Challenges of Cancer Research in Europe – The Case of Translational Research

a report by
Françoise Meunier *and* **Nicole Heine**

Director General, European Organisation for Research and Treatment of Cancer (EORTC); and Communications Officer, EORTC

DOI: 10.17925/EOH.2006.0.1.15

One of the major challenges in cancer research in Europe resides in promoting 'translational research'. This is a term that is frequently used, but closer scrutiny reveals that like much scientific jargon it is often employed indiscriminately – very often just in order to sound innovative, or to attract research funding – and this by scientists and health research promoters alike.

In order to get a clear grip on how to address the challenge of promoting translational research in Europe, it is necessary to try and draw a clearer picture about what the term refers to. When we talk about translational research, we sometimes refer to it in a very broad sense ('The Translational Continuum'), and sometimes in a more narrow, technical sense, including new promising fields in cancer research.

Furthermore, as we do not intend to engage in a purely philosophical exercise, it shall be argued that although the term has been coined only recently, the type of translational research in the narrow sense has been practised by the European Organisation for Research and Treatment of Cancer (EORTC) for many years. Indeed, a case will be made for the thesis that the very 'recipe' of the translational research resides in the way cancer research is organised.

What is 'Translational Research' All About?

What exactly is 'translational research' in cancer research all about? For the sake of argument, let us take a somewhat naïve approach by asking the simple pragmatic question, 'What is translational research supposed to achieve?'

One prominent definition of translational research, provided by the Translational Research Working Group (TRWG) of the National Cancer Institute (NCI), states that translational research in cancer research is "to reduce cancer incidence, morbidity, and mortality." Specifying the goal, however, does not provide a complete definition, as this just seems to state the ultimate objective of any kind of cancer research in general.

The complete definition given by the TRWG is more promising:

> "Translation research transforms scientific discoveries arising from laboratory, clinical, or population studies into clinical applications to reduce cancer incidence, morbidity, and mortality."[1]

This definition highlights a feature of paramount importance: translational research means doing more than just engaging in one of these classical fields of cancer research or 'adding' these. Translational research transforms the findings of the research into clinical applications. Any activity leading to this goal falls under what the author would refer to as "translational research in the broad sense".

The seminal report 2004–2005 'Translating Research into Cancer Care: Delivering on the Promise', issued by the US President's Cancer Panel, specifies the scope of activities of 'The Translational Continuum' as falling into the following five categories:

- Basic Science Discovery (promising molecule or gene target, candidate protein biomarker, epidemiological findings).
- Early Translation (partnerships and collaboration (academia, government, industry), intervention development, phase I/II trials).
- Late Translation (phase III trials – regulatory approval, partnerships, production and commercialization; phase IV trials – approval for additional uses, payment mechanism(s) established to support adoption, health services research to support dissemination and adoption).
- Dissemination (new drug, assay, device,

1. *See http://www.cancer.gov/trwg/TRWG-definition-and-TR-continuum (23 June 2006).*

Françoise Meunier is Director General of the European Organisation for Research and Treatment of Cancer (EORTC), and is involved in the co-ordination and administration of all EORTC activities to promote the EORTC as a major force in the field of oncology. In 1991, she created a European Research Group dedicated to invasive fungal infections in cancer patients in the framework of the EORTC network. Before joining EORTC in 1991, Dr Meunier was head of the Infectious Diseases Department at the Institut Jules Bordet in Brussels, Belgium. She has published over 150 peer-reviewed articles and is a member of numerous international scientific societies involved in oncology.

Nicole Heine is currently Communications Officer of the European Organisation for Research and Treatment of Cancer (EORTC). A philosopher by training, she specialised in bioethics. Before joining the EORTC in 2006, she was Programme Officer at the German National Ethics Council responsible for the public outreach programme. She previously worked as researcher in academic bioethical institutions (Institute for Science and Ethics, Bonn; German Reference Center for Ethics in the Life Sciences, Bonn). Her research interests focus on protection of human subjects involved in biomedical research.

behavioural intervention, educational materials, training – to (i) community health providers, and (ii) to patients and public).

- Adoption (adoption of advance by providers, patients, public; payment mechanisms in place to enable adoption).[2]

This spectrum nicely illustrates the complexities involved in taking basic scientific discoveries into the daily practice of cancer treatment. Obviously, the activities falling under it go far beyond the capacities or responsibilities of any existing single research body or institution.

What may be called 'Translational research in the narrow sense' comprises the first three categories: Basic Science Discovery, Early Translation and Late Translation. This is what the EORTC has been aiming at since its very foundation by Henry Tagnon in 1962 – that is, focusing on academic research. It means asking scientific questions that do not necessarily have a commercial goal, as they might be relevant only to a small number of patients, or because they do not involve getting new drugs on the market, but improving the application of drugs already on the market.

In a more technical sense, translational research refers to a particularly promising and powerful type of research, one based on molecular biology, which brings about, for example, molecular markers for the fine-tuning of regimens, or 'targeted drugs' that interfere with tumour-specific pathways.

What Can and Should be Done to Improve Academic Cancer Research in Europe?

In order to improve translational research in cancer in Europe, scientists as well as health promoters and research politicians will have to bring about a new culture of research – nothing more, nothing less. What exactly does this involve? It consists mainly of (1) continuing to work on a favourable regulatory environment in Europe adequate to the transnational nature of clinical trials, (2) providing and promoting the right kind of infrastructures, as well as (3) promoting 'translational research scientists' by providing adequate training to young researchers. These points are expanded below.

1. The Directive 2001/20/EC, as declining numbers of trials activated clearly suggest, poses an administrative and economic burden on research institutions and represents a disincentive to individual researchers, the effects of which are especially burdensome to chronically under-funded academic research. This is true for European cancer clinical research, but evidence suggests that this is true also for other fields of academic clinical research in medicine. In order to overcome these difficulties, we invite the academic clinical research community across Europe to share their experiences with us at the EORTC, in order to make our voice heard on national and Europe-wide levels.

2. Clinical cancer research is a truly multidisciplinary endeavour, involving scientists, surgeons, medical oncologists, radiation oncologists, pathologists, biostatisticians and others. In order to bring about scientifically sound results, the clinical trials designed involve a large number of patients. The EORTC has since its very beginning provided a paradigm of how academic clinical cancer research can be successfully organised; by providing a central structure, it supports its members in trial design, new drug acquisition, collecting the data, interpreting the results and pooling academic research efforts from all over Europe. Traditionally disease-oriented, the EORTC has proactively launched a new initiative entitled the Network of Core Institutions (NOCI), especially dedicated to translational research projects, cross-cutting traditional cancer-type oriented groups. The recipe for future successful translational research in Europe seems to reside in this type of co-operation – a central infrastructure providing support for scientists all across Europe. If this is true, then building adequate infrastructures for cancer research requires allocating funding for these kind of structures.

3. Promoting a new culture of research should build on training individuals researchers to become 'translational scientists', with an adequate training to conduct clinical trials and the necessary multidisciplinary know-how, via MD-PhD programmes. The EORTC's contribution to this lies in the provision of educational courses and conferences, and, more recently, the 'Young Oncologists Scheme', integrating promising young oncologists into the boards of our groups and providing grants.

Creating a new culture of research should involve establishing fruitful partnerships across the traditional 'academic-industrial' divide, ensuring that research agendas are set by scientific excellence to the benefit

2. See http://deainfo.nci.nih.gov/advisory/pcp/pcp.htm (23 June 2006).

18th EORTC - NCI - AACR Symposium on

"Molecular Targets and Cancer Therapeutics"

PRAGUE, Czech Republic, 7 - 10 November 2006

This meeting will discuss the exciting changes in drug development and translational research

- Late rate registration deadline: 16 October 2006

Registration limited to 2200 participants, registering early is recommended

For more information: www.eortc.be

EORTC European Organisation for Research and Treatment of Cancer

NATIONAL CANCER INSTITUTE

AACR American Association for Cancer Research

of the patient, and not by short-sighted, cost-benefit rationale. Recent initiatives, such as the Innovative Medicines Initiative, could pave the way for sustainable partnerships.

However, whether or not this culture of research will materialise is subject to (economic) choices set by society at large. Furthermore, the use of the findings of biomedical research and of promises made or not made depends on values; this holds particularly true for very powerful tools of translational research – the biobanks.

Biobanks as Tools for Cancer Clinical Research – A Touchstone for the New Culture of Research in Europe

Large international biobank studies can make a substantial contribution to scientific research (by validation of the previous studies, identification of unknown causes of disease) and especially in cancer research. Today, the collection of tumour tissue already allows, for example, the identifying of genomic (and proteomic) signatures for individualised therapies, and major breakthroughs for cancer treatment are expected to result from such an approach.

Nevertheless, as powerful and promising a tool as this is, intricate ethical, regulatory and technical challenges still lie ahead. Some of them are highlighted here.

- One of the principles on which European societies agree upon *prima facie* is the non-commercialisation of body fluids and body parts, and therefore no financial incentive should be given for their donation. However, the findings of the research projects carried out involving tissue could ultimately give rise to patents, and unavoidably financial interests come into play. So one of the challenges resides in safeguarding potential donors from any pressure from interested parties. However, it is clear that this type of research involves considerable costs to be covered somehow, and it seems only fair that benefit from patents should be used to help finance research.

- One of the reasons biobanks provide such a powerful tool resides in the fact that they store tissue and link it to clinical data – and that this may be done before specific research hypotheses are formulated. This represents a tremendous opportunity to gather information today and thus provide scientific data for future hypotheses, so these may be tested in a much shorter period of time, thereby greatly reducing the timespan from laboratory discovery to clinical practice. However, whether this is feasible depends on which kind of consent from the donor is considered ethically sound in the name of respect of the patients' autonomy. In order to provide as much flexibility for future research, broad consent would seem appropriate. That the broad consent type is ethically sound respecting specific provisions has been forcefully argued very recently.[3] The Council of Ministers of the Council of Europe recommends that:

> "Information and consent or authorisation to obtain such materials should be as specific as possible with regard to any foreseen research uses and the choices available in that respect."[4]

This provides the consent form with a time index. What exactly does this imply, though? It seems that obliging research to re-ask for consent constitutes a burden that could eventually lead to the risk that the potential of biobanks will not be of as much use as would be beneficial to patients.

Conclusions

The case of biobanks, one of the most important tools for translational research, again shows that progress in biomedical research gives rise to questions in need of ethical reflection, such as the priorities society assigns to solving problems like cancer and the allocation of resources. These questions should form an integral part of the new culture of research. Especially in the case of biobanks, European consensus on these intricate questions should be sought as quickly as possible. The questions are complex and have to be solved proactively, as a clear regulatory framework for biobanking in Europe is needed for pan-European research. However, one should not forget that the freedom of research forms as much a basic European principal as individual autonomy, and it is adherence to these principles that we owe what European culture is today. As we have no readily available solutions for the ethical questions relating to the advances in biomedical research, we just have one solution – to engage in an open dialogue, and to be creative. ■

3 *Hansson M G, et al.,* Lancet Oncology *(2006);7: pp. 26–269.*

4 *Council of Europe; Committee of Ministers, Recommendation Rec(2006)4 of the Committee of ministers to member states on research on biological materials of human origin (Adopted by the Committee of Ministers on 15 March 2006 at the 958th meeting of the ministers' Deputies).*