Seokjoo **CHAE** Ph.D. Candidate in Mathematical Biology, KAIST

@ sjchea@kaist.ac.kr

💡 291 Daehak-ro, Yuseong-gu, Daejeon 34141 Korea

i sjchae1207.github.io



2017-Current	Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea
	Integrated Ph.D. Program, Department of Mathematical Sciences
	(Advisor : Jae Kyoung Kim, Expected graduation : August 2024)
2013-2016	Korea Advanced Institute of Science and Technology, Daejeon, Republic of Korea
	B.Sc in Mathematical Sciences, Summa Cum Laude
2011-2012	Hansung Science High School, Seoul, Republic of Korea

Honors, Awards and Scholar

2022	Best Poster Award, Korean Biological Rhythm Society Symposium	Korean Biological Rhythm Society
2021	Best Poster Award, Society for Mathematical Biology Annual meeting	Society for Mathematical Biology
2019	SMB Landahl Travel Grant	Society for Mathematical Biology
2018	2nd Prize, NIMS-Mathworks MATLAB Challenge	KSIAM
2018	SMB Landahl Travel Grant	Society for Mathematical Biology
2017-2020	TJ Park POSCO Science Fellowship	POSCO TJ PARK Foundation
2016	Best Poster Award, KAIST Undergraduate Reserach Program Workshop	KAIST
2016	Bronze prize, Korean College Students Mathematical Competition	KMS
2015-2016	KAIST Presidential Fellowship	KAIST
2015-2016	Undergraduate Scholarship	Korea Foundation for Advanced Study
2014	Dean's list, School for Natural Science	KAIST
2014	Silver prize, Korean College Students Mathematical Competition	KMS
2013	Gold prize, Korean College Students Mathematical Competition	KMS
2013-2016	The National Scholarship for Science and Engineering	Korea Student Aid Foundation

Publications

2023*	Seok Joo Chae , Dae Wook Kim, Seunggyu Lee, and Jae Kyoung Kim, Spatially coordinated collective phosphorylation filters spatiotemporal noises for precise circadian timekeeping, iScience .
2018*	Leonid A. Bunimovich, Chi-Jen Wang, Seok Joo Chae , and Benjamin Z. Webb, Uncovering Hierarchical Structure in Social Networks Using Isospectral Reductions, IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining 2018:1199-1
In Prep.	Seolah Shin, Seok Joo Chae , Seunggyu Lee, and Jae Kyoung Kim, Model reduction in Reaction-diffusion systems.
Under Review	Hyun Kim, Won Chang, Seok Joo Chae , Jong-Eun Park, Minseok Seo, and Jae Kyoung Kim, scLENS: Datadriven signal detection for unbiased scRNA-seq data analysis.
Under Review	Seok Joo Chae, Dae Wook Kim, Oleg Igoshin, Seunggyu Lee, and Jae Kyoung Kim, Beyond microtubules: The cellular environment at the endoplasmic reticulum attracts proteins to the nucleus.
Under Review	Sunyoung Lee [†] , Seok Joo Chae [†] , In-Hwan Jang, Se-Chan Oh, Seok-Min Kim, Soo Yun Lee, Ji Hyun Kim, Jesang Ko, Hang J. Kim, Jae Kyoung Kim, Tae-Don Kim, NK killing activity is determined by activator-driven gating.

RESEARCH INTERESTS

MODEL REDUCTION IN SPATIOTEMPORAL SYSTEMS

2022 - 2023

Investigating quasi-steady state approximations (QSSAs) in spatiotemporal models and their validity condition.

MATLAB PDE Netlogo

INVESTIGATING HETEROGENEOUS DIFFUSION IN CELLULAR ENVIRONMENT

2022 - 2023

Spatiotemporal study of the impact of heterogeneous diffusion on the protein transport

MATLAB NetLogo Diffusion

ANALYSIS ON CIRCADIAN RHYTHM REDUCING NOISE FROM INTRA/EXTRACELLULAR ENVIRONMENT

2021 - 2022

Quantitative Analysis on circadian rhythm to investigate how the circadian rhythm compensates noise stem from heterogeneous intracellular environment.

MATLAB Circadian rhythm

NK CELL IMMUNOTHERAPY MODELING

2017 - 2023

Finding dominant signals that can improve NK cell immunotherapy efficacy.

MATLAB | Mathematical modeling | Biological data analysis

NETWORK INFERENCE AND CAUSALITY DETECTION IN THE CIRCADIAN CLOCK

2018 - 2022

Network inference of cells in the brain using causality detection method. Causality detection between ecological variables.

MATLAB R C++ Network inference Time series data analysis

PRESENTATIONS

2023	Korea Society for Industrial and Applied Mathematics Annual Meeting	Mini symposium, Gwangju, Korea
	International Conference on Systems Biology	Contributed Talk, Hartford, CT, USA
	International Congress on Industrial and Applied Mathematics	Contributed Talk, Tokyo, Japan
	Society for Mathematical Biology Annual Meeting	Contributed Talk, Columbus, OH, USA
	Korean Biological Rhythm Society Symposium	Poster, Daejeon, Korea
	CIJK-Conference on Mathematical and Theoretical biology	Mini symposium, Jeju, Korea
2022	Korea Society for Industrial and Applied Mathematics Annual Meeting	Mini symposium, Jeju, Korea
	International Conference on Systems Biology	Contributed Talk, Berlin, Germany
	Society for Research on Biological Rhythms, Biennial Meeting	Poster, Fernandina Beach, FL, USA
	Korean Biological Rhythm Society Symposium	Poster, Daejeon, Korea
2021	Korea Society for Mathematical biology Annual Meeting	Poster, Jeju, Korea
	Korea Society for Industrial and Applied Mathematics Annual Meeting	Poster, Busan, Korea
	Korea Society for Mathematical biology Spring conference	Contributed talk, Virtual
	Society for Mathematical biology Annual Meeting	Poster, Virtual
	Korea Society for Industrial and Applied Mathematics Spring conference	Poster, Virtual
2020	Korea Society for Industrial and Applied Mathematics Annual Meeting	Poster, Virtual
	Society for Mathematical biology Annual Meeting	Poster, Virtual
2019	Society for Mathematical biology Annual Meeting	Mini symposium, Montreal, Canada
	Society for Mathematical biology Annual Meeting	Poster, Montreal, Canada
2018	Society for Mathematical biology Annual Meeting	Poster, Sydney, Australia
	Korea Society for Mathematical Biology Annual Meeting	Contributed Talk, Busan, Korea
	IMA Workshop on Ecological and Biological Systems	Poster, Minneapolis, MN, USA
	A3 International Workshop For Mathematical and Life Sciences	Poster, Hiroshima, Japan
2016	KAIST Undergraduate Research Program Workshop	Daejeon, Korea

TEACHING EXPERIENCES

2023 Spring	High school Research Program	Teaching Assistant
2022 Spring	Undergraduate Research Program	Teaching Assistant
2018 Fall	Calculus II	Student Tutor
2017 Fall	Numerical Linear Algebra	Teaching Assistant
	Calculus II	Teaching Assistant
2017 Spring	Ordinary Differential Equations	Teaching Assistant
	Statistics for Graduate Students	Teaching Assistant
2016 Fall	Calculus II	Student Tutor
2015 Spring	Introduction to programming	Student Tutor
2014 Fall	Calculus II	Student Tutor
2014 Spring	Calculus I	Student Tutor

