

Revolutionising Biomedical Research Education and Training in Europe.

Mike Hardman, MD; AstraZeneca Science Policy and Relations, Macclesfield, Cheshire, England & Michael Wolzt, MD; Medical University of Vienna, Department of Clinical Pharmacology, Austria

The Innovative Medicines Initiative (IMI), the largest public private partnership in biomedical research, was established to speed up the development of better and safer medicines for patients in Europe. The IMI Education and Training projects specifically address the skills and competency requirements to make Research and Development (R&D) in Europe more competitive [1]: the European Medicines Research Training Network (EMTRAIN) project is one of these projects [2].

This article summarises the EMTRAIN activities after the first 2.5 years of the 7 year project.

on-course®

We have developed on-course® - a comprehensive, European, biomedical and medicines research and development postgraduate course portal [3]. This portal provides information about courses for Masters, short courses (continuing professional development, CPD) as well as PhD programmes. Over 3000 courses have been reviewed from approximately 1000 universities and other providers, covering information from 39 countries in 21 languages. Not only is this a free, flexible and easy way to access information, but it also includes the IMI Education and Training Quality Standards [4]. In addition Professional/Scientific bodies can indicate which courses they recognise as being suitable for their members' needs. This allows the course seekers to find the right course, with the right quality to meet their needs.

Although the IMI Education and Training projects have addressed the gaps identified in the IMI Strategic Research Agenda [5], there is a continuous need to identify new gaps and find ways to fill them quickly. One way of doing this has included working with the European Strategy Forum on Research Infrastructures (ESFRI) in the field of Biological and Medical Sciences (BMS) [6]. Currently there are thirteen BMS infrastructures; six are partners in the consortium, but the education and training activities of all thirteen are supported by EMTRAIN. Their courses are included in on-course®. Furthermore, EMTRAIN has a "gap team" whose role is to scan continuously the environment to identify needs as they emerge. The on-course® portal will provide the pharmaceutical industry with a platform for sharing their needs with academia and other course providers, and inviting collaborations.

on-course® is a registered trade mark

Pan-European needs and capabilities

EMTRAIN has undertaken a pan-European investigation with both academic, and pharmaceutical industry contacts. From these questionnaires and interviews we have already established that the needs of the industry and academia vary considerably across Europe as reflected e.g. by: Malta being particularly interested in medical devices; Hungary being interested in generics and biosimilars; and Luxemburg being interested in finance/venture capitalism. By the end of the year we will publish the full report.

Continuing Professional Development – LifeTrain

Every scientist needs to maintain their professional competence using guidance from their employers, academia and professional/scientific bodies. The extent to which such guidance exists is extremely variable.

Therefore, we have started LifeTrain, a programme to develop a common framework for CPD in Europe. After the first LifeTrain workshop for Professional/Scientific bodies in October 2011, we produced a concept paper which has been widely circulated for consultation [7]. In parallel with working with these Professional/Scientific bodies, we are working with other stakeholder groups including: DG Education and Culture; industry employers, EFPIA and small to medium enterprises (SMEs); the European Regulatory Agencies' education and training network; national ministries of education; academia and course providers; and the BMS infrastructures. These work-streams will come together at the second LifeTrain workshop in November this year which will result in a position paper defining the agreed, common framework for CPD.

PhD programme framework

Our intention is to develop a cohort of “industry-aware” young scientists who are better equipped to deal with the future models of medicines development, especially the increased collaboration between industry and academia. This can best be achieved by building on the extensive experience of public-private partner (industrial) PhDs [8] and adding an understanding of the medicines development process and the transferable skills which are most relevant to such scientists. EMTRAIN has developed a framework for these PhD doctoral candidates/students and our first PhD workshop was held in February 2012. We are also working closely with the Organisation for PhD Education in Biomedicine and Health Sciences in the European System (ORPHEUS) who have developed a set of standards for PhD education [10].

Conclusions

EMTRAIN has made considerable progress in the first 2.5 years of the project. We are now in the process of developing robust performance metrics to assess the impact of the project, and we are exploring models of sustainability beyond the public funding period of the project.

Figure 1. EMTRAIN Consortium in 2012

Public Partners (ESFRI BMS)	Private Partners (EFPIA)
1. Medical University of Vienna (ECRIN partner)	1. AstraZeneca
2. Karolinska Institutet (EATRIS & ECRIN partner)	2. Genzyme
3. University of Manchester (BBMRI partner)	3. Novartis
4. The Institut National de la Santé Et de la Recherche Médical (ECRIN partner)	4. Bayer
5. The European Molecular Biology Laboratory's European Bioinformatics Institute (ELIXIR partner)	5. Roche
6. Helmholtz Zentrum fuer Infektionsforschung (EATRIS partner)	6. GSK
7. Medical University of Graz (BBMRI partner)	7. UCB
8. The Institut Clinique de la Souris (Infrafrontier partner)	8. Novo Nordisk
9. Helmholtz Zentrum Muenchen (Infrafrontier partner)	9. Sanofi
10. University of Oxford (Instruct partner)	10. Boehringer Ingelheim
11. Medical Research Centre, Hungary (ECRIN partner)	11. Janssen Pharmaceuticals
	12. Orion
	13. Almirall
	14. Lundbeck
	15. Esteve

Figure 2. ESFRI BMS Partners' network

The participating six ESFRI BMS infrastructures have already established a network across the following countries:



ECRIN: Austria, Belgium, Czech republic, Denmark, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Spain, Sweden, Switzerland, Turkey, United Kingdom;

ELIXIR: Belgium, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Latvia, Netherlands, Poland, Slovenia, Spain, Sweden, Switzerland, United Kingdom;

BBMRI: Austria, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Malta, Netherlands, Norway, Spain, Sweden, United Kingdom;

INSTRUCT: Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Latvia, Lithuania, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom;

INFRAFRONTIER: Austria, Czech Republic, Denmark, Finland, France, Germany, Greece, Italy, Portugal, Spain, Sweden, United Kingdom, and Canada;

EATRIS: Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, United Kingdom.

Figure 3. Location of on-course® courses



References:

- [1] <http://www.imi.europa.eu/>
- [2] <http://emtrain.eu/>
- [3] <http://www.on-course.eu/>
- [4] European Journal of Pharmaceutical Sciences. Volume 45, Issue 5, 11 April 2012, Pages 515–520. <http://www.sciencedirect.com/science/article/pii/S0928098711004374>
- [5] <http://www.imi.europa.eu/content/research-agenda>
- [6] http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri
- [7] http://emtrain.eu/images/stories/news/concept_paper_lifetrain_march%205th.pdf
- [8] <http://www.fi.dk/publikationer/2012/introduction-to-the-danish-industrial-phd-programme-structure-implementation-and-effects/introduction-to-the-danish-industrial-phd-programme-structure-implementation-and-effects>
- [9] **PhD framework** – <http://emtrain.eu/>
- [10] <http://www.orpheus-med.org/>

Abbreviations:

BBMRI	Biobanking and Biomolecular Resources Research Infrastructure (www.bbmri.eu)
EATRIS	European Advanced Translational Research Infrastructure in Medicine (www.eatris.eu)
ECRIN	European Clinical Research Network (www.ecrin.org)
ELIXIR	European Life-science Infrastructure for Biological Information (www.elixir-europe.org)
Eu2P	European programme in pharmacovigilance and pharmacoepidemiology (www.eu2p.org)
INFRAFRONTIER	European infrastructure for phenotyping and archiving of model mammalian genomes (www.infrafrontier.eu)
INSTRUCT	Integrated Structural Biology Infrastructure (www.structuralbiology.eu)
PharmaTrain	Pharmaceutical Medicines Training Programme (www.pharmatrain.eu)
SafeSciMET	European Modular Education and Training Program in Safety Sciences for Medicines (www.safescimet.eu)