




Lucy Shapiro

Virginia and D. K. Ludwig Professor
Developmental Biology

 Curriculum Vitae available Online

CONTACT INFORMATION

• Alternate Contact

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Bio

ACADEMIC APPOINTMENTS

- Professor, Developmental Biology
- Member, Bio-X
- Faculty Fellow, Stanford ChEM-H

ADMINISTRATIVE APPOINTMENTS

- Director, Beckman Center for Molecular & Genetic Medicine, (2004- present)

HONORS AND AWARDS

- Chan/Zuckerberg Investigator, Chan/Zuckerberg Biohub (2017)
- ASCB Women in Cell Biology Lifetime Achievement Award, American Society for Cell Biology (2013)
- Pearl Meister Greengard Prize, Rockefeller University (2013)
- Dean's Medal, Stanford University School of Medicine (2012)
- Louisa Gross Horwitz Prize, Columbia University Medical Center (2012)
- National Medal of Science, National Science Foundation (2011)
- Abbott Lifetime Achievement Award, ASM (2010)
- Distinguished Alumna Award, Albert Einstein College of Medicine (2010)
- Canada Gairdner International Award, Gairdner Foundation (2009)
- John Scott Award, Philadelphia City Trust (2009)
- Address the Swedish Royal Academy of Sciences, Swedish (2008)
- Hitchcock Professorship, UC Berkeley (2008)
- Selman A. Waksman Award, National Academy of Sciences (2005)
- Elected to the American Philosophical Society, American Philosophical Society (2003)
- FASEB Excellence in Science Award, Federation of American Societies for Experimental Biology (1994)

- National Academy of Sciences, National Academy of Sciences (1994)
- American Academy of Microbiology, American Academy of Microbiology (1993)
- American Academy of Arts and Sciences, American Academy of Arts and Sciences (1992)
- Institute of Medicine of the National Academy of Sciences, National Academy of Sciences (1991)

PROFESSIONAL EDUCATION

- Ph.D., Albert Einstein College of Medicine , Molecular Biology (1966)
- A.B., cum laude, Brooklyn College (1962)

LINKS

- CAP Profile: <http://med.stanford.edu/profiles/devbio/frdActionServlet?choiceId=facProfile&fid=4316>
- <http://shapirolab.stanford.edu>: <http://shapirolab.stanford.edu>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

A basic question in developmental biology involves the mechanisms used to generate the three-dimensional organization of a cell from a one-dimensional genetic code. Our goal is to define these mechanisms using both molecular genetics and biochemistry. The developmental program by which a single cell proceeds to a fully-developed organism involves cell divisions that yield dissimilar daughter cells. The characteristics that differentiate one daughter cell from the other result from differential transcription and subcellular positioning of regulatory and structural proteins. How this is brought about remains one of the most fundamental questions of developmental biology. To approach this question, we are studying a bacterial cell, whose simple life cycle is focused on the generation of asymmetry in the predivisional cell.

We are using full genome sequence and microarray technology to identify the genetic circuitry that controls the cell cycle in a bacterial cell with 3767 genes. Dynamic protein localization, phosphorelay signaling cascades, and spatially and temporally controlled proteolysis are overlaid on the transcription network that controls cell cycle progression and cell differentiation.

Teaching

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Colin Comerci, Jonathan Herrmann

Postdoctoral Faculty Sponsor

Saumya Saurabh, Xiaofeng Zhou

Doctoral Dissertation Co-Advisor (AC)

Jiarui Wang

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Cancer Biology (Phd Program)
- Developmental Biology (Phd Program)
- Molecular and Genetic Medicine (Fellowship Program)

Publications

PUBLICATIONS

- **Identification of PAmKate as a Red Photoactivatable Fluorescent Protein for Cryogenic Super-Resolution Imaging.** *Journal of the American Chemical Society*
Dahlberg, P. D., Sartor, A. M., Wang, J., Saurabh, S., Shapiro, L., Moerner, W. E.
2018; 140 (39): 12310–13
- **Integration of cell cycle signals by multi-PAS domain kinases.** *Proceedings of the National Academy of Sciences of the United States of America*
Mann, T. H., Shapiro, L.
2018
- **Spatial organization and dynamics of RNase E and ribosomes in *Caulobacter crescentus*** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Bayas, C. A., Wang, J., Lee, M. K., Schrader, J. M., Shapiro, L., Moerner, W. E.
2018; 115 (16): E3712–E3721
- **A Polar Matrix Microdomain Constrains Diffusion and Regulates Intracellular Signaling**
von Diezmann, A., Lasker, K., Mann, T. H., Ahrens, D. G., Shapiro, L., Moerner, W. E.
CELL PRESS.2018: 548A
- **Probing Asymmetric Behavior of a Cell Cycle Regupatory Protein in Live *Caulobacter* using Single-Molecule Imaging**
Wang, J., Shapiro, L., Moerner, W. E.
CELL PRESS.2018: 350A
- **A Red Fluorescent Protein for Cryogenic Single-Molecule Superresolution Imaging**
Sorter, A. M., Dahlberg, P. D., Wang, J., Shapiro, L., Moerner, W. E.
CELL PRESS.2018: 529A–530A
- **Environmental Calcium Controls Alternate Physical States of the *Caulobacter* Surface Layer**
Herrmann, J., Smit, J., Shapiro, L., Wakatsuki, S.
CELL PRESS.2018: 404A
- **Two-Color Sted Microscopy to Visualize S-Layer Biogenesis in *Caulobacter Crescentus***
Comerci, C. J., Herrmann, J., Shapiro, L., Wakatsuki, S., Moerner, W. E.
CELL PRESS.2018: 613A
- **Spatial Organization and Dynamics of RNA Processing in *Caulobacter Crescentus***
Bayas, C., Wang, J., Lee, M. K., Schrader, J. M., Shapiro, L., Moerner, W. E.
CELL PRESS.2018: 251A
- **Environmental Calcium Controls Alternate Physical States of the *Caulobacter* Surface Layer** *BIOPHYSICAL JOURNAL*
Herrmann, J., Jabbarpour, F., Bargar, P. G., Nomellini, J. F., Li, P., Lane, T. J., Weiss, T. M., Smit, J., Shapiro, L., Wakatsuki, S.
2017; 112 (9): 1841-1851
- **A Localized Complex of Two Protein Oligomers Controls the Orientation of Cell Polarity.** *mBio*
Perez, A. M., Mann, T. H., Lasker, K., Ahrens, D. G., Eckart, M. R., Shapiro, L.
2017; 8 (1)
- **Super-Resolution Microscopy and Single-Protein Tracking in Live Bacteria Using a Genetically Encoded, Photostable Fluoromodule.** *Current protocols in cell biology*
Saurabh, S., Perez, A. M., Comerci, C. J., Shapiro, L., Moerner, W. E.
2017; 75: 4.32.1–4.32.22
- **Dynamic translation regulation in *Caulobacter* cell cycle control.** *Proceedings of the National Academy of Sciences of the United States of America*
Schrader, J. M., Li, G., Childers, W. S., Perez, A. M., Weissman, J. S., Shapiro, L., McAdams, H. H.
2016; 113 (44): E6859-E6867

- **Cell cycle progression in *Caulobacter* requires a nucleoid-associated protein with high AT sequence recognition** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Ricci, D. P., Melfi, M. D., Lasker, K., Dill, D. L., McAdams, H. H., Shapiro, L.
2016; 113 (40): E5952-E5961
- **An intracellular compass spatially coordinates cell cycle modules in *Caulobacter crescentus*.** *Current opinion in microbiology*
Lasker, K., Mann, T. H., Shapiro, L.
2016; 33: 131-139
- **Super-resolution Imaging of Live Bacteria Cells Using a Genetically Directed, Highly Photostable Fluoromodule.** *Journal of the American Chemical Society*
Saurabh, S., Perez, A. M., Comerci, C. J., Shapiro, L., Moerner, W. E.
2016; 138 (33): 10398-10401
- **A cell cycle kinase with tandem sensory PAS domains integrates cell fate cues** *NATURE COMMUNICATIONS*
Mann, T. H., Childers, W. S., Blair, J. A., Eckart, M. R., Shapiro, L.
2016; 7
- **CauloBrowser: A systems biology resource for *Caulobacter crescentus*.** *Nucleic acids research*
Lasker, K., Schrader, J. M., Men, Y., Marshik, T., Dill, D. L., McAdams, H. H., Shapiro, L.
2016; 44 (D1): D640-5
- **CauloBrowser: A systems biology resource for *Caulobacter crescentus*.** *Nucleic acids research*
Lasker, K., Schrader, J. M., Men, Y., Marshik, T., Dill, D. L., McAdams, H. H., Shapiro, L.
2016; 44 (D1): D640-5
- **A cell cycle kinase with tandem sensory PAS domains integrates cell fate cues.** *Nature communications*
Mann, T. H., Seth Childers, W., Blair, J. A., Eckart, M. R., Shapiro, L.
2016; 7: 11454-?
- **Synchronization of *Caulobacter Crescentus* for Investigation of the Bacterial Cell Cycle** *JOVE-JOURNAL OF VISUALIZED EXPERIMENTS*
Schrader, J. M., Shapiro, L.
2015
- **The global regulatory architecture of transcription during the *Caulobacter* cell cycle.** *PLoS genetics*
Zhou, B., Schrader, J. M., Kalogeraki, V. S., Abeliuk, E., Dinh, C. B., Pham, J. Q., Cui, Z. Z., Dill, D. L., McAdams, H. H., Shapiro, L.
2015; 11 (1)
- **The Global Regulatory Architecture of Transcription during the *Caulobacter* Cell Cycle.** *PLoS genetics*
Zhou, B., Schrader, J. M., Kalogeraki, V. S., Abeliuk, E., Dinh, C. B., Pham, J. Q., Cui, Z. Z., Dill, D. L., McAdams, H. H., Shapiro, L.
2015; 11 (1)
- **Replication initiator DnaA binds at the *Caulobacter* centromere and enables chromosome segregation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Mera, P. E., Kalogeraki, V. S., Shapiro, L.
2014; 111 (45): 16100-16105
- **Cell Fate Regulation Governed by a Repurposed Bacterial Histidine Kinase** *PLOS BIOLOGY*
Childers, W. S., Xu, Q., Mann, T. H., Mathews, I. I., Blair, J. A., Deacon, A. M., Shapiro, L.
2014; 12 (10)
- **Cell fate regulation governed by a repurposed bacterial histidine kinase.** *PLoS biology*
Childers, W. S., Xu, Q., Mann, T. H., Mathews, I. I., Blair, J. A., Deacon, A. M., Shapiro, L.
2014; 12 (10)
- **ClpXP and ClpAP proteolytic activity on divisome substrates is differentially regulated following the *Caulobacter* asymmetric cell division** *MOLECULAR MICROBIOLOGY*
Williams, B., Bhat, N., Chien, P., Shapiro, L.
2014; 93 (5): 853-866
- **The coding and noncoding architecture of the *Caulobacter crescentus* genome.** *PLoS genetics*

- Schrader, J. M., Zhou, B., Li, G., Lasker, K., Childers, W. S., Williams, B., Long, T., Crosson, S., McAdams, H. H., Weissman, J. S., Shapiro, L. 2014; 10 (7)
- **The Coding and Noncoding Architecture of the *Caulobacter crescentus* Genome.** *PLoS genetics*
Schrader, J. M., Zhou, B., Li, G., Lasker, K., Childers, W. S., Williams, B., Long, T., Crosson, S., McAdams, H. H., Weissman, J. S., Shapiro, L. 2014; 10 (7)
 - **Bacterial scaffold directs pole-specific centromere segregation.** *Proceedings of the National Academy of Sciences of the United States of America*
Ptacin, J. L., Gahlmann, A., Bowman, G. R., Perez, A. M., von Diezmann, A. R., Eckart, M. R., Moerner, W. E., Shapiro, L. 2014; 111 (19): E2046-55
 - **The functions of DNA methylation by CcrM in *Caulobacter crescentus*: a global approach.** *Nucleic acids research*
Gonzalez, D., Kozdon, J. B., McAdams, H. H., Shapiro, L., Collier, J. 2014; 42 (6): 3720-3735
 - **Ribosome Profiling of the *Caulobacter* Cell-Cycle** *58th Annual Meeting of the Biophysical-Society*
Schrader, J. M., Li, G., Zhou, B., Weissman, J. S., Shapiro, L. CELL PRESS.2014: 375A–376A
 - **Global methylation state at base-pair resolution of the *Caulobacter* genome throughout the cell cycle.** *Proceedings of the National Academy of Sciences of the United States of America*
Kozdon, J. B., Melfi, M. D., Luong, K., Clark, T. A., Boitano, M., Wang, S., Zhou, B., Gonzalez, D., Collier, J., Turner, S. W., Korlach, J., Shapiro, L., McAdams, et al 2013; 110 (48): E4658-67
 - **Oligomerization and higher-order assembly contribute to sub-cellular localization of a bacterial scaffold.** *Molecular microbiology*
Bowman, G. R., Perez, A. M., Ptacin, J. L., Ighodaro, E., Folta-Stogniew, E., Comolli, L. R., Shapiro, L. 2013; 90 (4): 776-795
 - **Branched signal wiring of an essential bacterial cell-cycle phosphotransfer protein.** *Structure*
Blair, J. A., Xu, Q., Childers, W. S., Mathews, I. I., Kern, J. W., Eckart, M., Deacon, A. M., Shapiro, L. 2013; 21 (9): 1590-1601
 - **Retrospective. Francois Jacob (1920-2013).** *Science*
Shapiro, L., Losick, R. 2013; 340 (6135): 939-?
 - **Quantitative Multicolor Subdiffraction Imaging of Bacterial Protein Ultrastructures in Three Dimensions** *NANO LETTERS*
Gahlmann, A., Ptacin, J. L., Grover, G., Quirin, S., von Diezmann, A. R., Lee, M. K., Backlund, M. P., Shapiro, L., Piestun, R., Moerner, W. E. 2013; 13 (3): 987-993
 - ***Caulobacter* chromosome in vivo configuration matches model predictions for a supercoiled polymer in a cell-like confinement** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Hong, S., Toro, E., Mortensen, K. I., de la Rosa, M. A., Doniach, S., Shapiro, L., Spakowitz, A. J., McAdams, H. H. 2013; 110 (5): 1674-1679
 - **Chromosome architecture is a key element of bacterial cellular organization** *CELLULAR MICROBIOLOGY*
Ptacin, J. L., Shapiro, L. 2013; 15 (1): 45-52
 - **Deciphering the Transcriptional Landscape of *Caulobacter crescentus* at Base Pair Resolution** *11th International Conference on Computational Methods in Systems Biology (CMSB)*
Zhou, B., Schrader, J., Christen, B., McAdams, H., Shapiro, L. SPRINGER-VERLAG BERLIN.2013: 247–247
 - **Life in a Three-dimensional Grid** *JOURNAL OF BIOLOGICAL CHEMISTRY*
Shapiro, L. 2012; 287 (45)
 - **Osmolality-Dependent Relocation of Penicillin-Binding Protein PBP2 to the Division Site in *Caulobacter crescentus*** *JOURNAL OF BACTERIOLOGY*
Hocking, J., Priyadarshini, R., Takacs, C. N., Costa, T., Dye, N. A., Shapiro, L., Vollmer, W., Jacobs-Wagner, C.

2012; 194 (12): 3116-3127

- **Three-Dimensional Super-Resolution Imaging of the Midplane Protein FtsZ in Live *Caulobacter crescentus* Cells Using Astigmatism** *CHEMPHYSICHEM*
Biteen, J. S., Goley, E. D., Shapiro, L., Moerner, W. E.
2012; 13 (4): 1007-1012
- **Structure of the pilus assembly protein TadZ from *Eubacterium rectale*: implications for polar localization** *MOLECULAR MICROBIOLOGY*
Xu, Q., Christen, B., Chiu, H., Jaroszewski, L., Klock, H. E., Knuth, M. W., Miller, M. D., Elsliger, M., Deacon, A. M., Godzik, A., Lesley, S. A., Figurski, D. H., Shapiro, et al
2012; 83 (4): 712-727
- **An SMC ATPase mutant disrupts chromosome segregation in *Caulobacter*** *MOLECULAR MICROBIOLOGY*
Schwartz, M. A., Shapiro, L.
2011; 82 (6): 1359-1374
- **Three-dimensional superresolution colocalization of intracellular protein superstructures and the cell surface in live *Caulobacter crescentus*** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Lew, M. D., Lee, S. F., Ptacin, J. L., Lee, M. K., Twieg, R. J., Shapiro, L., Moerner, W. E.
2011; 108 (46): E1102-E1110
- **The Three-Dimensional Architecture of a Bacterial Genome and Its Alteration by Genetic Perturbation** *MOLECULAR CELL*
Umbarger, M. A., Toro, E., Wright, M. A., Porreca, G. J., Bau, D., Hong, S., Fero, M. J., Zhu, L. J., Marti-Renom, M. A., McAdams, H. H., Shapiro, L., Dekker, J., Church, et al
2011; 44 (2): 252-264
- **The essential genome of a bacterium** *MOLECULAR SYSTEMS BIOLOGY*
Christen, B., Abeliuk, E., Collier, J. M., Kalogeraki, V. S., Passarelli, B., Collier, J. A., Fero, M. J., McAdams, H. H., Shapiro, L.
2011; 7
- **Mutations in the nucleotide binding pocket of MreB can alter cell curvature and polar morphology in *Caulobacter*** *MOLECULAR MICROBIOLOGY*
Dye, N. A., Pincus, Z., Fisher, I. C., Shapiro, L., Theriot, J. A.
2011; 81 (2): 368-394
- **Assembly of the *Caulobacter* cell division machine** *MOLECULAR MICROBIOLOGY*
Goley, E. D., Yeh, Y., Hong, S., Fero, M. J., Abeliuk, E., McAdams, H. H., Shapiro, L.
2011; 80 (6): 1680-1698
- **The Architecture and Conservation Pattern of Whole-Cell Control Circuitry** *JOURNAL OF MOLECULAR BIOLOGY*
McAdams, H. H., Shapiro, L.
2011; 409 (1): 28-35
- **Regulatory Response to Carbon Starvation in *Caulobacter crescentus*** *PLOS ONE*
Britos, L., Abeliuk, E., Taverner, T., Lipton, M., McAdams, H., Shapiro, L.
2011; 6 (4)
- **Super-Resolution Imaging of the Nucleoid-Associated Protein HU in *Caulobacter crescentus*** *BIOPHYSICAL JOURNAL*
Lee, S. F., Thompson, M. A., Schwartz, M. A., Shapiro, L., Moerner, W. E.
2011; 100 (7): L31-L33
- **Bacterial polarity** *CURRENT OPINION IN CELL BIOLOGY*
Bowman, G. R., Lyuksyutova, A. I., Shapiro, L.
2011; 23 (1): 71-77
- **Exploring protein superstructures and dynamics in live bacterial cells using single-molecule and superresolution imaging.** *Methods in molecular biology (Clifton, N.J.)*
Biteen, J. S., Shapiro, L., Moerner, W. E.
2011; 783: 139-158
- **The role of a bacterial SMC in chromosome segregation** *Annual Meeting of the American-Society-for-Cell-Biology (ASCB)*
Schwartz, M., Shapiro, L.
AMER SOC CELL BIOLOGY.2011

- **Assembly of a bacterial cell division machine.** *Annual Meeting of the American-Society-for-Cell-Biology (ASCB)*
Goley, E. D., Yeh, Y., McAdams, H., Shapiro, L.
AMER SOC CELL BIOLOGY.2011
- **Superresolution Imaging of Targeted Proteins in Fixed and Living Cells Using Photoactivatable Organic Fluorophores** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
Lee, H. D., Lord, S. J., Iwanaga, S., Zhan, K., Xie, H., Williams, J. C., Wang, H., Bowman, G. R., Goley, E. D., Shapiro, L., Twieg, R. J., Rao, J., Moerner, et al
2010; 132 (43): 15099-15101
- **An essential transcription factor, SciP, enhances robustness of Caulobacter cell cycle regulation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Tan, M. H., Kozdon, J. B., Shen, X., Shapiro, L., McAdams, H. H.
2010; 107 (44): 18985-18990
- **Initiating bacterial mitosis Understanding the mechanism of ParA-mediated chromosome segregation** *CELL CYCLE*
Ptacin, J. L., Shapiro, L.
2010; 9 (20): 4033-4034
- **The Caulobacter Tol-Pal Complex Is Essential for Outer Membrane Integrity and the Positioning of a Polar Localization Factor** *JOURNAL OF BACTERIOLOGY*
Yeh, Y., Comolli, L. R., Downing, K. H., Shapiro, L., McAdams, H. H.
2010; 192 (19): 4847-4858
- **Imaging-Based Identification of a Critical Regulator of FtsZ Protofilament Curvature in Caulobacter** *MOLECULAR CELL*
Goley, E. D., Dye, N. A., Werner, J. N., Gitai, Z., Shapiro, L.
2010; 39 (6): 975-987
- **CrfA, a small noncoding RNA regulator of adaptation to carbon starvation in Caulobacter crescentus.** *Journal of bacteriology*
Landt, S. G., Lesley, J. A., Britos, L., Shapiro, L.
2010; 192 (18): 4763-4775
- **A spindle-like apparatus guides bacterial chromosome segregation** *NATURE CELL BIOLOGY*
Ptacin, J. L., Lee, S. F., Garner, E. C., Toro, E., Eckart, M., Comolli, L. R., Moerner, W., Shapiro, L.
2010; 12 (8): 791-U46
- **Polar Remodeling and Histidine Kinase Activation, Which Is Essential for Caulobacter Cell Cycle Progression, Are Dependent on DNA Replication Initiation** *JOURNAL OF BACTERIOLOGY*
Iniesta, A. A., Hillson, N. J., Shapiro, L.
2010; 192 (15): 3893-3902
- **DipM links peptidoglycan remodelling to outer membrane organization in Caulobacter** *MOLECULAR MICROBIOLOGY*
Goley, E. D., Comolli, L. R., Fero, K. E., Downing, K. H., Shapiro, L.
2010; 77 (1): 56-73
- **Cell pole-specific activation of a critical bacterial cell cycle kinase** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Iniesta, A. A., Hillson, N. J., Shapiro, L.
2010; 107 (15): 7012-7017
- **Caulobacter PopZ forms a polar subdomain dictating sequential changes in pole composition and function** *MOLECULAR MICROBIOLOGY*
Bowman, G. R., Comolli, L. R., Gaietta, G. M., Fero, M., Hong, S., Jones, Y., Lee, J. H., Downing, K. H., Ellisman, M. H., McAdams, H. H., Shapiro, L.
2010; 76 (1): 173-189
- **High-throughput identification of protein localization dependency networks** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Christen, B., Fero, M. J., Hillson, N. J., Bowman, G., Hong, S., Shapiro, L., McAdams, H. H.
2010; 107 (10): 4681-4686
- **Bacterial Chromosome Organization and Segregation** *COLD SPRING HARBOR PERSPECTIVES IN BIOLOGY*
Toro, E., Shapiro, L.

2010; 2 (2)

- **System-level design of bacterial cell cycle control** *146th Nobel Symposium on Systems Biology*
McAdams, H. H., Shapiro, L.
ELSEVIER SCIENCE BV.2009: 3984-91
- **Why and How Bacteria Localize Proteins** *SCIENCE*
Shapiro, L., McAdams, H. H., Losick, R.
2009; 326 (5957): 1225-1228
- **Feedback Control of DnaA-Mediated Replication Initiation by Replisome-Associated HdaA Protein in Caulobacter** *JOURNAL OF BACTERIOLOGY*
Collier, J., Shapiro, L.
2009; 191 (18): 5706-5716
- **Superresolution imaging of protein superstructures in live Caulobacter crescentus cells with EYFP**
Biteen, J. S., Thompson, M. A., Tselentis, N. K., Shapiro, L., Moerner, W. E.
AMER CHEMICAL SOC.2009
- **Imaging beyond the diffraction limit in cells using single-molecule active control**
Moerner, W. E., Biteen, J., Conley, N. R., Lee, H., Lord, S. J., Thompson, M. A., Shapiro, L., Liu, N., Samuel, R., Twieg, R. J.
AMER CHEMICAL SOC.2009: 555-555
- **Dynamic chromosome organization and protein localization coordinate the regulatory circuitry that drives the bacterial cell cycle.** *Cold Spring Harbor symposia on quantitative biology*
Goley, E. D., Toro, E., McAdams, H. H., Shapiro, L.
2009; 74: 55-64
- **Superresolution Imaging in Live Caulobacter Crescentus Cells Using Photoswitchable Enhanced Yellow Fluorescent Protein** *Conference on Single Molecule Spectroscopy and Imaging II*
Biteen, J. S., Thompson, M. A., Tselentis, N. K., Shapiro, L., Moerner, W. E.
SPIE-INT SOC OPTICAL ENGINEERING.2009
- **Super-resolution imaging in live Caulobacter crescentus cells using photoswitchable EYFP** *NATURE METHODS*
Biteen, J. S., Thompson, M. A., Tselentis, N. K., Bowman, G. R., Shapiro, L., Moerner, W. E.
2008; 5 (11): 947-949
- **A bacterial control circuit integrates polar localization and proteolysis of key regulatory proteins with a phospho-signaling cascade** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Iniesta, A. A., Shapiro, L.
2008; 105 (43): 16602-16607
- **Caulobacter requires a dedicated mechanism to initiate chromosome segregation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Toro, E., Hong, S., McAdams, H. H., Shapiro, L.
2008; 105 (40): 15435-15440
- **SpoT regulates DnaA stability and initiation of DNA replication in carbon-starved Caulobacter crescentus** *JOURNAL OF BACTERIOLOGY*
Lesley, J. A., Shapiro, L.
2008; 190 (20): 6867-6880
- **A polymeric protein anchors the chromosomal origin/ParB complex at a bacterial cell pole** *CELL*
Bowman, G. R., Comolli, L. R., Zhu, J., Eckart, M., Koenig, M., Downing, K. H., Moerner, W. E., Earnest, T., Shapiro, L.
2008; 134 (6): 945-955
- **Architecture and inherent robustness of a bacterial cell-cycle control system** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Shen, X., Collier, J., Dill, D., Shapiro, L., Horowitz, M., McAdams, H. H.
2008; 105 (32): 11340-11345
- **Small non-coding RNAs in Caulobacter crescentus** *MOLECULAR MICROBIOLOGY*
Landt, S. G., Abeliuk, E., McGrath, P. T., Lesley, J. A., McAdams, H. H., Shapiro, L.

2008; 68 (3): 600-614

- **Coordination of DNA replication and cell division in *Caulobacter crescentus*** *31st Annual Meeting of the German-Society-for-Cell-Biology*
Tan, M. H., McAdams, H., Shapiro, L.
ELSEVIER GMBH, URBAN & FISCHER VERLAG.2008: 23-23
- **Getting organized - how bacterial cells move proteins and DNA** *NATURE REVIEWS MICROBIOLOGY*
Thanbichler, M., Shapiro, L.
2008; 6 (1): 28-40
- ***Caulobacter crescentus* as a whole-cell uranium biosensor** *APPLIED AND ENVIRONMENTAL MICROBIOLOGY*
Hillson, N. J., Hu, P., Andersen, G. L., Shapiro, L.
2007; 73 (23): 7615-7621
- **A comprehensive set of plasmids for vanillate- and xylose-inducible gene expression in *Caulobacter crescentus*** *NUCLEIC ACIDS RESEARCH*
Thanbichler, M., Iniesta, A. A., Shapiro, L.
2007; 35 (20)
- **A DNA methylation ratchet governs progression through a bacterial cell cycle** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
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