

# Hyunjoong “Hune” Kim

Simons Postdoctoral Fellow in Mathematical Biology  
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<b>Research Interest</b>	<b>Applied Mathematics</b> Stochastic Processes, Partial Differential Equations, Optimization, Dynamical Systems	
	<b>Mathematical Biology</b> Cell Biology, Developmental Biology, Morphogenesis, Biophysics	
<b>Employment</b>	<b>University of Pennsylvania</b> , Philadelphia, PA Simons Postdoctoral Fellow in Mathematical Biology Advisors: Yoichiro Mori and Josh Plotkin	2020 - present
<b>Education</b>	<b>University of Utah</b> , Salt Lake City, UT Ph.D. in Mathematics Advisor: Paul C. Bressloff Thesis: “Mathematical models of cytoneme-based morphogenesis”	2020
	<b>Yonsei University</b> , Seoul, South Korea M.Sc. in Applied Mathematics Advisors: Jeehyun Lee and Hee-Dae Kwon Thesis: “Parameter estimation in epidemic models using Kalman filter”	2016
	B.Sc. in Mathematics	2014
<b>Academic Visit</b>	NSF-Simons Center for Multiscale Cell Fate Research University of California, Irvine, CA, Jul. 1 ~ Aug. 9 (6 weeks) Collaborated with <i>Jun Allard</i> and an experimentalist <i>Dae Seok Eom</i> <b>Funded by the Center</b>	2019
<b>Publications</b>	<b>H. Kim</b> , Y. Mori, and J. Plotkin, “Direct contact vs. diffusion in the efficiency of intercellular volume transport,” <i>In preparation</i> , 2021. M.-J. Muñoz-López, <b>H. Kim</b> , and Y. Mori, “Stochastic modeling of bleb-driven cell migration,” <i>Submitted</i> , 2021. S. Park*, <b>H. Kim</b> *, Y. Wang, D.S. Eom, and J.F. Allard, “Zebrafish airinemes optimize between ballistic search and diffusive search,” <i>Submitted</i> , 2021. [5] <b>H. Kim</b> and P.C. Bressloff, “Stochastic Turing pattern formation in a model with active and passive transport,” <i>Bulletin of Mathematical Biology</i> , <b>82</b> 144, 2020. [4] <b>H. Kim</b> and P.C. Bressloff, “Impulsive signaling model of cytoneme-based morphogen gradient formation,” <i>Physical Biology</i> , <b>16</b> 056005, 2019. [3] P.C. Bressloff and <b>H. Kim</b> , “Search-and-capture model of cytoneme-mediated morphogen gradient formation,” <i>Physical Review E</i> , <b>99</b> 052401, 2019. [2] <b>H. Kim</b> and P.C. Bressloff, “Direct vs. synaptic coupling in a mathematical model of cytoneme-based morphogen gradient formation,” <i>SIAM Journal on Applied Mathematics</i> , <b>78</b> 2323-2347, 2018. [1] P.C. Bressloff and <b>H. Kim</b> , “Bidirectional transport model of morphogen gradient formation via cytonemes,” <i>Physical Biology</i> , <b>15</b> 026101, 2018.	

<b>Honors &amp; Funding</b>	BioFire Scholar Award Approximately two awards are given in an academic year	2020
	Mathematics Department Summer Research Fellowship Approximately four awards are given in an academic year	2019
	Brain Korea 21 Scholarship for Leading Universities and Students National Research Foundation of Korea	2014 - 2016
	Honors Student of Yonsei University Top 10% GPA of the students are given in the college of science in a semester	2012
	Distinguished Honors Student of Yonsei University Approximately two honors are given in the college of science in a semester	2007
	National Science and Technology Scholarship Korea Student Aid Foundation Top 2% Korea SAT of the students are awarded for 8 semesters	2007
<b>Presentations</b>	Stochastic Turing pattern formation in a model with active and passive transport SIAM Conference on Applications Dynamical Systems, Virtual	2021
	Communication by touch: modeling perspectives Mathematical Biology Seminar, University of Pennsylvania, Philadelphia, PA	2020
	Do cytonemes form a morphogen gradient via a random search? Annual Symposium on Multiscale Cell Fate, Irvine, CA (Poster) <b>Symposium Travel Award</b>	2019
	Do developmental cells really communicate via diffusing particles? Applied Mathematics Seminar, California State University, Northridge, CA	2019
	Stochastic processes in cytoneme-mediated cell development SIAM Wasatch Student Chapters Conference, Logan, UT	2019
	Mathematical models of cytoneme-based morphogen gradient formation SIAM Conference on Life Sciences, Minneapolis, MN (Poster)	2018
	Estimation of the reproduction number of pandemic influenza A (H1N1) in Korea 2009 Korean Mathematical Society Annual Meeting, Seoul, South Korea	2015
	Estimating parameters in mathematical epidemic model by using Kalman filter Korean SIAM Annual Meeting, Seogwipo, South Korea (Poster) <b>Best Poster Prize</b>	2014
<b>Teaching</b>	<b>Full Instructor</b> , Department of Mathematics, University of Pennsylvania	
	AMCS 602: Algebraic Techniques for Applied Mathematics and Computational Science I	2021 Fall
	<b>Full Instructor</b> , Department of Mathematics, University of Utah	
	MATH 1320: Engineering Calculus II	2019 Fall
	MATH 1210: Calculus I	2019 Fall
	MATH 1030: Introduction to Quantitative Reasoning	2019 Spring, 2018 Fall
	<b>Lab Instructor</b> , Department of Mathematics, University of Utah	
	MATH 1310: Engineering Calculus I	2018 Spring
	MATH 1210: Calculus I	2017 Spring and Fall
	MATH 2250: Differential Equations and Linear Algebra	2016 Fall
<b>Grader</b> , Department of Computational Science and Engineering, Yonsei University		
CSE 5810: Numerical Analysis	2015 Spring and Fall 2014 Fall	

**Service**

<i>Member, Preliminary Exam Committee</i> Department of Mathematics, University of Pennsylvania, Philadelphia, PA	2021 - 2022
<i>Organizer, Mathematical Biology Seminar</i> University of Pennsylvania, Philadelphia, PA	2021
<i>Student Representative, Applied Mathematics Graduate Student Group</i> Yonsei University, Seoul, South Korea	2015
<i>President, Mathematics Honors Student Group</i> Yonsei University, Seoul, South Korea	2013
<i>Sergent, Signal Intelligence Specialist</i> Republic of Korea Air Force, Mandatory	2009 - 2010
<i>Student Representative, Science Undergraduate Students' Class 3</i> Yonsei University, Seoul, South Korea	2008

**Proficiency**

Computer Skills  
MATLAB, LaTeX, Adobe Illustrator, Mathematica, Maple, XPPAUT, R, C++, Fortran.

Language  
Professional proficiency in English  
Native proficiency in Korean