

1	CEIPEX RESEARCH TOPIC LEVEL2 production biology
2	RESEARCH GROUP Research Group of Advanced Biotechnologies and Environmental Analysis. (aBETA)
3	TOPICS/FOCUS Sustainable High-Value Bioproducts from Cyanobacteria
4	SUMMARY Cyanobacteria represent an untapped resource of antioxidant and medicinally active metabolites. The proposed project will identify and cultivate safe strains (e.g., <i>Arthrospira</i> , <i>Nostoc</i> , <i>Scytonema</i>) rich in phycocyanin, carotenoids (β -carotene, zeaxanthin), phenolic compounds, and sulfated polysaccharides with antioxidant, anti-inflammatory, antiviral, and anticancer activities. We will integrate advanced cultivation strategies in photobioreactors with strain selection and aim at elucidation of the high-value product biosynthesis upregulation aided by -omics approaches. Molecular profiling and bioassays will guide the strain selection and validate health-relevant properties. The research will also focus on biorefinery and separation methods to maximize the recovery of target molecules from cyanobacterial biomass. Life-cycle and techno-economic assessments will ensure environmental and economic sustainability. The project will deliver scalable technologies and a basis for next-generation nutraceuticals, cosmeceuticals, and pharmaceutical leads derived from cyanobacteria.
5	RG WEBPAGE/CONTACT https://ucb.af.mendelu.cz/veda-a-vyzkum/vyzkumna-skupina-nanobiotech-rostlin-a-mikroras/ Ing. Pavel Chaloupský, Ph.D.