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Dr. Huimin Zhao is the Centennial Endowed Chair Professor of chemical and biomolecular engineering, and professor of chemistry, biochemistry, biophysics, and bioengineering at the University of Illinois at Urbana-Champaign (UIUC). He received his B.S. degree in Biology from the University of Science and Technology of China in 1992 and his Ph.D. degree in Chemistry from the California Institute of Technology in 1998 under the guidance of Dr. Frances Arnold. Prior to joining UIUC in 2000, he was a project leader at the Industrial Biotechnology Laboratory of the Dow Chemical Company. He was promoted to full professor in 2008. Dr. Zhao has authored and co-authored over 110 research articles and 16 issued and pending patent applications with several being licensed by industry. His honors include Fellow of the American Association for the Advancement of Science (AAAS), Fellow of the American Institute of Medical and Biological Engineering (AIMBE), the American Chemical Society (ACS) Division of Biochemical Technology Young Investigator Award, American Institute of Chemical Engineers (AIChE) Food, Pharmaceutical, and Bioengineering Division Plenary Award Lecturer, National Science Foundation CAREER Award, DuPont Young Professor Award, Dow Chemical Special Recognition Award, Outstanding Overseas Young Chinese Scholars Award, Xerox Award for Faculty Research from UIUC College of Engineering, Petit Scholar from UIUC College of Liberal Arts and Sciences, and University Scholar from UIUC. Dr. Zhao served as a consultant for over 10 companies such as Pfizer, Maxygen, BP, Gevo, and zuChem, and a Scientific Advisory Board member of Gevo and Myriant Technologies. Dr. Zhao is an Associate Editor of *ACS Catalysis* and an editor of *Journal of Industrial Microbiology and Biotechnology*. His primary research interests are in the development and applications of synthetic biology tools to address society's most daunting challenges in human health and energy, and in the fundamental aspects of enzyme catalysis and gene regulation.

Title: Synthetic Biology: Putting Synthesis into Biology

Abstract: Synthetic biology is the deliberate design of novel biological systems and organisms that draws on principles elucidated by biologists, chemists, physicists, and engineers. It is a rapidly growing area with broad applications in medical, chemical, food, and agricultural industries. In this talk, I will discuss our recent work on the development and application of new synthetic biology tools. Specifically, I will discuss a new tool for rapid construction of large DNA molecules such as pathways and plasmids and its application in (1) discovery, characterization, and engineering of novel natural product biosynthetic pathways for drug discovery and development and (2) engineering of recombinant yeast strains that can efficiently utilize lignocellulose raw materials to produce biofuels and chemicals.