Sustainable industrial processes based on a C-C bond-forming enzyme platform

Fact Sheet

Project information

CARBAZYMES

Grant agreement ID: 635595

Project website

Start date: 1 April 2015

End date: 31 March 2019

Funded under: H2020-EU.2.1.4.

Overall budget: € 9 251 355

EU contribution: € 8 202 966

Coordinated by: TECHNISCHE UNIVERSITAT DARMSTADT Germany

Objective

C-C bond forming reactions are at the heart of industrial organic synthesis, but remain largely unexplored due to long development timelines and the lack of broad biocatalytic reaction platforms. CARBAZYMES addresses these challenges by assembling an interdisciplinary and intersectoral consortium as a powerful synergistic tool to promote innovation in the field of biocatalytic C-C bond formation at large scale, and thus the global competitiveness of the European chemical and pharmaceutical industry. The proposed consortium, with 50% industrial participation, represents academia but also commercial interests in different stages of the research-to-market process. This top-down approach, together with a life-cycle innovation approach ensures an industrial drive to the project.

Clearly aligned with the scope of topic BIOTEC3-2014, CARBAZYMES will pursue the biocatalytic synthesis (spanning TRLs 5-7) of 4 APIs and 3 bulk chemicals —corresponding to market needs detected by the industrial partners in the Consortium. This will be accomplished through an inter-disciplinary approach which includes: i) a broad platform of 4 types of unique C-C bond-forming enzymes, mostly lyases; ii) the capacity to rapidly evolve enzymes to operate under industrial conditions by means of novel enzyme panels and massive screening methods; iii) application of microreactor technology for bioprocess characterization; iv) demonstration actions comprising technical (up to 100L) and economic viability studies carried out by industrial partners.

CARBAZYMES unmistakably aims to have social and economic impact by addressing markets worth bn €, developing enzyme evolution technologies beyond the state of the art and creating qualified jobs and
technical-scale facilities at the industrial partners’ sites. CARBAZYMES will also achieve an environmental impact by enforcing that the developed processes replace more energy and resource intensive processes, thus leading to reduced environmental footprints.

Field of Science
/natural sciences/biological sciences/biochemistry/biomolecules/enzymes
/social sciences/economics and business/business and management/commerce

Programme(s)
H2020-EU.2.1.4 - INDUSTRIAL LEADERSHIP - Leadership in enabling and industrial technologies – Biotechnology

Topic(s)
BIOTEC-3-2014 - Widening industrial application of enzymatic processes

Call for proposal
H2020-LEIT-BIO-2014-1
See other projects for this call

Funding Scheme
IA - Innovation action

Coordinator

TECHNISCHE UNIVERSITAT DARMSTADT
Address  
Karolinenplatz 5  
64289 Darmstadt  
Germany
Activity type  
Higher or Secondary Education Establishments
EU Contribution  
€ 1 469 606

Website
Contact the organisation

Participants (14)
<table>
<thead>
<tr>
<th>Organisation Name</th>
<th>Country</th>
<th>EU Contribution</th>
<th>Address</th>
<th>Activity type</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGENCIA ESTATAL CONSEJO SUPERIOR DEINVESTIGACIONES CIENTIFICAS</td>
<td>Spain</td>
<td>€ 1 145 190</td>
<td>Calle Serrano 117 28006 Madrid</td>
<td>Research Organisations</td>
</tr>
<tr>
<td>UNIVERSIDAD AUTONOMA DE MADRID</td>
<td>Spain</td>
<td>€ 786 375</td>
<td>Calle Einstein 3 Ciudad Univ Cantoblanco Rectorado 28049 Madrid</td>
<td>Higher or Secondary Education Establishments</td>
</tr>
<tr>
<td>TECHNISCHE UNIVERSITAET BRAUNSCHWEIG</td>
<td>Germany</td>
<td>€ 677 018</td>
<td>Universitaetsplatz 2 38106 Braunschweig</td>
<td>Higher or Secondary Education Establishments</td>
</tr>
<tr>
<td>RIJKSUNIVERSITEIT GRONINGEN</td>
<td>Netherlands</td>
<td>€ 726 452</td>
<td>Broerstraat 5 9712cp Groningen</td>
<td>Higher or Secondary Education Establishments</td>
</tr>
<tr>
<td>Organisation</td>
<td>Country</td>
<td>EU Contribution</td>
<td>Address</td>
<td>Activity type</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>---------------</td>
<td>-----------------</td>
<td>--------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SVEUCILISTE U ZAGREBU FAKULTET KEMIJSKOG INZENJERSTVA I TEHNOLOGIJE</td>
<td>Croatia</td>
<td>€ 544 260</td>
<td>Marulicev Trg 19, 10000 Zagreb</td>
<td>Higher or Secondary Education Establishments</td>
</tr>
<tr>
<td>BIOCHEMIZE SL</td>
<td>Spain</td>
<td>€ 207 987</td>
<td>Carrer Marie Curie 8, 08042 Barcelona</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
</tr>
<tr>
<td>BIO-PRODICT BV</td>
<td>Netherlands</td>
<td>€ 463 736</td>
<td>Nieuwe Marktstraat 54, 6511 Aa Nijmegen</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
</tr>
<tr>
<td>SUSTAINABLE MOMENTUM SL</td>
<td>Spain</td>
<td>€ 109 200</td>
<td>Avda Alcalde Jose Ramirez Bethencourt 17 Planta 6, 35004 Las Palmas De Gran Canaria</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
</tr>
<tr>
<td>Organisation</td>
<td>EU Contribution</td>
<td>Address</td>
<td>Activity type</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>----------------</td>
<td>---------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>INSTITUT UNIV DE CIENCIA I TECNOLOGIA SA</td>
<td>€ 416 325</td>
<td>Calle Alvarez De Castro 63 08100 Mollet Del Valles</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
<td></td>
</tr>
<tr>
<td>Enzymicals</td>
<td>€ 380 800</td>
<td>Walther-Rathenau-Strasse 49a 17489 Greifswald</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
<td></td>
</tr>
<tr>
<td>ALBERT-LUDWIGS-UNIVERSITAET FREIBURG</td>
<td>€ 412 500</td>
<td>Fahnenbergplatz 79098 Freiburg</td>
<td>Higher or Secondary Education Establishments</td>
<td></td>
</tr>
<tr>
<td>PROZOMIX LIMITED</td>
<td>€ 384 892</td>
<td>Station Court 3 Ne49 9hn Haltwhistle</td>
<td>Private for-profit entities (excluding Higher or Secondary Education Establishments)</td>
<td></td>
</tr>
</tbody>
</table>
**EVONIK INDUSTRIES AG**  
Germany  
Address: Rellinghauser Strasse 1-11, 45128 Essen  
Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)  
Website  
Contact the organisation

**EVONIK CREAVIS GMBH**  
Germany  
Address: Rellinghauser Strasse 1-11, 45128 Essen  
Activity type: Private for-profit entities (excluding Higher or Secondary Education Establishments)  
Website  
Contact the organisation

**Share this page**

**Permalink:** [https://cordis.europa.eu/project/id/635595/en](https://cordis.europa.eu/project/id/635595/en)  
© European Union, 2019  

**Last update:** 31 January 2020  
**Record number:** 193340