

# Howard Ronald Kaback

## List of Publications by Citations

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116  
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7,283  
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46  
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83  
g-index

118  
ext. papers

7,654  
ext. citations

7.2  
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5.8  
L-index

#	Paper	IF	Citations
116	Structure and mechanism of the lactose permease of Escherichia coli. <i>Science</i> , <b>2003</b> , 301, 610-5	33.3	1256
115	Cys-scanning mutagenesis: a novel approach to structure function relationships in polytopic membrane proteins. <i>FASEB Journal</i> , <b>1998</b> , 12, 1281-99	0.9	329
114	Lessons from lactose permease. <i>Annual Review of Biophysics and Biomolecular Structure</i> , <b>2006</b> , 35, 67-91		266
113	The kamikaze approach to membrane transport. <i>Nature Reviews Molecular Cell Biology</i> , <b>2001</b> , 2, 610-20	48.7	264
112	Structural determination of wild-type lactose permease. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2007</b> , 104, 15294-8	11.5	193
111	Structural evidence for induced fit and a mechanism for sugar/H <sup>+</sup> symport in LacY. <i>EMBO Journal</i> , <b>2006</b> , 25, 1177-83	13	159
110	Sugar binding induces an outward facing conformation of LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2007</b> , 104, 16504-9	11.5	155
109	Purification, reconstitution, and characterization of the lac permease of Escherichia coli. <i>Methods in Enzymology</i> , <b>1986</b> , 125, 429-52	1.7	152
108	Mechanism of lactose translocation in membrane vesicles from Escherichia coli. 2. Effect of imposed $\Delta\psi$ , $\Delta\text{pH}$ , and $\Delta\mu_{\text{H}^+}$ . <i>Biochemistry</i> , <b>1979</b> , 18, 3697-704	3.2	138
107	Single-molecule FRET reveals sugar-induced conformational dynamics in LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2007</b> , 104, 12640-5	11.5	133
106	Site-directed alkylation and the alternating access model for LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2007</b> , 104, 491-4	11.5	132
105	From membrane to molecule to the third amino acid from the left with a membrane transport protein. <i>Quarterly Reviews of Biophysics</i> , <b>1997</b> , 30, 333-64	7	120
104	Cysteine scanning mutagenesis of putative transmembrane helices IX and X in the lactose permease of Escherichia coli. <i>Protein Science</i> , <b>1993</b> , 2, 1024-33	6.3	104
103	Structure of sugar-bound LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2014</b> , 111, 1784-8	11.5	101
102	Active transport in membrane vesicles from Escherichia coli: the electrochemical proton gradient alters the distribution of the lac carrier between two different kinetic states. <i>Biochemistry</i> , <b>1980</b> , 19, 5692-702	3.2	101
101	Structure-based mechanism for Na <sup>(+)</sup> /melibiose symport by MelB. <i>Nature Communications</i> , <b>2014</b> , 5, 3009	17.4	99
100	Proteomics on full-length membrane proteins using mass spectrometry. <i>Biochemistry</i> , <b>2000</b> , 39, 4237-42	3.2	96

99	Characterization of site-directed mutants in the lac permease of Escherichia coli. 2. Glutamate-325 replacements. <i>Biochemistry</i> , <b>1989</b> , 28, 2533-9	3.2	96
98	Monoclonal antibodies against the lac carrier protein from Escherichia coli. 2. Binding studies with membrane vesicles and proteoliposomes reconstituted with purified lac carrier protein. <i>Biochemistry</i> , <b>1984</b> , 23, 3688-93	3.2	94
97	Lactose permease and the alternating access mechanism. <i>Biochemistry</i> , <b>2011</b> , 50, 9684-93	3.2	93
96	The alternating access transport mechanism in LacY. <i>Journal of Membrane Biology</i> , <b>2011</b> , 239, 85-93	2.3	87
95	Identification of the epitope for monoclonal antibody 4B1 which uncouples lactose and proton translocation in the lactose permease of Escherichia coli. <i>Biochemistry</i> , <b>1996</b> , 35, 990-8	3.2	84
94	Opening and closing of the periplasmic gate in lactose permease. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2008</b> , 105, 3774-8	11.5	83
93	Membrane topology of the melibiose permease of Escherichia coli studied by melB-phoA fusion analysis. <i>Biochemistry</i> , <b>1996</b> , 35, 4161-8	3.2	83
92	Expression of lactose permease in contiguous fragments as a probe for membrane-spanning domains. <i>Biochemistry</i> , <b>1994</b> , 33, 8198-206	3.2	80
91	Crystal structure of lactose permease in complex with an affinity inactivator yields unique insight into sugar recognition. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2011</b> , 108, 9361-6	11.5	78
90	Structure and mechanism of the lactose permease. <i>Comptes Rendus - Biologies</i> , <b>2005</b> , 328, 557-67	1.4	76
89	Mechanism of lactose translocation in proteoliposomes reconstituted with lac carrier protein purified from Escherichia coli. 2. Deuterium solvent isotope effects. <i>Biochemistry</i> , <b>1983</b> , 22, 2531-6	3.2	74
88	A chemiosmotic mechanism of symport. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2015</b> , 112, 1259-64	11.5	71
87	Aromatic stacking in the sugar binding site of the lactose permease. <i>Biochemistry</i> , <b>2003</b> , 42, 1377-82	3.2	68
86	Proximity between Glu126 and Arg144 in the lactose permease of Escherichia coli. <i>Biochemistry</i> , <b>1999</b> , 38, 7407-12	3.2	67
85	What To Do while Awaiting Crystals of a Membrane Transport Protein and Thereafter□ <i>Accounts of Chemical Research</i> , <b>1999</b> , 32, 805-813	24.3	62
84	Probing of the rates of alternating access in LacY with Trp fluorescence. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2009</b> , 106, 21561-6	11.5	55
83	Proximity of periplasmic loops in the lactose permease of Escherichia coli determined by site-directed cross-linking. <i>Biochemistry</i> , <b>1997</b> , 36, 11959-65	3.2	55
82	Exploiting luminescence spectroscopy to elucidate the interaction between sugar and a tryptophan residue in the lactose permease of Escherichia coli. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2003</b> , 100, 12706-11	11.5	55

81	Protonation and sugar binding to LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2008</b> , 105, 8896-901	11.5	53
80	Binding affinity of lactose permease is not altered by the H <sup>+</sup> electrochemical gradient. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2004</b> , 101, 12148-52	11.5	53
79	YidC assists the stepwise and stochastic folding of membrane proteins. <i>Nature Chemical Biology</i> , <b>2016</b> , 12, 911-917	11.7	52
78	Residues in the H <sup>+</sup> translocation site define the pK <sub>a</sub> for sugar binding to LacY. <i>Biochemistry</i> , <b>2009</b> , 48, 8852-60	3.2	51
77	Role of glutamate-269 in the lactose permease of Escherichia coli. <i>Molecular Membrane Biology</i> , <b>1994</b> , 11, 9-16	3.4	51
76	Electrophysiological characterization of LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2009</b> , 106, 7373-8	11.5	49
75	Elucidation of substrate binding interactions in a membrane transport protein by mass spectrometry. <i>EMBO Journal</i> , <b>2003</b> , 22, 1467-77	13	49
74	Direct sugar binding to LacY measured by resonance energy transfer. <i>Biochemistry</i> , <b>2006</b> , 45, 15279-87	3.2	48
73	Surface-exposed positions in the transmembrane helices of the lactose permease of Escherichia coli determined by intermolecular thiol cross-linking. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2002</b> , 99, 3475-80	11.5	47
72	Ligand recognition by the lactose permease of Escherichia coli: specificity and affinity are defined by distinct structural elements of galactopyranosides. <i>Biochemistry</i> , <b>2000</b> , 39, 5097-103	3.2	47
71	Ligand-induced conformational changes in the lactose permease of Escherichia coli: evidence for two binding sites. <i>Protein Science</i> , <b>1994</b> , 3, 2294-301	6.3	47
70	Dynamics of lactose permease of Escherichia coli determined by site-directed chemical labeling and fluorescence spectroscopy. <i>Biochemistry</i> , <b>1995</b> , 34, 8257-63	3.2	45
69	EFFECT OF CALCIUM ON INTRACELLULAR SODIUM AND POTASSIUM CONCENTRATIONS IN PLANT AND ANIMAL CELLS. <i>Nature</i> , <b>1964</b> , 204, 641-2	50.4	45
68	Quantification of Detergents Complexed with Membrane Proteins. <i>Scientific Reports</i> , <b>2017</b> , 7, 41751	4.9	43
67	Sequence alignment and homology threading reveals prokaryotic and eukaryotic proteins similar to lactose permease. <i>Journal of Molecular Biology</i> , <b>2006</b> , 358, 1060-70	6.5	43
66	Site-directed spin labeling demonstrates that transmembrane domain XII in the lactose permease of Escherichia coli is an alpha-helix. <i>Biochemistry</i> , <b>1996</b> , 35, 12915-8	3.2	42
65	Site-directed alkylation of LacY: effect of the proton electrochemical gradient. <i>Journal of Molecular Biology</i> , <b>2007</b> , 374, 356-64	6.5	41
64	Site-directed sulphhydryl labeling of the lactose permease of Escherichia coli: N-ethylmaleimide-sensitive face of helix II. <i>Biochemistry</i> , <b>2000</b> , 39, 10649-55	3.2	41

63	The C-4 hydroxyl group of galactopyranosides is the major determinant for ligand recognition by the lactose permease of <i>Escherichia coli</i> . <i>Biochemistry</i> , <b>2001</b> , 40, 13015-9	3.2	41
62	Engineering the lac permease for purification and crystallization. <i>Journal of Bioenergetics and Biomembranes</i> , <b>1996</b> , 28, 29-34	3.7	41
61	Site-directed spin-labeling of transmembrane domain VII and the 4B1 antibody epitope in the lactose permease of <i>Escherichia coli</i> . <i>Biochemistry</i> , <b>1997</b> , 36, 15055-61	3.2	39
60	Site-directed sulfhydryl labeling of the lactose permease of <i>Escherichia coli</i> : helix VII. <i>Biochemistry</i> , <b>2000</b> , 39, 10641-8	3.2	39
59	Trp replacements for tightly interacting Gly-Gly pairs in LacY stabilize an outward-facing conformation. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2013</b> , 110, 8876-81	11.5	38
58	Opening the periplasmic cavity in lactose permease is the limiting step for sugar binding. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2011</b> , 108, 15147-51	11.5	37
57	Structure of LacY with an E-substituted galactoside: Connecting the binding site to the protonation site. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2015</b> , 112, 9004-9	11.5	36
56	Delineating electrogenic reactions during lactose/H <sup>+</sup> symport. <i>Biochemistry</i> , <b>2010</b> , 49, 6115-21	3.2	35
55	Fluorescence of native single-Trp mutants in the lactose permease from <i>Escherichia coli</i> : structural properties and evidence for a substrate-induced conformational change. <i>Protein Science</i> , <b>1995</b> , 4, 2310-8	6.3	34
54	Cysteine-scanning mutagenesis of transmembrane domain XII and the flanking periplasmic loop in the lactose permease of <i>Escherichia coli</i> . <i>Biochemistry</i> , <b>1996</b> , 35, 12909-14	3.2	34
53	Sugar binding induces the same global conformational change in purified LacY as in the native bacterial membrane. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2010</b> , 107, 9903-8	11.5	33
52	Binding of ligand or monoclonal antibody 4B1 induces discrete structural changes in the lactose permease of <i>Escherichia coli</i> . <i>Biochemistry</i> , <b>1997</b> , 36, 6408-14	3.2	33
51	Tilting of helix I and ligand-induced changes in the lactose permease determined by site-directed chemical cross-linking in situ. <i>Biochemistry</i> , <b>1998</b> , 37, 15785-90	3.2	33
50	Chemical rescue of Asp237-->Ala and Lys358-->Ala mutants in the lactose permease of <i>Escherichia coli</i> . <i>Biochemistry</i> , <b>1996</b> , 35, 13363-7	3.2	33
49	Site-directed sulfhydryl labeling of the lactose permease of <i>Escherichia coli</i> : helix X. <i>Biochemistry</i> , <b>2000</b> , 39, 10656-61	3.2	32
48	A conformational change in the lactose permease of <i>Escherichia coli</i> is induced by ligand binding or membrane potential. <i>Protein Science</i> , <b>1994</b> , 3, 1052-7	6.3	31
47	Crystal structure of a LacY-nanobody complex in a periplasmic-open conformation. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2016</b> , 113, 12420-12425	11.5	30
46	The role of helix VIII in the lactose permease of <i>Escherichia coli</i> : II. Site-directed sulfhydryl modification. <i>Protein Science</i> , <b>1997</b> , 6, 438-43	6.3	30

45	Proximity between periplasmic loops in the lactose permease of <i>Escherichia coli</i> as determined by site-directed spin labeling. <i>Biochemistry</i> , <b>1999</b> , 38, 3100-5	3.2	30
44	Engineering conformational flexibility in the lactose permease of <i>Escherichia coli</i> : use of glycine-scanning mutagenesis to rescue mutant Glu325-->Asp. <i>Biochemistry</i> , <b>2001</b> , 40, 769-76	3.2	28
43	Observing a lipid-dependent alteration in single lactose permeases. <i>Structure</i> , <b>2015</b> , 23, 754-61	5.2	27
42	Sulfhydryl oxidation of mutants with cysteine in place of acidic residues in the lactose permease. <i>Biochemistry</i> , <b>1998</b> , 37, 8191-6	3.2	27
41	It takes two to tango: The dance of the permease. <i>Journal of General Physiology</i> , <b>2019</b> , 151, 878-886	3.4	26
40	The role of helix VIII in the lactose permease of <i>Escherichia coli</i> : I. Cys-scanning mutagenesis. <i>Protein Science</i> , <b>1997</b> , 6, 431-7	6.3	26
39	Thiol cross-linking of cytoplasmic loops in the lactose permease of <i>Escherichia coli</i> . <i>Biochemistry</i> , <b>2000</b> , 39, 3134-40	3.2	25
38	pK of Glu325 in LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2017</b> , 114, 1530-1535	11.5	24
37	Crystal Structure of a ligand-bound LacY-Nanobody Complex. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2018</b> , 115, 8769-8774	11.5	23
36	Proximity of helices VIII (Ala273) and IX (Met299) in the lactose permease of <i>Escherichia coli</i> . <i>Biochemistry</i> , <b>1998</b> , 37, 4910-5	3.2	23
35	Insertion and folding pathways of single membrane proteins guided by translocases and insertases. <i>Science Advances</i> , <b>2019</b> , 5, eaau6824	14.3	21
34	Manipulating conformational equilibria in the lactose permease of <i>Escherichia coli</i> . <i>Journal of Molecular Biology</i> , <b>2002</b> , 315, 561-71	6.5	21
33	Structure-function relationships of integral membrane proteins: membrane transporters vs channels. <i>Biopolymers</i> , <b>2000</b> , 55, 297-307	2.2	21
32	Helix packing in the lactose permease of <i>Escherichia coli</i> determined by site-directed thiol cross-linking: helix I is close to helices V and XI. <i>Biochemistry</i> , <b>1999</b> , 38, 3120-6	3.2	20
31	The role of transmembrane domain III in the lactose permease of <i>Escherichia coli</i> . <i>Protein Science</i> , <b>1994</b> , 3, 2302-10	6.3	20
30	In vitro biotinylation provides quantitative recovery of highly purified active lactose permease in a single step. <i>Biochemistry</i> , <b>1998</b> , 37, 15713-9	3.2	19
29	Tertiary contacts of helix V in the lactose permease determined by site-directed chemical cross-linking in situ. <i>Biochemistry</i> , <b>1999</b> , 38, 2320-5	3.2	19
28	Transient conformers of LacY are trapped by nanobodies. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2015</b> , 112, 13839-44	11.5	18

27	Outward-facing conformers of LacY stabilized by nanobodies. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2014</b> , 111, 18548-53	11.5	18
26	Thermodynamic mechanism for inhibition of lactose permease by the phosphotransferase protein ILAGlc. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2015</b> , 112, 2407-12	11.5	17
25	An early event in the transport mechanism of LacY protein: interaction between helices V and I. <i>Journal of Biological Chemistry</i> , <b>2011</b> , 286, 30415-30422	5.4	16
24	Ligand-induced movement of helix X in the lactose permease from Escherichia coli: a fluorescence quenching study. <i>Biochemistry</i> , <b>1997</b> , 36, 14120-7	3.2	16
23	Binding of monoclonal antibody 4B1 to homologs of the lactose permease of Escherichia coli. <i>Protein Science</i> , <b>1997</b> , 6, 1503-10	6.3	16
22	Effect of the lipid phase transition on the lactose permease from Escherichia coli. <i>Biochemistry</i> , <b>2000</b> , 39, 14538-42	3.2	16
21	pH Regulation of Electrogenic Sugar/H <sup>+</sup> Symport in MFS Sugar Permeases. <i>PLoS ONE</i> , <b>2016</b> , 11, e0156393	3.7	16
20	Real-time conformational changes in LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2014</b> , 111, 8440-5	11.5	15
19	Electrophysiological characterization of uncoupled mutants of LacY. <i>Biochemistry</i> , <b>2013</b> , 52, 8261-6	3.2	14
18	Location of helix III in the lactose permease of Escherichia coli as determined by site-directed thiol cross-linking. <i>Biochemistry</i> , <b>1999</b> , 38, 16777-82	3.2	14
17	Probing the mechanism of a membrane transport protein with affinity inactivators. <i>Journal of Biological Chemistry</i> , <b>2003</b> , 278, 10641-8	5.4	12
16	Functional conservation in the putative substrate binding site of the sucrose permease from Escherichia coli. <i>Biochemistry</i> , <b>2000</b> , 39, 6170-5	3.2	12
15	Arg302 governs the pK of Glu325 in LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2019</b> , 116, 4934-4939	11.5	11
14	In vitro folding of a membrane protein: effect of denaturation and renaturation on substrate binding by the lactose permease of Escherichia coli. <i>Molecular Membrane Biology</i> , <b>1998</b> , 15, 15-20	3.4	10
13	An Asymmetric Conformational Change in LacY. <i>Biochemistry</i> , <b>2017</b> , 56, 1943-1950	3.2	7
12	The proton electrochemical gradient induces a kinetic asymmetry in the symport cycle of LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2020</b> , 117, 977-981	11.5	7
11	Oversized galactosides as a probe for conformational dynamics in LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2018</b> , 115, 4146-4151	11.5	6
10	Thermodynamics of Nanobody Binding to Lactose Permease. <i>Biochemistry</i> , <b>2016</b> , 55, 5917-5926	3.2	4

9	Engineered occluded apo-intermediate of LacY. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2018</b> , 115, 12716-12721	11.5	2
8	Diversity in kinetics correlated with structure in nano body-stabilized LacY. <i>PLoS ONE</i> , <b>2020</b> , 15, e0232846	5.7	1
7	Investigation of sugar binding kinetics of the E. coli sugar/H symporter XylE using solid supported membrane-based electrophysiology.. <i>Journal of Biological Chemistry</i> , <b>2021</b> , 101505	5.4	0
6	Mass Spectrometry of Membrane Transport Proteins 179-189		
5	Monoclonal antibody 4B1 influences the pK of Glu325 in lactose permease (LacY) from <i>Escherichia coli</i> : evidence from SEIRAS. <i>FEBS Letters</i> , <b>2020</b> , 594, 3356-3362	3.8	
4	Diversity in kinetics correlated with structure in nano body-stabilized LacY <b>2020</b> , 15, e0232846		
3	Diversity in kinetics correlated with structure in nano body-stabilized LacY <b>2020</b> , 15, e0232846		
2	Diversity in kinetics correlated with structure in nano body-stabilized LacY <b>2020</b> , 15, e0232846		
1	Diversity in kinetics correlated with structure in nano body-stabilized LacY <b>2020</b> , 15, e0232846		