

SUCKJOON JUN

UNIVERSITY OF CALIFORNIA SAN DIEGO

ASSISTANT PROFESSOR, PHYSICS

ASSISTANT PROFESSOR, SECTION OF MOLECULAR BIOLOGY, DIVISION OF BIOLOGY

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EDUCATION AND TRAINING:

Pusan National University	Physics	BSc	1997
Iowa State University	Physics	MSc	1999
Simon Fraser University	Physics	PhD	2004
AMOLF	Biophysics	Postdoctoral	2004-2006
Necker Hospital	Evolution	Postdoctoral	2006-2007

EMPLOYMENT HISTORY:

NSERC Post-doctoral fellow	AMOLF	2004-2006
Marie-Curie Post-doctoral fellow	Necker Hospital	2006-2007
Bauer Fellow	Harvard University	2007-2012
Assistant Professor	UCSD	2012-present

HONORS AND AWARDS:

2005	Nominee for the Canadian Association of Graduate Studies Thesis Awards, Simon Fraser Univ.
2005	Runner Up for NSERC (Canada) Doctoral Prizes (top 4 in the natural sciences & engineering in Canada)
2005	The Dean of Graduate Studies Convocation Medal in the Faculty of Science, Simon Fraser Univ. (ranked 1 st in natural sciences)
2005-2007	NSERC (Canada) post-doctoral fellowship (40K/year)
2007-2009	Marie-Curie Incoming International Post-doctoral Fellowship (declined in favor of the Bauer Fellowship at Harvard University)
2013	Allen Distinguished Investigator award, the Paul G. Allen Family Foundation
2013	Pew Scholar award, the Pew Charitable Trusts
2013	NSF CAREER Award, National Science Foundation
2015-2016	Scialog Fellow, Research Corporation / Gordon and Betty Moore Foundation

CURRENT EXTERNAL FUNDING (TOTAL DIRECT COST ~ \$3M)

\$1.6M	Allen Distinguished Investigator award	2013-2017
\$240K	Pew Scholar award	2013-2018
\$1.15M	NSF CAREER award	2013-2018

PAST FUNDING

\$1.38M	Bauer Fellowship, Harvard University and NIH P50	2007-2012
\$25K	NIH R01 subaward through Dr. Petra Levin's NIH R01 GM064671-07	08/2009-07/2010

GOOGLE SCHOLAR PROFILE: [[LINK](#)]

PUBLICATIONS

1. John T Sauls, Dongyang Li, Suckjoon Jun
How bacteria control cell size
Current Opinion in Cell Biology
[commissioned, 2016]
2. Steven B. Brown and Suckjoon Jun,
Complete Genome Sequence of *Escherichia coli* NCM3722
Genome Announcements
[in press]
3. Sattar Taheri-Araghi, Steven B. Brown, John T. Sauls, Dustin McIntosh, & **Suckjoon Jun**,
Single-cell physiology
Annual Review of Biophysics 44:3.1-3.20 (2015)
[\[online\]](#) [\[PDF\]](#) [\[Google Scholar\]](#)
4. **Suckjoon Jun**,
Chromosome, cell cycle, and entropy
Biophysical Journal 108, 785-786 (2015)
[\[online\]](#) [\[PDF\]](#) [\[from the cover\]](#)
5. Sattar Taheri-Araghi*, Serena Bradde*, Norbert Hill, Petra A. Levin, Johan Paulsson, Massimo Vergassola*,
Suckjoon Jun*,
Cell size control and homeostasis in bacteria
Current Biology 25, 385-391 (2015)
[\[online\]](#) [\[PDF+extended SI\]](#) [\[Google Scholar\]](#) [\[extensive news coverage\]](#)
6. **Suckjoon Jun** and Sattar Taheri-Araghi,
Cell-size maintenance: universal strategy revealed
Trends in Microbiology 23, 4-6 (2015)
[\[online\]](#) [\[PDF\]](#) [\[Google Scholar\]](#)
7. Ariel Amir, Farinaz Babaeipour, Dustin McIntosh, David R. Nelson & **Suckjoon Jun**,
Bending forces plastically deform growing bacterial cell walls.
Proc. Nat. Acad. Sci. USA (2014)
[\[open access full article\]](#) [\[News in Nature Physics\]](#) [\[Google Scholar\]](#)
8. Brenda Youngren, Henrik J. Nielsen, **Suckjoon Jun** & Stuart Austin,
The multi-fork *Escherichia coli* chromosome is a self-duplicating and self-segregating thermodynamic ring polymer.
Genes & Development. **28**, 71-84 (2014).
[\[open access full article\]](#) [\[Google Scholar\]](#)
9. J. Pelletier, K. Harvorsen, B.-Y. Ha, R. Paparcone, S. Sandler, C. Woldringh, W. Wong* & **S. Jun***,
Physical manipulation of the *Escherichia coli* chromosome reveals its soft nature.
Proc. Nat. Acad. Sci. Plus, **109**(40), E2649-E2656 (2012).
[\[open access full article\]](#) [\[PNAS highlight\]](#) [\[Nature Methods highlight\]](#) [\[Google Scholar\]](#)
10. Y. Jung, J. Kim, **S. Jun**, B.-Y. Ha,
Intrachain Ordering and Segregation of Polymers under Confinement,
Macromolecules 45(7), 3256-3262 (2012).
[\[online\]](#) [\[PDF\]](#) [\[Google Scholar\]](#)
11. Y. Jung, J. Kim, C. Jeon, H. Jeong, **S. Jun**, B.-Y. Ha,
Ring polymers as model bacterial chromosomes: confinement, chain topology, and how they interact.
Soft Matter 8, 2095-2102 (2012).
[\[online\]](#) [\[PDF\]](#) [\[Google Scholar\]](#)

12. P. Wang, L. Robert, J. Pelletier, W. Dang, F. Taddei, A. Wright, **S. Jun***.
Robust growth of *Escherichia coli*.
Current Biology 20, 1099-1103 (2010).
[\[online\]](#) [\[PDF\]](#) [\[F1000\]](#) [\[Google Scholar\]](#) [\[Small Things Considered\]](#) [\[The Scientist Top 7 Biology\]](#)
[\[The Scientist Top 7 Biochemistry\]](#)
13. **Suckjoon Jun*** and Andrew Wright*.
Entropy as the driver of chromosome segregation,
Nature Reviews Microbiology 8, 600-607 (2010).
Note: this is a peer-reviewed article under "Opinions" section of the journal, containing major original results.
[\[online\]](#) [\[PDF\]](#) [\[Small Things Considered\]](#) [\[Google Scholar\]](#)
14. Youngkyun Jung, **Suckjoon Jun**, Bae-Yeun Ha.
A self-avoiding polymer trapped inside a cylindrical pore: Flory free energy and unexpected dynamics,
Phys. Rev. E 79, 061912 (2009).
[\[PDF\]](#) [\[Google Scholar\]](#)
15. **Suckjoon Jun**, D. Thirumalai and Bae-Yeun Ha.
Compression and stretching of a self-avoiding chain in cylindrical nanopores,
Phys. Rev. Lett. 101, 138101 (2008).
[\[PDF\]](#) [\[Google Scholar\]](#)
16. Axel Arnold, Behnaz Borzorgui, Daan Frenkel, Bae-Yeun Ha and **Suckjoon Jun**.
Unexpected relaxation dynamics of a self-avoiding polymer in cylindrical confinement,
J. Chem. Phys. 127, 164903 (2007).
[\[online\]](#) [\[PDF\]](#) [\[Google Scholar\]](#)
17. Axel Arnold and **Suckjoon Jun**.
Timescale of entropic segregation of flexible polymers in confinement: Implications for chromosome segregation in filamentous bacteria,
Phys. Rev. E 76, 031901 (2007).
[\[online\]](#) [\[PDF\]](#) [\[Google Scholar\]](#)
18. **Suckjoon Jun***, Axel Arnold and Bae-Yeun Ha.
Confined space and effective interactions of multiple self-avoiding chains,
Phys. Rev. Lett. 98, 128303 (2007).
[\[online\]](#) [\[PDF\]](#) [\[Google Scholar\]](#)
19. **Suckjoon Jun*** and Bela Mulder.
Entropy-driven spatial organization of highly confined polymers: Lessons for the bacterial chromosome.
Proc. Nat. Acad. Sci. 103, 12388 (2006).
[\[online\]](#) [\[F1000\]](#) [\[JCB highlight\]](#) [\[Google Scholar\]](#)
20. **Suckjoon Jun** and John Bechhoefer.
Nucleation and growth in one dimension. part II: Application to DNA replication kinetics.
Phys. Rev. E 71, 011909 (2005).
[\[PDF\]](#) [\[Google Scholar\]](#)
21. **Suckjoon Jun**, Haiyang Zhang, and John Bechhoefer.
Nucleation and growth in one dimension. part I: The generalized Kolmogorov-Johnson-Mehl-Avrami model.
Phys. Rev. E 71, 011908 (2005).
[\[PDF\]](#) [\[Google Scholar\]](#)
22. **S. Jun**, Y. Hong, H. Imamura, B.-Y. Ha, J. Bechhoefer, and P. Chen.
Self-Assembly of the Ionic Peptide EAK16: the effect of charge distributions on self-assembly.
Biophysical Journal 87, 1249-1259 (2004).
[\[PDF\]](#) [\[Google Scholar\]](#)
23. **Suckjoon Jun**, John Herrick, Aaron Bensimon, and John Bechhoefer.
Persistence length of chromatin determines origin spacing in *Xenopus* early-embryo DNA replication: Quantitative comparisons between theory and experiment.

Cell Cycle 3(2), 223-229 (2004).

[\[PDF\]](#) [\[Google Scholar\]](#)

24. **Suckjoon Jun**, John Bechhoefer, and Bae-Yeun Ha.

Diffusion-limited loop formation of semiflexible polymers: Kramers theory and the intertwined time scales of chain relaxation and closing.

Europhys. Lett. 64(3), 420-426 (2003).

[\[PDF\]](#) [\[Google Scholar\]](#)

25. John Herrick, **Suckjoon Jun**, John Bechhoefer, and Aaron Bensimon.

Kinetic model of DNA replication in eucaryotic organisms.

J. Mol. Biol. 320, 741-750 (2002).

[\[PDF\]](#) [\[Google Scholar\]](#)

26. M Luban, F Borsa, S Budko, P Canfield, **S Jun**, JK Jung, P Kgler, D Mentrup, A Mller, R Modler, D Procissi, BJ Suh, and M Torikachvili.

Heisenberg spin-triangle in V6-type magnetic molecules: Experiment and theory.

Phys. Rev. B 66, 054407(1)-054407(12) (2002).

[\[PDF\]](#) [\[Google Scholar\]](#)

BOOK CHAPTERS AND MISCELLANEOUS

1. Sattar Taheri & **Suckjoon Jun**,

Single-cell cultivation in microfluidic devices,

the Handbook of Hydrocarbon and Lipid Microbiology (Springer, to appear in 2015)

2. **Suckjoon Jun**,

Polymer physics for understanding bacterial chromosomes.

Ch.6 in *Bacterial Chromatin* (edited by Dame and Dorman), Springer (2010).

3. **Suckjoon Jun** and Nick Rhind,

Just-in-time DNA replication,

Physics 1, 32 (2008).

4. **Suckjoon Jun** and John Bechhoefer.

Role of Polymer Loops in DNA replication.

Physics in Canada 59(2), pp. 85-92 (2003).

5. **Jun, S.**, Bechhoefer J., and Ha, B.-Y.

Ch. 3. Looping of Semiflexible Polymers: from Statics to Dynamics in *Molecular Interfacial Phenomena of Polymers and Biopolymers*, edited by Pu Chen (Woodhead Publishing Ltd, Cambridge, UK) (July, 2005).

INVITED TALKS (SINCE 2007 AS A PRINCIPAL INVESTIGATOR)

2016

- 07/2016 Workshop "Polymers with spatial and mechanical constraints", the Istituto Veneto di Scienze, Lettere ed Arti (IVSLA), Italy
05/2016 Fred Hutchinson Cancer Research Center, Seattle
03/2016 Rice University
01/2016 Gordon Research Conference on Sensory Transduction in Microorganisms (STIM)

2015

- 12/2015 Pacificchem 2015 Symposia Life at Small Copy Numbers, Honolulu, Hawaii
12/2015 Principles of cellular life, STATPHYS Winter School, Bangalore, India
11/2015 [Keynote] LyonSysBio 2015, Lyon, France
09/2015 Emory University, Physics colloquium
09/2015 Georgia Tech, Biophysics seminar
06/2015 Gordon Research Conference on Chromosome Dynamics

06/2015 BioComlex - Taiwan International Workshop on Soft Matter and Biological Physics, Taiwan
 05/2015 Umea University, Biology seminar, Sweden
 04/2015 Duke University, Systems Biology Seminar
 04/2015 UNC-CH (University of North Carolina, Chapel Hill), Biology Seminar
 04/2015 Johns Hopkins University, Biology seminar
 03/2015 Yale University, Sackler seminar
 03/2015 University of Cambridge, Cavendish Lab, Biological and Soft Systems seminar, UK
 02/2015 Allen Distinguished Investigators Symposium, UCSD/Scripps Institute of Oceanography
 01/2015 San Diego Microbiology Group (SDMG), San Diego, CA, USA

2014

12/2014 UCSD, Mechanical and Aerospace Department, Mech-Bio seminar
 11/2014 UC Merced, Physics colloquium, USA
 10/2014 Cold Spring Harbor Asia meeting on Quantitative Biology, Suzhou, China (declined)
 10/2014 Harvard University, FAS Center for Systems Biology, Bauer Forum
 10/2014 Harvard Medical School, Department of Systems Biology
 10/2014 MIT, Biophysics seminar
 10/2014 "Phenotypic heterogeneity and sociobiology of bacterial populations," Bavaria, Germany
 10/2014 AMOLF, Amsterdam, the Netherlands
 08/2014 UKC meeting, San Francisco, CA, USA
 07/2014 The Joint Annual Meeting of the Japanese Society for Mathematical Biology and the Society for Mathematical Biology at Osaka, Japan
 07/2014 The University of Tokyo, Tokyo, Japan
 06/2014 UC Riverside, Dep. Biochemistry, CA, USA

2013

10/2013 Allen Distinguished Investigators Symposium, Seattle, WA, USA
 10/2013 University of Washington, Microbiology Dep., Seattle, WA, USA
 08/2013 SPIE Optical Trapping & Optical Micromanipulation Conference, San Diego, CA, USA (declined)
 08/2013 The Seventh Annual q-Bio Conference, Santa Fe, NM, USA
 03/2013 UCSD, Frontiers in Bioinformatics and Systems Biology Colloquium, CA, USA
 02/2013 University of Oxford, Dep. Biochemistry and Center for Systems Biology, Oxford, UK
 02/2013 University of Stuttgart, Institute for Computational Physics, Germany
 02/2013 [Keynote] DECHEMA workshop Microfluidics for Systems Biology and Bioprocess Development, Frankfurt, Germany
 02/2013 Simon Fraser University, Dep. Physics, Vancouver, Canada

2012

11/2012 San Diego Microbiology Group (SDMG), San Diego, CA, USA
 11/2012 The Canadian Institute for Advanced Research (CIFAR), Toronto, Canada
 10/2012 University of Pennsylvania, Physics Dep., Philadelphia, PA, USA
 06/2012 The Biology and Physics of Bacterial Genome Organization workshop, Leiden, the Netherlands
 06/2012 Imperial College, Mathematics Dep., London, UK
 05/2012 University of Massachusetts - Amherst, Biology Dep., MA, USA
 04/2012 [Keynote] Chemical Biophysics Symposium, University of Toronto, Canada
 03/2012 University of Illinois at Urbana Champaign, Physics Dep., IL, USA
 03/2012 University of Massachusetts - Amherst, Physics Dep., MA, USA
 02/2012 UCSD, Physics Dep., CA, USA
 02/2012 San Diego State University, Biology & Math, CA, USA
 01/2012 Rutgers University, Physics Dep., NJ, USA
 01/2012 University of Texas, Austin, Physics Dep., TX, USA
 01/2012 The Ohio State University, Physics Dep., OH, USA
 01/2012 Harvard University, "Cells, Circuits, and Computation" symposium, MA

2011

09/2011 New York University, Physics Dep., New York, USA
09/2011 Rockefeller University, New York, USA
05/2011 IST Austria, Vienna, Austria
05/2011 Harvard University, Squishy Physics seminar, MA, USA
03/2011 Weizmann-Harvard meeting on Systems Biology, Weizmann Institute, Israel
03/2011 Caltech, Bioengineering Dep., CA, USA
03/2011 Harvard University, Microbial Science Initiative Chalk-talk, MA, USA
02/2011 MIT, Physics Dep., MA, USA

2007 - 2010

09/2010 University of Toronto, Physics Dep., Canada
08/2009 Oxford University, EMBO meeting on prokaryotes, UK
05/2009 Gordon Research Conference, Italy
03/2009 Harvard University, Widely Applied Mathematics seminar, MA, USA
09/2008 Site-Specific recombination meeting, Woods Hole, MA, USA
07/2008 Brandeis University, Physics Dep., MA, USA
04/2008 MIT, Physics Dep., MA, USA
10/2007 Harvard University, daVinci group monthly lunch, MA, USA
09/2007 Princeton University, Lewis-Sigler Center, NJ, USA
08/2007 Simon Fraser University, Physics Dep., Canada
05/2007 Pasteur Institute, Paris, France

TRAINING (SELECTED SUMMER/WINTER SCHOOLS)

Advanced Bacterial Genetics, Cold Spring Harbor Laboratory Course	Summer 2010
Jerusalem Winter School in Theoretical Physics	Winter 2005
Systems Biology (organized by Uri Alon, Naama Barkai, Natalie Balaban)	
Les Houches Summer School Session LXXXII	Summer 2004
Multiple Aspects of DNA and RNA: from Biophysics to Bioinformatics	
Boulder Summer School on Nonequilibrium Statistical Physics	Summer 2001
Glasses, transport & friction, biological systems, and turbulence	

TEACHING

Winter School on Quantitative Systems Biology, ICTS, Bangalore, India	12/7-12/20, 2015
annual qBio bootcamp (2 weeks per each course)	2014 - 2017
PHYS177/277, <i>Physics of the Cell</i> , a literature-based graduate course in quantitative, physical, and systems biology, UCSD	2013 - present
PHYS2C, PHYS1C (waves, fluids, thermo, optics)	2014, 2015
Faculty for Life Sciences 100 course (experimental biology lab), Harvard University	Fall 2010
Foljuif (France) summerschool instructor for an interdisciplinary research	Summer 2006
Teaching assistant for various undergraduate physics courses	1997-2004

PROFESSIONAL ACTIVITIES

Reviewer for Nature, Nature Reviews Microbiology, Nature Methods, Nature Communications, Scientific Reports (Nature), PNAS, Physical Review Letters, Physical Review X, Physical Reviews, Physical Biology, Journal of Chemical Physics, PLoS ONE, PLoS Comp Biol, Current Biology, Journal of Microscopy, Biophysical Journal, Nucleic Acids Research, Integrative Biology, Molecular Systems Biology, Journal of Bacteriology, Molecular Microbiology, FEBS Letters, Macromolecules, Cell Systems, Frontiers in Microbiology

Reviewer for grants & awards: National Science Foundation (NSF) onsite panel, USA; Israeli Science Foundation, Israel; Foundation for Fundamental Research on Matter (FOM), the Netherlands; INRA, France; Helmholtz Association of German Research Centres, Germany

ACADEMIC SERVICES

Physics

physics graduate admissions committee (2014-)

physics exam committee (2012-2014)

colloquium committee (2013-2014)

qBio faculty search committee (2013-2014)

ad hoc committee for the appointment for A.V. Balatsky (as an adjunct professor) (2014)

Biology

Saltman Quarterly (2014-)

qBio, campus-wide

UCSD qBio Education Program Executive Committee

UCSD qBio annual summer bootcamp organizer (2014-)

UCSD qBio seminar series committee (2015)

University

Ethics Course panel (2013)

Guest lecturer for PHYS261 (2013, 2014)

Guest lecturer for Integrative Microbiology Graduate course (2013, 2015)

Guest lecturer for BIMM 130 (2013)

Guest lecturer for qBio summer school (http://q-bio.org/wiki/The_Ninth_q-bio_Summer_School:_San_Diego_Program)

Doctoral thesis committee: Min Ju Shon (Thesis Advisor: Adam Cohen, Chemistry Department, Harvard University, 2010-2012), John B. Deris (advisor Terry Hwa, Physics, UCSD, 2013-), Michael J. Erickstad (advisor Alex Groisman, Physics, UCSD, 2013-), Tony Hui (advisor Terry Hwa, 2013-2014), Edward John Obrien (advisor Bern Paulson, Bioengineering, UCSD, 2013-), BISB PhD oral exam committee for Jason Yao (advisor Roy Wollman, Chem/Biochem, 2013-), Ben Zhao (advisor Nan Hao, Bio, 2015-), Nick Keller (advisor Doug Smith physics, 2013-)

Master's thesis committee: Jimmy Do (Thesis Advisor: Milton Saier, UCSD, 2015-2016)

External thesis examiner for thesis defense of Ya Liu (advisor Bulbul Chakraborty, Brandeis University, 2009)

CURRENT COMPOSITION OF RESEARCH GROUP

1 lab manager, 2 senior scientists, 4 post-docs, 2 graduate students, 3 undergrads

SELECT LAB ALUMNI

Yonggun Jun (postdoc, 2014 – present; Asst. Prof. in physics at National Central University, Taiwan in 2016)

Sattar Taheri-Araghi (post-doc 2011-2015; Assistant Professor in Physics, California State University at Northridge)

James Pelletier (undergrad at Harvard 2008 – 2012; now graduate student in Physics at MIT; Hertz Fellow)

Muyoung Heo (post-doc 2010 – 2012; junior faculty at Busan National University, Korea)

Peter Galajda (post-doc 2007 – 2008; group leader in Hungarian Academy of Science, Hungary)

Shun Adachi (post-doc 2007 – 2008; junior faculty at Tokushima University, Japan)