

Bioorganic Synthesis @ the Cross-Roads of Chemistry & Biology

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Bioorganic synthetic chemistry represents a border crossing discipline at the interface of chemistry and biology. The combination of biotechnological methods with modern catalysis enables strong synergies towards sustainable technologies. In addition, the molecular understanding of biological processes opens up novel approaches to affect biology per se. Several aspects of this trans-disciplinary field will be addressed in selected case studies within this lecture:

- i) The combination of continuous flow-chemistry and biocatalysis offers a powerful tool to further exploit renewable resources towards sustainable platform chemicals and high-value products.
- ii) Combination of metabolically unrelated biocatalysts provides the prospect of designing artificial metabolic mini-pathways; such cascade processes also overcome equilibrium limitations and circumvent troublesome intermediate work-up.
- iii) Discovery of novel pharmacological tools opens the door towards a small-molecule based regenerative medicine; progress within prospective future therapies for cardiac diseases will be presented by modular design of focused compound libraries.