Kenji Sugioka

Curriculum Vitae

Assistant Professor/Principal Investigator
2407-2350 Health Sciences Mall, Vancouver, BC V6T1Z3, Canada
Department of Zoology, Life Sciences Institute, The University of British Columbia
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ACADEMIC CAREER

Assistant Professor **October 2018 - ongoing**
Department of Zoology, Life Sciences Institute, The University of British Columbia
Research topics: Developmental control of cell division, cellular symmetry breaking

Postdoctoral Research Associate (HFSP long-term fellow) **October 2012 - September 2018**
Institute of Molecular Biology, University of Oregon (Bruce Bowerman lab)
Research topics: oriented cell division, centriole biogenesis, meiotic spindle formation, and asymmetric cell division

Postdoctoral Researcher **April 2010-September 2012**
RIKEN/National Institute of Genetics, Japan (Hitoshi Sawa lab)
Research topics: Asymmetric cell division, Wnt signaling

EDUCATION

Ph.D. RIKEN Center for Developmental Biology/Kobe University, Japan 2006-2010
Dissertation: Analysis of Asymmetric Cell Division Regulated by the Wnt Signaling
Advisor: Dr. Hitoshi Sawa

MSc. Department of Biochemistry and Biophysics, University of Tokyo 2004-2006
Thesis projects: Analysis of DAZ-1 mediated translational regulation during oogenesis
Advisor: Dr. Masayuki Yamamoto

BSc. Department of Biochemistry and Biophysics, University of Tokyo 2000-2004

PUBLICATIONS

Submitted:

1) Mi Jing Khor, Gaganpreet Sangha, and **Kenji Sugioka***.
Cytokinesis-dependent HMR-1/Cadherin twisting regulates cellular patterning during early embryogenesis.

2) Yuxuan Rain Xiong, Eric Cytrynbaum, and **Kenji Sugioka***.
Adhesion-dependent chiral cortical flow drives chiral morphogenesis in early *Caenorhabditis elegans* embryos.

3) Yukimasa Shibata, Yuri Tanaka, Shunsuke Mori, Kaito Mitsuzumi, Shion Fujii, Hiroyuki Sasakura, Yuki Morioka, **Kenji Sugioka**, Kosei Takeuchi, and Kiyoji Nishiwaki*.
Endogenous chondroitin extends lifespan by inhibiting VHA-7-mediated tubular lysosome formation.

Published:

1) Christina Hsu+, Gaganpreet Sangha+, Wayne Fan, Joey Zheng, and **Kenji Sugioka***.
Contractile ring mechanosensation and its anillin-dependent tuning during early embryogenesis.
Nature Communications (2023). 14, 8138.
+ co-first author, * corresponding author

2) **Sugioka, K*.** (2022). Symmetry breaking of animal cytokinesis.
Seminars in Cell and Developmental Biology**,** (127), 100-109.
https://doi.org/10.1016/j.semcdb.2021.12.008

3) Xiong, R., and **Sugioka, K***., (2020) (* Corresponding author)
Improved 3D cellular morphometry of Caenorhabditis elegans embryos using a refractive index matching medium.
Plos One, 15(9), e0238955.

4) Hsu, C.R., Xiong, R., and **Sugioka, K***., (2019) (* Corresponding author)
In vitro reconstitution of spatial cell contact patterns with isolated *Caenorhabditis elegans* embryo blastomeres and adhesive polystyrene beads.
Journal of Visualized Experiments, (153), e60422.

5) Bowerman, B., and **Sugioka, K**., (2019)
Breaking Symmetry: Worm Cue Finally Found.
Developmental Cell 48(5), 593-594.

6) **Sugioka, K*.,** Bowerman, B., (2018) (* Corresponding author)
Combinatorial contact cues specify cell division orientation by directing cortical myosin flows. ***Developmental Cell*** 46(3), 257-270.e5
(bioRxiv preprint: https://doi.org/10.1101/164186.)

7) **Sugioka, K.,** Fielmich, LE., Mizumoto, K., Bowerman, B., van den Huevel, S., Kimura, A., Sawa, H., (2018)
Tumor suppressor APC is an attenuator of spindle-pulling forces during *C. elegans* asymmetric cell division. ***Proceedings of the National Academy of Sciences USA,*** Jan 30;115(5): E954-E963. (bioRxiv preprint: https://doi.org/10.1101/157404)

8) **Sugioka, K.**, Hamill, DR., Lowry, J., McNeely, ME., Enrick, M., Murali, B., Parsons, LW., Priess, JR., Bowerman, B., (2017)
Centriolar SAS-7 acts upstream of SPD-2 to regulate centriole assembly and pericentriolar material formation. ***eLife***, Jan 16;6. doi: 10.7554/eLife.20353.
**Recommended by Faculty of 1000/Media Coverages by UPI news/Phys.org*

9) Lowry, J., Yochem, J., Chuang, CH., **Sugioka, K.,** Connolly, AA., Bowerman, B., (2015)
High-throughput cloning of temperature-sensitive *C. elegans* mutants with adult syncytial germline membrane architecture defects. ***G3: Genes| Genomes| Genetics***, g3. 115.021451

10) Connolly, AA., **Sugioka, K.,** Chuang, CH., Lowry, J., Bowerman, B., (2015)
The *C. elegans* kinesin-13/MCAK family member KLP-7 acts through kinetochores to limit spindle pole number during oocyte meiotic spindle assembly. ***Journal of Cell Biology***, 210(6): 917-932

11) **Sugioka, K.,** Sawa, H., (2012) Formation and functions of asymmetric microtubule organization in polarized cells. ***Current Opinion in Cell Biology***, 24(4):517-25.

12) **Sugioka, K.,** Mizumoto, K., Sawa, H., (2011)
Wnt regulates spindle asymmetry to generate asymmetric nuclear β-catenin in *C. elegans* ***Cell***, 146(6): 942-54.
**Recommended by Faculty of 1000*

13**)** **Sugioka, K.,** Sawa, H., (2010)
Regulation of asymmetric positioning of nuclei by Wnt and Src signaling and its roles in POP-1/TCF nuclear asymmetry in *Caenorhabditis elegans.*
Genes to Cells 15(4): 397-407.

14) **Sugioka, K**., Sawa, H., (2010)
Wnt-dependent regulation of cell polarity and asymmetric cell division—mechanism to create orderly cellular diversity.
Journal of Clinical and Experimental Medicine, 233: 966-970. (review in Japanese)

15) **Sugioka, K**., Sawa, H., (2011)
Wnt signaling regulates asymmetric spindle formation to regulate nuclear β-catenin asymmetry.
Cell Technology, 30: 1294-1295. (review in Japanese: ISBN 978-4-7809-0125-2)

FUNDING

Active:

CIHR Project Grant 2021-2026
Canadian Institutes of Health Research (CIHR)
Role: co-investigator, Amount: $849,150

Michael Smith Foundation for Health Research Scholar Award 2020-2025
Michael Smith Foundation for Health Research
Role: PI, Amount: $450,000

NSERC Discovery Grant 2019-2025*
(*2-year extension due to COVID-19 and a new-PI status)
Natural Sciences and Engineering Research Council of Canada (NSERC)
Role: PI, Amount: $225,000

CIHR Project Grant 2020-2025
Canadian Institutes of Health Research (CIHR)
Role: PI, Amount: $745,875

Completed:

New Frontiers in Research Funds — Exploration Stream 2020-2022
New Frontiers in Research Fund
Role: PI, Amount: $250,000

Support for Teams to Advance Interdisciplinary Research (STAIR) 2020
UBC Faculty of Science
Role: co-PI, Amount: $22,500 to K.S.

B.C. Knowledge Development Fund (BCKDF) 2019
Province of British Columbia

Role: PI, Amount: $175,000

John R. Evans Leaders Fund 2019
Canada Foundation for Innovation
Role: PI, Amount: $175,000

HFSP Long-term Postdoctoral Fellowship 2012-2015
Human Frontier Science Program Organization
Role: Postdoc (PI), Amount: $164,102

RIKEN Junior Research Associate Program Fellowship 2006-2009
RIKEN
Role: Trainee, Amount: $ 50,973

Molecular Biology Society of Japan Travel Fellowship 2015
Molecular Biology Society of Japan
Role: Postdoc (PI), Amount: $1,327

Journal of Cell Science Travelling Fellowship 2015
Company of Biologist
Role: Postdoc (PI), Amount: $2,322

NIG Collaborative Research Program Grant (2013-A60) 2013
National Institute of Genetics
Role: Postdoc (PI), Amount: $2,654

Inoue Research Award for Young Scientists 2012
Inoue Foundation for Science
Role: N.A., Amount: $4,425

HONORS AND AWARDS

Michael Smith Foundation for Health Research Scholar Award 2020
Human Frontier Science Program Postdoctoral Fellowship 2012
Inoue Research Award for Young Scientists 2012
RIKEN Junior Research Associate Program Fellowship 2006

RESEARCH COLLABORATORS

Dr. Danielle Hamill (Dept. Zoology, Ohio Wesleyan University, OH, USA) 2014-2017
Dr. James R Priess (Fred Hutchinson Cancer Research Center, WA, USA) 2017
Dr. Akatsuki Kimura (National Institute of Genetics, Japan) 2015-2018
Dr. Sander van den Heuvel (Dept. Dev. Biol., Utrecht University, Netherlands) 2015-2018

Dr. Don Moerman (Dept. Zoology, The University of British Columbia)	2018-2020
Dr. Thimo Kurz (Inst. Mol. Cell. Systems. Biol, University of Glasgow)	2019-2020
Dr. Jay Newby (Dept. Statistics, University of Alberta)	2020-2022
Dr. Nozomu Yachie (School of Biomedical Engineering, UBC)	2020-
Dr. Geoff Shiebinger (Dept. Math, UBC)	2020-
Dr. Eric Cytrynbaum (Dept. Math, UBC)	2020-
Dr. James Feng (Dept. Math, Chemical Engineering, UBC)	2020-

SELECTED TALKS

Invited

1) **Seminar at King's College London**
Mechanical regulation of cytokinesis during embryogenesis. July 2024

2) **Seminar at Institute for Research in Immunology and Cancer, Université de Montréal**
Cell surface flow-dependent cellular patterning during embryogenesis. November 2023.

3) **Mathematical Biology Seminar, Pacific Institute for Mathematical Sciences, UBC.**
Extrinsic and intrinsic controls of cortical flow regulate *C. elegans* embryogenesis. April 2021

4) **Keynote talk at the Northwest Worm Meeting 2020**
Extrinsic and intrinsic controls of cortical flow regulate early embryogenesis. 2020

5) **Seminar at University of British Columbia, Vancouver, Canada**
Context-dependent cell division orientation programs during *C. elegans* embryogenesis. 2018

6) **Seminar at Ichan School of Medicine Mount Sinai, New York**
Context-dependent determination of animal cell division axes. 2018

7) **Seminar at National Institute of Genetics, Mishima, Japan**
CUL-3 E3 ubiquitin ligase regulates cell division axis to specify the D-V body axis. 2015

8) **Seminar at Tohoku University, Sendai, Japan**
Wnt-dependent asymmetric cell division. 2012

Selected

Kenji Sugioka and Bruce Bowerman (Talk)
Patterns of contact cue specify cell division orientation with myosin flow.

EMBO *C. elegans* Development, Cell Biology and Gene Expression Meeting. Barcelona, Spain, June 2018.

Kenji Sugioka and Bruce Bowerman. **(Plenary talk)**
Asymmetric ubiquitination of the contractile ring by CUL-3 E3 ubiquitin ligase complex regulates asymmetric cytokinesis in P0 cell.
20th International *C. elegans* Meeting. Los Angels, USA, June 2015

Kenji Sugioka[*], Danielle Hamill[*], Josh Lowry, Marie E. McNeely, Molly Enrick, Bhavna Murali, Lauren W. Parsons and Bruce Bowerman **(Talk)**
SPD-2 interacting protein SAS-X is a new centriolar protein required for centriole duplication.
20th International *C. elegans* Meeting. Los Angels, USA, June 2015

Kenji Sugioka, Kota Mizumoto and Hitoshi Sawa **(Talk)**
Distinct regulatory interactions between PAR and APC proteins that asymmetrically localize in P0 and EMS cells
5th East Asia *C.elegans* Meeting, Taipei, Taiwan, June 2012

Kenji Sugioka, Kota Mizumoto and Hitoshi Sawa **(Talk)**
Wnts regulate asymmetric spindle to generate asymmetric cell fates in *C. elegans*.
69th Annual Meeting of the Society for Developmental Biology, Albuquerque, USA, August, 2010

Kenji Sugioka, Kota Mizumoto and Hitoshi Sawa **(Talk)**
Spindle asymmetry produced by Wnt signaling regulates asymmetric nuclear localization of β-catenin.
4th East Asia *C. elegans* Meeting, Tokyo, Japan, June 2010

Kenji Sugioka, Kota Mizumoto and Hitoshi Sawa **(Talk)**
Wnts regulate asymmetric spindle to generate asymmetry of nuclear β-catenin in *C. elegans.*
EMBO workshop: Wnt Signaling in Development and Disease, Arolla, Switzerland
August, 2009

Kenji Sugioka and Hitoshi Sawa **(Talk)**
Wnts regulate spindle asymmetry to produce asymmetry of cell fates.
2nd *C. elegans* Development and Evolution Topic Meeting, Madison, USA, June 2008

MENTORING AND LEADERSHIP ACTIVITIES

-Graduate students (6 students; 3 active, 3 completed)

Viktorija Juciute	Jan 2024-ongoing
Rain Xiong	Sep 2020-ongoing

Mi Jing Khor	Sep 2022-ongoing
Chelsey Gough	Jan 2021-Jan 2024
Md Abu Taher	Jan 2020-May 2024
Christina Hsu	Sep 2019-April 2024

-Undergraduate students (22 students; 3 active, 19 completed)

Sabrina Ye (Role: Undergraduate RA)	May 2024-ongoing
Varsha Chembukkavu (Role: Honours student)	May 2024-ongoing
Trinity Truong (Role: Honours student)	Jul 2023-May 2024
Breanna Harada (Role: Honours student)	Jun 2023-May 2024
Jessica Zhang (Role: Lab volunteer)	May 2023-ongoing
Gaganpreet Sangha (Role: Directed study, undergraduate RA)	Sep 2021-Dec 2023
Emily Wang (Role: Honours student)	May 2022-Apr 2023
Stephanie Chen (Role: Lab volunteer)	Sep 2022-May 2023
Joey Zheng (Role: Directed study)	Sep 2021-Dec 2021
Jiaqing Li (Role: Lab volunteer)	Sep 2021-May 2022
Kahori Hirae (Role: Lab volunteer)	Sep 2021-Dec 2021
Wayne Fan (Role: Directed study, work learn)	May 2021-May 2022
Mike Kaardal (Role: Directed study)	May 2021-Aug 2021
Nghi Vo (Role: Co-op student)	May 2020-Aug 2020
Chelsey Gough (Role: Lab volunteer)	May 2020-Aug 2020
Zohaib Nadeem (Role: Directed Study Student)	Sep 2019-Dec 2019
Luis Altamirano (Role: Mitacs Exchange International Student from the National Autonomous University of Mexico)	Jun 2019-Aug 2019
Min Jee Kim (Role: Undergraduate Research Assistant)	May 2019-Dec 2019
Rain Xiong (Role: Undergraduate Research Assistant)	May 2019-Aug 2020
Kalen Dofher (Role: Directed Study Student)	May 2019-Aug 2019
Christina Hsu (Role: Undergraduate Research Assistant)	Jan 2019-Aug 2019
Andrew Chun (Role: Undergraduate volunteer)	Jan 2019-Apr 2019

-Research technicians (1 active, 4 completed)

Lisa Fernando	Jul 2019-ongoing
Viktorija Juciūtė	Jul 2021-Dec 2023
Aoi Hiroyasu	Jan 2019-Aug 2020
Chelsey Gough	Sep 2020-Dec 2020
Lixin Zhou	Jan 2019-Mar 2022

TEACHING

BIOL 362: Cellular Dynamics (third year cell biology course focusing on cell polarity, migration, cell division, cell-cell junction, morphogenesis)
37.5 hours per term, average class size ~80 students
2019 Term 2 (teaching evaluation 3.9/5.0), 2020 Term 2 (4.9/5.0), 2021 Term 2 (4.8/5.0), 2022 Term 2 (4.7/5.0), 2023 Term 2 (4.8/5.0)

SERVICES

1) <u>CIHR Grant Review Panel:</u>

1) February 24th, 2021-July 5th, 2021.
Role: Grant Review Panel Committee Member
CIHR Project Grant Competition Spring 2021: Cell Biology—Molecular/Fundamental Panel (CB1)

2) November 3rd, 2020 and January 29th, 2021.
Role: Grant Review Panel Committee Member
CIHR Project Grant Competition Fall 2020: Cell Biology—Molecular/Fundamental Panel (CB1)

2) Grant external reviewer

Jan 25th, 2024	External Reviewer, NSERC (Genes, Cells and Molecules)
Jan 13th, 2023	External Reviewer, NSERC (Genes, Cells and Molecules)
Dec 23rd, 2022	External Reviewer, New Frontiers in Rearch Fund (Exploration stream)
Dec 5th, 2022	External Reviewer, Human Frontier Science Program Research Grant

3) Journal reviewer
Nature communications/ Genetics / Quantitative Biology
Computational and Structural Biotechnology Journal
Bioinformatics/Biochemical Society Transactions
PLOS Genetics/ Journal of Cell Biology

4) Seminar/Conference organization

1. Januayr 27th, 2022	Seminar by Dr. Geraldine Seydoux (host, McClintock Lecture)
2. January 13th, 2022	Seminar by Dr. Clemens Cabernard (host, LSI Seminar Series)
3. May , 2022	The Moerman Symposium (co-organizer)
4. June, 2023	International Worm Meeting (session chair/poster judge)
5. Sept, 2023-April 2024	Debbie and Justin Wragg-Schmidt Zoology Spring Symposium (co-organizer)
6. Sept 2023	Seminar by Dr. Jessica Feldman (host, LSI Seminar Series)
6. April 2024	Seminar by Dr. Bob Goldstein (host, McClintock Lecture)
6. May 2024-ongoing	12th Canadian Developmental Biology Conference (co-organizer)

5) Defense/Honours exams

1. Honours Exam (BIOL449) nominee/examiner:

April 22th, 2021	Tommy Kuo, Dept of Botany, Geoffrey Wasteneys lab

April 18th, 2022	Sydney Ko, Dept of Zoology, Kota Mizumoto lab
April 24th, 2023	Eva Bhathena, Dept of Zoology, Vanessa Auld lab
April 19th, 2024	Jaime Conibear, Dept of Cell. Phys. Sci., Kurt Haas lab
April 27th, 2024	Julie Liu, Dept of Zoology, Kota Mizumoto lab

2. Defense chair:

January 20th, 2021	Elisabeth Bergman, Dept. of Zoology, Phillip Matthews lab
April 10th, 2024	Ivan Ho, Dept of Zoology, Ben Matthews lab

3. Defense examiner:

July 9th, 2021	Laryssa Halat (PhD), Dept. of Botany, Geoffrey Wasteneys lab
December 18th, 2019	Menghao Lu (MSc), Dept. of Zoology, Kota Mizumoto lab
May 9th, 2019	Mehadi Hasan (MSc), Dept. of Mechanical Eng., Mattia Bacca lab

PROFESSIONAL MEMBERSHIP

The Molecular Biology Society of Japan	Member	(2004-)
Japanese Society of Developmental Biology	Member	(2012-)
The American Society for Cell Biology	Member	(2017-)
ASAPbio	Ambassador	(2017-2020)
F1000Prime	Associate Faculty	(2018-)
Genetics Society of America	Member	(2019-)
College of Reviewers, CIHR	Full Member	(2021-)