

48th NARECOM – NAnoEnviCz REsearch COmmunity Meeting

29th October 2025 at 2:30 p.m.

**LCST of polyoxazoline based glycopolymers**

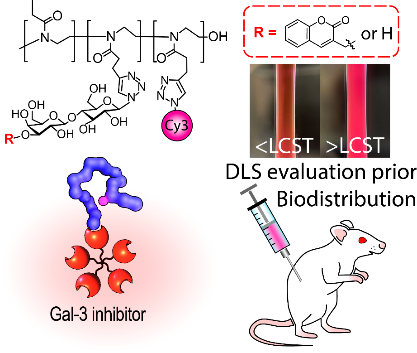
**Mgr. David Vrbata, Ph.D.**

*Institute of Microbiology of the Czech Academy of Sciences, v.v.i.*

**Abstract:**

Polyoxazolines are pseudopeptidic, non-toxic, biocompatible, and biodegradable synthetic polymers, which make them an excellent material for biomedical applications. By varying the initiating and terminating agents, the resulting telechelic polyoxazolines, modified by various functional groups, can be used for further chemical conjugations or polymerizations. The polyoxazoline backbone can also be transformed through hydrolysis of the parent polymer, usually poly(2-ethyl-2-oxazoline), into linear poly(ethyleneimines) (PEI). These hydrolyzed backbones can be further modified with carboxylic acid derivatives to create statistical copolymers with desired monomeric units, which would be otherwise unavailable through classical substituted monomer copolymerization. The versatile chemistry of polyoxazolines therefore provides an excellent toolbox for fine-tuning physicochemical properties, yielding next-generation polymer nanotherapeutics.

The hydrodynamic radius and aggregation behavior of such polymers are important characteristics, initially obtained through dynamic light scattering (DLS). The data obtained are particularly useful prior to in vivo studies, as they help prevent animal fatalities due to blood vessel clogging.

****