Stanford

Lucy Shapiro

Virginia and D. K. Ludwig Professor, Emerita

Developmental Biology

Curriculum Vitae available Online

CONTACT INFORMATION

- **Alternate Contact**

  Ngan Tefera - Administrative Support

  Email ntefera@stanford.edu

  Tel (650) 498-7301

Bio

ACADEMIC APPOINTMENTS

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

ADMINISTRATIVE APPOINTMENTS

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

HONORS AND AWARDS

- Dickson Prize in Science, Carnegie Mellon University (2020)
- 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 overlayed on the transcription network that controls cell cycle progression and cell differentiation.

Teaching

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Gabriel Amador, Meghan Nolan, Dirk Spencer

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

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

Publications

PUBLICATIONS

- **Identification and Demonstration of roGFP2 as an Environmental Sensor for Cryogenic Correlative Light and Electron Microscopy.** *Journal of structural biology*
  Perez, D., Dahlberg, P. D., Wang, J., Sartor, A. M., Borden, J. S., Shapiro, L., Moerner, W. E.

2022: 107881

- **ATP-responsive biomolecular condensates tune bacterial kinase signaling.** *Science advances*
  Saurabh, S., Chong, T. N., Bayas, C., Dahlberg, P. D., Cartwright, H. N., Moerner, W. E., Shapiro, L.
  2022; 8 (7): eabm6570

- **Delivering the message: How a novel technology enabled the rapid development of effective vaccines.** *Cell*
  Shapiro, L., Losick, R.
  2021

- **A localized adaptor protein performs distinct functions at the Caulobacter cell poles.** *Proceedings of the National Academy of Sciences of the United States of America*
  Wang, J., Moerner, W. E., Shapiro, L.
  2021; 118 (13)

- **A localized adaptor protein performs distinct functions at the Caulobacter cell poles** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Wang, J., Moerner, W. E., Shapiro, L.
  2021; 118 (13)

- **A Bacterial Toxin Perturbs Intracellular Amino Acid Balance To Induce Persistence.** *mBio*
  Zhou, X., Eckart, M. R., Shapiro, L.
  2021; 12 (1)

- **A Bacterial Toxin Perturbs Intracellular Amino Acid Balance To Induce Persistence** *MBIO*
  Zhou, X., Eckart, M. R., Shapiro, L.
  2021; 12 (1)

- **The Nucleoid-Associated Protein GapR Uses Conserved Structural Elements To Oligomerize and Bind DNA.** *mBio*
  Lourenco, R. F., Saurabh, S., Herrmann, J., Wakatsuki, S., Shapiro, L.
  2020; 11 (3)

- **Cryogenic single-molecule fluorescence annotations for electron tomography reveal in situ organization of key proteins in Caulobacter.** *Proceedings of the National Academy of Sciences of the United States of America*
  Dahlberg, P. D., Saurabh, S., Sartor, A. M., Wang, J., Mitchell, P. G., Chiu, W., Shapiro, L., Moerner, W. E.
  2020

- **Cryogenic Superresolution Fluorescence Correlated with Cryogenic Electron Tomography: Combining Specific Labeling and High Resolution**
  Dahlberg, P. D., Saurabh, S., Wang, J., Sartor, A. M., Chiu, W., Shapiro, L., Moerner, W. E.
  CELL PRESS.2020: 20A–21A

- **Continuous, Topologically Guided Protein Crystallization Drives Self-Assembly of a Bacterial Surface Layer**
  Comerci, C. J., Herrmann, J., Yoon, J., Jabbarpour, F., Zhou, X., Nomellini, J. F., Smit, J., Shapiro, L., Wakatsuki, S., Moerner, W. E.
  CELL PRESS.2020: 201A–202A

- **Robust Modulation of a Bacterial Kinase by Protein Phase Separation**
  Saurabh, S., Chong, T., Bayas, C., Dahlberg, P. D., Moerner, W. E., Shapiro, L.
  CELL PRESS.2020: 203A

- **Selective sequestration of signalling proteins in a membraneless organelle reinforces the spatial regulation of asymmetry in Caulobacter crescentus.** *Nature microbiology*
  Lasker, K., von Diezmann, L., Zhou, X., Ahrens, D. G., Mann, T. H., Moerner, W. E., Shapiro, L.
  2020

- **Cryogenic single-molecule active control microscopy with a photoactivatable fluorescent protein**
  Sartor, A. M., Dahlberg, P. D., Wang, J., Saurabh, S., Shapiro, L., Moerner, W. E., Gregor, Koberling, F., Erdmann, R.
  SPIE-INT SOC OPTICAL ENGINEERING.2020

- **A bacterial surface layer protein exploits multistep crystallization for rapid self-assembly.** *Proceedings of the National Academy of Sciences of the United States of America*
  Herrmann, J., Li, P., Jabbarpour, F., Chan, A. C., Rajkovic, I., Matsui, T., Shapiro, L., Smit, J., Weiss, T. M., Murphy, M. E., Wakatsuki, S.

2019

- **Asymmetric division yields progeny cells with distinct modes of regulating cell cycle-dependent chromosome methylation.** *Proceedings of the National Academy of Sciences of the United States of America*
  Zhou, X., Wang, J., Herrmann, J., Moerner, W. E., Shapiro, L.
  2019

- **Protein Self-Assembly Drives Surface Layer Biogenesis and Maintenance in C. crescentus**
  Herrmann, J., Comerci, C., Yoon, J., Jabbarpour, F., Shapiro, L., Wakatsuki, S., Moerner, W. E.
  CELL PRESS.2019: 159A

- **Biomolecular Condensates at Bacterial Cell Poles Function to Drive Spatially Restricted Signal Propagation**
  Shapiro, L.
  CELL PRESS.2019: 5A

- **A Bacterial Biomolecular Condensate Sequesters a Signaling Pathway that Drives Spatial Regulation of Gene Expression and Asymmetric Cell Division**
  Lasker, K., von Diezmann, A., Moerner, W. E., Shapiro, L.
  CELL PRESS.2019: 453A

- **Multi-Step 2D Protein Crystallization via Structural Changes within an Ordered Lattice**
  Herrmann, J., Comerci, C. J., Jabbarpour, F., Shapiro, L., Moerner, W. E., Wakatsuki, S.
  CELL PRESS.2019: 194A

- **Dissection of Protein Function Within a Bacterial Biomolecular Condensate by In Vitro Reconstitution**
  Saurabh, S., Shapiro, L.
  CELL PRESS.2019: 458A–459A

- **Topologically-guided continuous protein crystallization controls bacterial surface layer self-assembly.** *Nature communications*
  Comerci, C. J., Herrmann, J. n., Yoon, J. n., Jabbarpour, F. n., Zhou, X. n., Nomellini, J. F., Smit, J. n., Shapiro, L. n., Wakatsuki, S. n., Moerner, W. E.
  2019; 10 (1): 2731

- **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
- **Ultra-photostable, genetically directed fluoromodule enables STED nanoscopy and long time scale single protein tracks in live bacteria**
  Saurabh, S., Perez, A., Comerci, C., Shapiro, L., Moerner, W.
  AMER CHEMICAL SOC.2017
- **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. n., Perez, A. M., Comerci, C. J., Shapiro, L. n., 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
- **Three-Dimensional Super-Resolution Imaging of the RNA Degradation Machinery in Caulobacter Crescentus**
  Bayas, C. A., Schrader, J. M., Lee, M. K., Shapiro, L., Moerner, W. E.
  CELL PRESS.2016: 163A–164A
- **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)
- **A pseudokinase couples signaling pathways to enable asymmetric cell division in a bacterium** *MICROBIAL CELL*
  Childers, W., Shapiro, L.
  2015; 2 (1): 29–32
- **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
- **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): 16100-5
- **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
- **Systems architecture of a bacterial cell cycle**
  Shapiro, L.
  FEDERATION AMER SOC EXP BIOL.2014

- **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
- **Quantifying the Spatial Organization of Bacterial Ribosomes using Three-Dimensional Super-Resolution Microscopy**
  Lee, M., Schrader, J., Li, G., Weissman, J., McAdams, H., Shapiro, L., Moerner, W. E.
  CELL PRESS.2014: 492A
- **DNA Segregation and Partitioning in Caulobacter Crescentus: Super-Resolving Protein Colocalization at the Cell Pole**
  Gahlmann, A., Ptacin, J. L., von Diezmann, A. S., Shapiro, L., Moerner, W. E.
  CELL PRESS.2014: 59A–60A
- **Quantitative Registration and Distribution Analysis of Multicolor 3D Super-Resolution Images of Proteins Reveals Nanoscale Spatial Organization**
  von Diezmann, A. S., Gahlmann, A., Ptacin, J. L., Shapiro, L., Moerner, W. E.
  CELL PRESS.2014: 203A
- **A Novel Function of the Bacterial Replication Initiator Protein DnaA**
  Mera, P. E., Kalogeraki, V., Shapiro, L.
  CELL PRESS.2014: 271A
- **Unique Signaling Logic within a Bacterial Cell Cycle Circuit**
  Childers, W., Xu, Q., Mathews, I. I., Mann, T. H., Blair, J. A., Deacon, A. M., Shapiro, L.
  CELL PRESS.2014: 309A
- **Using Optically Reversible Spatial Mutations to Dissect the Asymmetric Developmental Program of a Bacterium**
  Lasker, K., Abraham, A., Childers, W., Shapiro, L.
  CELL PRESS.2014: 594A
- **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
- **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-?
- **Francois Jacob (1920-2013)** *SCIENCE*
  Shapiro, L., Losick, R.
  2013; 340 (6135): 939-939
- **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** *CHEMPHYSCHEM*
  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

- **Live-cell single-molecule and super-resolution imaging in bacteria**
  Coupland, B., Haas, B. L., Hoye, E., Koropatkin, N., Matson, J., DiRita, V., Martens, E., Shapiro, L., Moerner, W. E., Biteen, J. S.
  AMER CHEMICAL SOC.2011

- **The essential genome of a bacterium** *MOLECULAR SYSTEMS BIOLOGY*
  Christen, B., Abeliuk, E., Collier, J. M., Kalogeraki, V. S., Passarelli, B., Coller, 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 chromosome replication and cell cycle progression in Caulobacter**
  Shapiro, L.
  FEDERATION AMER SOC EXP BIOL.2008
- **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
- **Multiplexed Quantitative Proteomics Using Mass Spectrometry** *PROTEIN MASS SPECTROMETRY*
  Ross, P. L., Chen, X., Toro, E., Britos, L., Shapiro, L., Pappin, D., Whitelegge, J. P.
  2008; 52: 449–66
- **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*
  Collier, J., McAdams, H. H., Shapiro, L.
  2007; 104 (43): 17111-17116
- **Cell cycle regulation in Caulobacter: location, location, location** *JOURNAL OF CELL SCIENCE*
  Goley, E. D., Iniesta, A. A., Shapiro, L.
  2007; 120 (20): 3501-3507

- **Spatial complexity and control of a bacterial cell cycle** *CURRENT OPINION IN BIOTECHNOLOGY*
  Collier, J., Shapiro, L.
  2007; 18 (4): 333-340

- **An antifungal agent inhibits an aminoacyl-tRNA synthetase by trapping tRNA in the editing site** *SCIENCE*
  Rock, F. L., Mao, W., Yaremchuk, A., Tukalo, M., Crepin, T., Zhou, H., Zhang, Y., Hernandez, V., Akama, T., Baker, S. J., Plattner, J. J., Shapiro, L., Martinis, et al
  2007; 316 (5832): 1759-1761

- **High-throughput identification of transcription start sites, conserved promoter motifs and predicted regulons** *NATURE BIOTECHNOLOGY*
  McGrath, P. T., Lee, H., Zhang, L., Iniesta, A. A., Hottes, A. K., Tan, M. H., Hillson, N. J., Hu, P., Shapiro, L., McAdams, H. H.
  2007; 25 (5): 584-592

- **The push and pull of the bacterial cytoskeleton** *TRENDS IN CELL BIOLOGY*
  Dye, N. A., Shapiro, L.
  2007; 17 (5): 239-245

- **Systems biology of Caulobacter** *ANNUAL REVIEW OF GENETICS*
  Laub, M. T., Shapiro, L., McAdams, H. H.
  2007; 41: 429-441

- **Chromosome organization and segregation in bacteria** *JOURNAL OF STRUCTURAL BIOLOGY*
  Thanbichler, M., Shapiro, L.
  2006; 156 (2): 292-303

- **PHYS 489-Direct observation of MreB treadmilling in Caulobacter by single-molecule fluorescence microscopy**
  Kim, S., Gitai, Z., Kinkhabwala, A., Shapiro, L., Moerner, W. E.
  AMER CHEMICAL SOC.2006

- **A phospho-signaling pathway controls the localization and activity of a protease complex critical for bacterial cell cycle progression** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Iniesta, A. A., McGrath, P. T., Reisenauer, A., McAdams, H. H., Shapiro, L.
  2006; 103 (29): 10935-10940

- **Single molecules of the bacterial actin MreB undergo directed treadmilling motion in Caulobacter crescentus** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Kim, S. Y., Gitai, Z., Kinkhabwala, A., Shapiro, L., Moerner, W. E.
  2006; 103 (29): 10929-10934

- **MipZ, a spatial regulator coordinating chromosome segregation with cell division in Caulobacter** *CELL*
  Thanbichler, M., Shapiro, L.
  2006; 126 (1): 147-162

- **A dynamically localized protease complex and a polar specificity factor control a cell cycle master regulator** *CELL*
  McGrath, P. T., Iniesta, A. A., Ryan, K. R., Shapiro, L., McAdams, H. H.
  2006; 124 (3): 535-547

- **The bifunctional FtsK protein mediates chromosome partitioning and cell division in Caulobacter** *JOURNAL OF BACTERIOLOGY*
  Wang, S. C., West, L., Shapiro, L.
  2006; 188 (4): 1497-1508

- **DnaA couples DNA replication and the expression of two cell cycle master regulators** *EMBO JOURNAL*
  Collier, J., Murray, S. R., Shapiro, L.
  2006; 25 (2): 346-356

- **Cytokinesis signals truncation of the PodJ polarity factor by a cell cycle-regulated protease** *EMBO JOURNAL*
  Chen, J. C., Hottes, A. K., McAdams, H. H., McGrath, P. T., Viollier, P. H., Shapiro, L.
  2006; 25 (2): 377-386

- **Two independent spiral structures control cell shape in Caulobacter** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*

Dye, N. A., Pincus, Z., Theriot, J. A., Shapiro, L., Gitai, Z.
2005; 102 (51): 18608-18613

- **DnaA coordinates replication initiation and cell cycle transcription in Caulobacter crescentus** *MOLECULAR MICROBIOLOGY*
  Hottes, A. K., Shapiro, L., McAdams, H. H.
  2005; 58 (5): 1340-1353

- **Identification of borinic esters as inhibitors of bacterial cell growth and bacterial methyltransferases, CcrM and MenH** *JOURNAL OF MEDICINAL CHEMISTRY*
  Benkovic, S. J., Baker, S. J., Alley, M. R., Woo, Y. H., Zhang, Y. K., Akama, T., Mao, W. M., Baboval, J., Rajagopalan, P. T., Wall, M., Kahng, L. S., Tavassoli, A., Shapiro, et al
  2005; 48 (23): 7468-7476

- **The bacterial nucleoid: A highly organized and dynamic structure** *JOURNAL OF CELLULAR BIOCHEMISTRY*
  Thanbichler, M., Wang, S. C., Shapiro, L.
  2005; 96 (3): 506-521

- **Conserved modular design of an oxygen sensory/signaling network with species-specific output** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Crosson, S., McGrath, P. T., Stephens, C., McAdams, H. H., Shapiro, L.
  2005; 102 (22): 8018-8023

- **The choreographed dynamics of bacterial chromosomes** *TRENDS IN MICROBIOLOGY*
  Gitai, Z., Thanbichler, M., Shapiro, L.
  2005; 13 (5): 221-228

- **The structure and function of the bacterial chromosome** *CURRENT OPINION IN GENETICS & DEVELOPMENT*
  Thanbichler, M., Viollier, P. H., Shapiro, L.
  2005; 15 (2): 153-162

- **MreB actin-mediated segregation of a specific region of a bacterial chromosome** *CELL*
  Gital, Z., Dye, N. A., Reisenauer, A., Wachi, M., Shapiro, L.
  2005; 120 (3): 329-341

- **A membrane metalloprotease participates in the sequential degradation of a Caulobacter polarity determinant** *MOLECULAR MICROBIOLOGY*
  Chen, J. C., Viollier, P. H., Shapiro, L.
  2005; 55 (4): 1085-1103

- **Spatial complexity of mechanisms controlling a bacterial cell cycle** *CURRENT OPINION IN MICROBIOLOGY*
  Viollier, P. H., Shapiro, L.
  2004; 7 (6): 572-578

- **An actin-like gene can determine bacterial cell polarity** *44th Annual Meeting of the American-Society-for-Cell-Biology*
  Gitai, Z., Dye, N., Shapiro, L.
  AMER SOC CELL BIOLOGY.2004: 10A–10A

- **A genetic oscillator and the regulation of cell cycle progression in Caulobacter crescentus** *CELL CYCLE*
  Crosson, S., McAdams, H., Shapiro, L.
  2004; 3 (10): 1252-1254

- **Rapid and sequential movement of individual chromosomal loci to specific subcellular locations during bacterial DNA replication** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Viollier, P. H., Thanbichler, M., McGrath, P. T., West, L., Meewan, M., McAdams, H. H., Shapiro, L.
  2004; 101 (25): 9257-9262

- **The topoisornerase IV ParC subunit colocalizes with the Caulobacter replisome and is required for polar localization of replication origins** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Wang, S. C., Shapiro, L.
  2004; 101 (25): 9251-9256

- **An actin-like gene can determine cell polarity in bacteria** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Gitai, Z., Dye, N., Shapiro, L.
  2004; 101 (23): 8643-8648

- **Oscillating global regulators control the genetic circuit driving a bacterial cell cycle** *SCIENCE*
  Holtzendorff, J., Hung, D., Brende, P., Reisenauer, A., Viollier, P. H., McAdams, H. H., Shapiro, L.
  2004; 304 (5673): 983-987

- **Recruitment of a cytoplasmic response regulator to the cell pole is linked to its cell cycle-regulated proteolysis** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Ryan, K. R., Huntwork, S., Shapiro, L.
  2004; 101 (19): 7415-7420

- **Codon usage between genomes is constrained by genome-wide mutational processes** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Chen, S. L., Lee, W., Hottes, A. K., Shapiro, L., McAdams, H. H.
  2004; 101 (10): 3480-3485

- **A bacterial cell-cycle regulatory network operating in time and space** *SCIENCE*
  McAdams, H. H., Shapiro, L.
  2003; 301 (5641): 1874-1877

- **Identification of long intergenic repeat sequences associated with DNA methylation sites in Caulobacter crescentus and other alpha-proteobacteria** *JOURNAL OF BACTERIOLOGY*
  Chen, S. L., Shapiro, L.
  2003; 185 (16): 4997-5002

- **Fluorescence bleaching reveals asymmetric compartment formation prior to cell division in Caulobacter** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Judd, E. M., Ryan, K. R., Moerner, W. E., Shapiro, L., McAdams, H. H.
  2003; 100 (14): 8235-8240

- **A lytic transglycosylase homologue, PleA, is required for the assembly of pili and the flagellum at the Caulobacter crescentus cell pole** *MOLECULAR MICROBIOLOGY*
  Viollier, P. H., Shapiro, L.
  2003; 49 (2): 331-345

- **Bacterial cell division spirals into control** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Gitai, Z., Shapiro, L.
  2003; 100 (13): 7423-7424

- **Polar localization of replicon origins in the multipartite Genomes of Agrobacterium tumefaciens and Sinorhizobium meliloti** *JOURNAL OF BACTERIOLOGY*
  Kahng, L. S., Shapiro, L.
  2003; 185 (11): 3384-3391

- **Cell-cycle-regulated expression and subcellular localization of the Caulobacter crescentus SMC chromosome structural protein** *JOURNAL OF BACTERIOLOGY*
  Jensen, R. B., Shapiro, L.
  2003; 185 (10): 3068-3075

- **tmRNA in Caulobacter crescentus is cell cycle regulated by temporally controlled transcription and RNA degradation** *JOURNAL OF BACTERIOLOGY*
  Keiler, K. C., Shapiro, L.
  2003; 185 (6): 1825-1830

- **Functions of the CckA histidine kinase in Caulobacter cell cycle control** *MOLECULAR MICROBIOLOGY*
  Jacobs, C., Ausmees, N., Cordwell, S. J., Shapiro, L., Laub, M. T.
  2003; 47 (5): 1279-1290

- **Temporal and spatial regulation in prokaryotic cell cycle progression and development** *ANNUAL REVIEW OF BIOCHEMISTRY*

Ryan, K. R., Shapiro, L.
2003; 72: 367-394

- **tmRNA is required for correct timing of DNA replication in Caulobacter crescentus** *JOURNAL OF BACTERIOLOGY*
  Keiler, K. C., Shapiro, L.
  2003; 185 (2): 573-580
- **Generating and exploiting polarity in bacteria** *SCIENCE*
  Shapiro, L., McAdams, H. H., Losick, R.
  2002; 298 (5600): 1942-1946
- **The CtrA response regulator essential for Caulobacter crescentus cell-cycle progression requires a bipartite degradation signal for temporally controlled proteolysis** *JOURNAL OF MOLECULAR BIOLOGY*
  Ryan, K. R., Judd, E. M., Shapiro, L.
  2002; 324 (3): 443-455
- **Identification of a localization factor for the polar positioning of bacterial structural and regulatory proteins** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Viollier, P. H., Sternheim, N., Shapiro, L.
  2002; 99 (21): 13831-13836
- **A signal transduction protein cues proteolytic events critical to Caulobacter cell cycle progression** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Hung, D. Y., Shapiro, L.
  2002; 99 (20): 13160-13165
- **DNA methylation affects the cell cycle transcription of the CtrA global regulator in Caulobacter** *EMBO JOURNAL*
  Reisenauer, A., Shapiro, L.
  2002; 21 (18): 4969-4977
- **A dynamically localized histidine kinase controls the asymmetric distribution of polar pili proteins** *EMBO JOURNAL*
  Viollier, P. H., Sternheim, N., Shapiro, L.
  2002; 21 (17): 4420-4428
- **Biomolecular screening with encoded porous-silicon photonic crystals** *NATURE MATERIALS*
  Cunin, F., Schmedake, T. A., Link, J. R., Li, Y. Y., Koh, J., Bhatia, S. N., Sailor, M. J.
  2002; 1 (1): 39-41
- **Genes directly controlled by CtrA, a master regulator of the Caulobacter cell cycle** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Laub, M. T., Chen, S. L., Shapiro, L., McAdams, H. H.
  2002; 99 (7): 4632-4637
- **Dynamic localization of proteins and DNA during a bacterial cell cycle** *NATURE REVIEWS MOLECULAR CELL BIOLOGY*
  Jensen, R. B., Wang, S. C., Shapiro, L.
  2002; 3 (3): 167-176
- **Control of chromosome replication in Caulobacter crescentus** *ANNUAL REVIEW OF MICROBIOLOGY*
  Marczynski, G. T., Shapiro, L.
  2002; 56: 625-656
- **A moving DNA replication factory in Caulobacter crescentus** *EMBO JOURNAL*
  Jensen, R. B., Wang, S. C., Shapiro, L.
  2001; 20 (17): 4952-4963
- **Conserved promoter motif is required for cell cycle timing of dnaX transcription in Caulobacter** *JOURNAL OF BACTERIOLOGY*
  Keiler, K. C., Shapiro, L.
  2001; 183 (16): 4860-4865
- **A homolog of the CtrA cell cycle regulator is present and essential in Sinorhizobium meliloti** *JOURNAL OF BACTERIOLOGY*
  Barnett, M. J., Hung, D. Y., Reisenauer, A., Shapiro, L., Long, S. R.

2001; 183 (10): 3204-3210

- **The CcrM DNA methyltransferase of Agrobacterium tumefaciens is essential, and its activity is cell cycle regulated** *JOURNAL OF BACTERIOLOGY*
  Kahng, L. S., Shapiro, L.
  2001; 183 (10): 3065-3075

- **Single-molecule imaging in Caulobacter crescentus.**
  Paige, M. F., Judd, E., Shapiro, L., Moerner, W. E.
  AMER CHEMICAL SOC.2001: U285–U285

- **Complete genome sequence of Caulobacter crescentus** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Nierman, W. C., Feldblyum, T. V., Laub, M. T., Paulsen, I. T., Nelson, K. E., Eisen, J., Heidelberg, J. F., Alley, M. R., Ohta, N., Maddock, J. R., Potocka, I., Nelson, W. C., Newton, et al
  2001; 98 (7): 4136-4141

- **Dynamic localization of a cytoplasmic signal transduction response regulator controls morphogenesis during the Caulobacter cell cycle** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Jacobs, C., Hung, D., Shapiro, L.
  2001; 98 (7): 4095-4100

- **Global analysis of the genetic network controlling a bacterial cell cycle** *SCIENCE*
  Laub, M. T., McAdams, T. H., Feldblyum, T., Fraser, C. M., Shapiro, L.
  2000; 290 (5499): 2144-2148

- **Proteins on the move: dynamic protein localization in prokaryotes** *TRENDS IN CELL BIOLOGY*
  Jensen, R. B., Shapiro, L.
  2000; 10 (11): 483-488

- **tmRNAs that encode proteolysis-inducing tags are found in all known bacterial genomes: A two-piece tmRNA functions in Caulobacter** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Keiler, K. C., Shapiro, L., Williams, K. P.
  2000; 97 (14): 7778-7783

- **Identification and cell cycle control of a novel pilus system in Caulobacter crescentus** *EMBO JOURNAL*
  Skerker, J. M., Shapiro, L.
  2000; 19 (13): 3223-3234

- **The Brucella abortus CcrM DNA methyltransferase is essential for viability, and its overexpression attenuates intracellular replication in murine macrophages** *JOURNAL OF BACTERIOLOGY*
  Robertson, G. T., Reisenauer, A., Wright, R., Jensen, R. B., Jensen, A., Shapiro, L., Roop, R. M.
  2000; 182 (12): 3482-3489

- **Dynamic spatial regulation in the bacterial cell** *CELL*
  Shapiro, L., Losick, R.
  2000; 100 (1): 89-98

- **Chromosome segregation during the prokaryotic cell division cycle** *CURRENT OPINION IN CELL BIOLOGY*
  Jensen, R. B., Shapiro, L.
  1999; 11 (6): 726-731

- **Differential localization of two histidine kinases controlling bacterial cell differentiation** *MOLECULAR CELL*
  Wheeler, R. T., Shapiro, L.
  1999; 4 (5): 683-694

- **The Caulobacter crescentus smc gene is required for cell cycle progression and chromosome segregation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Jensen, R. B., Shapiro, L.
  1999; 96 (19): 10661-10666

- **Bacterial DNA methylation: a cell cycle regulator?** *JOURNAL OF BACTERIOLOGY*

Reisenauer, A., Kahng, L. S., McCollum, S., Shapiro, L.
1999; 181 (17): 5135-5139

- **Changing views on the nature of the bacterial cell: from biochemistry to cytology** *JOURNAL OF BACTERIOLOGY*
  Losick, R., Shapiro, L.
  1999; 181 (14): 4143-4145
- **Feedback control of a master bacterial cell-cycle regulator** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Domian, I. J., Reisenauer, A., Shapiro, L.
  1999; 96 (12): 6648-6653
- **Bacterial cell division: A moveable feast** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Jacobs, C., Shapiro, L.
  1999; 96 (11): 5891-5893
- **Cell cycle-dependent polar localization of an essential bacterial histidine kinase that controls DNA replication and cell division** *CELL*
  Jacobs, C., Domian, I. J., Maddock, J. R., Shapiro, L.
  1999; 97 (1): 111-120
- **The CtrA response regulator mediates temporal control of gene expression during the Caulobacter cell cycle** *JOURNAL OF BACTERIOLOGY*
  Reisenauer, A., Quon, K., Shapiro, L.
  1999; 181 (8): 2430-2439
- **Protein localization during the Caulobacter crescentus cell cycle** *CURRENT OPINION IN MICROBIOLOGY*
  Wheeler, R. T., Gober, J. W., Shapiro, L.
  1998; 1 (6): 636-642
- **DNA replication - Bringing the mountain to mohammed** *SCIENCE*
  Losick, R., Shapiro, L.
  1998; 282 (5393): 1430-1431
- **Microbial asymmetric cell division: Localization of cell fate determinants** *CURRENT OPINION IN GENETICS & DEVELOPMENT*
  Jacobs, C., Shapiro, L.
  1998; 8 (4): 386-391
- **A membrane-associated protein, FliX, is required for an early step in Caulobacter flagellar assembly** *JOURNAL OF BACTERIOLOGY*
  Mohr, C. D., MacKichan, J. K., Shapiro, L.
  1998; 180 (8): 2175-2185
- **A cell cycle-regulated adenine DNA methyltransferase from Caulobacter crescentus processively methylates GANTC sites on hemimethylated DNA** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Berdis, A. J., Lee, I., Coward, J. K., Stephens, C., Wright, R., Shapiro, L., Benkovic, S. J.
  1998; 95 (6): 2874-2879
- **Negative control of bacterial DNA replication by a cell cycle regulatory protein that binds at the chromosome origin** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Quon, K. C., Yang, B., Domian, I. J., Shapiro, L., Marczynski, G. T.
  1998; 95 (1): 120-125
- **Transcriptional analysis of the Caulobacter 4.5 S RNA ffs gene and the physiological basis of an ffs mutant with a Ts phenotype** *JOURNAL OF MOLECULAR BIOLOGY*
  Winzeler, E., Wheeler, R., Shapiro, L.
  1997; 272 (5): 665-676
- **The CcrM DNA methyltransferase is widespread in the alpha subdivision of proteobacteria, and its essential functions are conserved in Rhizobium meliloti and Caulobacter crescentus** *JOURNAL OF BACTERIOLOGY*
  Wright, R., Stephens, C., Shapiro, L.
  1997; 179 (18): 5869-5877
- **Identification of the fliI and fliJ components of the Caulobacter flagellar type III protein secretion system** *JOURNAL OF BACTERIOLOGY*

Stephens, C., Mohr, C., Boyd, C., Maddock, J., Gober, J., Shapiro, L.
1997; 179 (17): 5355-5365

- **Bacterial protein secretion - a target for new antibiotics?** *CHEMISTRY & BIOLOGY*
  Stephens, C., Shapiro, L.
  1997; 4 (9): 637-641
- **Cell type-specific phosphorylation and proteolysis of a transcriptional regulator controls the G1-to-S transition in a bacterial cell cycle** *CELL*
  Domian, I. J., Quon, K. C., Shapiro, L.
  1997; 90 (3): 415-424
- **Translation of the leaderless Caulobacter dnaX mRNA** *JOURNAL OF BACTERIOLOGY*
  Winzeler, E., Shapiro, L.
  1997; 179 (12): 3981-3988
- **Protein localization and cell fate in bacteria** *SCIENCE*
  Shapiro, L., Losick, R.
  1997; 276 (5313): 712-718
- **Transcription of genes encoding DNA replication proteins is coincident with cell cycle control of DNA replication in Caulobacter crescentus** *JOURNAL OF BACTERIOLOGY*
  Roberts, R. C., Shapiro, L.
  1997; 179 (7): 2319-2330
- **Bacterial chromosome segregation: Is there a mitotic apparatus?** *CELL*
  Wheeler, R. T., Shapiro, L.
  1997; 88 (5): 577-579
- **Isolation and characterization of a xylose-dependent promoter from Caulobacter crescentus** *JOURNAL OF BACTERIOLOGY*
  Meisenzahl, A. C., Shapiro, L., Jenal, U.
  1997; 179 (3): 592-600
- **A novel promoter motif for Caulobacter cell cycle-controlled DNA replication genes** *JOURNAL OF MOLECULAR BIOLOGY*
  Winzeler, E., Shapiro, L.
  1996; 264 (3): 412-425
- **The control of temporal and spatial organization during the Caulobacter cell cycle** *CURRENT OPINION IN GENETICS & DEVELOPMENT*
  Domian, I. J., Quon, K. C., Shapiro, L.
  1996; 6 (5): 538-544
- **Bacterial pathogenesis: Delivering the payload** *CURRENT BIOLOGY*
  Stephens, C., Shapiro, L.
  1996; 6 (8): 927-930
- **Caulobacter Lon protease has a critical role in cell-cycle control of DNA methylation** *GENES & DEVELOPMENT*
  Wright, R., Stephens, C., Zweiger, G., Shapiro, L., Alley, M. R.
  1996; 10 (12): 1532-1542
- **Cell cycle-controlled proteolysis of a flagellar motor protein that is asymmetrically distributed in the Caulobacter predivisional cell** *EMBO JOURNAL*
  Jenal, U., Shapiro, L.
  1996; 15 (10): 2393-2406
- **Identification of a Caulobacter crescentus operon encoding hrcA, involved in negatively regulating heat-inducible transcription, and the chaperone gene grpE** *JOURNAL OF BACTERIOLOGY*
  Roberts, R. C., Toochinda, C., Avedissian, M., Baldini, R. L., Gomes, S. L., Shapiro, L.
  1996; 178 (7): 1829-1841
- **Regulation of a heat shock sigma(32) homolog in Caulobacter crescentus** *JOURNAL OF BACTERIOLOGY*
  Reisenauer, A., Mohr, C. D., Shapiro, L.
  1996; 178 (7): 1919-1927

- **A cell cycle-regulated bacterial DNA methyltransferase is essential for viability** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Stephens, C., Reisenauer, A., Wright, R., Shapiro, L.
  1996; 93 (3): 1210-1214
- **Flagellar assembly in Caulobacter crescentus: A basal body P-ring null mutation affects stability of the L-ring protein** *JOURNAL OF BACTERIOLOGY*
  Mohr, C. D., Jenal, U., Shapiro, L.
  1996; 178 (3): 675-682
- **Cell cycle control by an essential bacterial two-component signal transduction protein** *CELL*
  Quon, K. C., Marczynski, G. T., Shapiro, L.
  1996; 84 (1): 83-93
- **Developmental programs in bacteria** *CURRENT TOPICS IN DEVELOPMENTAL BIOLOGY, VOL 34*
  Roberts, R. C., Mohr, C. D., Shapiro, L.
  1996; 34: 207-257
- **USE OF FLOW-CYTOMETRY TO IDENTIFY A CAULOBACTER 4.5 S RNA TEMPERATURE-SENSITIVE MUTANT DEFECTIVE IN THE CELL-CYCLE** *JOURNAL OF MOLECULAR BIOLOGY*
  Winzeler, E., Shapiro, L.
  1995; 251 (3): 346-365
- **CIRCUIT SIMULATION OF GENETIC NETWORKS** *SCIENCE*
  McAdams, H. H., Shapiro, L.
  1995; 269 (5224): 650-656
- **A DEVELOPMENTALLY-REGULATED CHROMOSOMAL ORIGIN OF REPLICATION USES ESSENTIAL TRANSCRIPTION ELEMENTS** *GENES & DEVELOPMENT*
  Marczynski, G. T., LENTINE, K., Shapiro, L.
  1995; 9 (12): 1543-1557
- **REGULATION OF THE CAULOBACTER-CRESCENTUS DNAKJ OPERON** *JOURNAL OF BACTERIOLOGY*
  Avedissian, M., Lessing, D., Gober, J. W., Shapiro, L., Gomes, S. L.
  1995; 177 (12): 3479-3484
- **THE CONTROL OF ASYMMETRIC GENE-EXPRESSION DURING CAULOBACTER CELL-DIFFERENTIATION** *ARCHIVES OF MICROBIOLOGY*
  Marczynski, G. T., Shapiro, L.
  1995; 163 (5): 313-321
- **IDENTIFICATION OF AN ESSENTIAL SIGMA-32 HOMOLOG IN COULOBACTER-CRESCENIUS**
  Reisenauer, A., Mohr, C., Shapiro, L.
  FEDERATION AMER SOC EXP BIOL.1995: A1275–A1275
- **COORDINATE CELL-CYCLE CONTROL OF A CAULOBACTER DNA METHYLTRANSFERASE AND THE FLAGELLAR GENETIC HIERARCHY** *JOURNAL OF BACTERIOLOGY*
  Stephens, C. M., Zweiger, G., Shapiro, L.
  1995; 177 (7): 1662-1669
- **THE BACTERIAL FLAGELLUM - FROM GENETIC NETWORK TO COMPLEX ARCHITECTURE** *CELL*
  Shapiro, L.
  1995; 80 (4): 525-527
- **IDENTIFICATION OF A NOVEL PROTEIN OR PROTEIN DOMAIN INVOLVED IN INITIATION OF DNA-REPLICATION IN CAULOBACTER**
  Winzeler, E., Shapiro, L.
  WILEY-BLACKWELL.1995: 121–121
- **TEMPORAL AND SPATIAL CONTROL OF CELL-DIFFERENTIATION DURING A BACTERIAL-CELL CYCLE**
  Shapiro, L., Quon, K., Marczynski, G., Stephens, C.
  WILEY-BLACKWELL.1995: 331–331

- **CAULOBACTER FLIQ AND FLIR MEMBRANE-PROTEINS, REQUIRED FOR FLAGELLAR BIOGENESIS AND CELL-DIVISION, BELONG TO A FAMILY OF VIRULENCE FACTOR EXPORT PROTEINS** *JOURNAL OF BACTERIOLOGY*
  Zhuang, W. Y., Shapiro, L.
  1995; 177 (2): 343-356
- **Regulation of asymmetry and polarity during the Caulobacter cell cycle** *ADVANCES IN ENZYMOLOGY & RELATED AREAS OF MOLECULAR BIOLOGY, VOL 71*
  Jenal, U., Stephens, C., Shapiro, L.
  1995; 71: 1-39
- **CAULOBACTER FLAGELLAR FUNCTION, BUT NOT ASSEMBLY, REQUIRES FLIL, A NON-POLARLY LOCALIZED MEMBRANE-PROTEIN PRESENT IN ALL CELL-TYPES** *JOURNAL OF MOLECULAR BIOLOGY*
  Jenal, U., WHITE, J., Shapiro, L.
  1994; 243 (2): 227-244
- **CELL-CYCLE ARREST OF A CAULOBACTER-CRESCENTUS SECA MUTANT** *JOURNAL OF BACTERIOLOGY*
  Kang, P. J., Shapiro, L.
  1994; 176 (16): 4958-4965
- **BACTERIAL SPORULATION - AN ATP/ADP SWITCH** *CURRENT BIOLOGY*
  Stephens, C., Shapiro, L., Singer, M.
  1994; 4 (7): 630-632
- **A CAULOBACTER DNA METHYLTRANSFERASE THAT FUNCTIONS ONLY IN THE PREDIVISIONAL CELL** *JOURNAL OF MOLECULAR BIOLOGY*
  Zweiger, G., MARCYNSKI, G., Shapiro, L.
  1994; 235 (2): 472-485
- **EXPRESSION OF CAULOBACTER-DNAA AS A FUNCTION OF THE CELL-CYCLE** *JOURNAL OF BACTERIOLOGY*
  Zweiger, G., Shapiro, L.
  1994; 176 (2): 401-408
- **THE EXPRESSION OF ASYMMETRY DURING CAULOBACTER CELL-DIFFERENTIATION** *ANNUAL REVIEW OF BIOCHEMISTRY*
  Brun, Y. V., Marczynski, G., Shapiro, L.
  1994; 63: 419-450
- **CHECKPOINTS THAT COUPLE GENE-EXPRESSION TO MORPHOGENESIS** *SCIENCE*
  Losick, R., Shapiro, L.
  1993; 262 (5137): 1227-1228
- **POLARIZED CELLS, POLAR ACTIONS** *JOURNAL OF BACTERIOLOGY*
  Maddock, J. R., Alley, M. R., Shapiro, L.
  1993; 175 (22): 7125-7129
- **ASYMMETRIC EXPRESSION OF THE GYRASE-B GENE FROM THE REPLICATION-COMPETENT CHROMOSOME IN THE CAULOBACTER-CRESCENTUS PREDIVISIONAL CELL** *JOURNAL OF BACTERIOLOGY*
  Rizzo, M. F., Shapiro, L., Gober, J.
  1993; 175 (21): 6970-6981
- **Bacterial chromosome origins of replication.** *Current opinion in genetics & development*
  Marczynski, G. T., Shapiro, L.
  1993; 3 (5): 775-782
- **AN UNUSUAL PROMOTER CONTROLS CELL-CYCLE REGULATION AND DEPENDENCE ON DNA-REPLICATION OF THE CAULOBACTER-FLILM EARLY FLAGELLAR OPERON** *MOLECULAR MICROBIOLOGY*
  Stephens, C. M., Shapiro, L.
  1993; 9 (6): 1169-1179
- **PROTEIN LOCALIZATION AND ASYMMETRY IN THE BACTERIAL-CELL** *CELL*
  Shapiro, L.

1993; 73 (5): 841-855

- **DEVELOPMENT AND BEHAVIOR IN BACTERIA** *CELL*
  Shapiro, L., Kaiser, D., Losick, R.
  1993; 73 (5): 835-836

- **FLOW-CYTOMETRY OF CAULOBACTER-CRESCENTUS - IDENTIFICATION AND CHARACTERIZATION OF A CELL-CYCLE MUTANT**
  Winzeler, E. A., Kang, P. J., Shapiro, L.
  WILEY-BLACKWELL.1993: 307–307

- **ISOLATION AND CHARACTERIZATION OF TRANS-ACTING MUTATIONS WHICH CAUSE OVEREXPRESSION OF A CELL-CYCLE REGULATED OPERON**
  Quon, K. C., Shapiro, L.
  WILEY-BLACKWELL.1993: 303–303

- **POLAR LOCATION OF THE CHEMORECEPTOR COMPLEX IN THE ESCHERICHIA-COLI CELL** *SCIENCE*
  Maddock, J. R., Shapiro, L.
  1993; 259 (5102): 1717-1723

- **REQUIREMENT OF THE CARBOXYL TERMINUS OF A BACTERIAL CHEMORECEPTOR FOR ITS TARGETED PROTEOLYSIS** *SCIENCE*
  Alley, M. R., Maddock, J. R., Shapiro, L.
  1993; 259 (5102): 1754-1757

- **THE CHEMORECEPTORS AND CHEMOTAXIS SIGNAL TRANSDUCTION PROTEINS ARE CLUSTERED AT THE POLE OF THE ESCHERICHIA-COLI CELL**
  Maddock, J., Shapiro, L.
  WILEY-BLACKWELL.1993: 136–136

- **REGULATION AND LOCALIZATION OF THE FTSZ PROTEIN AND IDENTIFICATION OF THE FTSZ GENE OF CAULOBACTER-CRESCENTUS**
  Brun, Y. V., Shapiro, L.
  WILEY-BLACKWELL.1993: 134–134

- **DEVELOPMENTAL CONTROL OF DNA-REPLICATION IN C-CRESCENTUS**
  Marczynski, G. T., LENTINE, K., Shapiro, L.
  WILEY-BLACKWELL.1993: 137–137

- **ORGANIZATION AND ORDERED EXPRESSION OF CAULOBACTER GENES ENCODING FLAGELLAR BASAL BODY ROD AND RING PROTEINS** *JOURNAL OF MOLECULAR BIOLOGY*
  Dingwall, A., Garman, J. D., Shapiro, L.
  1992; 228 (4): 1147-1162

- **A TEMPORALLY CONTROLLED SIGMA-FACTOR IS REQUIRED FOR POLAR MORPHOGENESIS AND NORMAL-CELL DIVISION IN CAULOBACTER** *GENES & DEVELOPMENT*
  Brun, Y. V., Shapiro, L.
  1992; 6 (12A): 2395-2408

- **CELL-CYCLE CONTROL OF A CLONED CHROMOSOMAL ORIGIN OF REPLICATION FROM CAULOBACTER-CRESCENTUS** *JOURNAL OF MOLECULAR BIOLOGY*
  Marczynski, G. T., Shapiro, L.
  1992; 226 (4): 959-977

- **A DEVELOPMENTALLY REGULATED CAULOBACTER FLAGELLAR PROMOTER IS ACTIVATED BY 3' ENHANCER AND IHF BINDING-ELEMENTS** *MOLECULAR BIOLOGY OF THE CELL*
  Gober, J. W., Shapiro, L.
  1992; 3 (8): 913-926

- **POLAR LOCALIZATION OF A BACTERIAL CHEMORECEPTOR** *GENES & DEVELOPMENT*
  Alley, M. R., Maddock, J. R., Shapiro, L.
  1992; 6 (5): 825-836

- **EARLY CAULOBACTER-CRESCENTUS GENES FLIL AND FLIM ARE REQUIRED FOR FLAGELLAR GENE-EXPRESSION AND NORMAL-CELL DIVISION** *JOURNAL OF BACTERIOLOGY*
  Yu, J., Shapiro, L.
  1992; 174 (10): 3327-3338

- **EXPRESSION OF AN EARLY GENE IN THE FLAGELLAR REGULATORY HIERARCHY IS SENSITIVE TO AN INTERRUPTION IN DNA-REPLICATION** *JOURNAL OF BACTERIOLOGY*
  Dingwall, A., Zhuang, W. Y., Quon, K., Shapiro, L.
  1992; 174 (6): 1760-1768

- **The control of timing and spatial organization during Caulobacter cell differentiation.** *Harvey lectures*
  Shapiro, L.
  1992; 88: 23-48

- **Positional information during Caulobacter cell differentiation.** *Current opinion in genetics & development*
  Gober, J. W., Alley, M. R., Shapiro, L.
  1991; 1 (3): 324-329

- **Molecular genetics of simple developmental systems** *CURRENT OPINION IN GENETICS & DEVELOPMENT*
  Blackburn, E., Firtel, R. A., Shapiro, L.
  1991; 1 (3): 305–6

- **GENETIC-ANALYSIS OF A TEMPORALLY TRANSCRIBED CHEMOTAXIS GENE-CLUSTER IN CAULOBACTER-CRESCENTUS** *GENETICS*
  Alley, M. R., Gomes, S. L., Alexander, W., Shapiro, L.
  1991; 129 (2): 333-342

- **TEMPORAL AND SPATIAL REGULATION OF DEVELOPMENTALLY EXPRESSED GENES IN CAULOBACTER** *BIOESSAYS*
  Gober, J. W., Shapiro, L.
  1991; 13 (6): 277-283

- **EXPRESSION OF POSITIONAL INFORMATION DURING CELL-DIFFERENTIATION IN CAULOBACTER** *CELL*
  Gober, J. W., CHAMPER, R., Reuter, S., Shapiro, L.
  1991; 64 (2): 381-391

- **IDENTIFICATION OF CIS AND TRANS-ELEMENTS INVOLVED IN THE TIMED CONTROL OF A CAULOBACTER FLAGELLAR GENE** *JOURNAL OF MOLECULAR BIOLOGY*
  Gober, J. W., Xu, H., Dingwall, A. K., Shapiro, L.
  1991; 217 (2): 247-257

- **Temporal and spatial regulation of developmentally expressed genes in Caulobacter** *Bio Essays*
  Gober, J.W., Shapiro, L.
  1991; 13 (6): 277-283

- **IDENTIFICATION OF A CAULOBACTER BASAL BODY STRUCTURAL GENE AND A CIS-ACTING SITE REQUIRED FOR ACTIVATION OF TRANSCRIPTION** *JOURNAL OF BACTERIOLOGY*
  Dingwall, A., Gober, J. W., Shapiro, L.
  1990; 172 (10): 6066-6076

- **REGULATORY INTERACTIONS BETWEEN PHOSPHOLIPID-SYNTHESIS AND DNA-REPLICATION IN CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  LOEWY, B., Marczynski, G. T., Dingwall, A., Shapiro, L.
  1990; 172 (10): 5523-5530

- **INTEGRATION HOST FACTOR IS REQUIRED FOR THE ACTIVATION OF DEVELOPMENTALLY REGULATED GENES IN CAULOBACTER** *GENES & DEVELOPMENT*
  Gober, J. W., Shapiro, L.
  1990; 4 (9): 1494-1504

- **EXPRESSION OF THE CAULOBACTER HEAT-SHOCK GENE DNAK IS DEVELOPMENTALLY CONTROLLED DURING GROWTH AT NORMAL TEMPERATURES** *JOURNAL OF BACTERIOLOGY*
  Gomes, S. L., Gober, J. W., Shapiro, L.

1990; 172 (6): 3051-3059

- **PLASMID AND CHROMOSOMAL DNA-REPLICATION AND PARTITIONING DURING THE CAULOBACTER-CRESCENTUS CELL-CYCLE** *JOURNAL OF MOLECULAR BIOLOGY*
  Marczynski, G. T., Dingwall, A., Shapiro, L.
  1990; 212 (4): 709-722
- **A CAULOBACTER GENE INVOLVED IN POLAR MORPHOGENESIS** *JOURNAL OF BACTERIOLOGY*
  Driks, A., Schoenlein, P. V., DeRosier, D. J., Shapiro, L., Ely, B.
  1990; 172 (4): 2113-2123
- **PURIFICATION AND CHARACTERIZATION OF FATTY-ACID BETA-OXIDATION ENZYMES FROM CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  OCONNELL, M. A., Orr, G., Shapiro, L.
  1990; 172 (2): 997-1004
- **Genetic regulatory hierarchy in Caulobacter development.** *Advances in genetics*
  Bryan, R., Glaser, D., Shapiro, L.
  1990; 27: 1-31
- **Analysis of bacterial genome organization and replication using pulsed field gel electrophoresis** *Methods*
  Dingwall, A., Shapiro, L., Ely, B
  1990; 1 (2): 160-168
- **THE MOLECULAR-GENETICS OF DIFFERENTIATION** *GENETICS*
  Ely, B., Shapiro, L.
  1989; 123 (3): 427-429
- **NEGATIVE TRANSCRIPTIONAL REGULATION IN THE CAULOBACTER FLAGELLAR HIERARCHY** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Xu, H., Dingwall, A., Shapiro, L.
  1989; 86 (17): 6656-6660
- **AN ESCHERICHIA-COLI CHEMORECEPTOR GENE IS TEMPORALLY CONTROLLED IN CAULOBACTER** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Frederikse, P. H., Shapiro, L.
  1989; 86 (11): 4061-4065
- **THE ORGANIZATION OF THE CAULOBACTER-CRESCENTUS FLAGELLAR FILAMENT** *JOURNAL OF MOLECULAR BIOLOGY*
  Driks, A., Bryan, R., Shapiro, L., DeRosier, D. J.
  1989; 206 (4): 627-636
- **IMAGE-RECONSTRUCTION OF THE FLAGELLAR BASAL BODY OF CAULOBACTER-CRESCENTUS** *JOURNAL OF MOLECULAR BIOLOGY*
  Stallmeyer, M. J., Hahnenberger, K. M., Sosinsky, G. E., Shapiro, L., DeRosier, D. J.
  1989; 205 (3): 511-518
- **TEMPORAL REGULATION AND OVERLAP ORGANIZATION OF 2 CAULOBACTER FLAGELLAR GENES** *JOURNAL OF MOLECULAR BIOLOGY*
  Kaplan, J. B., Dingwall, A., Bryan, R., CHAMPER, R., Shapiro, L.
  1989; 205 (1): 71-83
- **POSITIONING OF GENE-PRODUCTS DURING CAULOBACTER CELL-DIFFERENTIATION** *JOURNAL OF CELL SCIENCE*
  Shapiro, L., Gober, J. W.
  1989: 85-97
- **RATE, ORIGIN, AND BIDIRECTIONALITY OF CAULOBACTER CHROMOSOME-REPLICATION AS DETERMINED BY PULSED-FIELD GEL-ELECTROPHORESIS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Dingwall, A., Shapiro, L.
  1989; 86 (1): 119-123
- **ORGANIZATION AND TEMPORAL EXPRESSION OF A FLAGELLAR BASAL BODY GENE IN CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*

Hahnenberger, K. M., Shapiro, L.
1988; 170 (9): 4119-4124

- **CONTROL OF SYNTHESIS AND POSITIONING OF A CAULOBACTER-CRESCENTUS FLAGELLAR PROTEIN** *GENES & DEVELOPMENT*
  LOEWY, Z. G., Bryan, R. A., REUTER, S. H., Shapiro, L.
  1987; 1 (6): 626-635

- **ASYMMETRIC SEGREGATION OF HEAT-SHOCK PROTEINS UPON CELL-DIVISION IN CAULOBACTER-CRESCENTUS** *JOURNAL OF MOLECULAR BIOLOGY*
  REUTER, S. H., Shapiro, L.
  1987; 194 (4): 653-662

- **CASCADE REGULATION OF CAULOBACTER FLAGELLAR AND CHEMOTAXIS GENES** *JOURNAL OF MOLECULAR BIOLOGY*
  CHAMPER, R., Dingwall, A., Shapiro, L.
  1987; 194 (1): 71-80

- **IDENTIFICATION OF A GENE-CLUSTER INVOLVED IN FLAGELLAR BASAL BODY BIOGENESIS IN CAULOBACTER-CRESCENTUS** *JOURNAL OF MOLECULAR BIOLOGY*
  Hahnenberger, K. M., Shapiro, L.
  1987; 194 (1): 91-103

- **SEPARATION OF TEMPORAL CONTROL AND TRANS-ACTING MODULATION OF FLAGELLIN AND CHEMOTAXIS GENES IN CAULOBACTER** *MOLECULAR AND GENERAL GENETICS*
  Bryan, R., CHAMPER, R., Gomes, S., Ely, B., Shapiro, L.
  1987; 206 (2): 300-306

- **GENERAL NONCHEMOTACTIC MUTANTS OF CAULOBACTER-CRESCENTUS** *GENETICS*
  Ely, B., GERARDOT, C. J., Fleming, D. L., Gomes, S. L., Frederikse, P., Shapiro, L.
  1986; 114 (3): 717-730

- **DIFFERENTIAL LOCALIZATION OF MEMBRANE-RECEPTOR CHEMOTAXIS PROTEINS IN THE CAULOBACTER PREDIVISIONAL CELL** *JOURNAL OF MOLECULAR BIOLOGY*
  Nathan, P., Gomes, S. L., Hahnenberger, K., Newton, A., Shapiro, L.
  1986; 191 (3): 433-440

- **FATTY-ACID DEGRADATION IN CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  OCONNELL, M., Henry, S., Shapiro, L.
  1986; 168 (1): 49-54

- **TRANSCRIPTION INITIATION INVITRO AND INVIVO AT A HIGHLY CONSERVED PROMOTER WITHIN A 16 S-RIBOSOMAL RNA GENE** *JOURNAL OF MOLECULAR BIOLOGY*
  Amemiya, K., Bellofatto, V., Shapiro, L., Feingold, J.
  1986; 187 (1): 1-14

- **GENERATION OF POLARITY DURING CAULOBACTER CELL-DIFFERENTIATION** *ANNUAL REVIEW OF CELL BIOLOGY*
  Shapiro, L.
  1985; 1: 173-207

- **PHOSPHORYLATION OF THE BETA'-SUBUNIT OF RNA-POLYMERASE AND OTHER HOST PROTEINS UPON PHI-CD1 INFECTION OF CAULOBACTER-CRESCENTUS** *JOURNAL OF VIROLOGY*
  Hodgson, D., Shapiro, L., Amemiya, K.
  1985; 55 (1): 238-241

- **ORGANIZATION AND NUCLEOTIDE-SEQUENCE ANALYSIS OF AN RIBOSOMAL-RNA AND TRANSFER-RNA GENE-CLUSTER FROM CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  Feingold, J., Bellofatto, V., Shapiro, L., Amemiya, K.
  1985; 163 (1): 155-166

- **TEMPORAL AND SPATIAL CONTROL OF FLAGELLAR AND CHEMOTAXIS GENE-EXPRESSION DURING CAULOBACTER CELL-DIFFERENTIATION** *COLD SPRING HARBOR SYMPOSIA ON QUANTITATIVE BIOLOGY*
  CHAMPER, R., Bryan, R., Gomes, S. L., Purucker, M., Shapiro, L.

1985; 50: 831-840

- **ANALYSIS OF THE PLEIOTROPIC REGULATION OF FLAGELLAR AND CHEMOTAXIS GENE-EXPRESSION IN CAULOBACTER-CRESCENTUS BY USING PLASMID COMPLEMENTATION** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA-BIOLOGICAL SCIENCES*
  Bryan, R., Purucker, M., Gomes, S. L., Alexander, W., Shapiro, L.
  1984; 81 (5): 1341-1345

- **GENETIC-ANALYSIS AND CHARACTERIZATION OF A CAULOBACTER-CRESCENTUS MUTANT DEFECTIVE IN MEMBRANE BIOGENESIS** *JOURNAL OF BACTERIOLOGY*
  Hodgson, D., Shaw, P., Letts, V., Henry, S., Shapiro, L.
  1984; 158 (2): 430-440

- **ISOLATION AND GENETIC-ANALYSIS OF CAULOBACTER MUTANTS DEFECTIVE IN CELL-SHAPE AND MEMBRANE LIPID-SYNTHESIS** *GENETICS*
  Hodgson, D. A., Shaw, P., Shapiro, L.
  1984; 108 (4): 809-826

- **GENERATION OF A TN5 PROMOTER PROBE AND ITS USE IN THE STUDY OF GENE-EXPRESSION IN CAULOBACTER-CRESCENTUS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA-BIOLOGICAL SCIENCES*
  Bellofatto, V., Shapiro, L., Hodgson, D. A.
  1984; 81 (4): 1035-1039

- **DIFFERENTIAL EXPRESSION AND POSITIONING OF CHEMOTAXIS METHYLATION PROTEINS IN CAULOBACTER** *JOURNAL OF MOLECULAR BIOLOGY*
  Gomes, S. L., Shapiro, L.
  1984; 178 (3): 551-568

- **CAULOBACTER-CRESCENTUS FATTY ACID-DEPENDENT CELL-CYCLE MUTANT** *JOURNAL OF BACTERIOLOGY*
  Hodgson, D., Shaw, P., OCONNELL, M., Henry, S., Shapiro, L.
  1984; 158 (1): 156-162

- **PURIFICATION AND CHARACTERIZATION OF AN RNA PROCESSING ENZYME FROM CAULOBACTER-CRESCENTUS** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Bellofatto, V., Amemiya, K., Shapiro, L.
  1983; 258 (9): 5467-5476

- **DIFFERENTIAL TEMPLATE RECOGNITION BY THE CAULOBACTER-CRESCENTUS AND THE ESCHERICHIA-COLI RNA-POLYMERASES** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Amemiya, K., Shapiro, L.
  1983; 258 (14): 8984-8992

- **METHYLATION INVOLVED IN CHEMOTAXIS IS REGULATED DURING CAULOBACTER DIFFERENTIATION** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA-BIOLOGICAL SCIENCES*
  Shaw, P., Gomes, S. L., Sweeney, K., Ely, B., Shapiro, L.
  1983; 80 (17): 5261-5265

- **ISOLATION OF A CAULOBACTER GENE-CLUSTER SPECIFYING FLAGELLUM PRODUCTION BY USING NON-MOTILE TN5 INSERTION MUTANTS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA-BIOLOGICAL SCIENCES*
  Purucker, M., Bryan, R., Amemiya, K., Ely, B., Shapiro, L.
  1982; 79 (22): 6797-6801

- **CHARACTERIZATION OF THE PROTEINS OF THE CAULOBACTER-CRESCENTUS FLAGELLAR FILAMENT - PEPTIDE ANALYSIS AND FILAMENT ORGANIZATION** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  WEISSBORN, A., Steinman, H. M., Shapiro, L.
  1982; 257 (4): 2066-2074

- **SYNTHESIS OF SPECIFIC MEMBRANE-PROTEINS IS A FUNCTION OF DNA-REPLICATION AND PHOSPHOLIPID-SYNTHESIS IN CAULOBACTER-CRESCENTUS** *JOURNAL OF MOLECULAR BIOLOGY*
  Shapiro, L., MANSOUR, J., Shaw, P., Henry, S.
  1982; 159 (2): 303-322

- **SYNTHESIS AND UTILIZATION OF FATTY-ACIDS BY WILD-TYPE AND FATTY-ACID AUXOTROPHS OF CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  Letts, V., Shaw, P., Shapiro, L., Henry, S.
  1982; 151 (3): 1269-1278
- **INVITRO TRANSCRIPTION OF THE EARLY REGION OF CAULOBACTER PHAGE PHI-CD1 DEOXYRIBONUCLEIC-ACID BY HOST RNA-POLYMERASE** *BIOCHEMISTRY*
  Amemiya, K., Shapiro, L.
  1982; 21 (19): 4707-4713
- **3-DIMENSIONAL RECONSTRUCTION OF THE FLAGELLAR HOOK FROM CAULOBACTER-CRESCENTUS** *JOURNAL OF MOLECULAR BIOLOGY*
  Wagenknecht, T., DeRosier, D., Shapiro, L., WEISSBORN, A.
  1981; 151 (3): 439-465
- **PHOSPHOLIPID BIOSYNTHESIS IS REQUIRED FOR STALK ELONGATION IN CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  MANSOUR, J. D., Henry, S., Shapiro, L.
  1981; 145 (3): 1404-1409
- **Inverted-repeat nucleotide sequences in Escherichia coli and Caulobacter crescentus.** *Cold Spring Harbor symposia on quantitative biology*
  Nisen, P., Shapiro, L.
  1981; 45: 81-85
- **PHYSICAL MAP OF CAULOBACTER-CRESCENTUS BACTERIOPHAGE PHI-CD1 DNA** *JOURNAL OF VIROLOGY*
  Raboy, B., Shapiro, L., Amemiya, K.
  1980; 34 (2): 542-549
- **INVERTED-REPEAT NUCLEOTIDE-SEQUENCES IN ESCHERICHIA-COLI AND CAULOBACTER-CRESCENTUS** *COLD SPRING HARBOR SYMPOSIA ON QUANTITATIVE BIOLOGY*
  Nisen, P., Shapiro, L.
  1980; 45: 81-85
- **THE EFFECT OF TERMINATION OF MEMBRANE PHOSPHOLIPID-SYNTHESIS ON CELL-DEPENDENT EVENTS IN CAULOBACTER** *JOURNAL OF MOLECULAR BIOLOGY*
  Contreras, I., WEISSBORN, A., Amemiya, K., MANSOUR, J., Henry, S., Shapiro, L., Bender, R.
  1980; 138 (2): 401-409
- **INVOLVEMENT OF THE HOST RNA-POLYMERASE IN THE EARLY TRANSCRIPTION PROGRAM OF CAULOBACTER-CRESCENTUS BACTERIOPHAGE PHI-CDL DNA** *VIROLOGY*
  Amemiya, K., Raboy, B., Shapiro, L.
  1980; 104 (1): 109-116
- **DIFFERENTIAL MEMBRANE PHOSPHOLIPID-SYNTHESIS DURING THE CELL-CYCLE OF CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  MANSOUR, J. D., Henry, S., Shapiro, L.
  1980; 141 (1): 262-269
- **E. coli ribosomal RNA contains sequences homologous to insertion sequences IS1 and IS2.** *Nature*
  Nisen, P., Shapiro, L.
  1979; 282 (5741): 872-874
- **DEOXYRIBONUCLEIC-ACID SEQUENCE HOMOLOGIES AMONG BACTERIAL INSERTION SEQUENCE ELEMENTS AND GENOMES OF VARIOUS ORGANISMS** *JOURNAL OF BACTERIOLOGY*
  Nisen, P., Purucker, M., Shapiro, L.
  1979; 140 (2): 588-596
- **CELL-CYCLE-ASSOCIATED REARRANGEMENT OF INVERTED REPEAT DNA-SEQUENCES** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Nisen, P., Medford, R., MANSOUR, J., Purucker, M., SKALKA, A., Shapiro, L.
  1979; 76 (12): 6240-6244

- **FLAGELLAR HOOK AND BASAL COMPLEX OF CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  Johnson, R. C., Walsh, M. P., Ely, B., Shapiro, L.
  1979; 138 (3): 984-989

- **CAULOBACTER-CRESCENTUS MUTANT DEFECTIVE IN MEMBRANE PHOSPHOLIPID-SYNTHESIS** *JOURNAL OF BACTERIOLOGY*
  Contreras, I., Bender, R. A., MANSOUR, J., Henry, S., Shapiro, L.
  1979; 140 (2): 612-619

- **In situ immunoassays for translation products.** *Methods in enzymology*
  Anderson, D., Shapiro, L., SKALKA, A. M.
  1979; 68: 428-436

- **GALACTOSE CATABOLISM IN CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  Kurn, N., Contreras, I., Shapiro, L.
  1978; 135 (2): 517-520

- **MEMBRANE PHOSPHOLIPID COMPOSITION OF CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  Contreras, I., Shapiro, L., Henry, S.
  1978; 135 (3): 1130-1136

- **SPONTANEOUS FREQUENCY OF A DEVELOPMENTAL MUTANT IN VOLVOX** *DEVELOPMENTAL BIOLOGY*
  Kurn, N., COLB, M., Shapiro, L.
  1978; 66 (1): 266-269

- **CAULOBACTER-CRESCENTUS RNA-POLYMERASE - PURIFICATION AND CHARACTERIZATION OF HOLOENZYME AND CORE POLYMERASE** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Amemiya, K., Wu, C. W., Shapiro, L.
  1977; 252 (12): 4157-4165

- **PH-CONDITIONAL MUTANT OF ESCHERICHIA-COLI** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  COLB, M., Shapiro, L.
  1977; 74 (12): 5637-5641

- **EFFECT OF CARBON SOURCE AND ROLE OF CYCLIC ADENOSINE-3',5'-MONOPHOSPHATE ON CAULOBACTER CELL-CYCLE** *JOURNAL OF BACTERIOLOGY*
  Kurn, N., Shapiro, L., Agabian, N.
  1977; 131 (3): 951-959

- **DIFFERENTIATION IN CAULOBACTER CELL-CYCLE** *ANNUAL REVIEW OF MICROBIOLOGY*
  Shapiro, L.
  1976; 30: 377-407

- **EFFECT OF 3'-5'-CYCLIC GMP DERIVATIVES ON FORMATION OF CAULOBACTER SURFACE-STRUCTURES** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Kurn, N., Shapiro, L.
  1976; 73 (9): 3303-3307

- **INSITU IMMUNOASSAYS FOR GENE TRANSLATION PRODUCTS IN PHAGE PLAQUES AND BACTERIAL COLONIES** *GENE*
  SKALKA, A., Shapiro, L.
  1976; 1 (1): 65-79

- **CONDITIONAL SURFACE-STRUCTURE MUTANTS OF CAULOBACTER-CRESCENTUS TEMPERATURE-SENSITIVE FLAGELLA FORMATION DUE TO AN ALTERED FLAGELLIN MONOMER** *JOURNAL OF MOLECULAR BIOLOGY*
  Marino, W., Ammer, S., Shapiro, L.
  1976; 107 (2): 115-130

- **STRUCTURE OF CAULOBACTER DEOXYRIBONUCLEIC-ACID** *JOURNAL OF BACTERIOLOGY*
  Wood, N. B., RAKE, A. V., Shapiro, L.
  1976; 126 (3): 1305-1315

- **SPECIFIC CYCLIC GUANOSINE 3'-5'-MONOPHOSPHATE-BINDING PROTEIN IN CAULOBACTER-CRESCENTUS** *JOURNAL OF BIOLOGICAL CHEMISTRY*
  Sun, I. Y., Shapiro, L., Rosen, O. M.
  1975; 250 (15): 6181-6184
- **Regulation of the Caulobacter cell cycle.** *Current topics in cellular regulation*
  Kurn, N., Shapiro, L.
  1975; 9: 41-64
- **PURIFICATION AND CHARACTERIZATION OF GUANYLATE CYCLASE FROM CAULOBACTER-CRESCENTUS** *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS*
  Sun, I. C., Shapiro, L., Rosen, O. M.
  1974; 61 (1): 193-203
- **PLEIOTROPIC MUTATION AFFECTING EXPRESSION OF POLAR DEVELOPMENT EVENTS IN CAULOBACTER-CRESCENTUS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Kurn, N., Ammer, S., Shapiro, L.
  1974; 71 (8): 3157-3161
- **SYNTHESIS AND STRUCTURE OF CAULOBACTER-CRESCENTUS FLAGELLA** *JOURNAL OF BACTERIOLOGY*
  Shapiro, L., Maizel, J. V.
  1973; 113 (1): 478-485
- **DEOXYRIBONUCLEIC ACID-DEPENDENT RIBONUCLEIC-ACID POLYMERASE OF CAULOBACTER-CRESCENTUS** *JOURNAL OF BACTERIOLOGY*
  BENDIS, I. K., Shapiro, L.
  1973; 115 (3): 848-857
- **Structural studies on the capsid of Caulobacter crescentus bacteriophage phiCbK.** *Journal of molecular biology*
  Leonard, K. R., Kleinschmidt, A. K., Agabian-Keshishian, N., Shapiro, L., MAIZEL, J. V.
  1972; 71 (2): 201-216
- **CHARACTERIZATION OF A PROTEIN ACYL KINASE FROM CAULOBACTER-CRESCENTUS** *BIOCHEMICAL AND BIOPHYSICAL RESEARCH COMMUNICATIONS*
  Agabian, N., Rosen, O. M., Shapiro, L.
  1972; 49 (6): 1690-?
- **STRUCTURAL STUDIES ON CAPSID OF CAULOBACTER-CRESCENTUS BACTERIOPHAGE PHICBK** *JOURNAL OF MOLECULAR BIOLOGY*
  Leonard, K. R., Maizel, J. V., AGABIANK, N., Shapiro, L., KLEINSCH, A. K.
  1972; 71 (2): 201-?
- **EFFECT OF DIBUTYRYLADENOSINE 3'-5'-CYCLIC MONOPHOSPHATE ON GROWTH AND DIFFERENTIATION IN CAULOBACTER-CRESCENTUS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Shapiro, L., Rosen, O. M., AGABIANK, N., Hirsch, A.
  1972; 69 (5): 1225-?
- **BACTERIAL DIFFERENTIATION AND PHAGE INFECTION** *VIROLOGY*
  AGABIANK, N., Shapiro, L.
  1971; 44 (1): 46-?
- **BACTERIAL DIFFERENTIATION** *SCIENCE*
  Shapiro, L., AGABIANK, N., BENDIS, I.
  1971; 173 (4000): 884-?
- **Specific Assay for Differentiation in the Stalked Bacterium Caulobacter crescentus.** *Proceedings of the National Academy of Sciences of the United States of America*
  Shapiro, L., Agabian-Keshishian, N.
  1970; 67 (1): 200-203
- **STALKED BACTERIA - PROPERTIES OF DEOXRIYBONUCLEIC ACID BACTERIOPHAGE PHICBK** *JOURNAL OF VIROLOGY*
  AGABIANK, N., Shapiro, L.

1970; 5 (6): 795-?

- **SPECIFIC ASSAY FOR DIFFERENTIATION IN STALKED BACTERIUM CAULOBACTER-CRESCENTUS** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Shapiro, L., AGABIANK, N.
  1970; 67 (1): 200-?
- **PHAGE-SPECIFIC AND HOST PROTEINS IN REPLICATION OF BACTERIOPHAGE RNA** *FEDERATION PROCEEDINGS*
  August, J. T., EOYANG, L., DEFERNAN, M. T., Hasegawa, S., Kuo, C. H., RENSING, U., Shapiro, L.
  1970; 29 (3): 1170-?
- **PROPERTIES OF CAULOBACTER RIBONUCLEIC ACID BACTERIOPHAGE PHICB5** *JOURNAL OF VIROLOGY*
  BENDIS, I., Shapiro, L.
  1970; 6 (6): 847-?
- **Replication of the RNA genome.** *Journal of cellular physiology*
  August, J. T., EOYANG, L., FRANZE DE FERNANDEZ, M. T., Hasegawa, S., Kuo, C. H., RENSING, U., Shapiro, L.
  1969; 74 (2): 187-?
- **Resolution of two factors required in the Q-beta-RNA polymerase reaction.** *Nature*
  Shapiro, L., FRANZE DE FERNANDEZ, M. T., August, J. T.
  1968; 220 (5166): 478-480
- **Ribonucleic acid virus replication.** *Research publications - Association for Research in Nervous and Mental Disease*
  August, J. T., Shapiro, L.
  1968; 44: 71-86
- **SYNTHESIS OF BACTERIOPHAGE QBETA RNA** *COLD SPRING HARBOR SYMPOSIA ON QUANTITATIVE BIOLOGY*
  August, J. T., Banerjee, A. K., EOYANG, L., DEFERNAN, M. T., Hori, K., Kuo, C. H., RENSING, U., Shapiro, L.
  1968; 33: 73-?
- **PHYSICAL STUDIES ON STRUCTURE OF YEAST MITOCHONDRIAL DNA** *JOURNAL OF MOLECULAR BIOLOGY*
  Shapiro, L., Grossman, L. I., Marmur, J., KLEISCHM, A. K.
  1968; 33 (3): 907-?
- **SYMPOSIUM ON REPLICATION OF VIRAL NUCLEIC ACIDS .2. RIBONUCLEIC ACID VIRUS REPLICATION** *BACTERIOLOGICAL REVIEWS*
  Shapiro, L., August, J. T.
  1966; 30 (2): 279-?
- **REPLICATION OF RNA VIRUSES .I. CHARACTERIZATION OF A VIRAL RNA-DEPENDENT RNA POLYMERASE** *JOURNAL OF MOLECULAR BIOLOGY*
  August, J. T., Shapiro, L., EOYANG, L.
  1965; 11 (2): 257-?
- **REPLICATION OF RNA VIRUSES .3. UTILIZATION OF RIBONUCLEOTIDE ANALOGS IN REACTION CATALYZED BY A RNA VIRUS RNA POLYMERASE** *JOURNAL OF MOLECULAR BIOLOGY*
  Shapiro, L., August, J. T.
  1965; 14 (1): 214-?
- **REPLICATION OF RNA VIRUSES .2. RNA PRODUCT OF A REACTION CATALYZED BY A VIRAL RNA-DEPENDENT RNA POLYMERASE** *JOURNAL OF MOLECULAR BIOLOGY*
  Shapiro, L., August, J. T.
  1965; 11 (2): 272-?