

Yichao Guan

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EDUCATION

- **University of Illinois Urbana Champaign** Urbana, IL
Bachelor of Science in Physics. May 2022
- **Beijing University of Chemical Technology** Beijing, China
Studied Polymer Science and Engineering. Sept 2018 - June 2020

RESEARCH EXPERIENCE

- **Dept. of Plant Biology, University of Illinois Urbana Champaign** **Advisor:** James O'Dwyer
Undergraduate Research Assistant March 2022 - Present
 - Investigating the effect of cell size regulation as a life-history strategy on the competition and coexistence between bacterial species.
- **Dept. of Physics, University of Illinois Urbana Champaign** **Advisor:** Ido Golding
Undergraduate Research Assistant Jan 2021 - Present
 - Used the Gillespie algorithm to test the hypothesis that intracellular correlations in gene activity result from fluctuations in the concentration of an upstream regulator.
 - Using a cell cycle regulation model from literature to identify and quantify the major sources of noise in cell length distribution obtained in the experiment.
 - Constructed an RNA polymerase competition model to explain the cell cycle dependence of gene expression.
 - Using the RNAP competition model to explore the effects of genomic position, promoter strength, and growth rate on the transcription patterns of a particular gene.
- **Center for Quantitative Biology, Peking University** **Advisor:** Jie Lin
Visiting Research Assistant Oct 2020 - Aug 2021
 - Modeled the effect of single-cell growth traits variability on the growth rate of the whole population.
 - Used molecular dynamics (MD) simulation to investigate whether the movement of ribosomes during translation fluidizes the bacterial cytoplasm.

HONORS AND AWARDS

- **2nd Prize for Undergraduate Research** Evanston, IL
4th Annual Conference on Quantitative Approaches in Biology March 2022
- **Dean's List for All Semesters** Urbana, IL
University of Illinois Urbana Champaign Jan 2021 - May 2022
- **2019 University Scholarship & Merit Student** Beijing, China
Beijing University of Chemical Technology Oct 2019
- **2018 University Scholarship & Merit Student** Beijing, China
Beijing University of Chemical Technology Oct 2018

POSTER PRESENTATIONS

- **4th Annual Conference on Quantitative Approaches in Biology** Evanston, IL
First Author March 2022
 - Title: Cell cycle-dependent transcription in *E. coli* explained by competition for RNA Polymerase between promoters
- **Illinois Biophysics Grad Symposium** Urbana, IL
First Author April 2022
 - Title: Cell cycle-dependent transcription in *E. coli* explained by competition for RNA Polymerase between promoters