

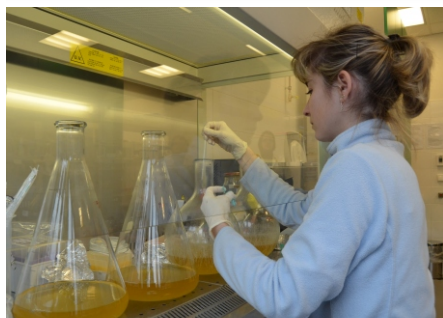
Enantis, s. r. o.

Nature-inspired technologies for sustainable living



THEMATIC BUSINESS FOCUS

Life Sciences
Environmental Technology
Enzyme-based Technology



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COMPANY OVERVIEW

Enantis was established in 2006 as the first biotechnology start-up from Masaryk University, Czech Republic. The company collaborates tightly with the Loschmidt Laboratories at Masaryk University in the development of modern technologies for sustainable growth. Enantis provides consulting and R&D services in the field of enzyme technologies and protein engineering for biomedical, environmental, agrochemical and military-defense applications. Enantis manufactures own products based on dehalogenase enzymes: whole-cell and enzyme catalysts, decontamination kits, biosensors and detection strips, optically pure chemicals and fluorescence probes. Our clients are pharmaceutical, biotechnological and military-defense companies.

KEY WORDS

Enzyme technologies, biocatalysis, biosensing, bioinformatics, protein engineering, decontamination, detection strips, agrochemicals, cosmetics, pharmaceuticals, warfare agents

MAIN CAPABILITIES

The current technology platform of Enantis is based on enzymes haloalkane dehalogenases and encompasses:

1. Synthesis of optically pure compounds by biocatalysis (pharmaceuticals, food additives and cosmetics)
2. Decontamination and biodegradation of industrial side products, pollutants, warfare chemicals and pesticides
3. Biosensing of environmental pollutants and warfare chemicals
4. Construction of optimized biocatalysts by protein engineering and synthetic biology
5. Industrial production of haloalkane dehalogenases

OUTSTANDING RESULTS

Product report in Nature Biotechnology:

Alamo-Bethencourt, V., Aldridge, S., Coombs, A., DeFrancesco, L., Huggett, B., Osborne, R., Mustard Gas Enzyme, *Nature Biotechnology* 25: 1197 (2007).

Patents:

Prokop, Z., Damborsky, J., Nagata, Y., Janssen, D.B., 2004: Method of Production of Optically Active Hydrocarbons and Alcohols Using Hydrolytic Dehalogenation Catalysed by Haloalkane Dehalogenases. Masaryk University, Brno, Czech Republic, Patent WO 2006/079295 A2.

Prokop, Z., Damborsky, J., Oplustil, F., Jesenska, A., Nagata, Y., 2005: Method of Detoxification of Yperite by using Haloalkane Dehalogenases. Masaryk University, Brno, Czech Republic, Patent WO 2006/128390 A1.

Prokop, Z., Koudeláková, T., Štěpánková, V., Chaloupková, R., Gora, A., Chovancová, E., Brezovský, J., Damborský, J., 2011: Method of Thermostabilization of a Protein and/or Stabilization Towards Organic Solvents. Masaryk University, Brno, Czech Republic. US Patent pending.

INTERNATIONAL COLLABORATIVE PROJECTS

Round Test for Decontamination Mixtures within Team of Experts for Biotechnology, NATO

NEWPROT EU FP7 Project to Develop Web Portal for Protein Engineering

RESEARCH

NUMBER OF RESEARCHERS

4

RESEARCH FOCUS

Isolation and construction of enzymes for production of optically pure compounds

Isolation and construction of enzymes for decontamination of chemical warfare

Isolation and construction of biocatalysts for biodegradation of persistent pollutants

Developing biosensors and detection strips for detection of chemical warfare and toxic halogenated compounds in the environment

RESEARCH PUBLICATIONS

Stepankova, V., Damborsky, J., Chaloupkova, R., 2013: Effect of Fourteen Organic Co-solvents on Activity, Stability and Enantioselectivity of Haloalkane Dehalogenases. **Biotechnology Journal** 8: 719-729.

Koudelakova, T., Bidmanova, T., Dvorak, P., Pavelka, A., Chaloupkova, R., Prokop, Z., Damborsky, J., 2013: Haloalkane Dehalogenases: Biotechnological Applications. **Biotechnology Journal** 8: 32-45.

Bidmanova, S., Hlavacek, A., Damborsky, J., Prokop, Z., 2012: Conjugation of 5(6)-Carboxyfluorescein and 5(6)-Carboxynaphthofluorescein with Bovine Serum Albumin and Their Immobilization for Optical pH Sensing. **Sensors and Actuators B: Chemical** 161: 93-99.

PUBLICALLY FUNDED R&D PROJECTS

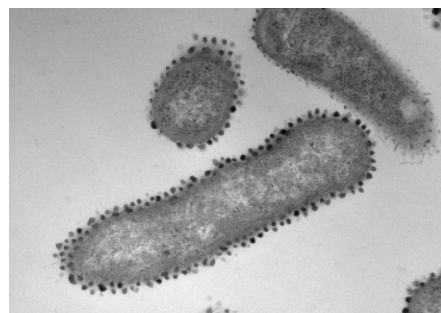
2009–2011 **BIOSENSORS** for the Detection of Nerve-Paralytic and Blistering Compounds using Recombinant Proteins and Nanobiotechnologies OVUOFVZ200807 financed by the Ministry of Defense, budget 4,730,000 CZK /cca 183,333 EUR

2012–2014 **NEWPROT** Collaborative Project FP7-KBBE-2011-5 financed by EU, budget 2,258,500 EUR

DEMAND

Enantis searches for:

- » Industrial partners for collaboration and marketing of new products and technologies
- » R&D contracts in protein engineering and enzyme technology development



YEAR OF ESTABLISHMENT

2006

MAIN PARTNERS

- » BioProduct BV (Wageningen, NL)
- » B.R.A.I.N (Zwingenberg, DE)
- » CETOCOEN, Masaryk University (Brno, CZ)
- » Enzymicals AG (Greifswald, DE)
- » Ernst-Moritz-Arndt-Universitaet Greifswald (Nijmegen, DE)
- » Fluid Operations AG (Walldorf, DE)
- » Ingenza (Midlothian, UK)
- » Institute of Microbiology v. v. i. (Prague, CZ)
- » Institute of Scientific Instruments (Brno, CZ)
- » International Clinical Research Centre (Brno, CZ)
- » LeadPharma (Nijmegen, NL)
- » Loschmidt Laboratories, Masaryk University (Brno, CZ)
- » Photon Systems Instruments s. r. o. (Drásov, CZ)
- » Radboud University Nijmegen (Nijmegen, NL)
- » S.A.F.AN. Bioinformatics (Torino, I)
- » University of Cambridge (Cambridge, UK)
- » University of Defense (Hradec Králové, CZ)

EXPECTATIONS

OFFER

Products:

- » Microbial enzymes haloalkane dehalogenases
- » Decontamination kit Yperzyme for sulphur mustard
- » Hexachlorohexane-degrading strains
- » Optical biosensors for detection of halogenated compounds
- » Strips for detection of halogenated compounds
- » Optically pure haloalkanes and alcohols
- » Fluorescence probes

R&D services:

- » Screening and isolation of novel biocatalysts
- » Rational design and directed evolution of proteins
- » Bioinformatic analysis
- » Specialized analysis and characterization of proteins
- » Development and optimization of enzyme-based technologies