IBISBA 1.0
Industrial Biotechnology Innovation and Synthetic Biology Accelerator

Deliverable D1.2
Webinar material available online

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1 Summary

IBISBA 1.0 aims at establishing an interoperable network of infrastructures capable of proposing R&D services to industrial biotechnology professionals. This requires specific training of infrastructure operators to establish a common understanding among them. To achieve this, new training offers are developed targeting infrastructure operators as well as the wider community of potential infrastructure users.

We have designed a training activity based on the implementation of 4 courses using a webinar tool, and covering the 4 major disciplines/steps in biomanufacturing: synthetic biology platforms and modelling, biocatalyst development, omics and analytics, and process development and optimization. The 3 first modules have already been organized and are freely accessible on the IBISBA website: https://www.ibisba.eu/Webinars.

2 Introduction

The overarching aim of IBISBA 1.0 is to lay foundations for the creation of a research infrastructure that will simultaneously deliver science, technology and innovation in the applied field of industrial biotechnology. This requires a common understanding among the infrastructure operators, and the enhancement of cross-disciplinary learning and knowledge exchange. We aim to achieve this by organizing specific training programs that link knowledge domains from cutting edge scientific discovery and early stage technology innovation to process and product design, and later industrial maturation steps and bioprocess design. More specifically, we have developed new training offers to promote among researchers and technical staff an integrated vision of industrial biotechnology from start to end. The target audience are infrastructure operators and potential users, but we believe that the content is also of interest to a wider stakeholder audience.

3 Results

We have designed a training activity based on the implementation of 4 courses using a webinar tool, and covering the 4 major disciplines/steps in biomanufacturing: synthetic biology platforms and modelling, biocatalyst development, omics and analytics, and process development and optimization.

So far, 3 out of 4 courses have been developed and presented during webinars (using the GoToWebinar tool). The 4th one is scheduled for Spring 2021. All presentations have been recorded and the materials are freely accessible on the IBISBA website: https://www.ibisba.eu/Webinars. Each webinar starts with general information about IBISBA and the possibility of subsidized access to its service platforms.

The webinars are announced in advance using the IBISBA website and social media as well as by mailings via all the IBISBA partners, their networks and different European institutions.
They are usually scheduled shortly before the opening of a Transnational Access (TNA) call and are thus also used to make publicity for the TNA program.

3.1 Course 1: Systems and synthetic biology
The 1st course was organized on September 12th 2019 from 10 to 12 am according to the following schedule:

10.00-10.10 Short introduction (Dr. José L. García, CSIC)
10.10-10.30 Presentation of IBISBA vision, project and Transnational Access offer (Dr. Michael O’Donohue, INRAE and Dr. Heleen De Wever, VITO)
10.30-10.50 Principles and required facilities for creating metabolic models at genomic scale (Dr. Juan Nogales, CSIC)
10.50-11.00 Open questions from attendees
11.00-11.20 How to make bacterial host strains to synthesize biotechnology products (Dr. Vitor Martins dos Santos, WU)
11.20-11.30 Open questions from attendees
11.30-11.50 A biotech application of systems and synthetic biology: bioproduction of cis,cis-muconic acid (CCM) as a successful story of synthetic biology (Dr. Xavier García & Dr. Joan Albiol, UAB)
11.50-12.00 Open questions from attendees
12.00 Closure (Dr. José L. Garcia, CSIC)

Out of 72 people initially registered, representing from 15 countries, 45 attended the webinar with an average interest (this figure determines the time spent in the webinar) of 97.45%. The largest number of attendees were from Spain and Italy. Some registrations were from outside the European Union (e.g., India, Australia, Mexico, Brazil, Perú, Uruguay, Turkey). Most of the attendees were from universities and public research organisations.

3.2 Course 2: Protein engineering and biocatalysis
The 2nd course took place on 26 March 2020 and involved speakers from I-CEO (France), CNR (Italy), VTT (Finland) and UAB (Spain). This was the program:

10.00-10.05 Short introduction (Dr. José L. García, CSIC)
10.05-10.30 Presentation of IBISBA vision and project and Transnational Access offer (Dr. Michael O’Donohue, INRAE and Dr. Fayza Daboussi, INSA)
10.30-10.45 Questions about IBISBA and TNA
10.45-11.00 Screening of enzymes for industrial biotechnology – description of services and some success stories (Dr. Sophie Bozonnet and Dr. Magali Remaud-Simeon, I-CEO - INSAT)
11.00-11.15 Cell biology educated protein design and testing (Dr. Emanuela Pedrazzini and Dr. Alessandro Vitale, CNR)
11.15-11.30  Protein production strategies for large scale using eukaryotic microbes Dr. Nina Aro, VTT)
11.30-11.45  Immobilized fused cyclohexanone monooxygenase (CHMO) and phosphite dehydrogenase (PTDH): reusable biocatalyst for the synthesis of ε-caprolactone (Gregorio Álvaro, UAB)
11.45-12.00 Questions about technical presentations
12.00  Closure (Dr. José L. Garcia, CSIC)

The number of registrations increased to 229, and from those, 185 attended the webinar with an average interest of 75% and an average attentiveness of 62%. More than half of the registrants or attendees were informed via e-mail, one quarter via the website and 15% via social media.

3.3 Course 3: Omics-based tools for biotechnological processes
The 3rd course was organized on 24 September 2020 according to the following schedule:

10.00-10.05  Short introduction (Dr. José L. García, CSIC)
10.05-10.15  Presentation of IBISBA and TNAs (Dr. Heleen De Wever, VITO)
10.15-10.30  Open questions about IBISBA and TNAs
10.30-10.45 Improvement of riboflavine bioproduction by $^{13}$C isotopic profiling (Dr. Lindsay Peyriga, INSAT)
10.45-11.00 Development of mevalonate pathway analysis by LC-HRMS (Dr. Floriant Bellvert; INSAT)
11.00-11.15 Transcriptome Sequencing by Ion Torrent Next-Generation Sequencing: application to Pichia pastoris (Dr. Marie-Ange Teste, INSAT)
11.15-11.30 De novo Sequencing and Assembly of Complex Genomes (Dr. Jean-Marc Aury, CEA)
11.30-11.45 Proteomic strategies to characterize recombinant proteins and to study the response of biotechnology-relevant organisms to perturbations (Anna Maria Salzano, CNR)
11.45-12.00 Questions about technical presentations
12.00  Closure (Dr. José L. Garcia, CSIC)

For the 3rd webinar course, the number of registrants and attendants increased even more, to 305 and 208 respectively. Around 75% of the participants were from Italy and Spain. Most participants were European and from academia.
4 Conclusion
Three out of 4 courses covering major disciplines in industrial biotechnology have been organized so far, with the last one scheduled for Spring 2021.

The infographic shows the steady increase in number of registrants and participants to the webinars as well as an increasing involvement of individuals not associated with IBISBA-partner organizations.

5 Partners involved in the work
CSIC organized the webinar courses together with VITO and CNR.

Various partners contributed by giving presentations as indicated in the course schedules.

6 Annexes