Stanford MEDICINE | Department of Biomedical Data Science

From Code to Cure: Developing Foundation model and AI agents driving biomedical discovery

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1:30PM-2:50PM

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Abstract:

Our lab is developing "AI co-scientist" to automate and accelerate biomedical discovery. We have built multi-agent systems that intelligently manage research pipelines, from hypothesis generation to data interpretation. This AI-native approach has demonstrated significant potential in several high-impact areas: successes in creating CRISPR-GPT for advanced gene-editing, RNAGenesis foundation model for therapeutic RNA design, and breakthrough applications in stem cell engineering and functional genomics (AutoScreen, Biomni, Stella). Our work shows that specialized models and AI agents are poised to become broadly useful in biomedical research..

Reading list:

- Qu, Y., Huang, K., Yin, M. et al. CRISPR-GPT for agentic automation of gene-editing experiments. Nat. Biomed. Eng (2025)
- Zhang, Z. et al. (2024) RNAGenesis: A Generalist Foundation model for functional RNA therapeutics [Preprint]. doi:10.1101/2024.12.30.630826.
- Jin, R. et al. (2025) Stella: Self-evolving LLM agent for biomedical research [Preprint]. doi:10.1101/2025.07.01.662467.