Seok Joo Chae

| CONTACT INFORMATION | Department of Bioengineering, Rice University 6100 Main St. Houston, Texas, USA | *E-mail:* seokjoo@rice.edu *Web:* http://sjchae1207.github.io |

APPOINTMENTS

Rice University, Houston, Texas, United States

Postdoctoral Associate in Igoshin group   Sep. 2024 – Present

EDUCATION

KAIST, Daejeon, Republic of Korea

Ph.D. in Mathematical Sciences   Mar. 2017 – Aug. 2024
Advisor: Jae Kyoung Kim (jaekkim@kaist.ac.kr)

KAIST, Daejeon, Republic of Korea

B.S. in Mathematical Sciences with *Summa Cum Laude*   Mar. 2013 – Feb. 2017

Hansung Science High School, Seoul, Republic of Korea   Mar. 2011 – Feb. 2013

RESEARCH INTERESTS

Spatiotemporal systems, Model reduction, Circadian rhythms, Immunotherapy, single-cell RNA sequencing

PAPERS

†: (co-)1st author, *: (co-)corresponding author.
One can enter the article web page by clicking the underlined title of a paper.

1. **Seok Joo Chae**†, Seolah Shin, Kangmin Lee, Seunggyu Lee*, and Jae Kyoung Kim*, From Homogeneity to Heterogeneity: Refining Stochastic Simulations of Gene Regulation, *Computational and Structural Biotechnology Journal*, 2025

2. 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*, B7H6 is the predominant activating ligand driving natural killer cell-mediated killing in patients with liquid tumours: evidence from clinical, in silico, in vitro, and in vivo studies *eBioMedicine*, 2024

3. Seolah Shin†, **Seok Joo Chae**†, Seunggyu Lee*, and Jae Kyoung Kim*, Beyond homogeneity: Assessing the validity of the Michaelis–Menten rate law in spatially heterogeneous environments, *PLoS Computational Biology*, 2024

4. Hyun Kim†, Won Chang, **Seok Joo Chae**, Jong-Eun Park, Minseok Seo, and Jae Kyoung Kim*, scLENS: Data-driven signal detection for unbiased scRNA-seq data analysis, *Nature Communications*, 2024

5. **Seok Joo Chae**†, Dae Wook Kim, Oleg A. Igoshin, Seunggyu Lee, and Jae Kyoung Kim*, Beyond microtubules: The cellular environment at the endoplasmic reticulum attracts proteins to the nucleus, *iScience*, 2024

6. **Seok Joo Chae**†, Dae Wook Kim, Seunggyu Lee, and Jae Kyoung Kim*, Spatially coordinated collective phosphorylation filters spatiotemporal noises for precise circadian timekeeping, *iScience*, 2023

7. Leonid A. Bunimovich†, Chi-Jen Wang, **Seok Joo Chae**, and Benjamin Z. Webb, Uncovering Hierarchical Structure in Social Networks Using Isospectral Reductions, *2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, 2018

IN REVISION/
IN PREPARATION

1. Jon DeBonis†, **Seok Joo Chae**†, Oleg A. Igoshin*, Understanding the Dynamics of Molecular Glue Induced Degradation with Mathematical Model (In preparation)

2. Sunyoung Lee†, **Seok Joo Chae**†, In-Hwan Jang, Jae Kyoung Kim*, Tae-Don Kim*, Stress-induced self recognition by Natural Killer cells does not require HLA Class I (Under review).

3. **Seok Joo Chae**†, Johanna Inhyang Kim†, Hyeontae Jo, Yun Min Song, Saebom Jeon, Sun-Young Moon, Ji-Hye Lee, Sohee Oh, Seockhoon Chung, Jae Kyoung Kim*, Jeong-Hyun Kim*, A Machine Learning-Based Screening Tool for Predicting PTSD in Firefighters: Firefighter Latent Risk Evaluation (FLARE) (Submitted).

4. Le Na Lau, Jun-Ho Cho, **Seok Joo Chae**, Ung-Gyu Kim, Jae Kyoung Kim, In-Sung Luke Yeo*, Immune-Metabolic Regulation of Early Osseointegration: Insights from Untargeted RNA Sequencing (Submitted).

HONORS AND
AWARDS

2022 Best Poster Award, Korean Biological Rhythm Society Symposium

2021 Best Poster Award, Society for Mathematical Biology Annual Meeting

2019 SMB Landahl Travel Grant, Society of Mathematical Biology

2018 SMB Landahl Travel Grant, Society of Mathematical Biology

2018 NIMS-Mathworks MATLAB Challenge, KSIAM

2017 – 2020 TJ Park POSCO Science Fellowship

2016 Best Poster Award, KAIST Undergraduate Research Program Workshop

2016 35th National Undergraduate Mathematics Competition Bronze Prize, KMS

2015-2017 KAIST Presidential Fellowship

2014 Dean's List Award, College of Natural Sciences, KAIST

2014 33rd National Undergraduate Mathematics Competition Silver Prize, KMS

2013 32nd National Undergraduate Mathematics Competition Gold Prize, KMS

2013 – 2017 The National Scholarship for Science and Engineering (Full Tuition), KOSAF

Abbreviations
KMS: Korean Mathematical Society
KSIAM: Korean Society for Industrial and Applied Mathematics
KOSAF: Korea Student Aid Foundation,

INVITED TALKS

2024 Josić Group Lab seminar, University of Houston, Houston, TX, USA
2024 ACMS Applied Math Seminar, University of Notre Dame, Notre Dame, IN, USA
2024 SMB Annual Meeting, Minisymposium, Seoul, Korea
2024 Busan University Mathematical Biology Seminar, Busan, Korea
2023 KSIAM Annual Meeting, Special session, Gwangju, Korea
2023 The 8th CIJK International Conference on Mathematical and Theoretical Biology, Jeju, Korea
2019 SMB Annual Meeting, Minisymposium, Montreal, Canada

CONTRIBUTED
TALKS AND
POSTERS

2025 ARPA-H ROGUE Site Visit, Poster, Pittsburg, PA, USA
2023 International Congress on Industrial and Applied Mathematics, Contributed Talk, Tokyo, Japan
2023 Society for Mathematical Biology Annual Meeting, Contributed Talk, Columbus, OH, USA
2023 International Conference on Systems Biology, Contributed Talk, Hartford, CT, USA
2023 Korean Biological Rhythm Society Symposium, Poster, Daejeon, Korea
2022 Society for Research on Biological Rhythms, Biennial Meeting Poster, Fernandina Beach, FL, USA
2022 International Conference on Systems Biology, Contributed Talk, Berlin, Germany

2022 Korean Biological Rhythm Society Symposium, Poster, Daejeon, Korea
2021 Korea Society for Mathematical Biology Annual Meeting Poster, Jeju, Korea
2021 Korea Society for Industrial and Applied Mathematics Annual Meeting Poster, Busan, Korea
2021 Korea Society for Mathematical Biology Spring conference, Contributed talk, Virtual
2021 Society for Mathematical Biology Annual Meeting, Poster, Virtual
2021 Korea Society for Industrial and Applied Mathematics Spring conference, Poster, Virtual
2020 Korea Society for Industrial and Applied Mathematics Annual Meeting, Poster, Virtual
2020 Society for Mathematical Biology Annual Meeting, Poster, Virtual
2019 Society for Mathematical Biology Annual Meeting, Poster, Montreal, Canada
2018 Society for Mathematical biology Annual Meeting, Poster, Sydney, Australia
2018 Korea Society for Mathematical Biology Annual Meeting, Contributed Talk, Busan, Korea
2018 IMA Workshop on Ecological and Biological Systems, Poster, Minneapolis, MN, USA
2018 A3 International Workshop For Mathematical and Life Sciences, Poster, Hiroshima, Japan
2016 KAIST Undergraduate Research Program Workshop Daejeon, Korea

Teaching Experience	**High school Research Program (HRP) (Spring 2023)**	
	Mentor	KAIST
	Undergraduate Research Program (URP) (Spring 2022)	
	Mentor	KAIST
	Calculus II (Fall 2018)	
	Student Tutor	KAIST
	Numerical Linear Algebra (Fall 2017)	
	Teaching Assistant	KAIST
	Calculus II (Fall 2017)	
	Teaching Assistant	KAIST
	Ordinary Differential Equations (Spring 2017)	
	Teaching Assistant	KAIST
	Statistics for Graduate Students (Spring 2017)	
	Teaching Assistant	KAIST
	Calculus I (Spring 2016)	
	Student Tutor	KAIST
	Introduction to Programming (Spring 2015)	
	Student Tutor	KAIST
	Calculus II (Fall 2014)	
	Student Tutor	KAIST
	Calculus I (Spring 2014)	
	Student Tutor	KAIST

| Service | **June 13-17, 2021: Support Staff, SMB Annual Meeting** | Online |
| | Host zoom links of sessions for Asia time zone. | |