

## XUE SHERRY GAO



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# "Engineered CRISPR Systems for Disease Treatment and Diagnostics"

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### ABSTRACT

The recent discovery of the CRISPR genome editing systems has been revolutionizing both basic biological research and the treatment of human genetic disorders. However, there are remaining challenges in improving the precision and multiplexity of the current CRISPR systems for genome manipulation. In this seminar, I will overview our recent development of highly specific and powerful genome-editing tools for the treatment and diagnostics of diseases and the discovery of new potential small-molecule drugs. First, I will introduce the development of high-precision and multiplex CRISPR genome-editing strategies for safe and effective molecular therapy to treat genetic disorders; Second, I will describe the application of these advanced CRISPR tools for fungi genome engineering to enable the production of novel small molecules with therapeutic potential; Finally, I will present the improved ultrasensitive viral detection by using the engineered CRISPR systems to advance timely and accurate diagnostics for the current and future pandemics and epidemics.

### BIO

Dr. Xue (Sherry) Gao obtained her doctoral degree in Chemical and Biomolecular Engineering from the University of California, Los Angeles in 2013. She was a postdoctoral associate in the Chemistry and Chemical Biology Department at Harvard University and the Broad Institute of MIT and Harvard. Dr. Gao joined Rice University in the Department of Chemical and Biomolecular Engineering as the Ted N. Law assistant professor in July 2017. In the past five years, Dr. Gao won the 2022 NSF CAREER AWARD, the 2022 Outstanding Young Faculty of Rice School of Engineering, the 2020 NIH Maximizing Investigators' Research Award, the 2018 InterDisciplinary Excellence Award, and the 2018 Hamill Innovation Award from Rice, etc.