

# Bridging the gap

*Without competent researchers, innovation processes in European medicines' development will not be sustainable, say Klaus Wassermann and Christa Janko, EMTRAIN*



*Research process: Klaus Wassermann and Christa Janko, EMTRAIN believe that competent researchers for innovation and development in European medicines are vital*

EMTRAIN is a European public-private consortium, offering tools and services for improving the infrastructure for education in European medicines research and development.

In the past decade, the environment for medicines research and development has undergone unprecedented change. Core structures shifted from big pharma to extensive collaborations between industry, academia and small and medium enterprises. Novel scientific discoveries have been made, with greater emphasis on the molecular basis of disease for stratified and personalised medicine. And the overall focus of the business is shifting to needs and priorities of patients and society.

Within all these dynamics however, the pharmaceutical industry continues to see a lack of new product emerging from its research and development departments. Licences for blockbuster medicines are phasing out, and there are currently not enough new product lines to fully compensate. For these reasons, making the time-consuming and resource-intensive research and development processes both more efficient and effective is a major concern. To provide patients and society with novel innovative medicines and equally sustain prosperity for the business in the future, something needs to be done.

EMTRAIN, the European Medicines Research Training Network, tackles these challenges. The consortium addresses a crucial factor for sustainable innovation in European medicines research: educating and training biomedical professionals for them to stay optimally competent in their job.

The EMTRAIN project is supported by Europe's public research community and the European pharmaceutical industry in the form of a public-private partnership. In short, its central services support students, early stage researchers and established professionals in advancing their careers in medicines development.

EMTRAIN's core argument is that to meet the needs of future medicines research and development, in order to boost innovation, it will be necessary to leave the traditional disciplinary silo approach behind and adopt fundamental cross-disciplinary thinking and collaboration. This change in culture is profound in that

it requires both the academic and the business worlds to change well-established routines and work together much more closely.

## Identifying obstacles

In Europe a number of hurdles have been identified in the fields of biomedical education and training which hold back innovation processes in medicines research on the whole. For example, highly qualified biomedical professionals wishing to move to another European country in order to advance their careers might have to undergo re-training. A broadly agreed procedure to recognise scientific training across Europe would improve this situation considerably.

Another issue is disruptive changes in science and technology, challenging mechanisms of maintaining professional competency by rendering hitherto well-established methods and routines obsolete. With ever greater complexity in research and manufacturing, increasing specialisation of individual professionals and thus ever bigger multidisciplinary teams working together on solving a specific problem, there is a substantial need for collaboration and communication across disciplinary boundaries.

Finally, the number of postgraduates employed in the private sector has been shown to have a significant positive effect on company as well as national economic performance. However, a major cause for concern is widely seen in the fact that traditional academic institutions are not effectively preparing their biomedical sciences students for careers in private industry. Today only about 20% of newly graduated PhDs in the biomedical sciences are able to pursue a career in academia because there are not enough tenure track jobs. Thus, catering for the remaining 8%, a majority of which will take up a job in industry, is of the highest importance.

## Preparing academics for jobs

So traditionally, pharma companies need to invest heavily in newly employed young research staff. The main issue here has not so much been mastering up-to-date biomedical research methods and procedures, but rather familiarising newly employed PhDs with the implications and challenges of working in the business environment. Raising PhD students' awareness early on about how pharmaceutical industry works would help significantly to reduce this initial effort and improve collaboration between the industry and academia.

The EMTRAIN project has established tools to cater for this. It runs annual workshops for PhD students who are interested in gaining in-depth understanding of how the pharma industry works. The PhD workshops are hosted by pharmaceutical companies who are themselves part of the EMTRAIN consortium. Students attending the EMTRAIN PhD Workshop learn about the medicines development process, entrepreneurship, intellectual property and ethics, to name but a few. Besides that, the PhD students practice presenting their research work to a critical expert audience. The company hosting the workshop brings the students in close contact with their senior research staff and provides guided tours of their local premises. The EMTRAIN PhD workshops have been met with students' interest and enthusiasm and have reportedly been very successful in terms of attendance and benefit to the participants.

## Biomedical web portal

Students and experienced professionals who require training are faced with the problem of how to find appropriate courses that match their requirements of time, location, cost and quality. EMTRAIN offers another tool to meet this need - a web search platform containing a comprehensive list of courses and other education and training opportunities in the biomedical sciences from all across Europe.

On-course ([www.on-course.eu](http://www.on-course.eu)) contains details of close to 6,800 biomedical masters, PhD and short courses. A team of dedicated curators are working on entering courses, updating existing entries and giving support course providers on a daily basis. Course seekers benefit from a sophisticated variety of customisable search functions. Course providers profit from the opportunity of advertising their courses on a platform that is specifically targeted to their audience. Registered providers have access to the backend of the system, enabling them to maintain their own course entries by themselves. In addition to its advanced search and editing functions, On-course also provides elaborate tools for statistical analyses of information in the database which monitor trends and gaps, as well as patterns of usage.

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## Competency as currency

Maintaining optimal competency doesn't stop once research staff are trained and fully established in the company business. Skills, knowledge and competencies required to fulfil a specific role in the medicines development value chain are changing constantly, with new concepts, research technologies and market trends emerging continually. Planning for additional training to maintain innovation rates, as well as to advance the researchers' careers, requires a systematic approach.

A third part of EMTRAIN's activities has been building and maintaining an extended network of stakeholders in continuing professional development. Under the umbrella of the LifeTrain initiative ([www.lifetrain.eu](http://www.lifetrain.eu)) is an open community of employers, professional bodies, course providers and individual professionals exchange ideas and develop concepts and tools to better organise continuing professional development for research staff in the biomedical sciences.

LifeTrain's core concept is the notion of competency. Competencies are observable factors which can be documented and compared against formalised requirements. Competency not only includes knowledge acquired by formal training but also factors like skills, values and attitudes. To implement the competency concept in everyday running of medicines development LifeTrain invites employers and professional bodies to define the requirements of a specific role in specially conceived competency profiles. The researchers in turn demonstrate how well they match a profile with their competency portfolios which they are invited to maintain by themselves. The competency concept is a major step in supporting mobility across national and disciplinary boundaries, significantly facilitating both employers' staff management and professionals' career planning across Europe.

Currently, LifeTrain has more than 80 dedicated signatories who have agreed on a set of core principles for optimally conducting continuing professional development. LifeTrain's signatories, as well as about 200 other stakeholders, meet up at the annual LifeTrain Workshop to discuss recent developments in continuing professional development for biomedical sciences, resulting in developing further concepts, strategies and tools.