



Session	Sensors, AI, Automation
Title	AI-guided enzyme engineering: choosing what to test next
Company	Crane Bioworks
Speaker	Kenny Helsens
TRL	TRL 4-7
Keywords feedstock (max 2)	na
Keywords technology (max 2)	Protein engineering
Keywords End-Product (max 2)	Protein sequences
Abstract:	
Enzyme development means choosing which variants deserve the next round of experiments. A promising sequence still has to work under the temperature, pH and substrate conditions of the intended process. At Crane Bioworks, human protein engineers work directly with customers, using our internal Crane protein intelligence platform to help wet lab teams decide what to test next. We combine AI models with structural analysis and physics-based methods to design and rank protein variants against the constraints that matter to each project. Our focus for the bioeconomy is enzyme engineering, including stability, activity and substrate specificity. Each campaign delivers a shortlist of candidates, the evidence behind their ranking and a practical validation plan. Our protein engineers review conflicting model predictions and make uncertainty explicit. When experimental results come back, we use them to investigate why candidates worked or failed and guide the next design round. Teams can access this computational capability through a focused pilot on their own target, without building an internal modelling team. We are looking for industrial biotech companies and research partners with an enzyme challenge and the capacity to test designs. The goal is to focus scarce lab capacity on better-supported candidates and learn more from each experiment.	