Francisco Bezanilla

List of Publications by Year in Descending Order

133 papers	11,475 citations	50 h-index	106 g-index
146 ext. papers	12,796 ext. citations	10.4 avg, IF	6.54 L-index

#	Paper	IF	Citations
133	Experimental challenges in ion channel research: uncovering basic principles of permeation and gating in potassium channels. *Advances in Physics: X*, **2022**, 7,	5.1	1
132	Optocapacitance: physical basis and its application.. *Biophysical Reviews*, **2022**, 14, 569-577	3.7	0
131	Molecular basis for functional connectivity between the voltage sensor and the selectivity filter gate in K channels. *ELife*, **2021**, 10,	8.9	7
130	Gating current noise produced by Brownian models of a voltage sensor. *Biophysical Journal*, **2021**, 120, 3983-4001	2.9	0
129	Remote nongenetic optical modulation of neuronal activity using fuzzy graphene. *Proceedings of the National Academy of Sciences of the United States of America*, **2020**, 117, 13339-13349	11.5	19
128	Transient Electrical Currents Mediated by the Na/K-ATPase: A Tour from Basic Biophysics to Human Diseases. *Biophysical Journal*, **2020**, 119, 236-242	2.9	8
127	Loss-of-function BK channel mutation causes impaired mitochondria and progressive cerebellar ataxia. *Proceedings of the National Academy of Sciences of the United States of America*, **2020**, 117, 6023-6034	11.5	29
126	Metal Bridge in S4 Segment Supports Helix Transition in Shaker Channel. *Biophysical Journal*, **2020**, 118, 922-933	2.9	2
125	Nongenetic optical neuromodulation with silicon-based materials. *Nature Protocols*, **2019**, 14, 1339-1376	18.8	35
124	Noncanonical mechanism of voltage sensor coupling to pore revealed by tandem dimers of Shaker. *Nature Communications*, **2019**, 10, 3584	17.4	15
123	An atlas of nano-enabled neural interfaces. *Nature Nanotechnology*, **2019**, 14, 645-657	28.7	80
122	Cholesterol Functionalization of Gold Nanoparticles Enhances Photoactivation of Neural Activity. *ACS Chemical Neuroscience*, **2019**, 10, 1478-1487	5.7	18
121	Methodological improvements for fluorescence recordings in oocytes. *Journal of General Physiology*, **2019**, 151, 264-272	3.4	5
120	Continuum Gating Current Models Computed with Consistent Interactions. *Biophysical Journal*, **2019**, 116, 270-282	2.9	6
119	Photoelectrochemical modulation of neuronal activity with free-standing coaxial silicon nanowires. *Nature Nanotechnology*, **2018**, 13, 260-266	28.7	124
118	Demonstration of ion channel synthesis by isolated squid giant axon provides functional evidence for localized axonal membrane protein translation. *Scientific Reports*, **2018**, 8, 2207	4.9	14
117	LRET Determination of Molecular Distances during pH Gating of the Mammalian Inward Rectifier Kir1.1b. *Biophysical Journal*, **2018**, 114, 88-97	2.9	3

116	Optocapacitive Generation of Action Potentials by Microsecond Laser Pulses of Nanojoule Energy. *Biophysical Journal*, **2018**, 114, 283-288	2.9	42
115	Nonsensing residues in S3-S4 linker‟s C terminus affect the voltage sensor set point in K channels. *Journal of General Physiology*, **2018**, 150, 307-321	3.4	10
114	Development of a PET radioligand for potassium channels to image CNS demyelination. *Scientific Reports*, **2018**, 8, 607	4.9	20
113	Optocapacitance Allows for Photostimulation of Neurons without Requiring Genetic Modification. *Neuromethods*, **2018**, 1-13	0.4	
112	Determination of the Stoichiometry between and Subunits of the BK Channel Using LRET. *Biophysical Journal*, **2018**, 114, 2493-2497	2.9	6
111	Replacing voltage sensor arginines with citrulline provides mechanistic insight into charge versus shape. *Journal of General Physiology*, **2018**, 150, 1017-1024	3.4	11
110	Roadmap on semiconductor-cell biointerfaces. *Physical Biology*, **2018**, 15, 031002	3	34
109	Influences: The Cell Physiology Laboratory in Montemar, Chile. *Journal of General Physiology*, **2018**, 150, 1464-1468	3.4	4
108	Gating currents. *Journal of General Physiology*, **2018**, 150, 911-932	3.4	39
107	Inversion of the Side-Chain Stereochemistry of Indvidual Thr or Ile Residues in a Protein Molecule: Impact on the Folding, Stability, and Structure of the ShK Toxin. *Angewandte Chemie - International Edition*, **2017**, 56, 3324-3328	16.4	12
106	Mapping of voltage sensor positions in resting and inactivated mammalian sodium channels by LRET. *Proceedings of the National Academy of Sciences of the United States of America*, **2017**, 114, E1857-E1865	11.5	29
105	Non-Canonical Interactions between Voltage Sensors and Pore Domain in Shaker K + -Channel. *Biophysical Journal*, **2017**, 112, 162a	2.9	2
104	Mechanism of functional interaction between potassium channel Kv1.3 and sodium channel NavBeta1 subunit. *Scientific Reports*, **2017**, 7, 45310	4.9	6
103	Correspondence: Reply to „Revisiting the theoretical cell membrane thermal capacitance response‟ *Nature Communications*, **2017**, 8, 1432	17.4	3
102	Biophysical Characterization of Genetically Encoded Voltage Sensor ASAP1: Dynamic Range Improvement. *Biophysical Journal*, **2017**, 113, 2178-2181	2.9	10
101	Nav channel binder containing a specific conjugation-site based on a low toxicity scorpion toxin. *Scientific Reports*, **2017**, 7, 16329	4.9	6
100	Heterogeneous silicon mesostructures for lipid-supported bioelectric interfaces. *Nature Materials*, **2016**, 15, 1023-30	27	99
99	Elucidation of the Covalent and Tertiary Structures of Biologically Active Ts3 Toxin. *Angewandte Chemie - International Edition*, **2016**, 55, 8639-42	16.4	13

98	Gating Current Models Computed with Consistent Interactions. *Biophysical Journal*, **2016**, 110, 102a-103a	2.9	2
97	-subunit-induced structural rearrangements of the Ca2+- and voltage-activated K+ (BK) channel. *Proceedings of the National Academy of Sciences of the United States of America*, **2016**, 113, E3231-9	11.5	13
96	A Novel Voltage Sensor in the Orthosteric Binding Site of the M2 Muscarinic Receptor. *Biophysical Journal*, **2016**, 111, 1396-1408	2.9	26
95	Mechanism of potassium ion uptake by the Na(+)/K(+)-ATPase. *Nature Communications*, **2015**, 6, 7622	17.4	36
94	Photosensitivity of neurons enabled by cell-targeted gold nanoparticles. *Neuron*, **2015**, 86, 207-17	13.9	221
93	Functional Site-Directed Fluorometry. *Advances in Experimental Medicine and Biology*, **2015**, 869, 55-76	3.6	16
92	Resting state of the human proton channel dimer in a lipid bilayer. *Proceedings of the National Academy of Sciences of the United States of America*, **2015**, 112, E5926-35	11.5	51
91	Kv3.1 uses a timely resurgent K(+) current to secure action potential repolarization. *Nature Communications*, **2015**, 6, 10173	17.4	28
90	A structural rearrangement of the Na+/K+-ATPase traps ouabain within the external ion permeation pathway. *Journal of Molecular Biology*, **2015**, 427, 1335-1344	6.5	10
89	Single-molecule fluorimetry and gating currents inspire an improved optical voltage indicator. *ELife* , **2015**, 4, e10482	8.9	26
88	Probing B(10) transitions in a voltage-sensing S4 helix. *Biophysical Journal*, **2014**, 107, 1117-1128	2.9	20
87	Molecular mechanism of Mg2+-dependent gating in CorA. *Nature Communications*, **2014**, 5, 3590	17.4	39
86	Real-time imaging of electrical signals with an infrared FDA-approved dye. *Biophysical Journal*, **2014** , 107, L09-12	2.9	35
85	Total chemical synthesis of biologically active fluorescent dye-labeled Ts1 toxin. *Angewandte Chemie - International Edition*, **2014**, 53, 8970-4	16.4	24
84	Moving gating charges through the gating pore in a Kv channel voltage sensor. *Proceedings of the National Academy of Sciences of the United States of America*, **2014**, 111, E1950-9	11.5	46
83	Molecular bases for the asynchronous activation of sodium and potassium channels required for nerve impulse generation. *Neuron*, **2013**, 79, 651-7	13.9	44
82	S3-S4 linker length modulates the relaxed state of a voltage-gated potassium channel. *Biophysical Journal*, **2013**, 105, 2312-22	2.9	25
81	Thermal mechanisms of millimeter wave stimulation of excitable cells. *Biophysical Journal*, **2013**, 104, 2622-8	2.9	19

80	Domain IV voltage-sensor movement is both sufficient and rate limiting for fast inactivation in sodium channels. *Journal of General Physiology*, **2013**, 142, 101-12	3.4	130
79	The gating charge should not be estimated by fitting a two-state model to a Q-V curve. *Journal of General Physiology*, **2013**, 142, 575-8	3.4	32
78	Sensing charges of the Ciona intestinalis voltage-sensing phosphatase. *Journal of General Physiology*, **2013**, 142, 543-55	3.4	28
77	IKs channels open slowly because KCNE1 accessory subunits slow the movement of S4 voltage sensors in KCNQ1 pore-forming subunits. *Proceedings of the National Academy of Sciences of the United States of America*, **2013**, 110, E559-66	11.5	45
76	An emerging consensus on voltage-dependent gating from computational modeling and molecular dynamics simulations. *Journal of General Physiology*, **2012**, 140, 587-94	3.4	141
75	Intermediate state trapping of a voltage sensor. *Journal of General Physiology*, **2012**, 140, 635-52	3.4	43
74	Infrared light excites cells by changing their electrical capacitance. *Nature Communications*, **2012**, 3, 736	17.4	375
73	Gating currents from Kv7 channels carrying neuronal hyperexcitability mutations in the voltage-sensing domain. *Biophysical Journal*, **2012**, 102, 1372-82	2.9	28
72	Tuning the voltage-sensor motion with a single residue. *Biophysical Journal*, **2012**, 103, L23-L25	2.9	17
71	Nano-positioning system for structural analysis of functional homomeric proteins in multiple conformations. *Structure*, **2012**, 20, 1629-40	5.2	13
70	The dynamic relationships between the three events that release individual Na+ ions from the Na+/K+-ATPase. *Nature Communications*, **2012**, 3, 669	17.4	42
69	Depolarization induces a conformational change in the binding site region of the M2 muscarinic receptor. *Proceedings of the National Academy of Sciences of the United States of America*, **2012**, 109, 285-90	11.5	30
68	Molecular mechanism for depolarization-induced modulation of Kv channel closure. *Journal of General Physiology*, **2012**, 140, 481-93	3.4	34
67	Properties of deactivation gating currents in Shaker channels. *Biophysical Journal*, **2011**, 100, L28-30	2.9	37
66	In search of a consensus model of the resting state of a voltage-sensing domain. *Neuron*, **2011**, 72, 713-20	13.9	78
65	Ouabain binding site in a functioning Na+/K+ ATPase. *Journal of Biological Chemistry*, **2011**, 286, 38177-38183	5.4	43
64	Voltage-Gated Ion Channels: The Machines Responsible for the Nerve Impulse **2011**, 231-248		1
63	Control of a final gating charge transition by a hydrophobic residue in the S2 segment of a K+ channel voltage sensor. *Proceedings of the National Academy of Sciences of the United States of America*, **2011**, 108, 6444-9	11.5	50

62	Energy landscape of the reactions governing the Na+ deeply occluded state of the Na+/K+-ATPase in the giant axon of the Humboldt squid. *Proceedings of the National Academy of Sciences of the United States of America*, **2011**, 108, 20556-61	11.5	14
61	Coupling between the voltage-sensing and phosphatase domains of Ci-VSP. *Journal of General Physiology*, **2009**, 134, 5-14	3.4	55
60	Charge movement of a voltage-sensitive fluorescent protein. *Biophysical Journal*, **2009**, 96, L19-21	2.9	49
59	Gating currents from neuronal KV7.4 Channels: General features and correlation with the ionic conductance. *Channels*, **2009**, 3, 277-286	3	25
58	How membrane proteins sense voltage. *Nature Reviews Molecular Cell Biology*, **2008**, 9, 323-32	48.7	357
57	A common pathway for charge transport through voltage-sensing domains. *Neuron*, **2008**, 57, 345-51	13.9	54
56	Ion channels: from conductance to structure. *Neuron*, **2008**, 60, 456-68	13.9	56
55	Fluorescence detection of the movement of single KcsA subunits reveals cooperativity. *Proceedings of the National Academy of Sciences of the United States of America*, **2008**, 105, 20263-8	11.5	43
54	Alpha-scorpion toxin impairs a conformational change that leads to fast inactivation of muscle sodium channels. *Journal of General Physiology*, **2008**, 132, 251-63	3.4	82
53	S4-based voltage sensors have three major conformations. *Proceedings of the National Academy of Sciences of the United States of America*, **2008**, 105, 17600-7	11.5	170
52	In vivo measurement of intramolecular distances using genetically encoded reporters. *Biophysical Journal*, **2007**, 93, L45-7	2.9	44
51	beta-Scorpion toxin modifies gating transitions in all four voltage sensors of the sodium channel. *Journal of General Physiology*, **2007**, 130, 257-68	3.4	67
50	Two atomic constraints unambiguously position the S4 segment relative to S1 and S2 segments in the closed state of Shaker K channel. *Proceedings of the National Academy of Sciences of the United States of America*, **2007**, 104, 7904-9	11.5	145
49	Distance measurements reveal a common topology of prokaryotic voltage-gated ion channels in the lipid bilayer. *Proceedings of the National Academy of Sciences of the United States of America*, **2006**, 103, 15865-70	11.5	35
48	Detection of the opening of the bundle crossing in KcsA with fluorescence lifetime spectroscopy reveals the existence of two gates for ion conduction. *Journal of General Physiology*, **2006**, 128, 569-81	3.4	87
47	Movement of gating charge is coupled to ligand binding in a G-protein-coupled receptor. *Nature*, **2006**, 444, 106-9	50.4	129
46	The action potential: from voltage-gated conductances to molecular structures. *Biological Research*, **2006**, 39, 425-35	7.6	21
45	Voltage-gated ion channels. *IEEE Transactions on Nanobioscience*, **2005**, 4, 34-48	3.4	95

44	Small vertical movement of a K+ channel voltage sensor measured with luminescence energy transfer. *Nature*, **2005**, 436, 848-51	50.4	169
43	Gating charge displacement in voltage-gated ion channels involves limited transmembrane movement. *Nature*, **2005**, 436, 852-6	50.4	226
42	Optical detection of rate-determining ion-modulated conformational changes of the ether-□go-go K+ channel voltage sensor. *Proceedings of the National Academy of Sciences of the United States of America*, **2005**, 102, 18718-23	11.5	32
41	Perturbation analysis of the voltage-sensitive conformational changes of the Na+/glucose cotransporter. *Journal of General Physiology*, **2005**, 125, 13-36	3.4	36
40	Gating of the bacterial sodium channel, NaChBac: voltage-dependent charge movement and gating currents. *Journal of General Physiology*, **2004**, 124, 349-56	3.4	79
39	Coupling interactions between voltage sensors of the sodium channel as revealed by site-specific measurements. *Journal of General Physiology*, **2004**, 123, 217-30	3.4	90
38	A fluorophore attached to nicotinic acetylcholine receptor beta M2 detects productive binding of agonist to the alpha delta site. *Proceedings of the National Academy of Sciences of the United States of America*, **2004**, 101, 10195-200	11.5	75
37	A proton pore in a potassium channel voltage sensor reveals a focused electric field. *Nature*, **2004**, 427, 548-53	50.4	335
36	Detecting rearrangements of shaker and NaChBac in real-time with fluorescence spectroscopy in patch-clamped mammalian cells. *Biophysical Journal*, **2004**, 86, 3966-80	2.9	48
35	The voltage sensor and the gate in ion channels. *Advances in Protein Chemistry*, **2003**, 63, 211-41		29
34	A physical model of potassium channel activation: from energy landscape to gating kinetics. *Biophysical Journal*, **2003**, 84, 3703-16	2.9	37
33	A fluorometric approach to local electric field measurements in a voltage-gated ion channel. *Neuron*, **2003**, 37, 85-97	13.9	107
32	Fast gating in the Shaker K+ channel and the energy landscape of activation. *Proceedings of the National Academy of Sciences of the United States of America*, **2003**, 100, 7611-5	11.5	60
31	Tracking voltage-dependent conformational changes in skeletal muscle sodium channel during activation. *Journal of General Physiology*, **2002**, 120, 629-45	3.4	255
30	Structural biology. Force and voltage sensors in one structure. *Science*, **2002**, 298, 1562-3	33.3	23
29	A comparison of propagated action potentials from tropical and temperate squid axons: different durations and conduction velocities correlate with ionic conductance levels. *Journal of Experimental Biology*, **2002**, 205, 1819-1830	3	36
28	Histidine scanning mutagenesis of basic residues of the S4 segment of the shaker k+ channel. *Journal of General Physiology*, **2001**, 117, 469-90	3.4	205
27	Three distinct and sequential steps in the release of sodium ions by the Na+/K+-ATPase. *Nature*, **2000**, 403, 898-901	50.4	133

26	The voltage sensor in voltage-dependent ion channels. *Physiological Reviews*, **2000**, 80, 555-92	47.9	721
25	Extracellular Mg(2+) modulates slow gating transitions and the opening of Drosophila ether-Go-Go potassium channels. *Journal of General Physiology*, **2000**, 115, 319-38	3.4	42
24	Modulation of the Shaker K(+) channel gating kinetics by the S3-S4 linker. *Journal of General Physiology*, **2000**, 115, 193-208	3.4	68
23	Atomic scale movement of the voltage-sensing region in a potassium channel measured via spectroscopy. *Nature*, **1999**, 402, 809-13	50.4	438
22	Voltage sensors in domains III and IV, but not I and II, are immobilized by Na+ channel fast inactivation. *Neuron*, **1999**, 22, 73-87	13.9	235
21	KramersTdiffusion theory applied to gating kinetics of voltage-dependent ion channels. *Biophysical Journal*, **1999**, 76, 782-803	2.9	62
20	Fluorescence techniques for studying cloned channels and transporters expressed in Xenopus oocytes. *Methods in Enzymology*, **1998**, 296, 566-78	1.7	20
19	Cut-open oocyte voltage-clamp technique. *Methods in Enzymology*, **1998**, 293, 300-18	1.7	127
18	Voltage gating of Shaker K+ channels. The effect of temperature on ionic and gating currents. *Journal of General Physiology*, **1998**, 112, 223-42	3.4	78
17	Structural implications of fluorescence quenching in the Shaker K+ channel. *Journal of General Physiology*, **1998**, 112, 391-408	3.4	124
16	Total charge movement per channel. The relation between gating charge displacement and the voltage sensitivity of activation. *Journal of General Physiology*, **1997**, 109, 27-39	3.4	101
15	Correlation between charge movement and ionic current during slow inactivation in Shaker K+ channels. *Journal of General Physiology*, **1997**, 110, 579-89	3.4	164
14	Characterizing voltage-dependent conformational changes in the Shaker K+ channel with fluorescence. *Neuron*, **1997**, 19, 1127-40	13.9	295
13	Voltage-dependent proton transport by the voltage sensor of the Shaker K+ channel. *Neuron*, **1997**, 19, 1319-27	13.9	202
12	Voltage-sensing residues in the S2 and S4 segments of the Shaker K+ channel. *Neuron*, **1996**, 16, 1159-67	13.9	593
11	Gating currents from a nonconducting mutant reveal open-closed conformations in Shaker K+ channels. *Neuron*, **1993**, 11, 353-8	13.9	274
10	Voltage Dependent Conductances: Gating Currents and Single Channel Recordings **1991**, 39-56		1
9	Gating currents associated with potassium channel activation. *Nature*, **1982**, 296, 657-9	50.4	64

8	10. Voltage Clamping of Excitable Membranes. *Methods in Experimental Physics*, **1982**, 20, 445-511		10
7	Fluorescence changes during electrical activity in frog muscle stained with merocyanine. *Nature*, **1976**, 259, 684-6	50.4	34
6	Charge movement associated with the opening and closing of the activation gates of the Na channels. *Journal of General Physiology*, **1974**, 63, 533-52	3.4	644
5	Currents related to movement of the gating particles of the sodium channels. *Nature*, **1973**, 242, 459-61	50.4	559
4	Destruction of sodium conductance inactivation in squid axons perfused with pronase. *Journal of General Physiology*, **1973**, 62, 375-91	3.4	476
3	Sodium and potassium conductance changes during a membrane action potential. *Journal of Physiology*, **1970**, 211, 729-51	3.9	47
2	Time course of the sodium permeability change during a single membrane action potential. *Journal of Physiology*, **1970**, 211, 753-65	3.9	10
1	Time course of the sodium influx in squid giant axon during a single voltage clamp pulse. *Journal of Physiology*, **1970**, 207, 151-64	3.9	21