

SUCKJOON JUN
 UNIVERSITY OF CALIFORNIA SAN DIEGO
 ASSISTANT PROFESSOR IN PHYSICS AND MOLECULAR 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:

Nominee for the Canadian Association of Graduate Studies Thesis Awards, Simon Fraser University, 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 University (ranked 1st in natural sciences), 2005
 NSERC (Canada) post-doctoral fellowship (40K/year), 2005-2007
 Marie-Curie Incoming International Post-doctoral Fellowship, 2007-2009 (declined in favor of the Bauer Fellowship at Harvard University)
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, 2013
 Scialog Fellow, Research Corporation / Gordon and Betty Moore Foundation, 2015-2016

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

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

PUBLICATIONS

1. Sattar Taheri-Araghi, Steven B. Brown, John T. Sauls, Dustin McIntosh, & **Suckjoon Jun**,
Single-cell physiology
Annual Review of Biophysics (in press 2015)
2. Sattar Taheri and **Suckjoon Jun**,
Cell size control: structure and hierarchy of physiological control
Frontiers in Microbiology (in press 2015)
3. **Suckjoon Jun**,
Chromosome, cell cycle, and entropy
Biophysical Journal 108, 785-786 (2015)
4. 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)
[\[various news coverage\]](#)
5. **Suckjoon Jun** and Sattar Taheri-Araghi,
Cell-size maintenance: universal strategy revealed
Trends in Microbiology 23, 4-6 (2015)
6. 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)
[\[Nature Physics highlight\]](#)
7. 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).
8. J. Pelletier, K. Harvorsen, B.-Y. Ha, R. Pappalardo, 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).
[\[PNAS highlight\]](#) [\[Nature Methods highlight\]](#)
9. Y. Jung, J. Kim, **S. Jun**, B.-Y. Ha,
Intrachain Ordering and Segregation of Polymers under Confinement,
Macromolecules 45(7), 3256-3262 (2012).
10. 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).
11. 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).
[\[F1000\]](#) [\[Top 7 from F1000, The Scientist\]](#) [\[Top 7 biochemistry papers, The Scientist\]](#)
12. **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.

13. 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).
14. **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).
15. 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).
16. 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).
17. **Suckjoon Jun***, Axel Arnold and Bae-Yeun Ha.
Confined space and effective interactions of multiple self-avoiding chains,
Phys. Rev. Lett. 98, 128303 (2007).
18. **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).
[\[Journal of Cell Biology highlight\]](#) [\[F1000\]](#)
19. **Suckjoon Jun** and John Bechhoefer.
Nucleation and growth in one dimension. part II: Application to DNA replication kinetics.
Phys. Rev. E 71, 011909 (2005).
20. **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).
21. **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).
22. **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).
23. **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).
24. John Herrick, **Suckjoon Jun**, John Bechhoefer, and Aaron Bensimon.
Kinetic model of DNA replication in eucaryotic organisms.
J. Mol. Biol. 320, 741-750 (2002).
25. M Luban, F Borsa, S Budko, P Canfield, **S Jun**, JK Jung, P Kgler, D Mentrup, A Miller, 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).

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)

- 12/2015 Pacifichem 2015 Symposia Life at Small Copy Numbers, Honolulu, Hawaii
- 12/2015 Principles of cellular life, STATPHYS Winter School, Bangalore, India
- 09/2015 Emory University, Physics colloquium
- 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
- 12/2014 UCSD, Mechanical and Aerospace Department, Mech-Bio seminar
- 11/2014 UC Merced, Physics colloquium, USA
- 10/2014 (declined) Cold Spring Harbor Asia meeting on Quantitative Biology, Suzhou, China
- 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 RIKEN, Wako, Japan
- 07/2014 The University of Tokyo, Tokyo, Japan
- 06/2014 UC Riverside, Dep. Biochemistry, CA, USA
- 10/2013 Allen Distinguished Investigators Symposium, Seattle, WA, USA
- 10/2013 University of Washington, Microbiology Dep., Seattle, WA, USA

08/2013 (declined) SPIE Optical Trapping & Optical Micromanipulation Conference, San Diego, CA, USA
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 Oxford University, 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
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
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
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, Naarma Barkai, Natalie Balaban)	

Les Houches Summer School Session LXXXII Multiple Aspects of DNA and RNA: from Biophysics to Bioinformatics	Summer 2004
Boulder Summer School on Nonequilibrium Statistical Physics Glasses, transport & friction, biological systems, and turbulence	Summer 2001

TEACHING

PHYS177/277, <i>Physics of the Cell</i> , a literature-based graduate course in quantitative, physical, and systems biology, UCSD	Spring 2013
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, PNAS, Physical Review Letters, 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

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

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 O'Brien (advisor Bern Paulson, Bioengineering, UCSD, 2013-), BIBS PhD oral exam committee for Jason Yao (advisor Roy Wollman, Chem/Biochem, 2013-), Nick Keller (advisor Doug Smith physics, 2013-)

UCSD service 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), Ethics Course panel (2013), UCSD qBio Education Program Executive Committee, UCSD qBio Education Program Web site committee

Guest lectures PHYS261 (2013, 2014), Integrative Microbiology Graduate course (2013, 2015), BImm 130 (2013) etc

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

CURRENT COLLABORATORS

Bacterial growth, cell cycle, cell-size control: Susan Golden (UCSD), Terry Hwa (UCSD), Petra Levin (Washington Univ.), Sue Lovett (Brandeis), Anca Segall (SDSU), Massimo Vergassola (UCSD).

Chromosomes: Judith Armitage (Univ. Oxford), Stuart Austin (National Cancer Institute), Jean-Yves Bouet (CNRS - Univ. Toulouse III, Toulouse, France), Bae-Yeun Ha, (Univ. Waterloo, Canada), Kees Murre (UCSD), Conrad Woldringh (Univ. Amsterdam), Andrew Wright (Tufts Medical School)

Cell walls & morphology: Ariel Amir (Harvard Junior Fellow) and David Nelson (Harvard University)

CURRENT COMPOSITION OF RESEARCH GROUP

1 lab manager, 2 research scientists, 3 post-docs, 1 graduate student, 3 undergrads