

Edward H. Egelman

Birthdate: 3 January 1952

Nationality: U.S.A.

Email: egelman@virginia.edu

Education:

Brandeis University	B.A.	1976	Physics
Harvard University	PhD Program	1976-78	High Energy Physics
Brandeis University	Ph.D.	1982	Biophysics
MRC Lab. of Molecular Biology, Cambridge, UK	Postdoc.	1982-84	Structural Biology

Research and/or Professional Experience:

1976-78	Research Assistant in High Energy Physics, Harvard University, Supervisor: Dr. Carlo Rubbia.
1978-82	Graduate Program in Biophysics, Brandeis University, Supervisor: Dr. David DeRosier.
1982-84	Postdoctoral Fellow, Laboratory of Molecular Biology, Cambridge, England, Supervisor: Dr. Richard Henderson.
1984-89	Asst. Professor, Dept. of Mol. Biophysics and Biochemistry, Yale Univ.
1991	Special Reviewer, NIH Biophysical Biochemistry Study Section (BBCB).
1992-94	National Advisory Committee, Integrated Microscopy Resource, University of Wisconsin, Madison, WI
1993-9	Editorial Board, Biophysical Journal
1994-98	Member, NIH Biophysical Biochemistry Study Section (BBCB)
1994	Chair, Structural Biology Review Panel (Imaging), Dept. of Energy
1997	Program Committee, 1998 Biophysical Society Meeting
1989-93	Associate Professor, Dept. of Cell Biology and Neuroanatomy, Univ. of Minnesota
1993-99	Professor, Dept. of Cell Biology and Neuroanatomy, Univ. of Minnesota
1999-	Professor, Dept. of Biochem. and Molecular Genetics, Univ. of Virginia
1999-03	Council of the Biophysical Society
2001-8	National Advisory Council, Albany NIH "Visualization of Biological Complexity" Resource
2002-3	Program Chair, 2003 Annual Meeting of the Biophysical Society
2002	Chair, NIH Special Emphasis Panel (Instrumentation)
2006,2008	Editor, Macromolecular Assemblages issue, Current Opinion in Structural Biology
2006-7	Editorial Board, Journal of Biological Chemistry
2007-12	Editor-in-Chief, Biophysical Journal
2008	National Advisory Council, NIH Resource, National Center for Macromolecular Imaging, Baylor Medical School, Houston, TX
2008	Chair, NIH Site Visit and Program Review, National Center for Microscopy and Imaging, UC San Diego
2008-9	Chair, NIH Pathways to Independence review panel
2009	Chair, NIH High-End Instrumentation Review Panel
2008	Chair, NIH Pathways to Independence (K99/R00) Study Section
2009	Chair, NIH High-End Instrumentation Study Section
2009-12	Overall Editor, Elsevier 9 Volume Major Reference Work on Comprehensive Biophysics
2009	Editor, Macromolecular Assemblages issue, Current Opinion in Structural Biology
2010-	Chair, National Advisory Council, NIH Resource, National Center for Macromolecular Imaging, Baylor Medical School, Houston, TX
2011	Chair, NIH Shared Instrumentation (Electron Microscopy) Study Section
2011	Chair, NIH Site Visit and Program Review, National Resource for Automated Molecular Microscopy, Scripps
2013	Chair, Three-Dimensional Electron Microscopy Gordon Conference

- 2013** Chair, NIH Site Visit and Program Review, National Center for Microscopy and Imaging Research, UC San Diego, July, 2013
- 2013** Chair, NIH Site Visit and Program Review, Boulder Laboratory for 3-D Electron Microscopy of Cells
- 2012-14** Chair, National Advisory Council, NIH Resource, National Center for Macromolecular Imaging, Baylor Medical School, Houston, TX
- 2014** Chair, NIH Shared Instrumentation Panel
- 2012-** Chair, Public Affairs Committee, Biophysical Society
- 2015** Meeting Organizer, Thematic Meeting on *Polymers and Self-Assembly: From Biology to Nanomaterials*, Rio de Janeiro, Brazil, November, 2015
- 2016-** Board of Reviewing Editors, *eLife*
- 2016** Advisory Board, NCI Frederick Cryo-EM Facility
- 2018** Chair, NIH Review of Competing P41 Research Resources
- 2018** Co-editor, Current Opinion in Colloid & Interface Science volume

Honors:

- 1976-77** Harvard University Physics Department Predoctoral Fellowship
- 1978-79** Dretzin Fellow, Brandeis University
- 1982-83** Jane Coffin Childs Fellow, MRC Laboratory of Molecular Biology, Cambridge, England
- 1983-84** NATO Fellow, MRC Laboratory of Molecular Biology, Cambridge, England
- 1999** Brandeis University 50th Anniversary Scientific Alumni Colloquium Series
- 2003** Boris Balinsky Lecture, Microscopy Society of Southern Africa
- 2005** Elected Fellow of the Biophysical Society
- 2005** John P. McGovern Lecture, Houston, TX
- 2007** Elected Fellow of the American Academy of Microbiology
- 2008** Keynote Speaker, Biomedical Sciences Retreat, SUNY Upstate Medical University, Sept., 2008
- 2008** Keynote Lecture, Joint 5th Structural Biology & Functional Genomics and 1st Biological Physics International Conference, National University of Singapore, December, 2008
- 2009** Keynote Speaker, European Biophysics Congress, Genoa, Italy, July, 2009
- 2012** Distinguished Service Award, Biophysical Society
- 2015-2016** President, Biophysical Society
- 2016** Harrison Distinguished Chair
- 2016** University of Virginia Distinguished Scientist Award
- 2016** Keynote Speaker, Mid-Atlantic Crystallographic Meeting
- 2016** Keynote Speaker, CASP12 Meeting, Gaeta, Italy
- 2017** Biochemistry *Alumni Lecture*, University of Queensland
- 2018** Friday Lecture Series, Rockefeller University
- 2018** Fulbright Award, Poland
- 2019** Elected to the National Academy of Sciences
- 2020** Keynote Speaker, Cryo-EM Workshop, Lake Tahoe, CA, March, 2020

Professional Societies:

Biophysical Society, 1982-

Current Research Funding:

NIH R35 GM122510 (PI: Egelman) 5/01/17-4/30/22
 NIH/NIGMS Cryo-EM of Helical Protein and Nucleoprotein Polymers at Near Atomic Resolution
 This MIRA (Maximizing Investigators' Research Award) consolidates my Actin and Nucleoprotein R01s as well as expands the scope into other projects involving bacterial pathogenesis.

NIH R01 AI114902

(PI: Sundberg)

7/01/15 - 06/30/20

NIH/NIAID

Structure and Function of Clostridium difficile Type IV Pili

The aim of this project is to address the current lack of understanding regarding *C. difficile* colonization that represents a major obstacle to the development of new preventative and therapeutic strategies. The University of Maryland School of Medicine is the primary award site, with a UVa subcontract. Role: Co-Investigator

DMR 1533958

(PIs: Conticello, Egelman, Grigoryan)

09/01/15 – 08/31/20

NSF/DMR–DMREF: Collaborative Research: Helical Protein Assemblies by Design

The focus of this project is designing and examining helical peptide assemblies using cryo-EM.

DE-SC0020329 (UVA PI: Egelman)

9/01/19 – 8/31/22

DoE/Office of Science

Electron transport in Polymerized Cytochrome Appendages

This project is aimed at understanding long-range electron transport by extracellular bacterial cytochrome filaments.

Publications: Google Scholar h-index=79 (May, 2020), > 19,000 citations

- 1979** 1. Egelman, E.H. (1979) "Sauce Bearnaise." *New England Journal of Medicine* **301**, 276.
- 1980** 2. DeRosier, D.J., Tilney, L.G., and Egelman, E.H. (1980) "Actin in the Inner Ear: The Remarkable Structure of the Stereocilium." *Nature* **287**, 291-296.
- 1981** 3. Egelman, E.H. (1981) "Problem of Light Piping in Immunofluorescence Studies". *Nature* **294**, 674.
- 1982** 4. Tilney, L.G., Saunders, J.C., Egelman, E.H., and DeRosier, D.J. (1982) "Changes in the Organization of Actin Filaments in the Stereocilia of Noise Damaged Lizard Cochlea". *Hearing Research* **7**, 181-197.
5. Egelman, E.H., Francis, N. and DeRosier, D.J. (1982) "F-Actin: A Helix with a Random Variable Twist". *Nature* **298**, 131-135
6. Egelman, E.H. and DeRosier, D.J. (1982) "The Fourier Transform of Actin and Other Helical Systems with Cumulative Random Angular Disorder". *Acta Crystallographica* **A38**, 796-799.
- 1983** 7. Tilney, L.G., Egelman, E.H., DeRosier, D.J., and Saunders, J.C. (1983) "Hair Cells, Stereocilia, and Actin Filaments of the Bird Cochlea.II" *Journal of Cell Biology* **96**, 822-834.
8. Egelman, E.H., Francis, N., and DeRosier, D.J. (1983) "Helical Disorder and the Filament Structure of F-Actin are Elucidated by the Angle-layered Aggregate". *Journal of Molecular Biology* **166**, 605-623.
Appendix: Egelman, E.H. and DeRosier, D.J. (1983) "A Model for F-Actin Derived from Image Analysis of Isolated Filaments". *Journal of Molecular Biology* **166**, 623-629.
9. Egelman, E.H. and DeRosier, D.J. (1983) "Structural Studies of F-Actin" in *Actin: Its Structure and Function in Muscle and Non-Muscle Cells*, p. 17-24, C. dos Remedios and J. Barden, eds., Academic Press, Sydney.
10. Egelman, E.H. and Padron, R. (1983) "X-Ray Diffraction Evidence that Actin is a 100 Å Filament". *Nature* **307**, 56-58.
- 1984** 11. Howard-Flanders, P., West, S.C., Rusche, J.R., and Egelman, E.H. (1984) "Molecular Mechanisms of General Genetic Recombination: The DNA Binding Sites of Rec A Protein". *Cold Spring Harbor Symposia on Quantitative Biology* **XLIX**, 571-580.
- 1985** 12. Egelman, E.H. (1985) "The Structure of F-Actin" . *The Journal of Muscle Research and Cell Motility* **6**, 129-15.
- 1986** 13. Trinick, J., Cooper, J., Seymour, J. and Egelman, E.H. (1986) "Electron Microscopy of Frozen Hydrated Actin Filaments". *Journal of Microscopy* **141**, 349-360.
14. Stasiak, A. and Egelman, E.H. (1986) "The Structure and Dynamics of recA Protein - DNA Complexes as Determined by Image Analysis of Electron Micrographs." *Biophysical Journal* **49**, 5-7.
15. Stasiak, A. and Egelman, E.H. (1986) "RecA-DNA Helical Complexes in Genetic Recombination." *Biochemical Society Transactions* **14**, 218-220.

16. Egelman, E.H. (1986) "An Algorithm for Straightening Images of Curved Filaments". *Ultramicroscopy* **19**, 367-374.
17. Egelman, E.H. and Stasiak, A. (1986) "The Structure of Helical RecA-DNA Complexes: I. Complexes Formed in the Presence of ATP-gamma-S or ATP." *Journal of Molecular Biology* **191**, 677-697.
18. Stasiak, A. and Egelman, E.H. (1986) "RecA Protein-DNA Interactions in Recombination," in: *DNA Replication and Recombination*, 619-628, T. Kelly and R. McMacken, eds., Alan R. Liss, N.Y.
19. Howard-Flanders, P., West, S.C., Cassuto, E., Hahn, T-R, Egelman, E.H., and Stasiak, A. (1986) "Structure of recA spiral Filaments and their Role in Homologous Pairing and Strand Exchange in Genetic Recombination." in: *DNA Replication and Recombination*, 609-617, T. Kelly and R. McMacken, eds., Alan R. Liss, N.Y.
- 1988** 20. Egelman, E.H. and Stasiak, A. (1988) "Structure of Helical RecA-DNA Complexes. II. Local Conformational Changes Visualized in Bundles of RecA-ATP-gamma-S Filaments." *Journal of Molecular Biology*, **200**, 329-349.
21. Stasiak, A. and Egelman, E.H. (1988) "Visualization of Recombination Reactions." p. 265-307, in *Genetic Recombination*, R.Kucherlapati and G. Smith, eds., ASM Press.
22. Stasiak, A., Egelman, E.H. and Howard-Flanders, P. (1988) "Structure of Helical RecA-DNA Complexes. III. The Structural Polarity of RecA Filaments and Functional Polarity in the RecA-Mediated Strand Exchange Reaction." *Journal of Molecular Biology*, **202**, 659-662.
- 1989** 23. Egelman, E.H., Wu, S.-S., Amrein, A., Portner, A. and Murti, G. (1989). "The Sendai Virus Nucleocapsid Exists in at Least Four Different Helical States." *J. Virology*, **63**, 2233-2243.
24. Egelman, E.H. and Yu, X. (1989) "The Location of DNA in RecA-DNA Helical Filaments." *Science* **245**, 404-407.
- 1990** 25. Yu, X. and Egelman, E.H. (1990) "Image analysis reveals that the E. coli RecA protein consists of two domains." *Biophysical Journal*, **57**, 555-566.
- 1991** 26. Egelman, E.H. and DeRosier, D.J. (1991) "Angular Disorder in Actin: Is it Consistent with General Principles of Protein Structure?" *Journal of Molecular Biology*, **217**, 405-408.
27. Yu, X. and Egelman, E.H. (1991) "Removal of the RecA C-terminus Results in a Conformational Change in the RecA-DNA Filament." *Journal of Structural Biology*, **106**, 243-254.
28. Dustin, I., Furrer, P., Stasiak, A., Dubochet, J. Langowski, J. and Egelman, E.H. (1991) "Spatial Visualization of DNA in Solution." *Journal of Structural Biology*, **107**, 15-21.
- 1992** 29. Yu, X. and Egelman, E.H. (1992) "Direct Visualization of Dynamics and Cooperative Conformational Changes Within RecA Filaments That Appear To Be Associated with the Hydrolysis of ATP-gamma-S." *J. Mol. Biol.* **225**, 193-216.
30. Yu, X. and Egelman, E.H. (1992) "Structural Data Suggest that the Active and Inactive Forms of the RecA Filament are not Simply Interconvertible." *J. Mol. Biol.*, **227**, 334-346.
31. Egelman, E.H. (1992) "Two Key Questions Raised by an Atomic Model for F-actin." *Current Opinion in Structural Biology* **2**, 286-292.
32. Egelman, E.H. and DeRosier, D.J. (1992) "Image Analysis Shows that Variations in Actin Crossover Spacings are Random, Not Compensatory." *Biophysical Journal* **63**, 1299-1305.
33. Orlova, A. and Egelman, E.H. (1992) "The Structural Basis for the Destabilization of F-Actin by Phosphate Release Following ATP Hydrolysis." *J. Mol. Biol.* **227**, 1043-1053.
34. Turnquist, S., Simon, M., Egelman, E.H. and Anderson, D. (1992) "Supercoiled DNA Wraps Around the Bacteriophage phi29 Head-Tail Connector." *P.N.A.S.*, **89**, 10479-10483.
- 1993** 35. Egelman, E.H. and Stasiak, A. (1993) "Electron Microscopy of RecA-DNA Complexes." *Micron* **24**, 309-324.
36. Yu, X. and Egelman, E.H. (1993) "The LexA Repressor Binds within the Deep Helical Groove of the Activated RecA Filament." *J. Mol. Biol.* **231**, 29-40.
37. Orlova, A. and Egelman, E.H. (1993) "A Conformational Change in the Actin Subunit Can Change the Flexibility of the Actin Filament." *J. Mol. Biol.* **232**, 334-341.
38. Egelman, E.H. (1993) "What do X-ray Crystallographic and Electron Microscopic Structural Studies of the RecA Protein Tell Us About Recombination?", *Current Opinion in Structural Biology* **3**, 189-197.
39. Ogawa, T., Yu, X., Shinohara, A. and Egelman, E.H. (1993) "Similarity of the Yeast Rad51 Filament to the Bacterial RecA Filament." *Science* **259**, 1896-1899.
40. Yu, X. and Egelman, E.H. (1993) "The DNA Conformation Induced by the Bacteriophage T4 UvsX Protein Appears Identical to the Conformation Induced by the E. coli RecA Protein". *J. Mol. Biol.* **232**, 1-4.

41. Ogawa, T., Shinohara, A., Nabetani, A., Ikeya, T., Yu, X., Egelman, E.H. and Ogawa, H. (1993) "RecA-like Recombination Proteins in Eukaryotes: Functions and Structures of RAD51 Genes." *Cold Spring Harbor Symposia on Quantitative Biology* **58**, 567-576.
- 1994** 42. Stasiak, A. and Egelman, E.H. (1994) "Structure and Function of RecA-DNA Complexes." *Experientia* **50**, 192-203.
43. Bednar, J., Furrer, P., Stasiak, A., Dubochet, J., Egelman, E.H. and Bates, A.D. (1994) "The twist, writhe and overall shape of supercoiled DNA change during counterion induced transition from a loosely to a tightly interwound superhelix. Possible implications for DNA structure in vivo." *J. Mol. Biol.* **235**, 825-847.
44. Orlova, A., Yu, X. and Egelman, E.H. (1994) "Three-dimensional Reconstruction of a Co-complex of F-Actin with Antibody F_{ab} Fragments to Actin's Amino Terminus." *Biophysical Journal* **66**, 276-285.
45. Egelman, E.H. (1994) "The Ghost of Ribbons Past." *Current Biology* **4**, 79-81.
46. Stasiak, A., Tsaneva, I., West, S.C., Benson, K., Yu, X. and Egelman, E.H. (1994) "The E. coli RuvB Branch Migration Protein Forms Double Hexameric Rings Around DNA." *Proc. Natl. Acad. Sci. U.S.A.* **91**, 7618-7622.
47. Tsuprun, V., Anderson, D. and Egelman, E.H. (1994) "The Bacteriophage ϕ 29 Head-Tail Connector Shows 13-Fold Symmetry in Both Hexagonally-Packed Arrays and as Single Particles." *Biophysical Journal* **66**, 2139-2150.
- 1995** 48. Egelman, E.H., Yu, X., Wild, R., Hingorani, M.M. and Patel, S.S. (1995) "Bacteriophage T7 Helicase/Primase Proteins Form Rings Around Single-Stranded DNA that Suggest a General Structure for Hexameric Helicases." *Proc. Natl. Acad. Sci. U.S.A.* **92**, 3869-3873
49. Orlova, A. and Egelman, E.H. (1995) "Structural Dynamics of F-actin. I. Changes in the C-terminus." *J. Mol. Biol.* **245**, 582-597.
50. Orlova, A., Prochniewicz, E. and Egelman, E.H. (1995) "Structural Dynamics of F-actin. II. Cooperativity in Structural Transitions." *J. Mol. Biol.* **245**, 598-607.
51. Nojima, D., Linck, R. and Egelman, E.H. (1995) "At Least One of the Protofilaments of the Axonemal Doublet Microtubule is Not Made From Tubulin." *Current Biology* **5**, 158-167.
52. Egelman, E.H. and Orlova, A. (1995) "New Insights Into Actin Filament Dynamics." *Current Opinion in Structural Biology* **5**, 172-180.
53. Egelman, E.H. (1995) "Structural Studies of Tubulin-Based Motility Race Ahead", *Current Biology* **5**, 1354-1356.
54. Yu, X., Angov, E., Camerini-Otero, R.D. and Egelman, E.H. (1995) "Structural Polymorphism of the RecA Protein from the Thermophilic Bacterium *T. Aquaticus*", *Biophysical J.* **69**, 2728-2738.
55. Egelman, E.H. and Orlova, A. (1995) "Allostery, Cooperativity and Different Structural States in F-Actin", *Journal of Structural Biology* **115**, 159-162.
- 1996** 56. Yu, X., Jezewska, M.J., Bujalowski, W. and Egelman, E.H. (1996) "The Hexameric E. coli" DnaB Helicase Can Exist in Different Quaternary States", *J. Mol. Biol.* **259**, 7-14.
57. Yu, X., Hingorani, M., Patel, S.S. and Egelman, E.H. (1996) "DNA Is Bound Within the Central Hole to One or Two of the Six Subunits of the T7 DNA Helicase", *Nature Struct. Biol.* **3**, 740-743.
58. Egelman, E.H. (1996) "Homomorphous hexameric helicases: tales from the ring cycle", *Structure* **4**, 759-762.
- 1997** 59. Orlova, A. and Egelman, E.H. (1997) "Cooperative Rigor Binding of Myosin to Actin is a Function of F-Actin Structure", *J. Mol. Biol.* **265**, 469-474.
60. Yu, X., West, S.C. and Egelman, E.H. (1997) "Structure and Subunit Composition of the RuvAB-Holliday Junction Complex", *J. Mol. Biol.* **266**, 217-222.
61. Yu, X. and Egelman, E.H. (1997) "The RecA Hexamer Is a Structural Homologue of Ring Helicases", *Nature Structural Biology* **4**, 101-104.
62. Orlova, A., Chen, X., Rubenstein, P.A. and Egelman, E.H. (1997) "Modulation of Yeast F-actin Structure by a Mutation in the Nucleotide-Binding Cleft", *J. Mol. Biol.* **271**, 235-243.
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64. A. Stasiak, A., West, S.C. and Egelman, E.H. (1997) "Sickle Cell Anemia Research and a Recombinant DNA Technique (letter)", *Science* **277**, 460.
65. Egelman, E.H., Orlova, A. and McGough, A. (1997) "Only One F-Actin Model (letter)", *Nature Structural Biology* **4**, 683-684.
- 1998** 66. Egelman, E.H. (1998) "Tubulin Family: Kinship of Key Proteins Across Phylogenetic Domains," *Current Biology* **8**, R288-R290.
67. Yu, X., Shibata, T. and Egelman, E.H. (1998) "Identification of a Defined Epitope on the

Surface of the Active RecA-DNA Filament Using a Monoclonal Antibody and Three-Dimensional Reconstruction." *J. Mol. Biol.* **283**, 985-992.

68. Kim, E., Bobkova, E., Miller, C.J., Orlova, A., Hegyi, G., Egelman, E.H., Muhlrad, A. and Reisler, E. (1998) "Intrastrand Cross-linked Actin Between Gln41 and Cys374. II. Inhibition of Motion and Force Generation with Myosin." *Biochemistry* **37**, 17801-17809.

1999

69. Egelman, E.H. (1998) "Bacterial Helicases." *Journal of Structural Biology* **124**, 123-128.

70. Fouts, E., Yu, X., Egelman, E.H. and Botchan, M. (1999) "Biochemical and Electron Microscopic Image Analysis of the Hexameric E1 Helicase", *J. Biol. Chem.*, **274**, 4447-4458

71. Belmont, L.D., Orlova, A., Drubin, D.G. and Egelman, E.H. (1999) "A Change in Actin Conformation Associated with Filament Instability after Pi Release." *Proc. Natl. Acad. Sci. U.S.A.* **96**, 29-34.

72. Passy, S. I., Yu, X., Li, Z., Radding, C.M. and Egelman, E.H. (1999) "Rings and Filaments of β Protein from Bacteriophage λ Suggest a New Superfamily of Recombination Proteins." *Proc. Natl. Acad. Sci. U.S.A.* **96**, 4279-4284.

73. Passy, S.I., Yu, X., Li, Z., Radding, C.M., Masson, J.-Y., West, S.C. And Egelman, E.H. (1999) "Human Dmc1 protein binds DNA as an octameric ring." *Proc. Natl. Acad. Sci. U.S.A.* **96**, 10684-10688.

2000

74. Stasiak, A.Z., Larquet, E., Stasiak, A., Müller, S., Engel, A., Van Dyck, E., West, S.C. and Egelman, E.H. (2000). "The human Rad52 protein exists as a heptameric ring, with structural homology to hexameric helicases." *Current Biology* **10**, 337-340.

75. Orlova, A. and Egelman, E.H. (2000). "F-actin retains a memory of angular order." *Biophysical Journal* **78**, 2180-2185.

76. Yu, X., Horiguchi, T., Shigesada, K. and Egelman, E.H. (2000) "Three-dimensional Reconstruction of transcription Termination Factor rho: Orientation of the N-terminal Domain and Visualization of an RNA-binding site." *J. Mol. Biol.* **299**, 1279-1287.

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78. Egelman, E.H. (2000). "A common structural core in proteins active in DNA recombination and replication." *Trends in Biochemical Sciences (TIBS)* **25**, 180-184.

79. Egelman, E.H. (2000). "A Robust Algorithm for the Reconstruction of Helical Filaments Using Single-Particle Methods." *Ultramicroscopy* **85**, 225-234.

2001

80. Orlova, A., Prochniewicz, E., Thomas, D.D., Rybakova, I.N., Ervasti, J.M. and Egelman, E.H. (2001). "Binding of dystrophin's tandem calponin homology domain to F-actin is modulated by actin's structure." *Biophysical Journal* **80**, 1926-1931.

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88. Orlova, A., Galkin, V.E., VanLoock, M.S., Kim, E., Shvetsov, A., Reisler, E. and Egelman, E.H. (2001), "Probing the Structure of F-Actin: Cross-links Constrain Atomic Models and Modify Actin Dynamics", *J. Mol. Biol.* **312**, 95-106.

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- 2002**
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Recent Invited Seminars and Meeting Presentations

Invited Speaker, One World Cryo-EM Talks, September, 2020
Keynote Speaker, Cryo-EM Workshop, Lake Tahoe, CA, March, 2020 (meeting postponed due to pandemic)
Invited Speaker, Association of Biomolecular Resource Facilities, Annual Meeting, Palm Springs, CA, March, 2020
Invited Seminar Speaker, UC Irvine Dept. of Molecular Biology and Biochemistry, Irvine, CA, February, 2020
Invited Symposium Speaker, Institut Pasteur, Paris, France, February, 2020
Invited Speaker, Sensory Transduction in Microorganisms Gordon Research Conference, Ventura, CA, January, 2020
Invited Seminar Speaker, UCLA Dept. of Biochemistry, January, 2020
Invited Seminar Speaker, Imperial College, London, UK, October, 2019
Invited Seminar Speaker, Dept. of Biochemistry and Biophysics, University of North Carolina, Sept., 2019
Invited New and Notable Speaker, International Union of Pure and Applied Biophysics Congress, Madrid, Spain, July, 2019
Invited Lecturer, EBSA Summer Biophysics School, Escorial, Spain, July, 2019
Invited Speaker, Workshop on Advances and Challenges of Biological Cryo-EM, University of Chicago Hong Kong Campus, June, 2019
Invited Speaker, Three-Dimensional Electron Microscopy Gordon Research Conference, Hong Kong, June, 2019
Invited Speaker, 24th Sealy Center Structural Biology and Molecular Biophysics Symposium, UT Medical Branch, Galveston, TX, May, 2019
Invited Seminar Speaker, Institut Pasteur, Paris, France, May, 2019
Invited Seminar Speaker, Institut Jacques Monod, Paris, France, May, 2019
Invited Speaker, New and Notable Symposium, Biophysical Society Annual Meeting, Baltimore, MD, March, 2019
Invited Seminar Speaker, Department of Biochemistry, Baylor College of Medicine, Houston, TX, January, 2019
Invited Seminar Speaker, Biochemistry and Biophysics Center, NHLBI/NIH, Bethesda, MD, January, 2019
Invited Symposium Speaker, MIT, October, 2018
Invited Speaker, FASEB Machines on Genes Meeting, Colorado, June, 2018
Keynote Lecture, Annual Retreat of the International Institute of Molecular and Cell Biology, Warsaw, Poland, May, 2018
Invited Speaker, University of Warsaw, Center of New Technologies, May, 2018
Invited Speaker, Institute of Bioorganic Chemistry of the Polish Academy of Sciences, Poznan, Poland, May, 2018
Invited Speaker, Jagiellonian University, Krakow, Poland, May, 2018
Friday Lecture, Rockefeller University, January, 2018
2017 Biochemistry Alumni Lecture, University of Queensland, Brisbane, Australia, November, 2017
Invited Symposium Speaker, Delft University, Netherlands, September, 2017
Invited Seminar Speaker, Institut Pasteur, Paris, March, 2017
Invited External Speaker, NIEHS Genomic Stability and Structural Biology Laboratory Retreat, Research Triangle Park, NC, March, 2017
Invited Symposium Speaker, Third Coast Workshop on Biological Cryo-EM, Chicago, March, 2017
Invited Seminar Speaker, Biochemistry Department, University of Texas Health Sciences Center at Houston, February, 2017
Invited Seminar Speaker, Department of Biochemistry, Weill Cornell Medical College, January, 2017
Keynote Speaker, CASP12 Meeting, Gaeta, Italy, December, 2016
Invited Seminar Speaker, Biochemistry Department, North Carolina State University, October, 2016
Invited Seminar Speaker, Biochemistry Program, Indiana University, September, 2016
Invited Speaker, UK-US Plant Health Workshop, British Embassy, Washington, DC, September, 2016
Invited Symposium Speaker, Structural Aspects of Infectious Disease, Cambridge, UK, August, 2016
Keynote Speaker, Mid-Atlantic Crystallography Meeting, June, 2016
Invited Visiting Speaker, NIH/NIEHS Intramural Research Retreat, Raleigh, NC, April, 2016
Invited Seminar Speaker, Department of Biochemistry and Molecular Biology, University of Chicago, March, 2016
Invited Meeting Speaker, CryoEM 3D Image Analysis, Lake Tahoe, California, March, 2016

Invited Seminar Speaker, University of Minnesota Medical School, February, 2016
Invited Seminar Speaker, University of Maryland, February, 2016
Invited Seminar Speaker, Medical University of South Carolina, January, 2016
Invited Seminar Speaker, University of Paris Descartes, December, 2015
Invited Symposium Speaker, Institut Pasteur, Paris, France, December, 2015
Invited Speaker, Biophysics in the Understanding, Diagnosis and Treatment of Infectious Diseases, Stellenbosch, South Africa, November, 2015
Invited Seminar Speaker, Physiology Department, University of Pennsylvania, October, 2015
Invited Speaker, Polymers and Self-Assembly: From Biology to Nanomaterials, Rio de Janeiro, Brazil, October, 2015
Invited Seminar Speaker, NIH Structural Biology Interest Group, September, 2015
Invited Seminar Speaker, Molecular Biophysics and Biochemistry, Yale University, September, 2015
Invited Seminar Speaker, Department of Chemistry, Brandeis University, September, 2015
Invited Session Chair, Three-Dimensional Electron Microscopy Gordon Research Conference, June, 2015
Invited Symposium Speaker, American Society for Biochemistry and Molecular Biology Annual Meeting, Boston, MA, April, 2015
Invited Speaker, NIH Workshop on Data Reproducibility, Bethesda, MD, March, 2015
Invited Seminar Speaker, Florida State University, March, 2015
Invited Seminar Speaker, Univ. of Texas, Austin, TX, January, 2015
Invited Seminar Speaker, Virginia Commonwealth University, November, 2014
Invited Seminar Speaker, Johns Hopkins University Medical School, November, 2014
Invited Seminar Speaker, CNRS, Gif-sur-Yvette, France, October, 2014
Invited Seminar Speaker, Saclay, France, October, 2014
Invited Seminar Speaker, Institute for Molecular Pharmacology, Berlin, Germany, October, 2014
Invited Seminar Speaker, Vanderbilt University, September, 2014
Invited Seminar Speaker, Monash University, Melbourne, Australia, July, 2014
Invited Symposium Speaker, "Physics of Biological Systems", Gif-sur-Yvette, France, June, 2014
Invited Speaker, Gordon Research Conference on Muscle and Molecular Motors, July, 2014
Invited Seminar Speaker, Institute of Cancer Research, Chester Beatty Laboratories, London, U.K., July, 2014
Invited Seminar Speaker, Imperial College, London, U.K., July, 2014
Invited Seminar Speaker, Biozentrum, University of Basel, June, 2014
Invited Speaker, Cryo-EM Workshop, Lake Tahoe, CA, March, 2014
Invited Symposium Speaker, National Centre for Biological Sciences, Bangalore, India, February, 2014
Invited Seminar Speaker, Dept. of Biochemistry, Ohio State University, January, 2014
Invited Seminar Speaker, Dept. of Chemistry, Emory University, October, 2013
Invited Seminar Speaker, Dept. of Biochemistry, UCLA, October, 2013
Invited Symposium Speaker, European Microscopy Meeting, Regensburg, Germany, August, 2013
Invited Seminar Speaker, Institut Pasteur, Paris, France, April, 2013
Invited Symposium Speaker, American Chemical Society Meeting, New Orleans, April, 2013
Invited Symposium Speaker, Biophysical Society Annual Meeting, Philadelphia, February, 2013
Invited Speaker, Novel Biophysical Approaches in the Investigation of the Cytoskeleton, European Cytoskeletal Forum, Pecs, Hungary, November, 2012
Invited Seminar Speaker, European Molecular Biology Laboratory, Heidelberg, Germany, July, 2012
Invited Speaker, International Symposium on Cryo-EM, Huangshan, China, September, 2012
Invited Seminar Speaker, Tsinghua University, Beijing, China, September, 2012
Invited Seminar Speaker, University of Texas, Austin, September, 2012
Invited Seminar Speaker, University of Chicago, April, 2012
Invited Seminar Speaker, Life Sciences Division, Lawrence Berkeley Laboratory, November, 2011
Invited Seminar Speaker, Pennsylvania Muscle Institute, Univ. of Pennsylvania, October, 2011
Invited Seminar Speaker, Biochemistry, UC San Diego, October, 2011
Invited Symposium Speaker, International Union of Crystallography, Madrid, Spain, August, 2011
Invited Speaker, Gordon Research Conference on Muscle and Molecular Motors, July, 2011
Invited Speaker, NCMi Workshop on Single Particle Reconstruction, Validation and Analysis, Houston, Texas, March, 2011
Invited Seminar Speaker, Institut Pasteur, Paris, France, March, 2011
Invited Seminar Speaker, University of Melbourne, Division of Structural Biology, Melbourne, Australia, February, 2011
Invited Seminar Speaker, University of Queensland, Institute for Molecular Bioscience, Brisbane, Australia, February, 2011

Invited Symposium Speaker (and meeting organizer), Actin, the Cytoskeleton, and the Nucleus, National University of Singapore, November, 2010

Invited seminar speaker, Joint Rockefeller/Cornell/MSKCC Program in Structural Biology, October, 2010

Invited Seminar, Dept. of Cell Biology, University of Texas Medical Branch, Galveston, TX, October, 2010

Invited Seminar, Molecular Biosciences, University of Kansas, October, 2010

Invited seminar speaker, Dept. of Cell Biology, UT Southwestern Medical Center, Dallas, TX, September, 2010

Invited Seminar Speaker, Dept. of Microbiology, University of Regensburg, Regensburg, Germany, June, 2010

Invited Seminar Speaker, CNRS Center for Structural Biochemistry, Montpellier, France, May, 2010

Invited Seminar Speaker, University of Pittsburgh Program in Structural Biology, April, 2010

Invited Speaker, 5th International Conference on Structural Analysis of Supramolecular Assemblies by Hybrid Methods, Lake Tahoe, CA, March, 2010

Invited Symposium Speaker, Biophysical Society Annual Meeting, San Francisco, CA, Feb., 2010

Invited Seminar Speaker, Stanford Nanobiotechnology Seminar Series, Palo Alto, CA, Jan., 2010

Invited Speaker, EM Gordon Conference, New Hampshire, July, 2009

Invited Symposium Speaker, UCLA Nanotechnology Institute, October, 2009

Invited Seminar Speaker, Max Planck Institute for Terrestrial Microbiology, Marburg, Germany, October, 2009

Invited Symposium speaker, Protein Society Annual Meeting, San Diego, July, 2008

Invited Symposium speaker, International Union of Crystallography, Congress and General Assembly, Osaka, Japan, August, 2008

Keynote Speaker, Biomedical Sciences Retreat, SUNY Upstate Medical University, Sept., 2008

UC Berkeley, Structural Quantitative Biology Seminar, October, 2008

Keynote Lecture, Joint 5th Structural Biology & Functional Genomics and 1st Biological Physics International Conference, National University of Singapore, December, 2008

Invited Seminar Speaker, University of Oxford Biochemistry Department, February, 2009

Invited Symposium Speaker, Center for Integrative Genomics Symposium on DNA Repair and Human Health, Lausanne, Switzerland, June, 2009

Keynote Speaker, European Biophysics Congress, Genoa, Italy, July, 2009

Invited Speaker, FASEB Meeting on Recombination, Snowmass, CO, July, 2007

Invited Symposium Speaker, Hungarian Biophysics Conference, Pecs, Hungary, August, 2007

Invited Seminar Speaker, University of Maryland, Biophysics Program, September, 2007

Invited Seminar Speaker, University of Cape Town, Structural Biology Program, October, 2007

Invited Workshop Speaker, Scripps Research Institute, November, 2007

Invited Seminar Speaker, Autonomous University, Madrid, Spain, March, 2008

Invited Seminar Speaker, University of North Carolina, Biochemistry Dept., March, 2008

Invited Joint Biology-Biochemistry Seminar, Brandeis University, , April, 2008

Invited Symposium Speaker, American Physiological Society Annual Meeting, San Diego, April, 2008

Invited Symposium Speaker, American Society for Biochemistry and Molecular Biology Annual Meeting, San Diego, April, 2008

Invited Speaker, EMBO Workshop on Genetic Recombination, Il Ciocco, Italy, May, 2008

Invited Seminar Speaker, CNRS, Grenoble, France, July, 2008

Invited Symposium Speaker, Protein Society Annual Meeting, San Diego, CA, July, 2008

Invited Symposium Speaker, International Union of Crystallography, Congress and General Assembly, Osaka, Japan, August, 2008

Keynote Address, Biomedical Sciences Retreat, SUNY Upstate Medical Center Retreat, Sept., 2008

Invited Seminar Speaker, Biophysics Program, UCSF, January, 2007

Invited Speaker, Birkbeck College, London, February, 2007

Invited Speaker, MRC Laboratory of Molecular Biology, Cambridge, England, February, 2007

Invited Seminar Speaker, Biochemistry Department, Univ. of Maryland Medical School, March, 2007

Invited Seminar Speaker, Biochemistry Department, Univ. of British Columbia, Vancouver, Canada, April, 2007

Invited Speaker, Novartis/Univ. of Siena Joint Seminar, April, 2007

Invited Seminar Speaker, Physiology Department, University of Florence, Italy, April, 2007

Invited Seminar Speaker, Hospital for Sick Children/University of Toronto, May, 2007

Invited Seminar Speaker, McMaster University, May, 2007

Invited Seminar Speaker, University of Guelph, May, 2007

Invited Speaker, FEBS Workshop on Conserved Protein Domains, Seefeld, Austria, Sept., 2005

Invited Speaker, EMBO Workshop on Coiled-Coils and Related Proteins, Alpbach, Austria, Sept., 2005
Invited Speaker, Max-Planck Institute for Structural Biology, Frankfurt, Germany, Sept., 2005
UCLA Graduate Student Invited Seminar, Feb., 2006
Invited Seminar Speaker, University of Southern California, Feb., 2006
Invited Seminar Speaker, University of Missouri, Kansas City, Feb., 2006
Invited Seminar Speaker, University of Texas, Houston Medical Center, April, 2006
Invited Seminar Speaker, Georgia Institute of Technology, May, 2006
Invited Speaker, EMBO Workshop on Genetic Recombination and Genome Rearrangements, Seillac, France, May, 2006
Invited Symposium Speaker, American Society of Microbiology, Orlando, Florida, May, 2006
Invited Speaker, Gordon Research Conference on Three-Dimensional Electron Microscopy, Il Ciocco, Italy, June, 2006
Invited Symposium Speaker, Microscopy and Microanalysis Annual Meeting, Chicago, Illinois, July, 2006
Invited Seminar Speaker, Simon Fraser University, Vancouver, Canada, August, 2006
Invited Speaker, Scripps Research Institute, La Jolla, CA, July, 2004
NIH Special Seminar, Bethesda, MD, August, 2004
Invited Seminar Speaker, Dept. of Biochemistry, Univ. of Iowa, October, 2004
Invited Seminar Speaker, CNRS, Gif-sur-Yvette, France, Feb., 2005
Invited Seminar Speaker, University of Texas, Houston, April, 2005
Invited Seminar Speaker, Nencki Institute, Warsaw, Poland, May, 2005
Invited Seminar Speaker, Jagiellonian University, Krakow, Poland, May 2005
Invited Speaker, FASEB Workshop on Genetic Recombination, Snowmass, CO, July, 2005
Invited Seminar Speaker, Physiology Dept., Univ. of Vermont, Aug., 2005
Invited Seminar Speaker, University of Cape Town Medical School, Nov., 2004
Invited Speaker, EMBO Workshop on Genetic Recombination, Seillac, France, May, 2004
Invited Speaker, Microscopy Society of South Africa, Cape Town, December, 2003
Invited Speaker, Fifth International Meeting on AAA Proteins, Airlie House, VA, June, 2003
Invited Speaker, Gordon Conference on 3D EM, New London, NH, June, 2003
Invited Speaker, FASEB Helicase Conference, Saxton's River, VT, June, 2003
Invited Speaker, Dept. of Microbiology, Northwestern Univ. Medical School, Chicago, IL, June, 2003
Invited Speaker, EPFL, Lausanne, Switzerland, May, 2003
Invited Speaker, Dept. of Biology, Georgia Tech, Atlanta, GA, May, 2003
Invited Speaker, Center for Structural Biology, Imperial College, London, UK, March, 2003
Invited Symposium Speaker, Biophysical Society 47th Annual Meeting, San Antonio, TX, Mar., 2003
Invited Speaker, Gordon Conference on Mammalian DNA Repair, Ventura, CA, Jan., 2003
Invited Seminar Speaker, NYU Chemistry Dept., Jan., 2003
Invited Seminar Speaker, Tufts Medical School, Boston, MA, Jan., 2003
Invited Seminar Speaker, NIH Structural Studies, Bethesda, MD, Nov., 2002
Invited Seminar Speaker, Scripps Research Institute, La Jolla, CA, Aug., 2002
Invited Speaker, Biophysical Discussions, Asilomar, CA, April, 2002
Invited Speaker, Keystone Meeting on DNA Helicases, Cancer and Aging, March, 2002
Invited Seminar Speaker, Boston Biomedical Research Institute, March, 2002
Invited Seminar Speaker, Yale Univ. Dept. of Microbiology, March, 2002
Invited Symposium Speaker, Actin Workshop, Spring-8, Harima, Japan, Nov., 2001
Invited Seminar Speaker, Biomolecular Engineering Research Institute, Osaka, Japan, Nov., 2001
Invited Seminar Speaker, Birkbeck College, London, UK, October, 2001
Invited Seminar Speaker, Dept. of Biochemistry, Cambridge University, UK, October, 2001
Invited Seminar Speaker, Dept. of Biochemistry, Oxford University, UK, October, 2001
Invited Seminar Speaker, Center for Advanced Research in Biotechnology (CARB), Rockville, MD, October, 2001
Invited Seminar Speaker, Univ. of Delaware Biochemistry Dept., Sept., 2001
Invited Plenary Speaker, Russian Academy of Sciences Muscle Meeting, Puschino, Russia, August, 2001
Invited Speaker, FASEB Recombination Meeting, Snowmass, CO, July, 2001
Invited Speaker, FASEB Conference on Helicases, Saxton River, VT, July, 2001
Invited Plenary Speaker, Biomolecular Sterodynamics Conference, Albany, NY, June, 2001
Invited Speaker, EMBO Workshop on Muscle, Alpbach, Austria, April, 2001
Invited National Academy of Science Symposium Speaker, Recombination and Replication, Irvine, CA, November, 2000
Invited Seminar Speaker, Institute of Molecular Agrobiolgy, Singapore, October, 2000

Invited Seminar Speaker, RIKEN, Japan, October, 2000
Invited Seminar Speaker, Purdue University, August, 2000
Invited Seminar Speaker, Univ. of Pittsburgh, June, 2000
Invited Symposium Speaker, American Society for Microbiology, Los Angeles, CA, May, 2000
Invited Speaker, EMBO Workshop on Genetic Recombination, Seillac, France, May, 2000
Invited Seminar Speaker, Osaka University, Japan, April, 2000
Invited Seminar Speaker, Nagoya University, Japan, April, 2000
Invited Seminar Speaker, Kyoto University, Japan, April, 2000
Invited Seminar Speaker, Weizmann Institute of Science, Rehovot, Israel, Feb., 2000
Invited Seminar Speaker, Tel Aviv University, Israel, Feb., 2000
Invited Seminar Speaker, Haifa Technion, Israel, Feb., 2000
Invited Speaker, Juan March Workshop on Helicases, Madrid, Spain, Nov., 1999
Invited Speaker, National Minority Research Symposium, Phoenix, AZ, Nov., 1999
Invited Molecular Medicine Seminar Speaker, Univ. of Texas Health Science Center at San Antonio, Sept., 1999
Invited Speaker, FASEB Conference on Genetic Recombination and Chromosome Rearrangements, Snowmass, CO, Aug., 1999
Invited Symposium Speaker, Microscopy Society of America, Portland, OR, Aug., 1999
Invited Speaker, Gordon Research Conference on Muscle and Contractile Proteins, New London, NH, June, 1999
Invited Workshop Leader, Keystone Meeting on Replication and Recombination, Taos, NM, Feb., 1999
Invited Symposium Speaker and Session Chair, British Biophysical Society Symposium on Structure and Function of Molecular Motors, Leeds, UK, Jan., 1999
Invited Speaker, Brandeis University 50th Anniversary Scientific Alumni Colloquium Series, Waltham, MA, Jan., 1999
Invited Seminar Speaker, Dept. of Biochemistry, Univ. of Alberta, Edmonton, CA, Dec., 1998
Invited Seminar Speaker, Dept. of Genetics, Univ. of Seville, Spain, Nov., 1998
Invited Seminar Speaker, Dept. of Biochemistry, Univ. of Virginia Health Sciences Center, Charlottesville, VA, Sept., 1998
Invited Speaker, Program in Biotechnology, Univ. of Nebraska, Lincoln, NE, Aug., 1998
Invited Speaker, EMBO Workshop on Genetic Recombination, Seillac, France, May, 1998
Invited Speaker, Dept. of Biochemistry and Molecular Biology, Univ. of Alabama Medical Center, Birmingham, AL, May, 1998
Invited Speaker, Workshop on Structure and Function of Molecular Motors, Alpbach, Austria, April, 1998
Invited Symposium Speaker, Molecular and Cellular Mechanisms of Genetic Recombination, Osaka, Japan, March, 1998
Invited Seminar Speaker, Biophysics Dept., Johns Hopkins University, Mar., 1998
Invited Seminar Speaker, Department of Biochemistry, Case Western Reserve University, Mar., 1998
Symposium Chair, Biophysical Approaches to Understanding DNA Replication and Recombination, 1998 Biophysical Society Meeting, Kansas City, Missouri, Feb., 1998
Invited Seminar Speaker, Institute of Medical Science, University of Tokyo, Nov., 1997
Invited Seminar Speaker, International Institute for Advanced Research, Seika, Japan, Nov., 1997
Invited Seminar Speaker, RIKEN Research Institute, Saitama, Japan, Nov., 1997
Invited Seminar Speaker, NIAMS, NIH, Bethesda, MD, Oct., 1997
Invited Seminar Speaker, University of Kansas, Dept. of Biochemistry, Cell and Molecular Biology, Lawrence, KS, Sept., 1997