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Laboratory of Biotransformation

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Expertise and topics of interest

- Synthesis of complex carbohydrates, multivalent glycomaterials and glycopolymers
- Tailored glycobiochemical engines such as mutant glycosidases, glycosyltransferases and enzymatic cascades combined with chemical approaches
- Interaction of glycomaterials with lectins/lectin receptors active in cancerogenesis, cardiopathologies, immunomodulation, and tissue regeneration, such as galectins-1 and -3
- Targeted delivery of drugs, therapeutics and imaging based on glycan-lectin interactions (HPMA copolymers)

A. Šimonová, C. E. Kupper, S. Böcker, A. Müller, K. Hofbauerová, et al. *J. Mol. Catal. B: Enzym.*, 2014, **101**, 47-55.

P. Bojarová, P. Chytil, B. Mikulová, L. Bumba, R. Konefał, et al. Glycan-decorated HPMA copolymers as high-affinity lectin ligands. *Polym. Chem.*, 2017, **8**, 2647-2658.

D. Laaf, P. Bojarová, B. Mikulová, H. Pelantová, V. Křen, L. Elling. Two-Step Enzymatic Synthesis of β -D-N-Acetylgalactosamine-(1 \rightarrow 4)-D-N-acetylglucosamine (LacdiNAc) Chitooligomers for Deciphering Galectin Binding Behavior. *Adv. Synth. Catal.* 2017, **359**, 2101–2108.



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Expected benefits and activities during participation in BIONECA

- Share experience with BIONECA partners working on biomaterial development
- Provide our biomaterials for *ex vivo* and *in vivo* testing in systems aiming at targeted delivery, imaging, and tissue regeneration, especially in cardiology-related applications
- Collaborate with groups that study modelling of cell-biomaterial interactions

Foreseen maximum contribution

- WG1: Processing of biomaterials