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Challenges of Life Science-based Innovation in Europe

A position paper by the Young European Biotech Network

based on the results of the Youth conference on
European Life Science Careers, Berlin 2012

EXECUTIVE SUMMARY

Introduction

In this position paper, obstacles are highlighted that constrict the transfer of Life Science knowledge into products and applications. We, the Young European Biotech Network (YEBN), propose solutions that could help to overcome these obstacles.

Despite the wealth of research data published, too few Life Science-based innovations are presently developed. Investment into Life Science research has led to a fundamental increase in knowledge over the last decades. Almost a million newly published articles were added to the biomedical database Pubmed in 2012 alone. Yet, patients are still waiting for new cures, plastics and toxins are still accumulating in the environment, and bacteria develop multi-resistance against antibiotics. This position paper is intended to encourage a dialogue among the Life Science community and relevant stakeholders. The aim of this dialogue is to establish best practices for the creation and usage of Life Science knowledge with the greatest benefit for European society.



Graphic adapted from Belle Mellor originally published in Nature 453, 840-842 (2008)

The full position paper can be downloaded at www.yebn.eu/projects/position-paper2013

Below is the abridged summary of the position paper. Problems of the Life Science innovation process are identified, followed by possible solutions that could enhance Life Science-based innovation.

Abridged summary of problems and solutions

Problem 1: Bridging the translational gap between discovery and application

Solution 1.1: Promote target-driven research and Open Innovation

Besides curiosity-driven research, funding agencies should also promote target-driven research, i.e. reward the delivery of preset research goals, as offered by the research charity Price4Life or through Open Innovation.

Solution 1.2: Join European Research Networks

European Networks and Initiatives (e.g. COST, EUREKA, EIT, and many more) support the collaboration between academia, industry and medical centres. By combining capacities and identifying major targets, these networks can amplify the potential of research areas involved and facilitate the application of their discoveries.

Problem 2: Short-term competition discourages innovation

Permanent short-term competition for funding, laboratory space and positions creates job insecurity among scientist. This promotes short-term tactics and stifles long-term research strategies.

Solution 2: Promote quality, not quantity of research publications

We appeal to funding bodies, as well as to universities and research institutes, to select for research quality over quantity, for example by evaluating only the five best previous publications of their applicants and staff.

Problem 3: Reproducibility of life science research results

Many life science research publications cannot be robustly reproduced by independent laboratories.

Solution 3.1: Promote research integrity and documentation practice

During the training of young researchers, more emphasis needs to be put on research integrity and documentation practice. Supervisors need to act as role models for their students.

Solution 3.2: Enhance documentation practice and quality monitoring of publications

We appeal to journal editors to:

- Prevent the on-going citation of retracted publications and to make retractions more visible
- Publish the correspondence between reviewers, researchers and editors
- Allow researchers to publish a comprehensive description of all experimental protocols

Solution 3.3: Ensure proficient statistical analysis

Research students and staff need to be appropriately trained in applied statistics. Statistical advice service units should additionally be established at all research institutes and universities. Moreover, we appeal to the European Commission to support the development of a Europe-wide, certified online course in applied statistics for researcher in the Life Sciences.

Solution 3.4: Switch to electronic data documentation

This change would induce a fundamental improvement in the way experimental data is stored, accessed and combined.

Problem 4: Transfer of public research knowledge

Solution 4.1: Educate academic researchers about knowledge transfer possibilities

Inexperience in the patenting process can delay publication and reduce patent options. Researchers also need to become more aware of other ways of knowledge transfer, such as industry collaborative research, consultancy and contract research.

Solution 4.2: Do not forget the first mission of universities

The hire of science graduates by industry is a very effective way of knowledge transfer. Quality and integrity of higher education needs to be sustained. Lecturers should be hired and assessed based on their teaching abilities instead of their research output.

Problem 5: Culture difference between Academia and Industry

Opposing objectives and strategies obstruct collaborations between public and private partners.

Solution 5.1: Promote industry experience among Life Science students

Students should be encouraged to conduct placements in industry. Industry-academia partner PhD programmes need to be more widely advertised and supported.

Solution 5.2: Promote the formation of public-private research centre clusters

These can lead to very productive collaborations and enhance the economic status of a region.

Problem 6: Communication between basic and clinical scientists

Basic science researchers who work on disease models need to interact more with clinicians to ensure the transferability of their discoveries.

Solution 6: Create and engage with centres of translational medicine

In Europe, the European Advanced Translational Infrastructure in Medicine assesses the translational potential of discoveries, identifies the optimal regulatory strategy and gives access to large patients groups.

Problem 7: How to find the right collaborator

Research thrives through collaborations. But finding a suitable collaborator from another research field can be difficult.

Solution 7: Provide support programmes of collaboration initiation

We appeal to the European Commission as well as to the national governments in Europe to support collaboration initiation programmes like the European Crucible.

Problem 8: Science communication

In order to promote their innovations, scientist must take public concerns seriously and address them timely. Yet most scientists have no prior experience in public communication.

Solution 8: Train scientists in public communication and promote evidence-based policy

Young scientists need to be encouraged to practice their communication skills and engage with the public.

**Please send any feedback, comments & ideas to position.paper@yebn.eu
Together, we can create a better environment for research-based innovation.**

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About the Young European Biotech Network (YEBN)

The Young European Biotech Network (YEBN) is an international association of young scientists from undergraduate student to postdoctoral researcher level based in the Life Sciences and Biotechnology. YEBN has almost 4000 members organised in six national organisations as well as individual members in by now 14 European countries. YEBN represent the needs of young Biotechnologists and Life Science researchers in Europe and promotes the European spirit among its members. The aims of YEBN are to improve education, career development and job prospects for young scientists in Europe, as well as to foster the interaction between the Bio-industry and academia. For more information about YEBN and its present as well as past activities please go to www.yebn.eu.

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