Carlos J Bustamante

List of Publications by Year
in descending order

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289 papers	38,649 citations	2675 95 h-index	3034 188 g-index
307 all docs	307 docs citations	307 times ranked	21772 citing authors

#	Article	IF	Citations
1	Ten years of tension: single-molecule DNA mechanics. Nature, 2003, 421, 423-427.	27.8	1,203
2	Folding-Unfolding Transitions in Single Titin Molecules Characterized with Laser Tweezers. Science, 1997, 276, 1112-1116.	12.6	1,147
3	Equilibrium Information from Nonequilibrium Measurements in an Experimental Test of Jarzynski's Equality. Science, 2002, 296, 1832-1835.	12.6	1,049
4	Recent Advances in Optical Tweezers. Annual Review of Biochemistry, 2008, 77, 205-228.	11.1	995
5	The bacteriophage Ï†29 portal motor can package DNA against a large internal force. Nature, 2001, 413, 748-752.	27.8	983
6	Ionic effects on the elasticity of single DNA molecules. Proceedings of the National Academy of Sciences of the United States of America, 1997, 94, 6185-6190.	7.1	929
7	Verification of the Crooks fluctuation theorem and recovery of RNA folding free energies. Nature, 2005, 437, 231-234.	27.8	891
8	How RNA folds. Journal of Molecular Biology, 1999, 293, 271-281.	4.2	888
9	Porphyrin assemblies on DNA as studied by a resonance light-scattering technique. Journal of the American Chemical Society, 1993, 115, 5393-5399.	13.7	846
10	Reversible Unfolding of Single RNA Molecules by Mechanical Force. Science, 2001, 292, 733-737.	12.6	839
11	Single-molecule studies of DNA mechanics. Current Opinion in Structural Biology, 2000, 10, 279-285.	5.7	755
12	Mechanical Processes in Biochemistry. Annual Review of Biochemistry, 2004, 73, 705-748.	11.1	721
13	Scanning Force Microscopy of DNA Deposited onto Mica: EquilibrationversusKinetic Trapping Studied by Statistical Polymer Chain Analysis. Journal of Molecular Biology, 1996, 264, 919-932.	4.2	641
14	The Nonequilibrium Thermodynamics of Small Systems. Physics Today, 2005, 58, 43-48.	0.3	621
15	Direct Observation of the Three-State Folding of a Single Protein Molecule. Science, 2005, 309, 2057-2060.	12.6	587
16	Rapid spontaneous accessibility of nucleosomal DNA. Nature Structural and Molecular Biology, 2005, 12, 46-53.	8.2	580
17	Structural transitions and elasticity from torque measurements on DNA. Nature, 2003, 424, 338-341.	27.8	536
18	Single-molecule studies of the effect of template tension on T7 DNA polymerase activity. Nature, 2000, 404, 103-106.	27.8	465

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19	Following translation by single ribosomes one codon at a time. Nature, 2008, 452, 598-603.	27.8	446
20	Circular DNA molecules imaged in air by scanning force microscopy. Biochemistry, 1992, 31, 22-26.	2.5	438
21	Pulling a single chromatin fiber reveals the forces that maintain its higher-order structure. Proceedings of the National Academy of Sciences of the United States of America, 2000, 97, 127-132.	7.1	433
22	Grabbing the cat by the tail: manipulating molecules one by one. Nature Reviews Molecular Cell Biology, 2000, 1, 130-136.	37.0	375
23	DNA overwinds when stretched. Nature, 2006, 442, 836-839.	27.8	358
24	RNA translocation and unwinding mechanism of HCV NS3 helicase and its coordination by ATP. Nature, 2006, 439, 105-108.	27.8	343
25	Escherichia coli RNA Polymerase Activity Observed Using Atomic Force Microscopy. Biochemistry, 1997, 36, 461-468.	2.5	341
26	Nucleosomal Fluctuations Govern the Transcription Dynamics of RNA Polymerase II. Science, 2009, 325, 626-628.	12.6	341
27	Counting single photoactivatable fluorescent molecules by photoactivated localization microscopy (PALM). Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 17436-17441.	7.1	336
28	Single-Molecule Study of Transcriptional Pausing and Arrest by E. coli RNA Polymerase. Science, 2000, 287, 2497-2500.	12.6	330
29	Conjugation of DNA to Silanized Colloidal Semiconductor Nanocrystalline Quantum Dots. Chemistry of Materials, 2002, 14, 2113-2119.	6.7	312
30	The Physics of Molecular Motors. Accounts of Chemical Research, 2001, 34, 412-420.	15.6	289
31	Bias and error in estimates of equilibrium free-energy differences from nonequilibrium measurements. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 12564-12569.	7.1	289
32	Polymer chain statistics and conformational analysis of DNA molecules with bends or sections of different flexibility. Journal of Molecular Biology, 1998, 280, 41-59.	4.2	279
33	Differential detection of dual traps improves the spatial resolution of optical tweezers. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 9006-9011.	7.1	277
34	The ribosome uses two active mechanisms to unwind messenger RNA during translation. Nature, 2011, 475, 118-121.	27.8	275
35	The Ribosome Modulates Nascent Protein Folding. Science, 2011, 334, 1723-1727.	12.6	268
36	Intersubunit coordination in a homomeric ring ATPase. Nature, 2009, 457, 446-450.	27.8	266

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37	[7] Optical-trap force transducer that operates by direct measurement of light momentum. Methods in Enzymology, 2003, 361, 134-162.	1.0	258
38	Mechanism of Force Generation of a Viral DNA Packaging Motor. Cell, 2005, 122, 683-692.	28.9	258
39	ClpX(P) Generates Mechanical Force to Unfold and Translocate Its Protein Substrates. Cell, 2011, 145, 459-469.	28.9	256
40	Stretching of Single Collapsed DNA Molecules. Biophysical Journal, 2000, 78, 1965-1978.	0.5	253
41	The Mechanochemistry of Molecular Motors. Biophysical Journal, 2000, 78, 541-556.	0.5	251
42	Backtracking determines the force sensitivity of RNAPâ€‰II in a factor-dependent manner. Nature, 2007, 446, 820-823.	27.8	249
43	Scanning Force Microscopy in Biology. Physics Today, 1995, 48, 32-38.	0.3	247
44	Direct Observation of One-Dimensional Diffusion and Transcription by Escherichia coli RNA Polymerase. Biophysical Journal, 1999, 77, 2284-2294.	0.5	238
45	Unusual Oligomerization Required for Activity of NtrC, a Bacterial Enhancer-Binding Protein. Science, 1997, 275, 1658-1661.	12.6	237
46	Optical tweezers in single-molecule biophysics. Nature Reviews Methods Primers, 2021, 1, .	21.2	229
47	Three-dimensional structure of extended chromatin fibers as revealed by tapping-mode scanning force microscopy.. Proceedings of the National Academy of Sciences of the United States of America, 1994, 91, 11621-11625.	7.1	226
48	Identifying Kinetic Barriers to Mechanical Unfolding of the T. thermophila Ribozyme. Science, 2003, 299, 1892-1895.	12.6	226
49	The folding cooperativity of a protein is controlled by its chain topology. Nature, 2010, 465, 637-640.	27.8	222
50	Solid-state synthesis and mechanical unfolding of polymers of T4 lysozyme. Proceedings of the National Academy of Sciences of the United States of America, 2000, 97, 139-144.	7.1	219
51	Single-molecule derivation of salt dependent base-pair free energies in DNA. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 15431-15436.	7.1	215
52	Positive Torsional Strain Causes the Formation of a Four-way Junction at Replication Forks. Journal of Biological Chemistry, 2001, 276, 2790-2796.	3.4	212
53	Experimental test of Hatano and Sasa's nonequilibrium steady-state equality. Proceedings of the National Academy of Sciences of the United States of America, 2004, 101, 15038-15041.	7.1	210
54	Polymerization and mechanical properties of single RecA-DNA filaments. Proceedings of the National Academy of Sciences of the United States of America, 1999, 96, 10109-10114.	7.1	208

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55	Mechanical force releases nascent chainâ€“mediated ribosome arrest in vitro and in vivo. Science, 2015, 348, 457-460.	12.6	207
56	DNA Translocation and Loop Formation Mechanism of Chromatin Remodeling by SWI/SNF and RSC. Molecular Cell, 2006, 24, 559-568.	9.7	198
57	Wrapping of DNA around the E.coli RNA polymerase open promoter complex. EMBO Journal, 1999, 18, 4464-4475.	7.8	195
58	The heat released during catalytic turnover enhances the diffusion of an enzyme. Nature, 2015, 517, 227-230.	27.8	191
59	Effect of force on mononucleosomal dynamics. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 15871-15876.	7.1	187
60	Scanning force microscopy under aqueous solutions. Current Opinion in Structural Biology, 1997, 7, 709-716.	5.7	181
61	Theory of the interaction of light with large inhomogeneous molecular aggregates. II. Psiâ€type circular dichroism. Journal of Chemical Physics, 1986, 84, 2972-2980.	3.0	178
62	Light-powering Escherichia coli with proteorhodopsin. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 2408-2412.	7.1	176
63	Mechanochemical analysis of DNA gyrase using rotor bead tracking. Nature, 2006, 439, 100-104.	27.8	172
64	Chirality sensing by Escherichia coli topoisomerase IV and the mechanism of type II topoisomerases. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 8654-8659.	7.1	171
65	Replication of mitochondrial DNA occurs by strand displacement with alternative light-strand origins, not via a strand-coupled mechanism. Genes and Development, 2005, 19, 2466-2476.	5.9	170
66	Temperature Control Methods in a Laser Tweezers System. Biophysical Journal, 2005, 89, 1308-1316.	0.5	170
67	Revisiting the Central Dogma One Molecule at a Time. Cell, 2011, 144, 480-497.	28.9	164
68	Sequence-Directed DNA Translocation by Purified FtsK. Science, 2005, 307, 586-590.	12.6	163
69	Nucleosomal Elements that Control the Topography of the Barrier to Transcription. Cell, 2012, 151, 738-749.	28.9	162
70	Laminin and biomimetic extracellular elasticity enhance functional differentiation in mammary epithelia. EMBO Journal, 2008, 27, 2829-2838.	7.8	161
71	ATP-dependent force generation and membrane scission by ESCRT-III and Vps4. Science, 2018, 362, 1423-1428.	12.6	150
72	Transcriptional activation via DNA-looping: visualization of intermediates in the activation pathway of E. coli RNA polymeraseÂ·Ï*f*54 holoenzyme by scanning force microscopy. Journal of Molecular Biology, 1997, 270, 125-138.	4.2	143

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73	Using mechanical force to probe the mechanism of pausing and arrest during continuous elongation by Escherichia coli RNA polymerase. Proceedings of the National Academy of Sciences of the United States of America, 2002, 99, 11682-11687.	7.1	138
74	Following the assembly of RNA polymerase-DNA complexes in aqueous solutions with the scanning force microscope.. Proceedings of the National Academy of Sciences of the United States of America, 1994, 91, 12927-12931.	7.1	136
75	Force Unfolding Kinetics of RNA Using Optical Tweezers. I. Effects of Experimental Variables on Measured Results. Biophysical Journal, 2007, 92, 2996-3009.	0.5	134
76	Singleâ€“Base Pair Unwinding and Asynchronous RNA Release by the Hepatitis C Virus NS3 Helicase. Science, 2011, 333, 1746-1749.	12.6	133
77	Biochemical and structural applications of scanning force microscopy. Current Opinion in Structural Biology, 1994, 4, 750-760.	5.7	131
78	Experimental Test of Connector Rotation during DNA Packaging into Bacteriophage Ï†29 Capsids. PLoS Biology, 2007, 5, e59.	5.6	131
79	The elongation rate of RNA polymerase determines the fate of transcribed nucleosomes. Nature Structural and Molecular Biology, 2011, 18, 1394-1399.	8.2	130
80	A Viral Packaging Motor Varies Its DNA Rotation and Step Size to Preserve Subunit Coordination as the Capsid Fills. Cell, 2014, 157, 702-713.	28.9	127
81	Triplex structures in an RNA pseudoknot enhance mechanical stability and increase efficiency of â€“1 ribosomal frameshifting. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 12706-12711.	7.1	126
82	Scanning force microscopy of nucleic acids and nucleoprotein assemblies. Current Opinion in Structural Biology, 1993, 3, 363-372.	5.7	124
83	Single-Molecule Studies of Protein Folding with Optical Tweezers. Annual Review of Biochemistry, 2020, 89, 443-470.	11.1	124
84	The ClpXP Protease Unfolds Substrates Using a Constant Rate of Pulling but Different Gears. Cell, 2013, 155, 636-646.	28.9	123
85	Images of single-stranded nucleic acids by scanning tunnelling microscopy. Nature, 1989, 342, 204-206.	27.8	119
86	The effect of force on thermodynamics and kinetics of single molecule reactions. Biophysical Chemistry, 2002, 101-102, 513-533.	2.8	118
87	Direct Visualization of Individual DNA Molecules by Fluorescence Microscopy: Characterization of the Factors Affecting Signal/Background and Optimization of Imaging Conditions Using YOYO. Analytical Biochemistry, 1997, 249, 44-53.	2.4	117
88	Direct observation of a force-induced switch in the anisotropic mechanical unfolding pathway of a protein. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 17820-17825.	7.1	115
89	Probing the Mechanical Folding Kinetics of TAR RNA by Hopping, Force-Jump, and Force-Ramp Methods. Biophysical Journal, 2006, 90, 250-260.	0.5	113
90	Topographical structure of membrane-boundEscherichia coliF1F0ATP synthase in aqueous buffer. FEBS Letters, 1996, 397, 30-34.	2.8	112

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91	Single-molecule in vivo imaging of bacterial respiratory complexes indicates delocalized oxidative phosphorylation. Biochimica Et Biophysica Acta - Bioenergetics, 2014, 1837, 811-824.	1.0	111
92	Complete dissection of transcription elongation reveals slow translocation of RNA polymerase II in a linear ratchet mechanism. ELife, 2013, 2, e00971.	6.0	111
93	ORGANIZATION OF PIGMENTâ€PROTEIN COMPLEXES INTO MACRODOMAINS IN THE THYLAKOID MEMBRANES OF WILDâ€TYPE and CHLOROPHYLL foâ€LESS MUTANT OF BARLEY AS REVEALED BY CIRCULAR DICHROISM. Photochemistry and Photobiology, 1991, 54, 273-281.	2.5	110
94	Identification of oligonucleotide sequences that direct the movement of the Escherichia coli FtsK translocase. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 17618-17623.	7.1	109
95	Substrate interactions and promiscuity in a viral DNA packaging motor. Nature, 2009, 461, 669-673.	27.8	107
96	Imaging of kinked configurations of DNA molecules undergoing orthogonal field alternating gel electrophoresis by fluorescence microscopy. Biochemistry, 1990, 29, 3396-3401.	2.5	106
97	High Degree of Coordination and Division of Labor among Subunits in a Homomeric Ring ATPase. Cell, 2012, 151, 1017-1028.	28.9	106
98	A two-state kinetic model for the unfolding of single molecules by mechanical force. Proceedings of the National Academy of Sciences of the United States of America, 2002, 99, 13544-13548.	7.1	104
99	Multiple modes of Escherichia coli DNA gyrase activity revealed by force and torque. Nature Structural and Molecular Biology, 2007, 14, 264-271.	8.2	101
100	Relating Single-Molecule Measurements to Thermodynamics. Biophysical Journal, 2003, 84, 733-738.	0.5	99
101	Proofreading dynamics of a processive DNA polymerase. EMBO Journal, 2009, 28, 2794-2802.	7.8	98
102	A frameshifting stimulatory stem loop destabilizes the hybrid state and impedes ribosomal translocation. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 5538-5543.	7.1	97
103	Ribosome Excursions during mRNA Translocation Mediate Broad Branching of Frameshift Pathways. Cell, 2015, 160, 870-881.	28.9	96
104	Nascent RNA structure modulates the transcriptional dynamics of RNA polymerases. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 8948-8953.	7.1	95
105	Stochastic approach to the molecular counting problem in superresolution microscopy. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, E110-8.	7.1	95
106	Effect of protein structure on mitochondrial import. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 15435-15440.	7.1	94
107	Protein-DNA chimeras for single molecule mechanical folding studies with the optical tweezers. European Biophysics Journal, 2008, 37, 729-738.	2.2	93
108	Hydrophobic catalysis and a potential biological role of DNA unstacking induced by environment effects. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 17169-17174.	7.1	92

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109	Theory of the interaction of light with large inhomogeneous molecular aggregates. I. Absorption. Journal of Chemical Physics, 1986, 84, 2961-2971.	3.0	91
110	Sequence-directed DNA export guides chromosome translocation during sporulation in Bacillus subtilis. Nature Structural and Molecular Biology, 2008, 15, 485-493.	8.2	91
111	Differential scattering of circularly polarized light by the helical sperm head from the octopus Eledone cirrhosa. Nature, 1982, 298, 773-774.	27.8	90
112	NS3 helicase actively separates RNA strands and senses sequence barriers ahead of the opening fork. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 13954-13959.	7.1	90
113	In singulo Biochemistry: When Less Is More. Annual Review of Biochemistry, 2008, 77, 45-50.	11.1	90
114	Structure of cytoplasmic ring of nuclear pore complex by integrative cryo-EM and AlphaFold. Science, 2022, 376, .	12.6	89
115	An Integrated Laser Trap/Flow Control Video Microscope for the Study of Single Biomolecules. Biophysical Journal, 2000, 79, 1155-1167.	0.5	88
116	Mechanical Fatigue in Repetitively Stretched Single Molecules of Titin. Biophysical Journal, 2001, 80, 852-863.	0.5	87
117	Length control and sharpening of atomic force microscope carbon nanotube tips assisted by an electron beam. Nanotechnology, 2005, 16, 2493-2496.	2.6	86
118	Chemically tunable mucin chimeras assembled on living cells. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 12574-12579.	7.1	86
119	Pulling chromatin fibers: computer simulations of direct physical micromanipulations. Journal of Molecular Biology, 2000, 295, 29-40.	4.2	85
120	Determination of thermodynamics and kinetics of RNA reactions by force. Quarterly Reviews of Biophysics, 2006, 39, 325-360.	5.7	85
121	Conformational flexibility in the chromatin remodeler RSC observed by electron microscopy and the orthogonal tilt reconstruction method. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 4913-4918.	7.1	84
122	Real-time control of the energy landscape by force directs the folding of RNA molecules. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 7039-7044.	7.1	83
123	Facilitated Target Location on DNA by IndividualEscherichia coli RNA Polymerase Molecules Observed with the Scanning Force Microscope Operating in Liquid. Journal of Biological Chemistry, 1999, 274, 16665-16668.	3.4	82
124	Three-dimensional architecture of the bacteriophage Ï†29 packaged genome and elucidation of its packaging process. Virology, 2008, 371, 267-277.	2.4	82
125	Ribosomal protein S1 unwinds double-stranded RNA in multiple steps. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 14458-14463.	7.1	82
126	Circular intensity differential scattering of light by helical structures. I. Theory. Journal of Chemical Physics, 1980, 73, 4273-4281.	3.0	81

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127	Exact Solutions for Kinetic Models of Macromolecular Dynamics. Journal of Physical Chemistry B, 2008, 112, 6025-6044.	2.6	81
128	Characterization of the Mechanical Unfolding of RNA Pseudoknots. Journal of Molecular Biology, 2008, 375, 511-528.	4.2	81
129	The molten globule state is unusually deformable under mechanical force. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 3796-3801.	7.1	81
130	Measurement of the Effect of Monovalent Cations on RNA Hairpin Stability. Journal of the American Chemical Society, 2007, 129, 14966-14973.	13.7	80
131	Direct measurement of the mechanical work during translocation by the ribosome. ELife, 2014, 3, e03406.	6.0	79
132	Linker Histone Tails and N-Tails of Histone H3 Are Redundant: Scanning Force Microscopy Studies of Reconstituted Fibers. Biophysical Journal, 1998, 74, 2830-2839.	0.5	78
133	Mechanochemistry of a Viral DNA Packaging Motor. Journal of Molecular Biology, 2010, 400, 186-203.	4.2	78
134	Tension induces a base-paired overstretched DNA conformation. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 15179-15184.	7.1	78
135	Design and application of a computerâ€controlled confocal scanning differential polarization microscope. Review of Scientific Instruments, 1988, 59, 2399-2408.	1.3	77
136	Unraveling the Thousand Word Picture: An Introduction to Super-Resolution Data Analysis. Chemical Reviews, 2017, 117, 7276-7330.	47.7	77
137	Linker DNA accessibility in chromatin fibers of different conformations: a reevaluation.. Proceedings of the National Academy of Sciences of the United States of America, 1994, 91, 5277-5280.	7.1	76
138	Extracting signal from noise: kinetic mechanisms from a Michaelisâ€“Mentenâ€like expression for enzymatic fluctuations. FEBS Journal, 2014, 281, 498-517.	4.7	76
139	The psiâ€type circular dichroism of large molecular aggregates. III. Calculations. Journal of Chemical Physics, 1986, 84, 2981-2989.	3.0	74
140	Molecular Mechanisms of Transcription through Single-Molecule Experiments. Chemical Reviews, 2014, 114, 3203-3223.	47.7	74
141	Unusual mechanical stability of a minimal RNA kissing complex. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 15847-15852.	7.1	73
142	Complete Unfolding of the Titin Molecule under External Force. Journal of Structural Biology, 1998, 122, 197-205.	2.8	72
143	Real-time imaging of single DNA molecules with fluorescence microscopy. Biophysical Journal, 1989, 56, 507-516.	0.5	71
144	Direct observation of large chiral domains in chloroplast thylakoid membranes by differential polarization microscopy.. Proceedings of the National Academy of Sciences of the United States of America, 1989, 86, 8748-8752.	7.1	70

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145	Force Unfolding Kinetics of RNA using Optical Tweezers. II. Modeling Experiments. Biophysical Journal, 2007, 92, 3010-3021.	0.5	69
146	Thermal Probing of E. coli RNA Polymerase Off-Pathway Mechanisms. Journal of Molecular Biology, 2008, 382, 628-637.	4.2	66
147	Contributions of Linker Histones and Histone H3 to Chromatin Structure: Scanning Force Microscopy Studies on Trypsinized Fibers. Biophysical Journal, 1998, 74, 2823-2829.	0.5	65
148	Mechanics and structure of titin oligomers explored with atomic force microscopy. Biochimica Et Biophysica Acta - Bioenergetics, 2003, 1604, 105-114.	1.0	65
149	SpoIIIE strips proteins off the DNA during chromosome translocation. Genes and Development, 2008, 22, 1786-1795.	5.9	63
150	High-resolution and high-accuracy topographic and transcriptional maps of the nucleosome barrier. ELife, 2019, 8, .	6.0	63
151	Visualizing RNA Extrusion and DNA Wrapping in Transcription Elongation Complexes of Bacterial and Eukaryotic RNA Polymerases. Journal of Molecular Biology, 2003, 326, 1413-1426.	4.2	62
152	Dynamic SpoIIIE assembly mediates septal membrane fission during Bacillus subtilis sporulation. Genes and Development, 2010, 24, 1160-1172.	5.9	60
153	Towards a molecular description of pulsed-field gel electrophoresis. Trends in Biotechnology, 1993, 11, 23-30.	9.3	59
154	Condensation Transition in DNA-Polyaminoamide Dendrimer Fibers Studied Using Optical Tweezers. Physical Review Letters, 2006, 96, 118301.	7.8	59
155	Optimized two-color super resolution imaging of Drp1 during mitochondrial fission with a slow-switching Dronpa variant. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 13093-13098.	7.1	59
156	Nucleotide and Partner-Protein Control of Bacterial Replicative Helicase Structure and Function. Molecular Cell, 2013, 52, 844-854.	9.7	57
157	Knots can impair protein degradation by ATP-dependent proteases. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 9864-9869.	7.1	57
158	Bayesian estimates of free energies from nonequilibrium work data in the presence of instrument noise. Journal of Chemical Physics, 2008, 129, 024102.	3.0	56
159	Circular intensity differential scattering of light by helical structures. II. Applications. Journal of Chemical Physics, 1980, 73, 6046-6055.	3.0	55
160	Circular intensity differential scattering of light. IV. Randomly oriented species. Journal of Chemical Physics, 1982, 76, 3440-3446.	3.0	54
161	Interaction of water-soluble porphyrins with single- and double-stranded polyribonucleotides. Biopolymers, 1994, 34, 1099-1104.	2.4	54
162	Sequence-specific recognition of cytosine C5 and adenine N6 DNA methyltransferases requires different deformations of DNA.. Proceedings of the National Academy of Sciences of the United States of America, 1996, 93, 7618-7622.	7.1	54

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163	Helically organized macroaggregates of pigment-protein complexes in chloroplasts: evidence from circular intensity differential scattering. Biochemistry, 1988, 27, 5839-5843.	2.5	53
164	Methods in Statistical Kinetics. Methods in Enzymology, 2010, 475, 221-257.	1.0	53
165	Identification of the FtsK sequence-recognition domain. Nature Structural and Molecular Biology, 2006, 13, 1023-1025.	8.2	52
166	Substrate-translocating loops regulate mechanochemical coupling and power production in AAA+ protease ClpXP. Nature Structural and Molecular Biology, 2016, 23, 974-981.	8.2	52
167	Transcription factors IIS and IIF enhance transcription efficiency by differentially modifying RNA polymerase pausing dynamics. Proceedings of the National Academy of Sciences of the United States of America, 2014, 111, 3419-3424.	7.1	49
168	Real-time imaging of the reorientation mechanisms of YOYO-labelled DNA molecules during 90 degrees and 120 degrees pulsed field gel electrophoresis. Nucleic Acids Research, 1996, 24, 4759-4767.	14.5	48
169	Single molecule transcription elongation. Methods, 2009, 48, 323-332.	3.8	47
170	Role of linker histones in extended chromatin fibre structure. Nature Structural Biology, 1994, 1, 761-763.	9.7	46
171	Visualization and Analysis of Chromatin by Scanning Force Microscopy. Methods, 1997, 12, 73-83.	3.8	46
172	Co-temporal Force and Fluorescence Measurements Reveal a Ribosomal Gear Shift Mechanism of Translation Regulation by Structured mRNAs. Molecular Cell, 2019, 75, 1007-1019.e5.	9.7	46
173	Differential scattering (CIDS) of circularly polarized light by dense particles. Journal of Chemical Physics, 1984, 80, 4817-4823.	3.0	45
174	Mechanical Operation and Intersubunit Coordination of Ring-Shaped Molecular Motors: Insights from Single-Molecule Studies. Biophysical Journal, 2014, 106, 1844-1858.	0.5	45
175	Trapping of megabase-sized DNA molecules during agarose gel electrophoresis. Proceedings of the National Academy of Sciences of the United States of America, 1999, 96, 453-458.	7.1	43
176	Limitations of Constant-Force-Feedback Experiments. Biophysical Journal, 2012, 103, 1490-1499.	0.5	42
177	Pause sequences facilitate entry into long-lived paused states by reducing RNA polymerase transcription rates. Nature Communications, 2018, 9, 2930.	12.8	42
178	DNA Molecular Handles for Single-Molecule Protein-Folding Studies by Optical Tweezers. Methods in Molecular Biology, 2011, 749, 255-271.	0.9	42
179	Circular intensity differential scattering of light by helical structures. III. A general polarizability tensor and anomalous scattering. Journal of Chemical Physics, 1981, 74, 4839-4850.	3.0	41
180	Trigger loop folding determines transcription rate of Escherichia coliâ€™s RNA polymerase. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 743-748.	7.1	41

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181	The Bacterial Condensin MukBEF Compacts DNA into a Repetitive, Stable Structure. Science, 2004, 305, 222-227.	12.6	40
182	Tension-dependent structural deformation alters single-molecule transition kinetics. Proceedings of the National Academy of Sciences of the United States of America, 2011, 108, 1885-1890.	7.1	40
183	Model and computer simulations of the motion of DNA molecules during pulse field gel electrophoresis. Biochemistry, 1991, 30, 5264-5274.	2.5	39
184	Non-equilibrium dynamics of a nascent polypeptide during translation suppress its misfolding. Nature Communications, 2019, 10, 2709.	12.8	39
185	Full molecular trajectories of RNA polymerase at single base-pair resolution. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 1286-1291.	7.1	36
186	Imaging differential polarization microscope with electronic readout. Review of Scientific Instruments, 1985, 56, 2228-2236.	1.3	35
187	Unfolding single RNA molecules: bridging the gap between equilibrium and non-equilibrium statistical thermodynamics. Quarterly Reviews of Biophysics, 2005, 38, 291-301.	5.7	35
188	Single Molecule Conformational Memory Extraction: P5ab RNA Hairpin. Journal of Physical Chemistry B, 2014, 118, 6597-6603.	2.6	35
189	Using a systemâ€™s equilibrium behavior to reduce its energy dissipation in nonequilibrium processes. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 5920-5924.	7.1	35
190	Mechanistic constraints from the substrate concentration dependence of enzymatic fluctuations. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 15739-15744.	7.1	34
191	Mechanisms of Cellular Proteostasis: Insights from Single-Molecule Approaches. Annual Review of Biophysics, 2014, 43, 119-140.	10.0	34
192	Visualization and functional dissection of coaxial paired SpoIIIE channels across the sporulation septum. ELife, 2015, 4, e06474.	6.0	34
193	Daunomycin inverts the long-range chirality of DNA condensed states. Biochemistry, 1991, 30, 5661-5666.	2.5	32
194	Single-molecule diffusometry reveals no catalysis-induced diffusion enhancement of alkaline phosphatase as proposed by FCS experiments. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 21328-21335.	7.1	32
195	Fluorescence Measurements on the E.coli DNA Polymerase Clamp Loader: Implications for Conformational Changes During ATP and Clamp Binding. Journal of Molecular Biology, 2004, 336, 1047-1059.	4.2	31
196	Molecular switch-like regulation enables global subunit coordination in a viral ring ATPase. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 7961-7966.	7.1	30
197	Could AlphaFold revolutionize chemical therapeutics?. Nature Structural and Molecular Biology, 2021, 28, 771-772.	8.2	30
198	Effects of tipâ€sample forces and humidity on the imaging of DNA with a scanning force microscope. Scanning, 1996, 18, 344-350.	1.5	29

#	Article	IF	Citations
199	The energy cost of polypeptide knot formation and its folding consequences. Nature Communications, 2017, 8, 1581.	12.8	28
200	Finding a protein's Achilles heel. Nature Structural and Molecular Biology, 2003, 10, 674-676.	8.2	27
201	Analysis of P Element Transposase Protein-DNA Interactions during the Early Stages of Transposition. Journal of Biological Chemistry, 2007, 282, 29002-29012.	3.4	26
202	Programming chain-growth copolymerization of DNA hairpin tiles for in-vitro hierarchical supramolecular organization. Nature Communications, 2019, 10, 1006.	12.8	26
203	Differential polarization imaging. I. Theory. Biophysical Journal, 1987, 52, 911-927.	0.5	25
204	Effect of Poly(ADP-ribosyl)ation and Mg2+ Ions on Chromatin Structure Revealed by Scanning Force Microscopy. Biochemistry, 2001, 40, 10947-10955.	2.5	25
205	Circular dichroism in samples which scatter light. Trends in Biochemical Sciences, 1983, 8, 41-44.	7.5	24
206	Circular Dichroism Studies on Single Chinese Hamster Cells. Biochemistry, 1985, 24, 5152-5157.	2.5	24
207	High-Resolution Dual-Trap Optical Tweezers with Differential Detection: Instrument Design. Cold Spring Harbor Protocols, 2009, 2009, pdb.ip73.	0.3	24
208	Peptide Nucleic Acids as Tools for Single-Molecule Sequence Detection and Manipulation. Nano Letters, 2010, 10, 4697-4701.	9.1	24
209	Expressions for the interpretation of circular intensity differential scattering of chiral aggregates. Biopolymers, 1985, 24, 1595-1612.	2.4	23
210	Scanning tunneling microscopy. II. Calculation of images of atomic and molecular adsorbates. Physical Review B, 1995, 51, 11089-11102.	3.2	22
211	Mechanical Manipulation of Single Titin Molecules with Laser Tweezers. Advances in Experimental Medicine and Biology, 2000, 481, 111-128.	1.6	22
212	Guanosine triphosphate acts as a cofactor to promote assembly of initial P-element transposase-DNA synaptic complexes. Genes and Development, 2005, 19, 1422-1425.	5.9	21
213	Atomic Force Microscopy of Photosystem II and Its Unit Cell Clustering Quantitatively Delineate the Mesoscale Variability in Arabidopsis Thylakoids. PLoS ONE, 2014, 9, e101470.	2.5	21
214	New insights into the regulatory mechanisms of ppGpp and DksA on Escherichia coli RNA polymeraseâ€“promoter complex. Nucleic Acids Research, 2015, 43, 5249-5262.	14.5	21
215	An analysis of circular intensity differential scattering measurements: Studies on the sperm cell ofeledone cirrhosa. Biopolymers, 1986, 25, 2043-2064.	2.4	20
216	Scanning tunneling microscopy images of metalâ€coated bacteriophages and uncoated, doubleâ€stranded DNA. Journal of Vacuum Science and Technology A: Vacuum, Surfaces and Films, 1990, 8, 706-712.	2.1	20

#	Article	IF	Citations
217	Model computations on the differential scattering of circularly polarized light (CIDS) by dense macromolecular particles. Biopolymers, 1985, 24, 783-797.	2.4	19
218	Electro-Optic and Non-Linear Optical Coefficients of (Pb, La)(Zr, Ti)O₃, BaTiO₃, (Sr, Ba)Nb₂O₆ and Ba₂NaNb₅O₁₅ Thin Films. Materials Research Society Symposia Proceedings, 1990, 200, 261.	0.1	19
219	Attaching molecules to surfaces for scanning probe microscopy. Biophysical Journal, 1993, 64, 896-897.	0.5	19
220	The Biogenesis of SRP RNA Is Modulated by an RNA Folding Intermediate Attained during Transcription. Molecular Cell, 2020, 77, 241-250.e8.	9.7	19
221	Imaging of metal-coated biological samples by scanning tunneling microscopy. Ultramicroscopy, 1989, 27, 367-373.	1.9	18
222	A method for imaging E. coli. RNA polymerase holoenzyme with the scanning tunneling microscope in an aqueous environment. Journal of Vacuum Science & Technology an Official Journal of the American Vacuum Society B, Microelectronics Processing and Phenomena, 1991, 9, 1291.	1.6	18
223	Introduction to Single Molecule Imaging and Mechanics: Seeing and Touching Molecules One at a Time. Chemical Reviews, 2014, 114, 3069-3071.	47.7	18
224	Two-subunit DNA escort mechanism and inactive subunit bypass in an ultra-fast ring ATPase. ELife, 2015, 4, .	6.0	18
225	Differential Polarization Microscopy: A New Imaging Technique. Bio/technology, 1985, 3, 711-714.	1.5	17
226	Differential polarization imaging. II. Symmetry properties and calculations. Biophysical Journal, 1987, 52, 929-946.	0.5	17
227	Physical Parameters That Control the Imaging of Purple Membranes with the Scanning Tunneling Microscope. Langmuir, 1995, 11, 2109-2114.	3.5	17
228	Differential force microscope for long time-scale biophysical measurements. Review of Scientific Instruments, 2007, 78, 043711.	1.3	17
229	Programming PAM antennae for efficient CRISPR-Cas9 DNA editing. Science Advances, 2020, 6, eaay9948.	10.3	17
230	Tunable, biodegradable grafting-from glycopolypeptide bottlebrush polymers. Nature Communications, 2021, 12, 6472.	12.8	17
231	<title>Scanning force microscopy of circular DNA and chromatin in air and propanol</title>. , 1992, , .		16
232	Sequence-Dependent Upstream DNAâ€“RNA Polymerase Interactions in the Open Complex with Î»PR and Î»PRM Promoters and Implications for the Mechanism of Promoter Interference. Journal of Molecular Biology, 2009, 385, 748-760.	4.2	16
233	High-Resolution Dual-Trap Optical Tweezers with Differential Detection: An Introduction: Figure 1.. Cold Spring Harbor Protocols, 2009, 2009, pdb.top60.	0.3	16
234	Friction-driven membrane scission by the human ESCRT-III proteins CHMP1B and IST1. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, .	7.1	16

#	Article	IF	Citations
235	Of torques, forces, and protein machines. Protein Science, 2009, 13, 3061-3065.	7.6	15
236	Circular intensity differential scattering of light by hierarchical molecular structures. Journal of Chemical Physics, 1986, 84, 1916-1921.	3.0	14
237	Differential polarization microscope using an image dissector camera and phaseâ€lock detection. Review of Scientific Instruments, 1987, 58, 1987-1995.	1.3	13
238	Differential polarization imaging. III. Theory confirmation. Patterns of polymerization of hemoglobin S in red blood sickle cells. Biophysical Journal, 1987, 52, 947-954.	0.5	13
239	A study of some lyotropic cholesteric mesophases by circular and linear dichroism and by circular intensity differential scattering. Liquid Crystals, 1988, 3, 101-113.	2.2	13
240	Mechanical, electrical, and chemical manipulation of single DNA molecules. Nanotechnology, 1992, 3, 16-20.	2.6	13
241	A very low current scanning tunneling microscope. Review of Scientific Instruments, 1995, 66, 4876-4879.	1.3	13
242	Differential polarization imaging. V. Numerical aperture effects and the contribution of preferential scattering and absorption to the circular dichroism images. Biophysical Journal, 1991, 59, 1183-1193.	0.5	12
243	Molecular switch-like regulation in motor proteins. Philosophical Transactions of the Royal Society B: Biological Sciences, 2018, 373, 20170181.	4.0	12
244	Intercalation of cationic dyes in the DNA double helix: Introductory theory. Biopolymers, 1984, 23, 629-645.	2.4	11
245	Fluorescence Microscopy of the Dynamics of Supercoiling, Folding, and Condensation of Bacterial Chromosomes, Induced by Acridine Orange. Journal of Biomolecular Structure and Dynamics, 1990, 8, 643-655.	3.5	11
246	Coupling Translocation with Nucleic Acid Unwinding by NS3 Helicase. Journal of Molecular Biology, 2010, 404, 439-455.	4.2	11
247	Design and construction of a circular intensity differential scattering instrument. Review of Scientific Instruments, 1984, 55, 1574-1579.	1.3	10
248	Scanning tunneling microscopy. I. Theoretical framework and coherence effects. Physical Review B, 1995, 51, 11074-11088.	3.2	10
249	High-Resolution Dual-Trap Optical Tweezers with Differential Detection: Alignment of Instrument Components. Cold Spring Harbor Protocols, 2009, 2009, pdb.ip76-pdb.ip76.	0.3	10
250	Mechanochemical coupling and bi-phasic force-velocity dependence in the ultra-fast ring ATPase SpoIIIE. ELife, 2018, 7, .	6.0	10
251	Observation of single DNA molecules during pulsed-field gel electrophoresis by fluorescence microscopy. Methods, 1990, 1, 151-159.	3.8	9
252	Electrodeposition procedure of E. coli RNA polymerase onto gold and deposition of E. coli RNA polymerase onto mica for observation with scanning force microscopy. Ultramicroscopy, 1992, 42-44, 1173-1180.	1.9	9

#	Article	IF	Citations
253	Purification and staining of intact yeast DNA chromosomes and real-time observation of their migration during gel electrophoresis. Biochemical Journal, 1997, 326, 131-138.	3.7	9
254	The Circular Intensity Differential Scattering (CIDS) of Cholesteric and Blue Mesophases. Molecular Crystals and Liquid Crystals, 1984, 111, 79-102.	0.8	8
255	Deposition and imaging of metal-coated biomolecules with the STM. Ultramicroscopy, 1992, 42-44, 1250-1254.	1.9	8
256	High-Resolution Dual-Trap Optical Tweezers with Differential Detection: Managing Environmental Noise. Cold Spring Harbor Protocols, 2009, 2009, pdb.ip72-pdb.ip72.	0.3	8
257	High-Resolution Dual-Trap Optical Tweezers with Differential Detection: Data Collection and Instrument Calibration: Figure 1.. Cold Spring Harbor Protocols, 2009, 2009, pdb.ip74.	0.3	7
258	Production and characterization of a highly pure RNA polymerase holoenzyme from Mycobacterium tuberculosis. Protein Expression and Purification, 2017, 134, 1-10.	1.3	7
259	A DNA packaging motor inchworms along one strand allowing it to adapt to alternative double-helical structures. Nature Communications, 2021, 12, 3439.	12.8	7
260	RECENT ADVANCES IN POLARIZATION SPECTROSCOPY: PERSPECTIVES OF THE EXTENSION TO THE SOFT Xâ€RAY REGION. Photochemistry and Photobiology, 1986, 44, 331-341.	2.5	6
261	Deciphering the Molecular Mechanism of the Bacteriophage Ï†29 DNA Packaging Motor. Methods in Molecular Biology, 2017, 1486, 343-355.	0.9	6
262	Atomic Force Microscopy Visualizes Mobility of Photosynthetic Proteins in Grana Thylakoid Membranes. Biophysical Journal, 2020, 118, 1876-1886.	0.5	6
263	High-Resolution Dual-Trap Optical Tweezers with Differential Detection: Minimizing the Influence of Measurement Noise. Cold Spring Harbor Protocols, 2009, 2009, pdb.ip75-pdb.ip75.	0.3	5
264	Quantum mechanical treatment of circular intensity differential scattering: The elastic process. Journal of Chemical Physics, 1984, 81, 1643-1649.	3.0	4
265	Use of circularly polarized light to study biological macromolecules. Pure and Applied Chemistry, 1984, 56, 1423-1428.	1.9	4
266	Bacteriophage Phi29 Negatively Twists DNA During Packaging. Biophysical Journal, 2009, 96, 416a.	0.5	4
267	Helical inchworming: a novel translocation mechanism for a ring ATPase. Biophysical Reviews, 2021, 13, 885-888.	3.2	4
268	<title>Manipulation of single-DNA molecules and measurements of their elastic properties under an optical microscope</title>. , 1991, 1435, 179.		3
269	Molecular Handles for the Mechanical Manipulation of Single-Membrane Proteins in Living Cells. IEEE Transactions on Nanobioscience, 2005, 4, 269-276.	3.3	3
270	Revisiting the Central Dogma One Molecule at a Time. Cell, 2011, 145, 160.	28.9	3

#	Article	IF	Citations
271	Molecular machines one molecule at a time. Protein Science, 2017, 26, 1245-1248.	7.6	3
272	Viral DNA Packaging: One Step at a Time. Springer Series in Chemical Physics, 2010, , 237-269.	0.2	3
273	Contribution of differential scattering of circularly polarized light to the optical rotatory dispersion of a sample. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 1984, 1, 1114.	1.5	2
274	Probing Biological Surfaces: STM and SFM in Biology . Othmar Marti And Matthias Amrein, Eds. Academic Press, San Diego, CA, 1993. xii, 331 pp., illus. $69.95 or Â£54.. Science, 1994, 264, 296-296.	12.6	2
275	Preparation of Bioderived and Biodegradable Surfactants Based on an Intrinsically Disordered Protein Sequence. Biomacromolecules, 2022, 23, 1462-1470.	5.4	2
276	2,6-Di(isobutyrylamino)hexanoic Acid as a Potential Therapeutic Agent for the Treament of Sickle Cell Disease. Annals of the New York Academy of Sciences, 1989, 565, 353-355.	3.8	1
277	<title>Role of the structural domains of linker histones and histone H3 in the chromatin fiber structure at low-ionic strength: scanning force microscopy (SFM) studies on partially trypsinized chromatin</title>. , 1995, , .		1
278	Nicholas R. Cozzarelli (1938â€“2006). ACS Chemical Biology, 2006, 1, 123-125.	3.4	1
279	Physical Biology at the Crossroads. , 2008, , 115-135.		1
280	Differential Polarization Imaging: Theory and Applications. , 1988, , 313-356.		1
281	Probing Biological Surfaces: STM and SFM in Biology . Othmar Marti And Matthias Amrein, Eds. Academic Press, San Diego, CA, 1993. xii, 331 pp., illus. $69.95 or Â£54.. Science, 1994, 264, 296-296.	12.6	1
282	Observation of Intracellular Sickle Cell Hemoglobin Polymers with a Differential Polarization Microscope. Annals of the New York Academy of Sciences, 1989, 565, 438-439.	3.8	0
283	The origin of the superposition principle for circular intensity differential scattering by hierarchical chiral structures. Journal of Chemical Physics, 1990, 92, 875-881.	3.0	0
284	Scanning Tunneling Microscopy of E. coli RNA Polymerase Electrochemically Deposited onto an Au Substrate. AIP Conference Proceedings, 1991, , .	0.4	0
285	Letting the cat out of the bag: a personal journey in Biophysics. Physical Biology, 2014, 11, 053012.	1.8	0
286	The eternal molecule. , 2003, , 82-139.		0
287	Circular Differential Microscopy. , 1985, , 133-146.		0
288	Differential polarization microscopy: Theory and applications. Proceedings Annual Meeting Electron Microscopy Society of America, 1988, 46, 60-61.	0.0	0

#	Article	IF	Citations
289	Under the microscope. Carlos Bustamante, Ph.D. BioTechniques, 2007, 42, 411.	1.8	0