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Excellent translational research in oncology: A journey towards novel and more effective anti-cancer therapies

A. Rajan[a], A. Berns[a], U. Ringborg[b], J. Celis[c], B. Ponder[d], C. Caldas[d], D. Livingston[e], R.G. Bristow[f], T.T. Hecht[g], T. Tursz[h,1], H. van Luenen[a], P. Bono[i], T. Helander[i], K. Seamon[d], J.F. Smyth[j], D. Louvard[k], A. Eggermont[h], W.H. van Harten[a,*]

[a]The Netherlands Cancer Institute, The Netherlands
[b]Karolinska Institutet, Sweden
[c]Danish Cancer Society, Denmark
[d]Cambridge Cancer Centre, UK
[e]Dana-Farber/Harvard Cancer Center, USA
[f]Princess Margaret Cancer Center, Canada
[g]Translational Research Program, National Cancer Institute, USA
[h]Institut Gustave Roussy, France
[i]Helsinki University Central Hospital Cancer Center, Finland
[j]University of Edinburgh, UK
[k]Institut Curie, France

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ABSTRACT

Comprehensive Cancer Centres (CCCs) serve as critical drivers for improving cancer survival. In Europe, we have developed an Excellence Designation System (EDS) consisting of criteria to assess "excellence" of CCCs in translational research (bench to bedside and back), with the expectation that many European CCCs will aspire to this status.

* *Corresponding author*. Group Leader, Psychosocial Research and Epidemiology, Netherlands Cancer Institute, Plesmanlaan 121, 1066CX, Amsterdam, The Netherlands. Tel.: 31 (20) 512 2860.
E-mail address: w.v.harten@nki.nl (W.H. van Harten).
[1] Honorary Director Institut Gustave Roussy, France.
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There is a growing awareness of the importance of identifying conditions that can contribute to translational cancer research success (Pozen and Kline, 2011). A need to improve performance is also a priority, in order to reduce the time taken to translate successful innovations from the laboratory into the clinic (Contopoulus-Ioannidis et al., 2008), and to take observations made in clinical studies back to the lab for further investigation or for the discovery of new biology. The increasing cancer burden and the fact that the performance of European cancer research could be considerably improved were the underlying drives for the EU Sixth Frame Work Programme (FP6) to fund clinical research for the first time (Busquin, 2002).

The Eurocan+Plus project (Eurocan plus report, 2008), funded in October 2005 (FP6), carried out a comprehensive analysis of European cancer research to identify barriers that hampered collaboration between various stakeholders, nationally as well as between European countries. One of the main conclusions of this project was the need to strengthen the collaboration between cancer research centres in order to achieve critical mass and share the infrastructure necessary for innovative translational cancer research. The concept of a Comprehensive Cancer Centre (CCC) was considered of great importance, being the only organisational form in which cancer treatment and care are closely integrated with research and education and, therefore, optimal for translational research.

As a follow-up to the Eurocan+Plus project, in 2011, the European Commission (EC) funded the EurocanPlatform, which brings together 23 European cancer research centres and 5 cancer organizations to structure translational cancer research. The long-term goal of this platform is to create a sustainable translational cancer research platform with the critical mass of expertise, resources, infrastructures, and patient numbers that are needed to facilitate innovation and improve performance in all areas of cancer research, particularly translational research. Recently, six EurocanPlatform centres established Cancer Core Europe (CCE) (Eggermont et al., 2014) as a significant first step towards establishing such platform (Eggermont et al., 2014; Celis and Ringborg, 2014).

As requested by the EC (Ringborg, 2008; Brown, 2009), a work package was dedicated to developing a methodology to quality assure and designate "CCCs of Excellence" that could qualify for future European funding. Developing a methodology for identifying and assessing CCCs of Excellence in translational research was one of its primary goals. Towards this aim, we previously reported the steps that were taken to develop a draft Excellence Designation System (EDS) (Rajan et al., 2013). This included evidence from current literature and a European stakeholder consensus exercise, covering a 2-year (2011–2013) period and involving researchers, managers, clinicians and patient representatives from cancer institutions across Europe. Now, we describe a final EDS that has been developed in collaboration between the EurocanPlatform and the European Academy of Cancer Sciences (EACS) and that has been piloted with three European CCCs. Its relevance for CCCs and translational research is discussed.

Translational research has rapidly evolved in the past decade (Doroshow and Kummar, 2014) and numerous definitions currently exist (Woolf, 2008; Rajan et al., 2012). However, only few cover the complete cancer research continuum from bench to bedside and vice versa (Rajan et al., 2012). One definition (National Institutes of Health, 2014) that does, was put forward by the staff of the National Cancer Institute (NCI) while working with Dr. Richard Klausner, it's former Director:

> *"Translational research uses knowledge of human biology to develop and test the feasibility of cancer-relevant interventions in humans OR determines the biological basis for observations made in individuals with cancer or in populations at risk for cancer. The term "interventions" is used in its broadest sense to include molecular assays, imaging techniques, drugs, biological agents, and/or other methodologies applicable to the prevention, early detection, diagnosis, prognosis, and/or treatment of cancer"*(National Institutes of Health, 2014).

We present this perspective in three parts: (i) an introduction to the EDS that we piloted with 3 European CCCs (see acknowledgement for composition of peer-review team), in September 2014 at Helsinki University Central Hospital Cancer Center, Cambridge Cancer Centre and The Netherlands Cancer Institute; (ii) a summary of the pilot results (see Table 1) as well as the experiences of CCCs and the peer-reviewers (Pozen and Kline, 2011) from taking part in the pilot; and (iii) a discussion of the relevance of the system for translational oncology and an overall conclusion.

1. Excellence Designation System (EDS) in translational research for CCCs

European CCCs already go through several assessments at the national level. In addition, they undergo European/international assessments such as the accreditation and designation system developed by the Organization of European Cancer Institutes (OECI). Hence, it was felt that the EDS should not reinvent the wheel nor add bureaucracy by creating a totally new assessment system. So, it takes the existing national/international assessments as a basis. The reason that the EDS criteria are made descriptive is primarily that it builds on the OECI accreditation & designation system and secondly that various scientometric and quantitative analyses are already part of both the OECI-system and other reviews. At present there is no quantitative rating system for EDS as it was felt that expert review is at present the best way to judge the excellent status of translational research. The EDS covers only criteria that are not included in the OECI standards for CCCs. The standards related to inventory and core facilities exist in the OECI programme and this information will be obtained from the OECI designation report. Moreover, excellence can be found in fields that do not necessarily overlap. European CCCs that have an OECI CCC designation are eligible to apply to this programme. However, balancing between maintaining a high standard of the excellence program and allowing CCCs that apply to have a fair chance at achieving the designation status is a challenge. In the EurocanPlatform project the system is meant to set criteria for entry in European Translational Research platforms, which is considered for instance for