



## Steven M. Block

The Stanford W. Ascherman, M.D., Professor and Professor of Applied Physics and of Biology

 Curriculum Vitae available Online

### CONTACT INFORMATION

- **Alternate Contact**

Contact my lab

**Tel** 724-5536

### Bio

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#### BIO

S.M. Block holds the Ascherman Chair in the Depts. of Applied Physics and Biology at Stanford. He's best-known as a founder of the field known as "single molecule biophysics." Block holds degrees from Oxford and Caltech, and served as faculty at the Rowland Institute and Harvard, then Princeton, prior to joining Stanford in 1999. Block is a member of the National Academy of Sciences, the American Academy of Arts & Sciences, and is a Fellow of the AAAS, the APS, and the BPS. His research lies at the interface of physics and biology, particularly in the study of biomolecular motors, including kinesin and RNA polymerase, and the folding of nucleic acid-based structures. His group pioneered the use of laser-based optical traps, or 'optical tweezers,' to study the nanoscale motions of biomolecules. In what's left of his spare time, he enjoys skiing and playing bluegrass music on the banjo and mandolin.

#### ACADEMIC APPOINTMENTS

- Professor, Applied Physics
- Professor, Biology
- Member, Bio-X

#### ADMINISTRATIVE APPOINTMENTS

- Senior Fellow (by courtesy), Freeman Spogli Institute for International Studies, (2001- present)

#### HONORS AND AWARDS

- Young Investigator Award, Biophysical Society (1994)
- President, Biophysical Society (2005-2006)
- S.W. Ascherman Chair of Sciences, Stanford University (2006)
- Research Excellence Award, U. Penn Nano/Bio Interface Center (2007)
- Outstanding Investigator Award in Single Molecule Biophysics, Biophysical Society (2008)
- Max Delbruck Prize in Biological Physics, American Physical Society (2008)
- MERIT Award, NIH-NIGMS (2010-2019)
- National Lecturer, Biophysical Society (2012)
- Fellow, American Physical Society (elected 2012)

- Fellow, American Association for the Advancement of Science (elected 2006)
- Member, American Academy of Arts & Sciences (elected 2000)
- Member, National Academy of Sciences (elected 2007)

## **BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS**

- Advisory Board, Miller Institute, Univ. of California (2015 - present)

## **PROFESSIONAL EDUCATION**

- PhD, California Inst. of Technology , Biology (1983)
- MA, Univ. Colorado , Biology (1982)
- MA, Oxford University, UK , Physics (1978)
- BA, Oxford University, UK , Physics (1974)

## **PATENTS**

- William J. Greenleaf, Steven Block. "United States Patent 7,556,922 Motion Resolved Molecular Sequencing", Leland Stanford Junior University, Jul 7, 2009

## **LINKS**

- visit the Block Lab website: <https://web.stanford.edu/group/blocklab/>

## **Research & Scholarship**

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### **CURRENT RESEARCH AND SCHOLARLY INTERESTS**

Single molecule biophysics using optical trapping and fluorescence

## **Teaching**

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### **COURSES**

#### **2018-19**

- Advanced Imaging Lab in Biophysics: APPPHYS 232, BIO 132, BIO 232, BIOPHYS 232, GENE 232 (Spr)
- Science as a Creative Process: APPPHYS 61, BIO 61 (Aut)

#### **2017-18**

- Advanced Imaging Lab in Biophysics: APPPHYS 232, BIO 132, BIO 232, BIOPHYS 232, GENE 232 (Spr)
- Science as a Creative Process: APPPHYS 61, BIO 61 (Aut)

### **STANFORD ADVISEES**

#### **Doctoral (Program)**

Claire-Alice Hébert, Selene She, Ta Tang

### **GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS**

- Biology (School of Humanities and Sciences) (Phd Program)
- Biophysics (Phd Program)

## Publications

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### PUBLICATIONS

- **Self-cleavage of the glmS ribozyme core is controlled by a fragile folding element.** *Proceedings of the National Academy of Sciences of the United States of America*  
Savinov, A., Block, S. M.  
2018
- **KIF15 nanomechanics and kinesin inhibitors, with implications for cancer chemotherapeutics** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Milic, B., Chakraborty, A., Han, K., Bassik, M. C., Block, S. M.  
2018; 115 (20): E4613–E4622
- **Real-time observation of the initiation of RNA polymerase II transcription.** *Nature*  
Fazal, F. M., Meng, C. A., Murakami, K., Kornberg, R. D., Block, S. M.  
2015; 525 (7568): 274-277
- **Examining kinesin processivity within a general gating framework.** *eLife*  
Andreasson, J. O., Milic, B., Chen, G., Guydosh, N. R., Hancock, W. O., Block, S. M.  
2015; 4
- **Binding and Translocation of Termination Factor Rho Studied at the Single-Molecule Level** *JOURNAL OF MOLECULAR BIOLOGY*  
Koslover, D. J., Fazal, F. M., Mooney, R. A., Landick, R., Block, S. M.  
2012; 423 (5): 664-676
- **Direct Observation of Cotranscriptional Folding in an Adenine Riboswitch** *SCIENCE*  
Frieda, K. L., Block, S. M.  
2012; 338 (6105): 397-400
- **A universal pathway for kinesin stepping** *NATURE STRUCTURAL & MOLECULAR BIOLOGY*  
Clancy, B. E., Behnke-Parks, W. M., Andreasson, J. O., Rosenfeld, S. S., Block, S. M.  
2011; 18 (9): 1020-U79
- **Direct observation of hierarchical folding in single riboswitch aptamers** *SCIENCE*  
Greenleaf, W. J., Frieda, K. L., Foster, D. A., Woodside, M. T., Block, S. M.  
2008; 319 (5863): 630-633
- **Direct measurement of the full, sequence-dependent folding landscape of a nucleic acid** *SCIENCE*  
Woodside, M. T., Anthony, P. C., Behnke-Parks, W. M., Larizadeh, K., Herschlag, D., Block, S. M.  
2006; 314 (5801): 1001-1004
- **Direct observation of base-pair stepping by RNA polymerase** *NATURE*  
Abbondanzieri, E. A., Greenleaf, W. J., Shaevitz, J. W., Landick, R., Block, S. M.  
2005; 438 (7067): 460-465
- **Relationship between Folding and Catalysis in the GLMS Ribozyme Riboswitch**  
Savinov, A., Block, S. M.  
CELL PRESS.2018: 215A
- **Single-Molecule Nanomechanics of Kinesin and Kinesin-Family Proteins**  
Block, S. M.  
CELL PRESS.2018: 556A
- **Real-Time Observation of Polymerase- Promoter Contact Remodeling during Transcription Initiation**  
Fazal, F. M., Meng, C. A., Block, S. M.  
CELL PRESS.2018: 247A
- **Observing Single RNA Polymerase Molecules Down to Base-Pair Resolution.** *Methods in molecular biology (Clifton, N.J.)*  
Chakraborty, A., Meng, C. A., Block, S. M.

2017; 1486: 391-409

- **Real-time observation of polymerase-promoter contact remodeling during transcription initiation.** *Nature communications*  
Meng, C. A., Fazal, F. M., Block, S. M.  
2017; 8 (1): 1178
- **Direct observation of processive exonuclease motion using optical tweezers** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Fazal, F. M., Koslover, D. J., Luisi, B. F., Block, S. M.  
2015; 112 (49): 15101-15106
- **Real-time observation of the initiation of RNA polymerase II transcription.** *Nature*  
Fazal, F. M., Meng, C. A., Murakami, K., Kornberg, R. D., Block, S. M.  
2015; 525 (7568): 274-277
- **Factor-dependent processivity in human eIF4A DEAD-box helicase** *SCIENCE*  
García-García, C., Frieda, K. L., Feoktistova, K., Fraser, C. S., Block, S. M.  
2015; 348 (6242): 1486-1488
- **RNA BIOCHEMISTRY. Factor-dependent processivity in human eIF4A DEAD-box helicase.** *Science*  
García-García, C., Frieda, K. L., Feoktistova, K., Fraser, C. S., Block, S. M.  
2015; 348 (6242): 1486-1488
- **The Mechanochemical Cycle of Mammalian Kinesin-2 KIF3A/B under Load** *CURRENT BIOLOGY*  
Andreasson, J. O., Shastry, S., Hancock, W. O., Block, S. M.  
2015; 25 (9): 1166-1175
- **Examining kinesin processivity within a general gating framework** *ELIFE*  
Andreasson, J. O., Milic, B., Chen, G., Guydosh, N. R., Hancock, W. O., Block, S. M.  
2015; 4
- **Observation of long-range tertiary interactions during ligand binding by the TPP riboswitch aptamer.** *eLife*  
Duesterberg, V. K., Fischer-Hwang, I. T., Perez, C. F., Hogan, D. W., Block, S. M.  
2015; 4
- **A DNA-based molecular probe for optically reporting cellular traction forces** *NATURE METHODS*  
Blakely, B. L., Dumelin, C. E., Trappmann, B., Mcgregor, L. M., Choi, C. K., Anthony, P. C., Duesterberg, V. K., Baker, B. M., Block, S. M., Liu, D. R., Chen, C. S.  
2014; 11 (12): 1229-?
- **Single-molecule studies of riboswitch folding** *BIOCHIMICA ET BIOPHYSICA ACTA-GENE REGULATORY MECHANISMS*  
Savinov, A., Perez, C. F., Block, S. M.  
2014; 1839 (10): 1030-1045
- **Kinesin processivity is gated by phosphate release** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Milic, B., Andreasson, J. O., Hancock, W. O., Block, S. M.  
2014; 111 (39): 14136-14140
- **Kinesin processivity is gated by phosphate release.** *Proceedings of the National Academy of Sciences of the United States of America*  
Milic, B., Andreasson, J. O., Hancock, W. O., Block, S. M.  
2014; 111 (39): 14136-14140
- **A pause sequence enriched at translation start sites drives transcription dynamics in vivo.** *Science*  
Larson, M. H., Mooney, R. A., Peters, J. M., Windgassen, T., Nayak, D., Gross, C. A., Block, S. M., Greenleaf, W. J., Landick, R., Weissman, J. S.  
2014; 344 (6187): 1042-1047
- **Transcription factors TFIIF and TFIIS promote transcript elongation by RNA polymerase II by synergistic and independent mechanisms** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Schweikhard, V., Meng, C., Murakami, K., Kaplan, C. D., Kornberg, R. D., Block, S. M.  
2014; 111 (18): 6642-6647

- **Reconstructing Folding Energy Landscapes by Single-Molecule Force Spectroscopy** *ANNUAL REVIEW OF BIOPHYSICS, VOL 43*  
Woodside, M. T., Block, S. M.  
2014; 43: 19-39
- **Effects of Neck Linker Length on Kinesin-1 Force Generation and Motility** *57th Annual Meeting of the Biophysical-Society*  
Andreasson, J. O., Milic, B. V., Hancock, W. O., Block, S. M.  
CELL PRESS.2013: 382A–382A
- **Single-molecule studies of RNAPII elongation** *BIOCHIMICA ET BIOPHYSICA ACTA-GENE REGULATORY MECHANISMS*  
Zhou, J., Schweikhard, V., Block, S. M.  
2013; 1829 (1): 29-38
- **Efficient reconstitution of transcription elongation complexes for single-molecule studies of eukaryotic RNA polymerase II.** *Transcription*  
Palangat, M., Larson, M. H., Hu, X., Gnatt, A., Block, S. M., Landick, R.  
2012; 3 (3): 146-153
- **Trigger loop dynamics mediate the balance between the transcriptional fidelity and speed of RNA polymerase II** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Larson, M. H., Zhou, J., Kaplan, C. D., Palangat, M., Kornberg, R. D., Landick, R., Block, S. M.  
2012; 109 (17): 6555-6560
- **Electrostatics of Nucleic Acid Folding under Conformational Constraint** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*  
Anthony, P. C., Sim, A. Y., Chu, V. B., Doniach, S., Block, S. M., Herschlag, D.  
2012; 134 (10): 4607-4614
- **Folding energy landscape of the thiamine pyrophosphate riboswitch aptamer** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Anthony, P. C., Perez, C. F., Garcia-Garcia, C., Block, S. M.  
2012; 109 (5): 1485-1489
- **Applied Force Provides Insight into Transcriptional Pausing and Its Modulation by Transcription Factor NusA** *MOLECULAR CELL*  
Zhou, J., Ha, K. S., La Porta, A., Landick, R., Block, S. M.  
2011; 44 (4): 635-646
- **Optical tweezers study life under tension** *NATURE PHOTONICS*  
Fazal, F. M., Block, S. M.  
2011; 5 (6): 318-321
- **Single-Molecule Studies of RNA Polymerase: One Singular Sensation, Every Little Step It Takes** *MOLECULAR CELL*  
Larson, M. H., Landick, R., Block, S. M.  
2011; 41 (3): 249-262
- **Visualizing individual microtubules by bright field microscopy** *AMERICAN JOURNAL OF PHYSICS*  
Gutierrez-Medina, B., Block, S. M.  
2010; 78 (11): 1152-1159
- **E. coli NusG Inhibits Backtracking and Accelerates Pause-Free Transcription by Promoting Forward Trans location of RNA Polymerase** *JOURNAL OF MOLECULAR BIOLOGY*  
Herbert, K. M., Zhou, J., Mooney, R. A., La Porta, A., Landick, R., Block, S. M.  
2010; 399 (1): 17-30
- **AN OPTICAL APPARATUS FOR ROTATION AND TRAPPING** *METHODS IN ENZYMOLOGY, VOL 475: SINGLE MOLECULE TOOLS, PT B*  
Gutierrez-Medina, B., Andreasson, J. O., Greenleaf, W. J., Laporta, A., Block, S. M.  
2010; 475: 377-404
- **UK defence group's structure could limit its usefulness** *NATURE*  
Block, S. M.  
2009; 462 (7275): 847-847
- **Direct measurements of kinesin torsional properties reveal flexible domains and occasional stalk reversals during stepping** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*

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- Gutierrez-Medina, B., Fehr, A. N., Block, S. M.  
2009; 106 (40): 17007-17012
- **On the Origin of Kinesin Limping** *BIOPHYSICAL JOURNAL*  
Fehr, A. N., Gutierrez-Medina, B., Asbury, C. L., Block, S. M.  
2009; 97 (6): 1663-1670
  - **Force and Premature Binding of ADP Can Regulate the Processivity of Individual Eg5 Dimers** *BIOPHYSICAL JOURNAL*  
Valentine, M. T., Block, S. M.  
2009; 97 (6): 1671-1677
  - **Direct observation of the binding state of the kinesin head to the microtubule** *NATURE*  
Guydosh, N. R., Block, S. M.  
2009; 461 (7260): 125-U137
  - **Folding and unfolding single RNA molecules under tension** *CURRENT OPINION IN CHEMICAL BIOLOGY*  
Woodside, M. T., Garcia-Garcia, C., Block, S. M.  
2008; 12 (6): 640-646
  - **Precision steering of an optical trap by electro-optic deflection** *OPTICS LETTERS*  
Valentine, M. T., Guydosh, N. R., Gutierrez-Medina, B., Fehr, A. N., Andreasson, J. O., Block, S. M.  
2008; 33 (6): 599-601
  - **Kinesin steps do not alternate in size** *BIOPHYSICAL JOURNAL*  
Fehr, A. N., Asbury, C. L., Block, S. M.  
2008; 94 (3): L20-L22
  - **Single-molecule studies of RNA polymerase: Motoring along** *ANNUAL REVIEW OF BIOCHEMISTRY*  
Herbert, K. M., Greenleaf, W. J., Block, S. M.  
2008; 77: 149-176
  - **Not so lame after all: Kinesin still walks with a hobbled head** *JOURNAL OF GENERAL PHYSIOLOGY*  
Guydosh, N. R., Block, S. M.  
2007; 130 (5): 441-444
  - **Kinesin motor mechanics: Binding, stepping, tracking, gating, and limping** *BIOPHYSICAL JOURNAL*  
Block, S. M.  
2007; 92 (9): 2986-2995
  - **Molecule by molecule, the physics and chemistry of life: SMB 2007.** *Nature chemical biology*  
Block, S. M., Larson, M. H., Greenleaf, W. J., Herbert, K. M., Guydosh, N. R., Anthony, P. C.  
2007; 3 (4): 193-197
  - **High-resolution, single-molecule measurements of biomolecular motion** *ANNUAL REVIEW OF BIOPHYSICS AND BIOMOLECULAR STRUCTURE*  
Greenleaf, W. J., Woodside, M. T., Block, S. M.  
2007; 36: 171-190
  - **Direct measurement of the full sequence-dependent folding landscape of single nucleic acids using an optical trap** *51st Annual Meeting of the Biophysical Society*  
Woodside, M. T., Amhony, P. C., Larizadeh, K., Behnke-Parks, W. M., Herschlag, D., Block, S. M.  
CELL PRESS.2007: 351A-351A
  - **High-resolution, single-molecule optical trapping measurements of transcription with basepair accuracy: Instrumentation and methods** *Conference on Optical Trapping and Optical Micromanipulation IV*  
Greenleaf, W. J., Frieda, K. L., Abbondanzieri, E. A., Woodside, M. T., Block, S. M.  
SPIE-INT SOC OPTICAL ENGINEERING.2007
  - **Single-molecule, motion-based DNA sequencing using RNA polymerase** *SCIENCE*  
Greenleaf, W. J., Block, S. M.  
2006; 313 (5788): 801-801

- **Pulling on the nascent RNA during transcription does not alter kinetics of elongation or ubiquitous pausing** *MOLECULAR CELL*  
Dalal, R. V., Larson, M. H., Neuman, K. C., Gelles, J., Landick, R., Block, S. M.  
2006; 23 (2): 231-239
- **Backsteps induced by nucleotide analogs suggest the front head of kinesin is gated by strain** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Guydosh, N. R., Block, S. M.  
2006; 103 (21): 8054-8059
- **Individual dimers of the mitotic kinesin motor Eg5 step processively and support substantial loads in vitro** *NATURE CELL BIOLOGY*  
Valentine, M. T., Fordyce, P. M., Krzysiak, T. C., Gilbert, S. P., Block, S. M.  
2006; 8 (5): 470-U89
- **Nanomechanical measurements of the sequence-dependent folding landscapes of single nucleic acid hairpins** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Woodside, M. T., Behnke-Parks, W. M., Larizadeh, K., Travers, K., Herschlag, D., Block, S. M.  
2006; 103 (16): 6190-6195
- **Eg5 steps it up!** *CELL DIVISION*  
Valentine, M. T., Fordyce, P. M., Block, S. M.  
2006; 1
- **Picocalorimetry of transcription by RNA polymerase** *BIOPHYSICAL JOURNAL*  
Abbondanzieri, E. A., Shaevitz, J. W., Block, S. M.  
2005; 89 (6): L61-L63
- **Passive all-optical force clamp for high-resolution laser trapping** *PHYSICAL REVIEW LETTERS*  
Greenleaf, W. J., Woodside, M. T., Abbondanzieri, E. A., Block, S. M.  
2005; 95 (20)
- **Statistical kinetics of macromolecular dynamics** *BIOPHYSICAL JOURNAL*  
Shaevitz, J. W., Block, S. M., Schnitzer, M. J.  
2005; 89 (4): 2277-2285
- **Measurement of the effective focal shift in an optical trap** *OPTICS LETTERS*  
Neuman, K. C., Abbondanzieri, E. A., Block, S. M.  
2005; 30 (11): 1318-1320
- **Simultaneous, coincident optical trapping and single-molecule fluorescence** *NATURE METHODS*  
Lang, M. J., Fordyce, P. M., Engh, A. M., Neuman, K. C., Block, S. M.  
2004; 1 (2): 133-139
- **Optical trapping** *REVIEW OF SCIENTIFIC INSTRUMENTS*  
Neuman, K. C., Block, S. M.  
2004; 75 (9): 2787-2809
- **Forward and reverse motion of single RecBCD molecules on DNA** *BIOPHYSICAL JOURNAL*  
Perkins, T. T., Li, H. W., Dalal, R. V., Gelles, J., Block, S. M.  
2004; 86 (3): 1640-1648
- **Kinesin moves by an asymmetric hand-over-hand mechanism** *SCIENCE*  
Asbury, C. L., Fehr, A. N., Block, S. M.  
2003; 302 (5653): 2130-2134
- **Backtracking by single RNA polymerase molecules observed at near-base-pair resolution** *NATURE*  
Shaevitz, J. W., Abbondanzieri, E. A., Landick, R., Block, S. M.  
2003; 426 (6967): 684-687
- **Ubiquitous transcriptional pausing is independent of RNA polymerase backtracking** *CELL*  
Neuman, K. C., Abbondanzieri, E. A., Landick, R., Gelles, J., Block, S. M.

2003; 115 (4): 437-447

- **Sequence-dependent pausing of single lambda exonuclease molecules** *SCIENCE*  
Perkins, T. T., Dalal, R. V., Mitsis, P. G., Block, S. M.  
2003; 301 (5641): 1914-1918
- **Stepping and stretching - How kinesin uses internal strain to walk processively** *JOURNAL OF BIOLOGICAL CHEMISTRY*  
Rosenfeld, S. S., Fordyce, P. M., Jefferson, G. M., King, P. H., Block, S. M.  
2003; 278 (20): 18550-18556
- **Probing the kinesin reaction cycle with a 2D optical force clamp** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*  
Block, S. M., Asbury, C. L., Shaevitz, J. W., Lang, M. J.  
2003; 100 (5): 2351-2356
- **Resource Letter: LBOT-1: Laser-based optical tweezers.** *American journal of physics*  
Lang, M. J., Block, S. M.  
2003; 71 (3): 201-15
- **Combined optical trapping and single-molecule fluorescence.** *Journal of biology*  
Lang, M. J., Fordyce, P. M., Block, S. M.  
2003; 2 (1): 6-?
- **A not-so-cheap stunt** *SCIENCE*  
Block, S. M.  
2002; 297 (5582): 769-769
- **An automated two-dimensional optical force clamp for single molecule studies** *BIOPHYSICAL JOURNAL*  
Lang, M. J., Asbury, C. L., Shaevitz, J. W., Block, S. M.  
2002; 83 (1): 491-501
- **The importance of lattice defects in katanin-mediated microtubule severing in vitro** *BIOPHYSICAL JOURNAL*  
Davis, L. J., Odde, D. J., Block, S. M., GROSS, S. P.  
2002; 82 (6): 2916-2927
- **Coordination of opposite-polarity microtubule motors** *JOURNAL OF CELL BIOLOGY*  
GROSS, S. P., Welte, M. A., Block, S. M., Wieschaus, E. F.  
2002; 156 (4): 715-724
- **Katanin and microtubule lattice defects**  
Davis, L. J., Odde, D. J., Block, S. M., GROSS, S. P.  
*AMER SOC CELL BIOLOGY*.2001: 433A-433A
- **Force production by single kinesin motors** *NATURE CELL BIOLOGY*  
Schnitzer, M. J., Visscher, K., Block, S. M.  
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- **Stretching of single collapsed DNA molecules** *BIOPHYSICAL JOURNAL*  
Baumann, C. G., Bloomfield, V. A., Smith, S. B., Bustamante, C., Wang, M. D., Block, S. M.  
2000; 78 (4): 1965-1978
- **Dynein-mediated cargo transport in vivo: A switch controls travel distance** *JOURNAL OF CELL BIOLOGY*  
GROSS, S. P., Welte, M. A., Block, S. M., Wieschaus, E. F.  
2000; 148 (5): 945-955
- **Characterization of photodamage to Escherichia coli in optical traps** *BIOPHYSICAL JOURNAL*  
Neuman, K. C., Chadd, E. H., Liou, G. F., Bergman, K., Block, S. M.  
1999; 77 (5): 2856-2863
- **Single kinesin molecules studied with a molecular force clamp** *NATURE*  
Visscher, K., Schnitzer, M. J., Block, S. M.



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- **Estimating the persistence length of a worm-like chain molecule from force-extension measurements** *BIOPHYSICAL JOURNAL*  
Bouchiat, C., Wang, M. D., Allemand, J. F., Strick, T., Block, S. M., Croquette, V.  
1999; 76 (1): 409-413
- **Force and velocity measured for single molecules of RNA polymerase** *SCIENCE*  
Wang, M. D., Schnitzer, M. J., Yin, H., Landick, R., Gelles, J., Block, S. M.  
1998; 282 (5390): 902-907
- **Role of ponticulin in pseudopod dynamics, cell-cell adhesion, and mechanical stability of an amoeboid membrane skeleton** *Workshop on the Cytoskeleton - Mechanical, Physical, and Biological Interactions*  
LUNA, E. J., HITT, A. L., Shutt, D., Wessels, D., Soll, D., Jay, P., Hug, C., Elson, E. L., Vesley, A., Downey, G. P., Wang, M., Block, S. M., Sigurdson, et al  
MARINE BIOLOGICAL LABORATORY.1998: 345-46
- **Kinesin: What gives?** *CELL*  
Block, S. M.  
1998; 93 (1): 5-8
- **Leading the procession: new insights into kinesin motors.** *journal of cell biology*  
Block, S. M.  
1998; 140 (6): 1281-1284
- **Developmental regulation of vesicle transport in Drosophila embryos: Forces and kinetics** *CELL*  
Welte, M. A., GROSS, S. P., Postner, M., Block, S. M., Wieschaus, E. F.  
1998; 92 (4): 547-557
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Visscher, K., Block, S. M.  
1998; 298: 460-489
- **Kinesin hydrolyses one ATP per 8-nm step** *NATURE*  
Schnitzer, M. J., Block, S. M.  
1997; 388 (6640): 386-390
- **Real engines of creation** *NATURE*  
Block, S. M.  
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- **Stretching DNA with optical tweezers** *BIOPHYSICAL JOURNAL*  
Wang, M. D., Yin, H., Landick, R., Gelles, J., Block, S. M.  
1997; 72 (3): 1335-1346
- **Do's and don'ts of poster presentation** *BIOPHYSICAL JOURNAL*  
Block, S. M.  
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