

## OXIZYMES CONFERENCE

The 8<sup>th</sup> European Meeting on Oxizymes, was held in Wageningen, The Netherlands from 3-6 July 2016. It is a two-yearly conference, this time organized by Prof. Willem van Berkel from Wageningen University. It brings together an active biocatalysis community (212 participants) in the field of redox enzymes. The international community mainly comes from Europe (95%) and a significant number of industry participants (9%). Major classes of enzymes discussed were monooxygenases, peroxidases, dehydrogenases, decarboxylases, and oxidases, with attention for many newly discovered enzymes and their applications. Flavoenzymes and laccases are still very important in this field, but also fungal lytic polysaccharide monooxygenases are being more intensively studied.

The conference focuses on applications for synthesis and material design, as well as enzymatic aspects. The respective sessions were: oxidative biocatalysis (2 sessions); heme enzymes; systems biocatalysis; optimization; flavoenzymes; reaction engineering; metalloenzymes and applications (2 sessions). Systems biocatalysis addressing issues of compatibility, and multistep synthesis is therewith in the heart of the conference.

Traditionally the Oxizymes conference gives opportunity to young researchers to present their work, and therefore the majority of the lectures (41) were 20 min oral lectures. In addition 125 posters were on display during the entire conference. Monday 4, and Tuesday 5 July were the COST days.

From the COST community Prof. Wolfgang Kroutil from Graz gave a lecture highlighting the potential for biocatalysis for synthesis. He discussed i.e. their recently discovered flavin dependent Berberine Bridge Enzyme (BBE) which forms a C-C bond between an N-CH<sub>3</sub> group and a phenol. However for selected substrates bearing an N-ethyl group enantioselective dealkylation was found and exploited for organic synthesis. Kroutil also demonstrated the use of laccase catalysed radical formation allowing for the first biocatalytic trifluoromethylation.

In total 18 COST participants were reimbursed, of which the majority presented their work via posters. Other oral lectures from the COST community, were given by Dr. Caroline Paul from Delft, who presented her work on biomimetic nicotinamide cofactors. Cofactor biomimetics were screened using several monooxygenases. An improvement of electron transfer yield was observed, while reducing the cofactor cost. Furthermore, Dr. Ayelet Fishman from Technion, Israel, provided new insights on 2-hydroxybiphenyl 3-monooxygenase (HbpA). HdpA is an FAD dependent monooxygenase, which catalyzes the ortho-hydroxylation of a broad range of phenols in the presence of NADH and oxygen. Structure-function correlations for HdpA from *Pseudomonas azelaica* HBPI were described, showing the role and location of critical residues. Noteworthy was also the Sophie Vanhulle award lecture, presented by Greta Faccio. Dr. Faccio (Swiss Federal Labs for Material Science and Technology) talked about bacterial oxidative enzymes for the functionalization of material surfaces. Tyrosinase thus catalyzes the site-specific immobilization of suitably engineered fluorescent proteins to amino-modified polystyrene particles. In a second approach laccase was engineered with an affinity peptide for iron oxide to allow for effective immobilization on hematite nanoparticles.

We look back on a successful conference, showing the forefront of redox systems biocatalysis.

Isabel Arends. August 2016.