Creating Health Impact from Research

A joint initiative from Higher Education Institutions across the UK

This initiative is supported by the Wellcome Trust and is open to *all* researchers (post doc and onwards) who want to impact healthcare.

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Introduction

The Wellcome Trust is supporting translational research across the UK with the Translational Partnership Awards (TPA), aimed at tackling specific bottlenecks in translation within the recipient institutions, and focused on facilitating the journey of innovations from the bench to the bedside.

All the institutions in receipt of a TPA award established the TPA Network to share experience and expertise in translational research, and to facilitate cross institutional interactions between researchers.

This cross institutional training initiative is intended for early career researchers (post docs, fellows and newly established lecturers) with an interest in delivering impact in healthcare research. The training programme will consist in a series of live sessions complemented by learning videos developed by Nessa Carey. There will be also an opportunity to interact with other participants in an online platform. This document will outline the programme and the learning objectives for each session.

The University of Manchester and the University of Newcastle have partnered together to deliver this unique training opportunity, and training will be delivered to ten selected participants from each institution on each of the two cohorts.

The Trainer: Dr Nessa Carey

Nessa Carey has a virology PhD from the University of Edinburgh and is a former Senior Lecturer in Molecular Biology at Imperial College, London. She worked in the biotech and pharmaceutical industry for thirteen years and now splits her professional time between providing consultancy services to some of the UK's leading research institutions, and training people around the world in how to create benefits for society from basic research. Nessa brings a huge amount of "real-life" experience to her training. As a former academic, Nessa really understand how academics think, the drivers and pressures that operate on them, and how to connect most effectively with them. Nessa has also significant experience in the biotech sector, driving innovation through to impact in a high-pressure environment. Nessa can draw on a wealth of experience on how to progress innovations both at the scientific and the business levels. Throughout all her career Nessa continued to train people, because she loves that feeling when delegates leave a course with the knowledge, skills and confidence to work better and more effectively.

The learning pathway

The programme consists in a core pathway and add on sessions (Figure 1).

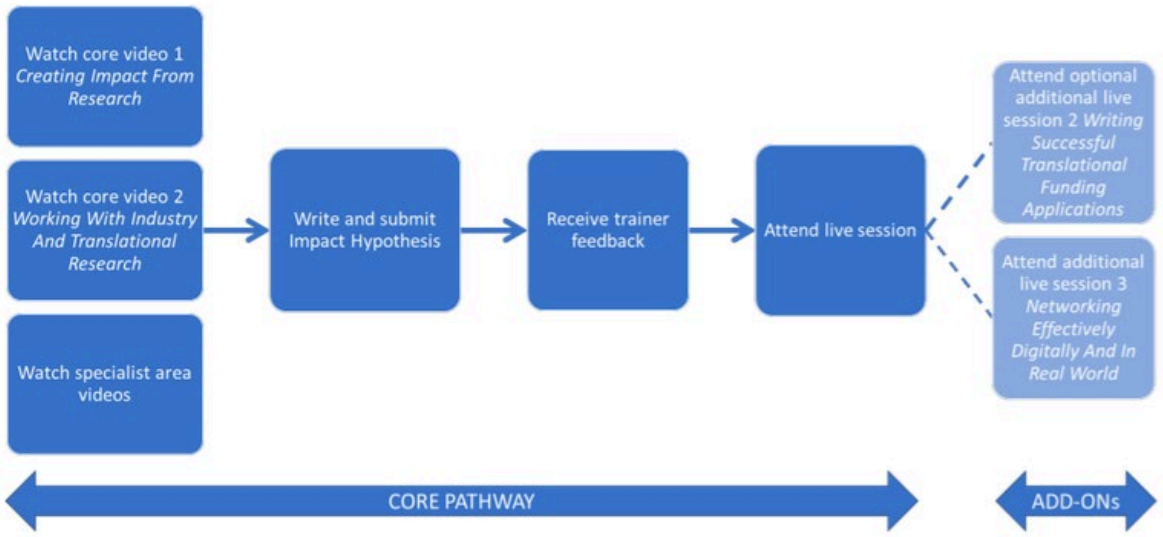

Figure 1 Learning pathway consisting in core and add on modules, with a combination of live sessions and pre-recorded videos

The core pathway includes **two core training videos** which will be made available to participants in advance of a live session. The training video will cover the following topics: video 1) *Creating impact from research*; video 2) *Working With Industry, And Translational Research.* After watching the videos, the participants will be able to write and submit an impact hypothesis based on their own research. They will then receive feedback from Nessa before attending the first live session. There will be two additional live sessions on *Writing Successful Translational Funding Applications* and *Networking Effectively Digitally And In Real World*. Additionally, specialist videos will be available to participants and these will focus on: *An Introduction to Drug Discovery and Development* and *An Introduction to Development of Medical Devices*. As a follow up to the specialist videos, you will be offered a place in surgery sessions to discuss your specific case studies. **All live sessions will last two hours and will be delivered via Zoom.** The learning objectives for each of the sessions and video contents are in the following sections of this document.

Expected commitment from attendees

In advance of the first live session, attendees are expected to have watched the two core videos and submitted an impact hypothesis to Nessa for feedback. Attendees are also expected to attend all three live sessions, where possible, but there won't be further work to complete beyond these sessions (except for putting what you learn in to practice!). Details of where to find the core and specialist videos and how to submit an impact hypothesis will follow.

Dates of Sessions

In June 2022 the *"Creating Health Impact from Research"* training will run twice. Specific dates for each cohort can be found below:

Cohort one:
Creating Impact From Research and Working With Industry, And Translational Research
7th June: 10.00am -12.30pm

Writing Successful Translational Funding Applications
8th June: 1.00pm - 3.30pm

Networking Effectively Digitally And In Real World
9th June: 10.00am - 12.30pm

Cohort two:
Creating Impact From Research and Working With Industry, And Translational Research
20th June: 1.00pm - 3.30pm

Writing Successful Translational Funding Applications
21st June: 1.00pm - 3.30pm

Networking Effectively Digitally And In Real World
22nd June: 1.00pm - 3.30pm

Additionally, participants will be offered optional surgery sessions on the specialist videos on *Drug Discovery and Development* and *Development of Medical Devices*. If you intend to participate to these sessions get in touch with the course organisers (at Manchester or Newcastle) as soon as possible.

Surgery Session 1

23rd June: 10am - 11.30am

Surgery Session 2

23rd June: 1pm – 1.30pm

Core Videos and Core Training Session

Synopsis

Although basic research is a hugely worthwhile pursuit in itself, it can be incredibly satisfying to see that your work is also creating benefit for other people outside the academic sphere. However, it can be really difficult to know where to start, and what to do. This training module, which consists of two videos (*Creating Impact From Research* and *Working With Industry, And Translational Research)* and a live online interactive session, will equip you with practical templates, strategies and tactics for exploring ways in which you can create impact from your research, and expand your professional transferable skill set.

Learning Outcomes

By the end of this course the attendees should be able to:

1. Recognise why government and charity funders have an increasing expectation of researchers and their institutions to support translational research and the creation of impact.
2. Define 'translational research' and why it is relevant to them.
3. Articulate the opportunity for impact from their own research by writing and critiquing an Impact Hypothesis
4. Devise methods to test their own Impact Hypothesis
5. Reflect on whether the proposed Impact from their research is realistic/relevant
6. Identify the key next stages to move their Impact idea forwards
7. Recognise the translational routes/business models to achieving Impact
8. Understand why non-academic partners want to work with universities
9. Articulate what benefits can be gained from working with non-academic partners
10. Address their own concerns about working with non-academic partners
11. Identify relevant potential partners and stakeholders to engage with
12. Present their research in different forms to different audiences, including defining and communicating their USP
13. Develop an awareness of the importance of intellectual property and the basic principles of protection and confidentiality
14. Reflect on how translational skills are applicable to careers outside the University
15. Identify researchers with similar issues and share knowledge and resources
16. Develop personal action plans to identify and develop the impact potential of their research

Add-on live session: Writing Successful Translational Funding Applications

Synopsis

If you want to create impact from your research you'll often need to find additional funding in order to validate and advance the work in a way that is different from basic science. This is the realm of translational funding and although writing a successful application has some similarities with standard research grants, there are important differences that you need to understand. In this live interactive session you'll gain an understanding of what translational funders are looking for and you'll learn how to structure and write a convincing application.

Learning Outcomes

By the end of this course the attendees should be able to:

1. Recognise what funders are trying to achieve via translational funding schemes
2. Identify the key features of a successful translational research application
3. Compare and contrast these with a basic research application
4. List activities that are appropriate to translational funding applications that would not typically be covered by a basic research grant
5. Appreciate the importance of targets, milestones, timelines and stop-go decision points
6. Discriminate between critical path and curiosity driven side steps
7. Distinguish between incremental improvements and value inflection points
8. Critique the most appropriate ways of demonstrating an achievable end use case
9. Understand what funders are really looking for in the sections of a typical translational research application, including IP considerations
10. Identify translational funding sources relevant to their own impact ambitions
11. Create a strategy for stepwise use of internal and external funding schemes
12. Appreciate the value of generating a clear narrative structure
13. Write a convincing translational funding Abstract
14. Identify local support structures and how to access them

Add-on live session: Networking Effectively Digitally And In Real World

Synopsis

Networking is a vital skill, no matter what sector you work in, but it's surrounded by misconceptions and misunderstanding. It's also quite a frightening prospect for a lot of people but it doesn't need to be. Anyone can learn to network effectively, if they develop the most appropriate strategy and tactics. In this live interactive session we'll explore the nature of networking, and equip you with the tools you need to succeed at this activity.

Learning Outcomes

By the end of this course the attendees should be able to:

1. Recognise that networking is a vital professional skill
2. Clarify their ideas about what networking is, and isn't
3. Identify the advantages they will gain personally from networking well
4. Challenge the common misconceptions about networking
5. Appreciate that networking is about contributing more than you take from a network
6. Identify the characteristics of a successful networker
7. Recognise that networking is a means to an end, not an end in itself.
8. Align their personal networking strategy with their own short-to-medium term ambitions.
9. Prioritise the types of in-person networking events they want to attend
10. Enter networking events with a strategy and practical tips that will make the event less intimidating and more productive
11. Recognise the importance of online networking methods
12. Take control of their online profile and activity
13. Write an effective online profile
14. Draft a convincing "ask"
15. Determine how much time they should spend networking
16. Create an active personalised networking plan

Specialist video: An Introduction to Development of Medical Devices

Synopsis

The term "medical device" can apply to something as simple as a scalpel or as complex as an MRI machine. Whatever the scale and complexity of device you are thinking of creating, there will be certain commonalities that you need to understand and address. The technical characteristics of the device are only one aspect of this. You also need to develop the commercial case (no point improving your technology if there's no-one who actually wants to pay for it) and the regulatory case (there won't be any customers if the regulators refuse to register your device). This video will introduce you to the basic principles and help guide you to think about how you will investigate key questions.

Learning Outcomes

By the end of this video the viewer should be able to:

1. Define a medical device
2. List the different classes of medical device
3. Differentiate the components of a medical device e.g. physical; software; consumables; data
4. Understand the importance of developing the technical, commercial and regulatory programmes in step with each other.
5. Analyse the market for a medical device
6. Distinguish between beneficiaries, end-users and customers
7. Interrogate where the value lies in a device
8. Recognise the importance of strong IP protection for the greatest commercial advantage
9. Understand the routes to market and the business models commonly used in this field
10. Recognise that it is cheaper, easier and faster to solve the right problems early, rather than try to fix them retrospectively.
11. Understand the importance of a Target Product Profile
12. Be familiar with the concepts of Registration and CE marking
13. Realise the importance of developing and selling internationally
14. Be aware of emerging fields e.g. Wearables
15. Focus on human centred-design and useability
16. Be aware of post-marketing surveillance
17. Appreciate that the development of medical devices is complex and always takes more money and time than you would expect.

Specialist video: An Introduction to Drug Discovery and Development

Synopsis

The drug discovery and development industry is a massive and highly regulated global activity. The field is increasingly complex and covers a range of modalities including small molecules, biological therapeutics, vaccines, and gene and cellular therapies. It typically takes 15 years between starting a new programme and actually being able to sell the drug and attrition rates are extraordinarily high, possibly reaching 95%. In this two-part video we will explore the way the industry works, and investigate the routes by which academic researchers can create attractive opportunities for drug discovery from their basic research.

Learning Outcomes

By the end of this video the viewer should be able to:

1. Identify all the major stages in drug discovery and development and the key questions being addressed at each stage.
2. Differentiate between a tool compound and a drug.
3. Distinguish an attractive from an unattractive target from an industrial perspective
4. Contrast what academia and industry mean by Proof of Concept.
5. Recognise the main pain points for industry.
6. Compare the opportunities and challenges for different disease classes e.g. rare diseases cf. oncology cf. neurosciences.
7. Contrast the technical benefits and drawbacks of: small molecules; biologicals; gene and cell therapies; new modalities?
8. Recognise the different ways in which companies work with academia and the opportunities these business models create.
9. Understand when pre-competitive collaborations are a viable option
10. Analyse why companies enter into large collaborative relationships in a specific field
11. Distinguish Collaborations from Contract research
12. Analyse the market conditions that favour the creation of a spin-out
13. Analyse the market conditions that favour the creation of licensing deals

Optional Surgery Sessions Following Specialist Videos

Each session will be 60-90 minutes in length and will either be about Medical Devices or about Drug Discovery.

The format will be discursive, with an emphasis on specific problems that the attendees (who will be self-selecting) bring to the session. When attendees register for the session they will be asked what they want to explore, which should be on concrete issues they are facing with specific translational projects, rather than more general curiosity. This information will be provided to the trainer in advance.

If an institution has a current funding call for translational applications, part of the surgery can be devoted to how to draft convincing applications for this.

The focus is expected to be around identifying the key "killer questions" in the technical, regulatory and commercial aspects of translation and innovation.