Carlos Bustamante

List of Publications by Year
in descending order

253 papers	36,950 citations	3288 93 h-index	3301 184 g-index
290 all docs	290 docs citations	290 times ranked	23270 citing authors

#	Article	IF	Citations
1	Ten years of tension: single-molecule DNA mechanics. Nature, 2003, 421, 423-427.	36.2	1,224
2	Recent Advances in Optical Tweezers. Annual Review of Biochemistry, 2008, 77, 205-228.	11.2	1,013
3	The bacteriophage Ï†29 portal motor can package DNA against a large internal force. Nature, 2001, 413, 748-752.	36.2	995
4	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.	7.6	943
5	How RNA folds. Journal of Molecular Biology, 1999, 293, 271-281.	4.3	901
6	Porphyrin assemblies on DNA as studied by a resonance light-scattering technique. Journal of the American Chemical Society, 1993, 115, 5393-5399.	14.6	849
7	Reversible Unfolding of Single RNA Molecules by Mechanical Force. Science, 2001, 292, 733-737.	20.9	841
8	Single-molecule studies of DNA mechanics. Current Opinion in Structural Biology, 2000, 10, 279-285.	5.9	763
9	Mechanical Processes in Biochemistry. Annual Review of Biochemistry, 2004, 73, 705-748.	11.2	733
10	Scanning Force Microscopy of DNA Deposited onto Mica: EquilibrationversusKinetic Trapping Studied by Statistical Polymer Chain Analysis. Journal of Molecular Biology, 1996, 264, 919-932.	4.3	647
11	The Nonequilibrium Thermodynamics of Small Systems. Physics Today, 2005, 58, 43-48.	0.4	623
12	Direct Observation of the Three-State Folding of a Single Protein Molecule. Science, 2005, 309, 2057-2060.	20.9	601
13	Rapid spontaneous accessibility of nucleosomal DNA. Nature Structural and Molecular Biology, 2005, 12, 46-53.	8.1	588
14	Structural transitions and elasticity from torque measurements on DNA. Nature, 2003, 424, 338-341.	36.2	541
15	Single-molecule studies of the effect of template tension on T7 DNA polymerase activity. Nature, 2000, 404, 103-106.	36.2	469
16	Following translation by single ribosomes one codon at a time. Nature, 2008, 452, 598-603.	36.2	451
17	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.	7.6	444
18	Circular DNA molecules imaged in air by scanning force microscopy. Biochemistry, 1992, 31, 22-26.	2.6	439

#	Article	IF	Citations
19	Grabbing the cat by the tail: manipulating molecules one by one. Nature Reviews Molecular Cell Biology, 2000, 1, 130-136.	37.3	377
20	DNA overwinds when stretched. Nature, 2006, 442, 836-839.	36.2	362
21	RNA translocation and unwinding mechanism of HCV NS3 helicase and its coordination by ATP. Nature, 2006, 439, 105-108.	36.2	344
22	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.	7.6	344
23	Escherichia coli RNA Polymerase Activity Observed Using Atomic Force Microscopy. Biochemistry, 1997, 36, 461-468.	2.6	341
24	Conjugation of DNA to Silanized Colloidal Semiconductor Nanocrystalline Quantum Dots. Chemistry of Materials, 2002, 14, 2113-2119.	7.1	314
25	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.	7.6	296
26	The Physics of Molecular Motors. Accounts of Chemical Research, 2001, 34, 412-420.	16.6	292
27	The ribosome uses two active mechanisms to unwind messenger RNA during translation. Nature, 2011, 475, 118-121.	36.2	282
28	Optical tweezers in single-molecule biophysics. Nature Reviews Methods Primers, 2021, 1, .	18.8	281
29	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.	7.6	280
30	Polymer chain statistics and conformational analysis of DNA molecules with bends or sections of different flexibility. Journal of Molecular Biology, 1998, 280, 41-59.	4.3	279
31	Intersubunit coordination in a homomeric ring ATPase. Nature, 2009, 457, 446-450.	36.2	274
32	Mechanism of Force Generation of a Viral DNA Packaging Motor. Cell, 2005, 122, 683-692.	27.8	263
33	ClpX(P) Generates Mechanical Force to Unfold and Translocate Its Protein Substrates. Cell, 2011, 145, 459-469.	27.8	263
34	[7] Optical-trap force transducer that operates by direct measurement of light momentum. Methods in Enzymology, 2003, 361, 134-162.	1.7	260
35	Stretching of Single Collapsed DNA Molecules. Biophysical Journal, 2000, 78, 1965-1978.	0.5	255
36	Backtracking determines the force sensitivity of RNAPâ€‰II in a factor-dependent manner. Nature, 2007, 446, 820-823.	36.2	254

#	Article	IF	Citations
37	The Mechanochemistry of Molecular Motors. Biophysical Journal, 2000, 78, 541-556.	0.5	253
38	Scanning Force Microscopy in Biology. Physics Today, 1995, 48, 32-38.	0.4	248
39	Direct Observation of One-Dimensional Diffusion and Transcription by Escherichia coli RNA Polymerase. Biophysical Journal, 1999, 77, 2284-2294.	0.5	240
40	Unusual Oligomerization Required for Activity of NtrC, a Bacterial Enhancer-Binding Protein. Science, 1997, 275, 1658-1661.	20.9	238
41	The folding cooperativity of a protein is controlled by its chain topology. Nature, 2010, 465, 637-640.	36.2	227
42	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.	7.6	220
43	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.	7.6	219
44	Positive Torsional Strain Causes the Formation of a Four-way Junction at Replication Forks. Journal of Biological Chemistry, 2001, 276, 2790-2796.	3.5	212
45	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.	7.6	208
46	DNA Translocation and Loop Formation Mechanism of Chromatin Remodeling by SWI/SNF and RSC. Molecular Cell, 2006, 24, 559-568.	9.6	199
47	The heat released during catalytic turnover enhances the diffusion of an enzyme. Nature, 2015, 517, 227-230.	36.2	196
48	Wrapping of DNA around the E.coli RNA polymerase open promoter complex. EMBO Journal, 1999, 18, 4464-4475.	8.2	195
49	Effect of force on mononucleosomal dynamics. Proceedings of the National Academy of Sciences of the United States of America, 2006, 103, 15871-15876.	7.6	194
50	Light-powering Escherichia coli with proteorhodopsin. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 2408-2412.	7.6	186
51	Theory of the interaction of light with large inhomogeneous molecular aggregates. II. Psiâ€type circular dichroism. Journal of Chemical Physics, 1986, 84, 2972-2980.	3.1	183
52	Scanning force microscopy under aqueous solutions. Current Opinion in Structural Biology, 1997, 7, 709-716.	5.9	182
53	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	177
54	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.	7.6	174

#	Article	IF	Citations
55	Mechanochemical analysis of DNA gyrase using rotor bead tracking. Nature, 2006, 439, 100-104.	36.2	174
56	Temperature Control Methods in a Laser Tweezers System. Biophysical Journal, 2005, 89, 1308-1316.	0.5	170
57	Revisiting the Central Dogma One Molecule at a Time. Cell, 2011, 144, 480-497.	27.8	168
58	Nucleosomal Elements that Control the Topography of the Barrier to Transcription. Cell, 2012, 151, 738-749.	27.8	166
59	Laminin and biomimetic extracellular elasticity enhance functional differentiation in mammary epithelia. EMBO Journal, 2008, 27, 2829-2838.	8.2	165
60	Sequence-Directed DNA Translocation by Purified FtsK. Science, 2005, 307, 586-590.	20.9	164
61	Transcriptional activation via DNA-looping: visualization of intermediates in the activation pathway of E. coli RNA polymeraseÂ·Ïƒ54 holoenzyme by scanning force microscopy. Journal of Molecular Biology, 1997, 270, 125-138.	4.3	143
62	Single-Molecule Studies of Protein Folding with Optical Tweezers. Annual Review of Biochemistry, 2020, 89, 443-470.	11.2	143
63	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.	7.6	138
64	Force Unfolding Kinetics of RNA Using Optical Tweezers. I. Effects of Experimental Variables on Measured Results. Biophysical Journal, 2007, 92, 2996-3009.	0.5	136
65	The elongation rate of RNA polymerase determines the fate of transcribed nucleosomes. Nature Structural and Molecular Biology, 2011, 18, 1394-1399.	8.1	132
66	A Viral Packaging Motor Varies Its DNA Rotation and Step Size to Preserve Subunit Coordination as the Capsid Fills. Cell, 2014, 157, 702-713.	27.8	132
67	Biochemical and structural applications of scanning force microscopy. Current Opinion in Structural Biology, 1994, 4, 750-760.	5.9	131
68	Experimental Test of Connector Rotation during DNA Packaging into Bacteriophage Ï†29 Capsids. PLoS Biology, 2007, 5, e59.	5.4	131
69	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.	7.6	128
70	The ClpXP Protease Unfolds Substrates Using a Constant Rate of Pulling but Different Gears. Cell, 2013, 155, 636-646.	27.8	126
71	Scanning force microscopy of nucleic acids and nucleoprotein assemblies. Current Opinion in Structural Biology, 1993, 3, 363-372.	5.9	124
72	Images of single-stranded nucleic acids by scanning tunnelling microscopy. Nature, 1989, 342, 204-206.	36.2	121

#	Article	IF	Citations
73	The effect of force on thermodynamics and kinetics of single molecule reactions. Biophysical Chemistry, 2002, 101-102, 513-533.	2.9	118
74	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.	2.5	117
75	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.	7.6	116
76	Complete dissection of transcription elongation reveals slow translocation of RNA polymerase II in a linear ratchet mechanism. ELife, 2013, 2, e00971.	5.9	114
77	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
78	Single-molecule in vivo imaging of bacterial respiratory complexes indicates delocalized oxidative phosphorylation. Biochimica Et Biophysica Acta - Bioenergetics, 2014, 1837, 811-824.	1.6	111
79	Structure of cytoplasmic ring of nuclear pore complex by integrative cryo-EM and AlphaFold. Science, 2022, 376, .	20.9	111
80	High Degree of Coordination and Division of Labor among Subunits in a Homomeric Ring ATPase. Cell, 2012, 151, 1017-1028.	27.8	110
81	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.	7.6	109
82	Substrate interactions and promiscuity in a viral DNA packaging motor. Nature, 2009, 461, 669-673.	36.2	108
83	Imaging of kinked configurations of DNA molecules undergoing orthogonal field alternating gel electrophoresis by fluorescence microscopy. Biochemistry, 1990, 29, 3396-3401.	2.6	106
84	Multiple modes of Escherichia coli DNA gyrase activity revealed by force and torque. Nature Structural and Molecular Biology, 2007, 14, 264-271.	8.1	102
85	Relating Single-Molecule Measurements to Thermodynamics. Biophysical Journal, 2003, 84, 733-738.	0.5	100
86	Proofreading dynamics of a processive DNA polymerase. EMBO Journal, 2009, 28, 2794-2802.	8.2	99
87	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.	7.6	99
88	Ribosome Excursions during mRNA Translocation Mediate Broad Branching of Frameshift Pathways. Cell, 2015, 160, 870-881.	27.8	99
89	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.	7.6	98
90	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.	7.6	98

#	Article	IF	Citations
91	Effect of protein structure on mitochondrial import. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 15435-15440.	7.6	96
92	Protein-DNA chimeras for single molecule mechanical folding studies with the optical tweezers. European Biophysics Journal, 2008, 37, 729-738.	2.3	95
93	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.	7.6	95
94	Differential scattering of circularly polarized light by the helical sperm head from the octopus Eledone cirrhosa. Nature, 1982, 298, 773-774.	36.2	94
95	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.	7.6	92
96	Theory of the interaction of light with large inhomogeneous molecular aggregates. I. Absorption. Journal of Chemical Physics, 1986, 84, 2961-2971.	3.1	91
97	Sequence-directed DNA export guides chromosome translocation during sporulation in Bacillus subtilis. Nature Structural and Molecular Biology, 2008, 15, 485-493.	8.1	91
98	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.	7.6	91
99	In singulo Biochemistry: When Less Is More. Annual Review of Biochemistry, 2008, 77, 45-50.	11.2	90
100	An Integrated Laser Trap/Flow Control Video Microscope for the Study of Single Biomolecules. Biophysical Journal, 2000, 79, 1155-1167.	0.5	88
101	Mechanical Fatigue in Repetitively Stretched Single Molecules of Titin. Biophysical Journal, 2001, 80, 852-863.	0.5	88
102	Determination of thermodynamics and kinetics of RNA reactions by force. Quarterly Reviews of Biophysics, 2006, 39, 325-360.	5.5	87
103	Pulling chromatin fibers: computer simulations of direct physical micromanipulations. Journal of Molecular Biology, 2000, 295, 29-40.	4.3	86
104	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.	7.6	85
105	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.	7.6	84
106	Exact Solutions for Kinetic Models of Macromolecular Dynamics. Journal of Physical Chemistry B, 2008, 112, 6025-6044.	2.7	84
107	Unraveling the Thousand Word Picture: An Introduction to Super-Resolution Data Analysis. Chemical Reviews, 2017, 117, 7276-7330.	51.4	84
108	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.	3.5	83

#	Article	IF	Citations
109	Three-dimensional architecture of the bacteriophage Ï†29 packaged genome and elucidation of its packaging process. Virology, 2008, 371, 267-277.	2.5	83
110	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.	7.6	83
111	Characterization of the Mechanical Unfolding of RNA Pseudoknots. Journal of Molecular Biology, 2008, 375, 511-528.	4.3	82
112	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.	7.6	82
113	Circular intensity differential scattering of light by helical structures. I. Theory. Journal of Chemical Physics, 1980, 73, 4273-4281.	3.1	81
114	Measurement of the Effect of Monovalent Cations on RNA Hairpin Stability. Journal of the American Chemical Society, 2007, 129, 14966-14973.	14.6	80
115	Direct measurement of the mechanical work during translocation by the ribosome. ELife, 2014, 3, e03406.	5.9	80
116	Mechanochemistry of a Viral DNA Packaging Motor. Journal of Molecular Biology, 2010, 400, 186-203.	4.3	79
117	Design and application of a computerâ€controlled confocal scanning differential polarization microscope. Review of Scientific Instruments, 1988, 59, 2399-2408.	1.4	78
118	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
119	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.	7.6	78
120	The psiâ€type circular dichroism of large molecular aggregates. III. Calculations. Journal of Chemical Physics, 1986, 84, 2981-2989.	3.1	75
121	Molecular Mechanisms of Transcription through Single-Molecule Experiments. Chemical Reviews, 2014, 114, 3203-3223.	51.4	75
122	Complete Unfolding of the Titin Molecule under External Force. Journal of Structural Biology, 1998, 122, 197-205.	2.9	73
123	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.	7.6	73
124	Mechanics and structure of titin oligomers explored with atomic force microscopy. Biochimica Et Biophysica Acta - Bioenergetics, 2003, 1604, 105-114.	1.6	66
125	Thermal Probing of E. coli RNA Polymerase Off-Pathway Mechanisms. Journal of Molecular Biology, 2008, 382, 628-637.	4.3	66
126	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

#	Article	IF	Citations
127	SpoIIIE strips proteins off the DNA during chromosome translocation. Genes and Development, 2008, 22, 1786-1795.	5.9	63
128	Visualizing RNA Extrusion and DNA Wrapping in Transcription Elongation Complexes of Bacterial and Eukaryotic RNA Polymerases. Journal of Molecular Biology, 2003, 326, 1413-1426.	4.3	62
129	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.	7.6	62
130	Dynamic SpoIIIE assembly mediates septal membrane fission during Bacillus subtilis sporulation. Genes and Development, 2010, 24, 1160-1172.	5.9	60
131	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.	7.6	60
132	Nucleotide and Partner-Protein Control of Bacterial Replicative Helicase Structure and Function. Molecular Cell, 2013, 52, 844-854.	9.6	59
133	Bayesian estimates of free energies from nonequilibrium work data in the presence of instrument noise. Journal of Chemical Physics, 2008, 129, 024102.	3.1	57
134	Circular intensity differential scattering of light. IV. Randomly oriented species. Journal of Chemical Physics, 1982, 76, 3440-3446.	3.1	56
135	Interaction of water-soluble porphyrins with single- and double-stranded polyribonucleotides. Biopolymers, 1994, 34, 1099-1104.	2.6	56
136	Substrate-translocating loops regulate mechanochemical coupling and power production in AAA+ protease ClpXP. Nature Structural and Molecular Biology, 2016, 23, 974-981.	8.1	56
137	Circular intensity differential scattering of light by helical structures. II. Applications. Journal of Chemical Physics, 1980, 73, 6046-6055.	3.1	55
138	Methods in Statistical Kinetics. Methods in Enzymology, 2010, 475, 221-257.	1.7	55
139	Helically organized macroaggregates of pigment-protein complexes in chloroplasts: evidence from circular intensity differential scattering. Biochemistry, 1988, 27, 5839-5843.	2.6	54
140	Identification of the FtsK sequence-recognition domain. Nature Structural and Molecular Biology, 2006, 13, 1023-1025.	8.1	52
141	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.	9.6	51
142	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.	7.6	49
143	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.	14.0	48
144	Visualization and Analysis of Chromatin by Scanning Force Microscopy. Methods, 1997, 12, 73-83.	3.9	47

#	Article	IF	Citations
145	Single molecule transcription elongation. Methods, 2009, 48, 323-332.	3.9	47
146	Mechanical Operation and Intersubunit Coordination of Ring-Shaped Molecular Motors: Insights from Single-Molecule Studies. Biophysical Journal, 2014, 106, 1844-1858.	0.5	47
147	Role of linker histones in extended chromatin fibre structure. Nature Structural Biology, 1994, 1, 761-763.	8.1	46
148	Differential scattering (CIDS) of circularly polarized light by dense particles. Journal of Chemical Physics, 1984, 80, 4817-4823.	3.1	45
149	Pause sequences facilitate entry into long-lived paused states by reducing RNA polymerase transcription rates. Nature Communications, 2018, 9, 2930.	13.2	45
150	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.	7.6	43
151	Limitations of Constant-Force-Feedback Experiments. Biophysical Journal, 2012, 103, 1490-1499.	0.5	43
152	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.	7.6	43
153	DNA Molecular Handles for Single-Molecule Protein-Folding Studies by Optical Tweezers. Methods in Molecular Biology, 2011, 749, 255-271.	0.0	42
154	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.	3.1	41
155	Non-equilibrium dynamics of a nascent polypeptide during translation suppress its misfolding. Nature Communications, 2019, 10, 2709.	13.2	41
156	Model and computer simulations of the motion of DNA molecules during pulse field gel electrophoresis. Biochemistry, 1991, 30, 5264-5274.	2.6	39
157	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.	7.6	38
158	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.	7.6	37
159	Mechanisms of Cellular Proteostasis: Insights from Single-Molecule Approaches. Annual Review of Biophysics, 2014, 43, 119-140.	10.1	36
160	Imaging differential polarization microscope with electronic readout. Review of Scientific Instruments, 1985, 56, 2228-2236.	1.4	35
161	Unfolding single RNA molecules: bridging the gap between equilibrium and non-equilibrium statistical thermodynamics. Quarterly Reviews of Biophysics, 2005, 38, 291-301.	5.5	35
162	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.	7.6	35

#	Article	IF	Citations
163	Single Molecule Conformational Memory Extraction: P5ab RNA Hairpin. Journal of Physical Chemistry B, 2014, 118, 6597-6603.	2.7	35
164	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.	7.6	35
165	Visualization and functional dissection of coaxial paired SpoIIIE channels across the sporulation septum. ELife, 2015, 4, e06474.	5.9	35
166	Could AlphaFold revolutionize chemical therapeutics?. Nature Structural and Molecular Biology, 2021, 28, 771-772.	8.1	33
167	Daunomycin inverts the long-range chirality of DNA condensed states. Biochemistry, 1991, 30, 5661-5666.	2.6	32
168	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.	4.3	32
169	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.	7.6	31
170	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
171	The energy cost of polypeptide knot formation and its folding consequences. Nature Communications, 2017, 8, 1581.	13.2	29
172	Finding a protein's Achilles heel. Nature Structural and Molecular Biology, 2003, 10, 674-676.	8.1	27
173	Analysis of P Element Transposase Protein-DNA Interactions during the Early Stages of Transposition. Journal of Biological Chemistry, 2007, 282, 29002-29012.	3.5	27
174	Programming chain-growth copolymerization of DNA hairpin tiles for in-vitro hierarchical supramolecular organization. Nature Communications, 2019, 10, 1006.	13.2	27
175	Circular dichroism in samples which scatter light. Trends in Biochemical Sciences, 1983, 8, 41-44.	7.5	25
176	Effect of Poly(ADP-ribosyl)ation and Mg2+ Ions on Chromatin Structure Revealed by Scanning Force Microscopy. Biochemistry, 2001, 40, 10947-10955.	2.6	25
177	High-Resolution Dual-Trap Optical Tweezers with Differential Detection: Instrument Design. Cold Spring Harbor Protocols, 2009, 2009, pdb.ip73.	0.3	25
178	Assignment of structural transitions during mechanical unwrapping of nucleosomes and their disassembly products. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, .	7.6	25
179	A trailing ribosome speeds up RNA polymerase at the expense of transcript fidelity via force and allostery. Cell, 2023, 186, 1244-1262.e34.	27.8	25
180	Circular Dichroism Studies on Single Chinese Hamster Cells. Biochemistry, 1985, 24, 5152-5157.	2.6	24

#	Article	IF	Citations
181	Peptide Nucleic Acids as Tools for Single-Molecule Sequence Detection and Manipulation. Nano Letters, 2010, 10, 4697-4701.	9.5	24
182	Expressions for the interpretation of circular intensity differential scattering of chiral aggregates. Biopolymers, 1985, 24, 1595-1612.	2.6	23
183	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	23
184	Tunable, biodegradable grafting-from glycopolypeptide bottlebrush polymers. Nature Communications, 2021, 12, 6472.	13.2	23
185	The Biogenesis of SRP RNA Is Modulated by an RNA Folding Intermediate Attained during Transcription. Molecular Cell, 2020, 77, 241-250.e8.	9.6	22
186	Mechanical Manipulation of Single Titin Molecules with Laser Tweezers. Advances in Experimental Medicine and Biology, 2000, 481, 111-128.	0.0	22
187	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
188	New insights into the regulatory mechanisms of ppGpp and DksA on Escherichia coli RNA polymeraseâ€“promoter complex. Nucleic Acids Research, 2015, 43, 5249-5262.	14.0	21
189	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, .	7.6	21
190	Population-based heteropolymer design to mimic protein mixtures. Nature, 2023, 615, 251-258.	36.2	21
191	An analysis of circular intensity differential scattering measurements: Studies on the sperm cell ofeledone cirrhosa. Biopolymers, 1986, 25, 2043-2064.	2.6	20
192	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.	2.2	20
193	Model computations on the differential scattering of circularly polarized light (CIDS) by dense macromolecular particles. Biopolymers, 1985, 24, 783-797.	2.6	19
194	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
195	Attaching molecules to surfaces for scanning probe microscopy. Biophysical Journal, 1993, 64, 896-897.	0.5	19
196	Imaging of metal-coated biological samples by scanning tunneling microscopy. Ultramicroscopy, 1989, 27, 367-373.	1.9	18
197	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
198	Introduction to Single Molecule Imaging and Mechanics: Seeing and Touching Molecules One at a Time. Chemical Reviews, 2014, 114, 3069-3071.	51.4	18

#	Article	IF	Citations
199	Programming PAM antennae for efficient CRISPR-Cas9 DNA editing. Science Advances, 2020, 6, eaay9948.	10.9	18
200	Two-subunit DNA escort mechanism and inactive subunit bypass in an ultra-fast ring ATPase. ELife, 2015, 4, .	5.9	18
201	Differential Polarization Microscopy: A New Imaging Technique. Bio/technology, 1985, 3, 711-714.	2.1	17
202	‹title›Scanning force microscopy of circular DNA and chromatin in air and propanol‹/title›. , 1992, , .		17
203	Differential force microscope for long time-scale biophysical measurements. Review of Scientific Instruments, 2007, 78, 043711.	1.4	17
204	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.	4.3	16
205	High-Resolution Dual-Trap Optical Tweezers with Differential Detection: An Introduction: Figure 1.. Cold Spring Harbor Protocols, 2009, 2009, pdb.top60.	0.3	16
206	Of torques, forces, and protein machines. Protein Science, 2009, 13, 3061-3065.	7.8	15
207	Circular intensity differential scattering of light by hierarchical molecular structures. Journal of Chemical Physics, 1986, 84, 1916-1921.	3.1	14
208	A study of some lyotropic cholesteric mesophases by circular and linear dichroism and by circular intensity differential scattering. Liquid Crystals, 1988, 3, 101-113.	2.3	13
209	A very low current scanning tunneling microscope. Review of Scientific Instruments, 1995, 66, 4876-4879.	1.4	13
210	Molecular switch-like regulation in motor proteins. Philosophical Transactions of the Royal Society B: Biological Sciences, 2018, 373, 20170181.	4.2	12
211	Intercalation of cationic dyes in the DNA double helix: Introductory theory. Biopolymers, 1984, 23, 629-645.	2.6	11
212	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.	3.6	11
213	Coupling Translocation with Nucleic Acid Unwinding by NS3 Helicase. Journal of Molecular Biology, 2010, 404, 439-455.	4.3	11
214	Design and construction of a circular intensity differential scattering instrument. Review of Scientific Instruments, 1984, 55, 1574-1579.	1.4	10
215	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
216	Mechanochemical coupling and bi-phasic force-velocity dependence in the ultra-fast ring ATPase SpoIIIE. ELife, 2018, 7, .	5.9	10

#	Article	IF	Citations
217	The development of single molecule force spectroscopy: from polymer biophysics to molecular machines. Quarterly Reviews of Biophysics, 2022, 55, .	5.5	10
218	Observation of single DNA molecules during pulsed-field gel electrophoresis by fluorescence microscopy. Methods, 1990, 1, 151-159.	3.9	9
219	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
220	Purification and staining of intact yeast DNA chromosomes and real-time observation of their migration during gel electrophoresis. Biochemical Journal, 1997, 326, 131-138.	3.8	9
221	The Circular Intensity Differential Scattering (CIDS) of Cholesteric and Blue Mesophases. Molecular Crystals and Liquid Crystals, 1984, 111, 79-102.	0.9	8
222	Deposition and imaging of metal-coated biomolecules with the STM. Ultramicroscopy, 1992, 42-44, 1250-1254.	1.9	8
223	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
224	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
225	Production and characterization of a highly pure RNA polymerase holoenzyme from Mycobacterium tuberculosis. Protein Expression and Purification, 2017, 134, 1-10.	1.4	7
226	A DNA packaging motor inchworms along one strand allowing it to adapt to alternative double-helical structures. Nature Communications, 2021, 12, 3439.	13.2	7
227	Deciphering the Molecular Mechanism of the Bacteriophage Ï†29 DNA Packaging Motor. Methods in Molecular Biology, 2017, 1486, 343-355.	0.0	6
228	Atomic Force Microscopy Visualizes Mobility of Photosynthetic Proteins in Grana Thylakoid Membranes. Biophysical Journal, 2020, 118, 1876-1886.	0.5	6
229	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
230	Helical inchworming: a novel translocation mechanism for a ring ATPase. Biophysical Reviews, 2021, 13, 885-888.	3.2	5
231	Quantum mechanical treatment of circular intensity differential scattering: The elastic process. Journal of Chemical Physics, 1984, 81, 1643-1649.	3.1	4
232	Use of circularly polarized light to study biological macromolecules. Pure and Applied Chemistry, 1984, 56, 1423-1428.	2.0	4
233	Bacteriophage Phi29 Negatively Twists DNA During Packaging. Biophysical Journal, 2009, 96, 416a.	0.5	4
234	Monitoring the compaction of single DNA molecules in Xenopus egg extract in real time. Proceedings of the National Academy of Sciences of the United States of America, 2023, 120, .	7.6	4

#	Article	IF	Citations
235	<title>Manipulation of single-DNA molecules and measurements of their elastic properties under an optical microscope</title>. , 1991, 1435, 179.		3
236	Molecular Handles for the Mechanical Manipulation of Single-Membrane Proteins in Living Cells. IEEE Transactions on Nanobioscience, 2005, 4, 269-276.	4.0	3
237	Revisiting the Central Dogma One Molecule at a Time. Cell, 2011, 145, 160.	27.8	3
238	Molecular machines one molecule at a time. Protein Science, 2017, 26, 1245-1248.	7.8	3
239	Viral DNA Packaging: One Step at a Time. Springer Series in Chemical Physics, 2010, , 237-269.	0.0	3
240	Preparation of Bioderived and Biodegradable Surfactants Based on an Intrinsically Disordered Protein Sequence. Biomacromolecules, 2022, 23, 1462-1470.	5.6	3
241	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
242	<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
243	Nicholas R. Cozzarelli (1938â€“2006). ACS Chemical Biology, 2006, 1, 123-125.	3.6	1
244	Physical Biology at the Crossroads. , 2008, , 115-135.		1
245	Differential Polarization Imaging: Theory and Applications. , 1988, , 313-356.		1
246	Angle between DNA linker and nucleosome core particle regulates array compaction revealedÂby individual-particle cryo-electron tomography. Nature Communications, 2024, 15, .	13.2	1
247	The origin of the superposition principle for circular intensity differential scattering by hierarchical chiral structures. Journal of Chemical Physics, 1990, 92, 875-881.	3.1	0
248	Scanning Tunneling Microscopy of E. coli RNA Polymerase Electrochemically Deposited onto an Au Substrate. AIP Conference Proceedings, 1991, , .	1.0	0
249	Nucleic acids â€" controlling biology and controlled by biophysics. Current Opinion in Structural Biology, 2004, 14, 333-334.	5.9	0
250	Letting the cat out of the bag: a personal journey in Biophysics. Physical Biology, 2014, 11, 053012.	1.8	0
251	Force-Driven Folding and Unfolding Transitions in Single Titin Molecules. , 2002, , 311-326.		0
252	The eternal molecule. , 2003, , 82-139.		0

#	Article	IF	Citations
253	Circular Differential Microscopy. , 1985, , 133-146.		0