

Overcoming hurdles for innovation in industrial biotechnology in Europe

BIO-TIC Technological Roadmap Draft 2

Executive Summary

The technological roadmap aims to gain insight into the R&D related hurdles that are impeding the full realization of Europe's IB market potential in 2030. In addition, the roadmap seeks to set priorities in terms of R&D and other actions to overcome the R&D hurdles. The prioritization is based on an extensive literature study, the stakeholder input gathered from eight regional workshops and more than 60 expert interviews.

The regional workshops not only sought the validation of the hurdles found in the literature but also aimed at highlighting the most compelling ones to the professionals involved daily in IB. According to the workshop participants, the most important R&D related hurdles for IB are:

- Process performance is currently poor: need to increase yield, productivity and robustness;
- Lab scale results with enzyme systems are very difficult to scale up due to the interaction of these systems;
- The costs for downstream processing can be very high in IB, since biocatalytic systems produce many impurities;
- The uncertainty of feedstock availability;
- The current raw material for IB competes with the food chain.

The current version of the technology roadmap comprises a series of actions to be developed to address the R&D hurdles for IB in Europe. The hurdles and corresponding actions are grouped according to the R&D topic they involve, and more specifically:

- Feedstock supply, focusing on topics related to biomass cultivation, logistics and pre-treatment;
- Bioconversion, focusing on topics related to biochemical conversion through biocatalysts and micro-organisms;
- DSP, focusing on topics related to biotechnological process development e.g. product recovery, water management;
- Products & markets, focusing on topics related to valorization, commercialization and the development of products;
- R&D tools, focusing on topics related to the development of tools supporting R&D, e.g. the development of models and databases;
- Knowledge infrastructure – hard, focusing on topics related to the installation of pilot facilities and connections to the existing physical infrastructure;
- Knowledge infrastructure – soft, focusing on topics related to funding, entrepreneurial climate, the presence of knowledge sharing and open innovation models.



It was generally agreed that across all business cases, further research was needed for feedstock supply. On the other hand, as far as chemical building blocks and CO₂ as a feedstock is concerned, bioconversion requires significant innovation.

--

The BIO-TIC project aims to identify the hurdles and solutions for industrial biotechnology in Europe. In order to do so, three roadmaps focusing on market, non-technological and technological aspects are being developed. The following is the second draft of the technological roadmap.

The BIO-TIC roadmapping process revolves around stakeholder engagement, subsequently we encourage any comments and contributions to be sent by end of August 2014 to bio-tic@europabio.org.

All BIO-TIC roadmaps can be downloaded via the web portal www.industrial-biotechnology.eu.

