



YOUNG EUROPEAN BIOTECH NETWORK

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**YOUTH CAREERS IN LIFE SCIENCES  
IN EUROPE**

# **A WHITE PAPER**

Frankfurt, February 13<sup>th</sup> 2009



## EXECUTIVE SUMMARY

From the 11<sup>th</sup> to the 13<sup>th</sup> of February, 2009 the first Youth Conference on Careers in Life Sciences in Europe took place in Frankfurt. Thirty young scientists from different European countries discussed with stakeholders from institutions, universities and companies with the aim to tackle major obstacles on the career paths of young scientists in the field.

This document represents the results of the meeting in the form of proposals for action to be carried out by European and National institutions, Universities, companies' organisations, and scientists' networks.

Different measures were hereby centred on three interfaces where criticalities emerge: academia/industry, academia/government and government/industry.

On the whole, the most urgent need is to reinforce the links between the three areas and in particular to ensure young scientists to be better prepared not only for an academic career, but also to acquire the necessary skills needed to bring scientists into a real, competitive, private job market.

**It is for these reasons that we urge the European Commission, National Governments, Universities and Companies' organisations to take action in order to:**

1. Define formal instruments enabling the educational system to keep its fundamental characteristics but, at the same time, to take into account the evolution of the job market as well as the evolving needs of professionals to be educated;
2. Include structured and standardized training on complementary skills (i.e. communication, CV writing, intellectual property rights and ideas valorisation) in all three educational levels (BSc, MSc and PhD);
3. Define formal instruments to promote and improve the governance of a unique job market in a bottom-up way, by involving researchers' organisations in the management, monitoring and centralization of the existing tools;
4. Invest in special Ph.D. programmes designed to facilitate contact and circulation of people between industry and academia and vice versa (iPhD – industry PhD);
5. Elaborate model contracts for human resources to be shared between academia and industry, in order to take into account the needs of both parties as well as to facilitate contacts and knowledge transfer;
6. Invest in multi-national educational programmes, and define better international standards for education at all levels; elaborate funding schemes subject to these standards fulfilment.

## INTERFACE ACADEMIA-INDUSTRY

### Question 1:

How to ensure you get the complementary skills that make you stick out of the crowd?

### Solution 1:

Dynamic dialogue between industry and academia capable of influencing the content of education as far as complementary skills are concerned.

#### Specific actions

- a. Small scale preliminary **snapshot of the educational offers regarding complementary skills** training among different universities: a collection of preliminary data is designated to set an informed background for short term subsequent actions (b)
- b. **Meeting of high-level stakeholders** (EuropaBio, EFB, European Conference of Rectors, if possible Commissioners on Enterprises, Research and Education) to set a list of measures to be implemented in the form of incentives, evaluation schemes and grant distribution criteria for universities. The goal of these measures will be to induce the universities to include in their structures some instruments of dialogue with industry as a tool to dynamically evaluate and plan the integration of classical education with complementary skills education at different levels.
- c. **Comprehensive survey on educational offers regarding complementary skills** courses at different universities and institutions, in order to help individuals as well as universities to better coordinate efforts in integrating education with complementary skills training.
- d. **Informative campaigns** for students at all levels in order to stimulate greater awareness of the importance of complementary skills training in their education both for those wishing to stay in academia and for those interested in an industrial career.

### Solution 2:

Create an integrated education at universities capable of enriching traditional courses with a range of additional educational offers on complementary skills, and ultimately revise the educational CVs of life science students.

#### Specific actions

- a. Identify and implement incentives for industry personnel spending a small percentage of their working time teaching at universities (promoting programmes, knowledge credits to industry etc.).
- b. Identify rewarding solutions to induce universities to hire more external professionals teaching professionalizing subjects related to complementary skills (patents, business plans, project planning etc.).
- c. Foster partnership frameworks between universities and third sector organisations (like students or professionals organisations) where students as well as early stage researchers can actively acquire complementary skills by doing activities in cooperation.
- d. Identify and implement three different schemes of mandatory/elective courses on complementary skills to be acquired at each educational level (BSc, MSc, and PhD).

**Question 2:**

**Are the current educational CVs and mobility conditions enough to allow technology transfer between industry and academia?**

**Solution 1:**

**Create an innovative framework for industry–academy partnerships made of new legislations, specific agreements and contracts capable of meeting the needs of both partners as well as their interaction.**

**Specific actions**

- a. Elaborate **a specific contract for a “shared human resource” individual** to be shared between industry and university within cooperation projects, in order to address the needs of both partners (publication rate and training for universities, as well as IPR protection and confidentiality for industry).
- b. **Elaborate specific training schemes** funded equally by industry and universities for human resources involved in joint projects.
- c. Elaborate **more specific schemes for the realisation of IPR in industry-academia collaborations**, in order to set a more general frame in comparison to those at a one-to-one negotiation level in different European locations. Reaching general agreements by representatives of universities, of industry organisations and scientists’ organisations would be preliminary.

**Solution 2:**

**Integrate into the higher level of research education (PhD, PostDoc) exchange periods in industry as part of professional advancement and as a vector of knowledge to be transferred in both directions.**

**Specific actions**

- a. Set **international criteria for PhD/PostDoc programmes regarding the periods spent in industry**. These periods could be mandatory (or not), and hence, would be similar to the minimum periods to be spent abroad in order to get the label “European Doctorate” to a PhD title.
- b. Evaluate the effectiveness of periods spent outside universities during formal BSc programmes (already foreseen by the Bologna process), which could pave the way for longer periods to be spent during PhD or PostDoc programmes.
- c. **Identify model contracts for PhD theses** (as well as for Marie Curies projects) **to be conducted in industry** or in an academia-industry cooperation, in order to ensure certain goals to be reached (e.g. defined objectives and deliverables as well as the respect for the needs of both partners involved).

## INTERFACE ACADEMIA-GOVERNMENT

### Question 1:

What are the barriers that need to be tackled in order to attract the brightest minds to the ERA?

### Solution 1:

Ensure open access to funding information for all life scientists within and outside the ERA by improving and better advertising existing databases for fellowships/grants available in the EU (e.g. the EURAXESS Portal).

#### Specific actions

- a. Actively promote and disseminate information about the EURAXESS platform and ensure that all public funded positions are available on this platform, making it a reference point for all young life scientists. **Establish links with private funding bodies to encourage them to advertise their funding opportunities using the same platform, thus concentrating the available information at one place.**
- b. Involve life scientist organizations (e.g. YEBN) in a more formal way to regularly monitor and survey the efficacy of the tools provided to life scientists, in order to **ensure constant bottom-up updates and improvements of the above mentioned platform.** These surveys could lead to the bottom-up collection of additional information needed.
- c. **Better communication about funding opportunities** realized at regular workshops to be organized at universities.
- d. **Foster links between researchers' and students' organizations** to share experience on grants and funding opportunities in the respective countries, thereby ensuring a more personal based approach to grant information.

### Solution 2:

Engage governments and universities in allowing **more flexible** visa regulations in order to enable graduates **switching** more easily **from a student-visa to a working-visa**. These visa regulations should be complementary to the "scientific visa" which will be applied soon.

### Solution 3:

**Promote international, multilateral, multi-national curricula throughout the EU** to encourage student mobility between countries. This would include mutual recognition of university degrees and courses (see below) as well as a governmental agreement of the educational standards for CVs in life sciences. To further enhance the worldwide appeal of these programmes, English should be added as a teaching language.

### Solution 4:

**Introduce a standardized ranking system for university degree courses** comparable to the current general university ranking system. This measure will allow students to compare courses between different European universities and choose the most applicable university, thus providing a focused group of the most qualified universities. Such a European-wide "course *à la carte*" system would enable students to personalize their curriculum and enrich their experience with a multi-cultural education from different European universities.

**Question 2:****How to establish excellent working conditions in the ERA to make it competitive and attractive?**

Excellent working conditions entail a professional-related aspect, such as access to state-of-the-art equipment, life-long-learning possibilities, an excellent track record of the working place, and a more social aspect, such as access to childcare facilities, pension plans, etc. Ensuring excellent working conditions in the European Research Area on all aspects will be a non-negligible factor to increase its competitiveness and attractiveness for life scientists.

**Solution 1:****Define and establish education and supervision standards to ensure proper training of PhD students and PostDocs.****Specific actions**

- a. Define evaluation criteria to compare BSc/MSc programmes and monitor the knowledge level and skills gained by the students at the end of these programmes. Those evaluation criteria can then be formulated within a European Commission measure in line with the Bologna process.
- b. Ensure the European Charter for Researchers and Code of Conduct for Recruitment of Researchers to be effectively applied by universities, research institutes and companies via more effective tools, such as funding criteria.
- c. Promote and advocate the establishment of external committees to monitor the progress of PhD students and to assess the quality of training provided by PhD advisors. External experts will more readily pinpoint possible problems in training or mentorship than internal faculties, and external expert opinions would allow for more critical discussions about the scientific research projects.

**Solution 2:****Improve the access to the EURAXESS Service Centres.**

These centres represent an important front-desk directly accessible by life scientists, and their action could be an important factor to improve working conditions. Therefore, the offered services need to be effectively advertised and a constant improvement process needs to be established.

**Specific actions**

- a. **Map and advertise** the existing service-providing infrastructures and competencies, both on the common EURAXESS platform as well as on other highly visited websites.
- b. **Establish agreements** with different scientists' networks in order to promote bottom-up improvements and to answer to the needs regarding new services.
- c. Use **third-party based surveys** among life scientists to propose additional improvements to be made or services to be added.

**Solution 3:****Longer-term grants to avoid insecurity for early-stage researchers.**

Promote and support early-stage researchers at the beginning of their career through longer-term grants and increased possibilities to re-apply to certain fellowships in order to sustain promising research projects. This measure will enable early-stage scientists to focus on bringing forward their research project instead of concentrating on finding finances to secure their projects.

**Solution 4:****Promote funds for parents in science / women in science .**

Promote funds for parents in science / women in science to ensure that projects can be continued in a competitive way while parental roles do not have to be neglected. At the same time, this helps avoid penalizing publication gaps.

## INTERFACE: GOVERNMENT – COMPANIES

## Question 1:

How to get involved in the funding schemes and get grant independence?

Solution 1:

**Encourage and facilitate the creation of new sets of individual grants specifically designed for young researchers** in order to allow better mobility and funding independency. The measure should encourage governments to create more sets of individual grants to facilitate technology transfer from research in academia to research in the private sector.

**Specific actions**

- a. **Map and publish the current individual grant offers available in different countries**, which are aimed to facilitate mobility of researchers from academia to industry.
- b. Elaborate **more specific schemes for industrial research grant applications** and especially for grants indented for very young scientists performing their research in the private sector. This would also be **attractive for industry interested in hiring younger scientists** and investing in research and innovation.
- c. Identify and implement incentives for industry to open research positions.
- d. Foster partnership relations between universities and the private sector to ensure the allocation of demands.
- e. Ensure **effective** dissemination of information and **access opportunities** to these sets of grants in all member countries.

## Question 2:

What incentives do industries need in order to invest in R+D and careers in R+D?

Solution 1:

**Support and incentive career development in industries. Promote an international and standardized iPhD (“industry-PhD”) scheme in order to support applied research in industries.**

**Specific actions**

- a. **Benchmark** existing doctoral schemes in member countries **where a formal collaboration between industry and academia is designated as part of PhD programmes.**
- b. **Elaborate** and discuss **an internationally recognized PhD scheme** incorporating academia-industry partnerships in its curricula.
- c. **Incentive the adoption of this scheme by member states**, by a decision of the European Association of the Universities and through specific added values recognized within community funding.

**Solution 2:**

**Investment in senior researchers' complementary skills education** in order to facilitate experience and skill transfer from academia to management positions in industry.

**Specific actions**

- a. Elaborate specific educational schemes in complementary skills tailored to senior researchers.
- b. Incentive the offer of this education within industry-academia partnerships funding.

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