Crick Institute Translation, Technology Transfer and Innovation Meeting

## Executive Summary

### Introduction

- On 18 May 2011 the Executive of the Francis Crick Institute convened a group of experts to explore and discuss factors that contribute to, or impede, successful translation, technology transfer and innovation, with an aim to informing the strategic development of these efforts at the Institute.
- Discussions were stimulated by a series of short presentations by selected experts, who drew upon their experiences and perspectives to describe factors contributing to or hindering success, with a particular focus on the role of the research institute.
- Several areas of challenge and opportunity were identified in discussion which led to a number of recommendations from the group of experts.
- The recommendations below include some that had already been considered and adopted as part of the Scientific Vision and Research strategy, as well as ones which the Institute's Executive will consider in further detail.

### Key recommendations

#### Enabling and Promoting Translational Activities

1. Probably the most challenging - and the most critical - aspects to develop are the collective attitudes and behaviours of people within an institute with regard to translation, technology transfer and innovation (T3I) activities. The Institute should not only enable translational activities, but should stimulate interest in T3I activities and find ways to encourage positive attitudes to translation.
2. The Institute must support translation of research without compromising the needs of basic research.
3. The Institute must develop innovation and technology transfer policies that focus on the public good and on benefits to society and the economy, as well as on generating revenue.
4. Senior management backing for T3I must be wholesale and manifest, supported both in policy and practice.
5. Translation involves moving through stages from basic research outputs to proof of concept and into increasingly complex development and commercialisation activities. The Institute should recognise and provide for the variety of skills and infrastructure required at the various phases.

6. Biomedical translation should not only aim to create a product, but should also focus on what comes back along the translation path (besides money) to enhance research, for instance in new approaches or tools.
7. Prescriptive or rigid processes for translational activities should be avoided, with minimal formal structures and bureaucracy to allow innovators the freedom to flexibly engage in translation. However, translational support should be available and easily accessed: management of a translation project *per se* is not incompatible with creativity and innovation.
8. People are not made into translational scientists and entrepreneurs but there are ways to motivate potential innovators. Researchers will be more likely to support and take up T3I activities if they see commercialisation as:
  - a. the way to take forward and apply research
  - b. increasing resources for research
  - c. increasing independence and freedom
  - d. a boost to prestige and reputation
  - e. generating personal revenue
9. Personal incentives are vital in attracting people to T3I activities, and returns from successful T3I outcomes should be widely and proportionally shared between individuals, laboratories and the Institute.
10. The long timescales (10+ years) involved in translation must be recognised and acknowledged in considering institutional and researcher commitment and outputs. Measurements of success for researchers involved in T3I activities differ from basic research as the timelines and outputs vary considerably. Evaluation of researchers should be carefully considered, and include contributions arising from T3I as well as basic research outputs.
11. The measures of outputs from T3I activities are crucial in influencing organisational behaviour. It will be important to develop ways of demonstrating the value and potential impact of T3I activities, to complement standard quantitative measurement of activities.
12. There is a need to have internal mentors, advocates and champions for translation. Internal successes are the best stimulus and should be endorsed and publicised. Having world class scientists who have been highly successful at translation to guide and mentor is a way to provide role models and gain momentum.
13. Developing the multidisciplinary nature of the Institute will be vital for generating new translation and commercial opportunities in addition to stimulating new scientific ideas.
14. Training in leadership, translation, business skills and clinical education through mentoring, seminars and extra-curricular programmes is necessary to give researchers the skills they need to engage in T3I activities.

## **Funding**

15. Institutional funding should be available on a competitive basis to allow progression of translation activities at various stages. Awards should be made quickly and under the auspices of a translation advisory board, which preferably will have external members. Applications should be easy to make and quickly processed.
16. Grants, contacts, industrial partnering and any revenue streams should be used to minimise investment dependence where possible, as much damage is done to individuals and early investors by repeated cash-flow seizures. However, Venture Capital, and increasingly, Angel Investor involvement brings more than money, in the form of individuals who provide leadership, mentorship and business expertise.
17. Funding for development/commercialisation in the UK is scarce, and private money may only be realised from international sources. Early commercial/ Venture Capital investment may be desired to accelerate development (in addition to obtaining 'academic' grants) and so it is critical to have established institutional relationships which can be brought in very early in development projects.
18. If a project reaches the stage at which it requires a company structure to drive it forward, there will need to be institutional funds available and an evaluation mechanism for the investment commitment to be made. The Institute should consider if it wants to be in a position to provide institutional follow-on funding, beyond initial spin out funding, to avoid dilution.

### **Technology Transfer Office**

19. A Technology Transfer Office (TTO) can provide a wide range of support services to facilitate T3I activities which are not resident elsewhere in the organisation.
20. The activities of TTOs can be diverse and extensive but key responsibilities could be to :
  - a. identify translatable science
  - b. assess feasibility and identify development and commercialisation pathways
  - c. manage intellectual property
  - d. provide business development support
  - e. provide legal capability
  - f. manage translational activities
  - g. manage translation funding schemes
21. Careful consideration should be given to the structure and function of the TTO. It could be a separate corporate entity, which presents challenges in keeping researchers engaged, and in avoiding an 'us and them' culture. However, it does provide protection from liability issues. Alternatively the TTO could be run internally, or potentially a virtual office with dispersed functions.
22. Intellectual property (IP) arises from fortuitous R&D output, from directed research and through innovative concept development. The TTO, or similar function, will need to balance the importance of protecting the IP via patents with the cost, and the impact of the filing on ultimate goals.

### **Resources and Infrastructure**

23. Providing extensive core facilities to support translation is important; many of these are also required to support basic research activities, such as crystallography, NMR, and biophysical labs. Access to this infrastructure and accompanying internal expertise is critical.
24. Chemistry capability in particular was an area which was highlighted as being critical and seen as often lacking. Many translation projects (and companies) fail due to a lack of chemistry capability and expertise. It is essential that the understanding of the design of molecules in respect to function is an integral part of the core capability, and the biological context of the work requires experienced medicinal chemists.
25. Scientific and electronic workshops are needed, run by highly skilled experts who contribute in partnership with basic researchers to advance translation projects.
26. Ideally, there would be internal or adjacent incubator space, with limitations on size and length of residency of nascent companies. In the absence of these, the Institute could develop linkages with existing (but more remote) incubators.

#### **External interactions**

27. There has never been a better time for attracting industry involvement in collaborative research and development. Driven by economic and productivity factors, companies involved in discovery and development of therapeutics recognise that the future of new advances in human health have to be a combined effort between academia and industry. These companies are increasingly engaging in an external distributed R&D model and The Crick Institute should actively look to support innovative interactions with industry.
28. Staff should be encouraged to move from the Institute into industry and vice versa through:
  - a. Industry sabbaticals for Institute researchers
  - b. Joint appointments for industry scientists
  - c. Internships and research sabbaticals for industry researchers and executives at the Institute
  - d. Embedding employees of nascent spin-offs in Institute laboratories
  - e. Transferring staff to new companies when they spin-out
  - f. Work with social entrepreneurs