

## Training Tomorrow's Scientists

Triple Helix concept, characterised by multi-directional flows of knowledge, financial resources, and social benefits, resulted in improvement of the academic-industrial collaboration. Yet, academia is still more focused on teaching and research, while industry tries to articulate and meet the consumers' needs. However, due to the Triple Helix concept, the strategic mission of universities has moved beyond education and research toward a "third mission" related to technology absorption, adaptation, and diffusion, as well as the improvement of collaboration with industry and direct contribution to the economic growth and development (1). Yet, the further enhancement of the collaboration between academia and industry is crucial for the improvement of education and training as well as skills development, but also because it enables generation of new knowledge and provides its acquisition and application (innovation and technology transfer) (2). The collaboration between universities and industries also promotes entrepreneurship through the start-ups and spin-offs establishing. Furthermore, there is a wide range of benefits rising from university-industry collaboration such as achievement of synergies and complementarities of scientific and technological capabilities, expansion of the relevance of research carried out in public institutions, promotion of the commercialization of public research and development (R&D) outcomes, and increase the mobility of labour between public and private sectors (2). Academic-industrial collaboration and technology transfer play especially prominent role in biomedical sciences e.g. through advancing the development of new drugs and other biomedical technologies. Although it can result in both important public health benefits and a source of income for universities, some ethical concerns, particularly when research involves human subjects, may raise (3). Despite multiple and wide-reaching benefits of the collaboration between academia and industry, the historically defined missions of these two "cultures" (education and discovery driven by intellectual curiosity vs. translational research, commercialization, and profit making) still upbear walls between them. This is why, it is of utmost importance to undertake measures by both parts, but particularly by the government that will promote, encourage and facilitate academic-industrial collaboration. Some of them are the policies that promote university-industry collaboration; R&D incentives and grants; performance-based funding of universities and reward systems for researchers; intellectual property rights regime and technology transfer offices; science parks, spin-offs, and business incubators, but particularly supporting the enhancement and improvement of education and training in accordance with the industry needs (2). However, beside the governmental measures that are undoubtedly important, both academia and industry should recognise the advantages and mutual benefits of collaboration and actively contribute to its establishing and development. For the beginning, universities should consult industry in curricula development, offer entrepreneur-ship educational contents, promote joint supervision of PhD students, while industry should explore capacities of researches conducted at the universities, offer more internships for the students, encourage participation in teaching among the experts, shear the state-of-the-art technologies with academicians etc.

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2. Guimón J. (2013) Promoting University-Industry Collaboration in Developing Countries. World Bank: The Innovation Policy Platform
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#### IS-18 POST-GRADUATE ACADEMIC PATH TIPS FOR YOUNG SCIENTISTS

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For young scientists, the relevant choice of adequate postdoctoral position will greatly contribute to building a successful research carrier. How to ride the good tide is a complex problem wherein – in optimal cases - supervisors and the young scientists need to work together.

This talk will focus on the academic possibilities of guiding your career forward. In this aspect, the choices are more numerous than it seems. Within a postdoctoral opportunity, you can actively shape your career by considering how the scientific job can be complemented by additional science-related activities. Making the most of your postdoc is a complex challenge and this talk will address some helpful tips to achieve this.

There are numerous issues to consider both on behalf of the young scientist who wishes to apply for a postdoctoral position as well as for the senior scientists (previous and future supervisors). First of all, it is of high importance that the supervisor recognizes the need of the young scientist to pursue independent research in a new field and in a different lab. The supervisor may facilitate choice of the cognate and relevant future host for the young scientist relying on their research network.

Also, the supervisor can help the young scientist by proposing new research fields and promoting possibilities in applications for postdoctoral studies, and may contribute greatly to all aspects listed below. However the major part and responsibilities lie with the young scientists themselves.

Among these responsibilities, some of the most important factors are the following:

- 1 Identification of interesting, currently yet open, and widely influential research areas
- 2 Finding a good postdoctoral position, with a relevant supervisor who is capable of building a mutually beneficial partnership with the young scientist. In this respect, carriers of previous post postdoctoral fellows in the lab will be highly revealing.
- 3 Working on publication skills. Publications are of course the very measure of the success of research studies, so care needs to be taken to proceed with these skills both in manuscript writing and conference presentations
- 4 Consideration of future possible carrier stages, choice and preparation.

#### IS-19 POST-GRADUATE INDUSTRIAL PATH

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Pharmaceutical and biotechnology industry positions have become more attractive to many recent graduates but especially PhD graduates, and consequently highly competitive. According to the Nature's 2017 Graduate Student Survey more than half of the respondents said that, they would like to work in industry, and nearly one-quarter said an industrial position was what they most wanted (1). Unfortunately, the reports from the employers from pharma and biotech industry indicate the existence of a considerable gap between the skills required by employers and those possessed by recent graduates (2). Therefore, an adequate education and training, as well as skills development that will meet the industry needs, on both graduate and postgraduate level, have become a huge challenge for the universities but also for PhD supervisors. On the graduate level, curricula are predominantly created by the faculty members/academicians thus reflecting their views and expectations, in most cases without consultations with industry. Consequently, curricula might or might not be aligned with student needs upon graduation and entrance into industry positions. Some survey revealed that academic research environment appreciates more knowledge in basic sciences and skills in laboratory and research methodologies, whereas industry appreciates more communication skills, skills related to teamwork and self-efficacy. Yet, both environments equally appreciate skills related to problem solving, self-directed learning, and having a big picture (2). Thus, it is hard to expect from academicians to create and to run curricula that will enable to students the development of the skills needed for the successful industry career, without close and tight collaboration with the colleagues from industry. On the postgraduate level, the problem is relinquished to the supervisors, who often do not have any experience with industry, so not being aware of skills needed for industry positions. The Nature's 2017 Graduate Student Survey revealed students' dissatisfaction with supervisor's advising regarding student's careers outside academia, encouragement to attend career training and events, and help with finding future employment, in more than 30% of respondents (3). Thus, many recent graduates are left to themselves regarding the recognising and developing skills needed for industry career. Therefore,