

## Seok Joo Chae

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### CONTACT INFORMATION

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Biomedical Mathematics Group, IBS  
55 Expo-ro, Yuseong-gu, Daejeon 34126 Korea

### EDUCATION

**KAIST**, Daejeon, Republic of Korea  
Ph.D. in Mathematical Sciences, Mar. 2017 – Aug. 2024 (expected)  
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**†, 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. *bioRxiv* (In revision for *iScience*, 2024)
2. **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
3. 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. 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 (In revision for *Nature Communications*)
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\*, NK killing activity is determined by activator-driven gating. (In revision for *Science Advances*)
3. Seolah Shin†, **Seok Joo Chae**†, Seunggyu Lee\*, and Jae Kyoung Kim\*, Model reduction in Reaction-diffusion systems (To be submitted to *PLoS Computational Biology*)

### 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 34th National Undergraduate Mathematics Competition Bronze Prize, KMS  
 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	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
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CONTRIBUTED TALKS AND POSTERS	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
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TEACHING EXPERIENCE	<b>High school Research Program (URP) (Spring 2023)</b> <i>Mentor</i> KAIST, Daejeon, Korea <b>Undergraduate Research Program (URP) (Spring 2022)</b> <i>Mentor</i> KAIST, Daejeon, Korea <b>Calculus II (Fall 2018)</b> <i>Student Tutor</i> KAIST, Daejeon, Korea <b>Numerical Linear Algebra (Fall 2017)</b> <i>Teaching Assistant</i> KAIST, Daejeon, Korea <b>Calculus II (Fall 2017)</b> <i>Teaching Assistant</i> KAIST, Daejeon, Korea <b>Ordinary Differential Equations (Spring 2017)</b> <i>Teaching Assistant</i> KAIST, Daejeon, Korea <b>Statistics for Graduate Students (Spring 2017)</b>
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<i>Teaching Assistant</i>	KAIST, Daejeon, Korea
<b>Calculus II (Fall 2018)</b>	
<i>Student Tutor</i>	KAIST, Daejeon, Korea
<b>Introduction to Programming II (Spring 2015)</b>	
<i>Student Tutor</i>	KAIST, Daejeon, Korea
<b>Calculus II (Fall 2014)</b>	
<i>Student Tutor</i>	KAIST, Daejeon, Korea
<b>Calculus I (Spring 2014)</b>	
<i>Student Tutor</i>	KAIST, Daejeon, Korea

SERVICE	<b>June 13-17, 2021: Support Staff, SMB Annual Meeting</b>	Online
	Host zoom links of sessions for Asia time zone.	