

CURRICULUM VITAE

Name	RAMÓN LATORRE
Address	Pasaje Harrington 287, Playa Ancha, Valparaíso
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Place of Birth	Santiago, Chile.

EDUCATION

1965	Biochemist, University of Chile, School of Chemistry and Pharmacy, Santiago, Chile.
1969	Ph.D. Faculty of Sciences, University of Chile, Santiago, Chile.

POSTDOCTORAL TRAINING

1969-1972	Visiting Fellow, Laboratory of Biophysics, IR, National Institute of Neurological Diseases and Stroke, National Institutes of Health, Bethesda, MD, U.S.A.
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ACADEMIC APPOINTMENTS

2010 –	Director, Instituto Científico Milenio Centro Interdisciplinario de Neurociencias, Universidad de Valparaíso, Pasaje Harrington 287, Playa Ancha, Valparaíso
2008-	Professor and Director, Centro Interdisciplinario de Neurociencias, Universidad de Valparaíso, Pasaje Harrington 287, Playa Ancha, Valparaíso
2007 -	Associate Scholar, The University of Chicago, Chicago, Ill.
2006-2007	Scientific Attaché, Chilean Embassy, Rome, Italy.
2000-2007	Professor, Departamento de Biofísica y Fisiología Molecular, Centro de Estudios Científicos, Valdivia

1996-1999	Executive Director, Centro de Estudios Científicos de Santiago.
1995-present	Adjunct Professor, Department of Anesthesiology, University of California Los Angeles, CA, USA
1984-1999	Chairman, Biophysics Section, Centro de Estudios Científicos de Santiago (CECS), Santiago, Chile.
1983-present	Professor, Department of Biology, Faculty of Sciences, University of Chile, Santiago, Chile.
1982-1983	Associate Professor, Department of Physiology and Biophysics, Harvard Medical School, Boston, MA, U.S.A.
1977-1982	Assistant Professor, Department of Physiology and Biophysics, Harvard Medical School, Boston, MA, U.S.A.
1976-1977	Assistant Professor, Department of Pharmacological and Physiological Sciences, University of Chicago, Chicago, IL, U.S.A.
1972-1974	Associate Professor, Department of Biology, Faculty of Sciences, University of Chile, Santiago, Chile.

OTHER PROFESSIONAL POSITIONS AND MAJOR VISITING APPOINTMENTS

1974-1975	Visiting Scientist, Department of Physiology and Pharmacology, Duke University Medical Center, Durham, N.C., U.S.A.
1974	Visiting Associate, Laboratory of Biophysics, IR, National Institute of Neurological Diseases and Stroke, National Institute of Health, Bethesda, MA, U.S.A.
1983-present	Visiting Professor, Graduate Department of Biochemistry, Brandeis University, Waltham MA. U.S.A.
1986-1995	Visiting Professor, Department of Physiology University of California at Los Angeles, Los Angeles, CA, U.S.A.
1992	Professeur Associé, Laboratoire de Neurobiologie, Ecole Normale Supérieure, Paris, France.

2003 Visiting Professor of Neurobiology, Department of Neurobiology, Harvard Medical School, Boston, MA

HONORS AND AWARDS

1986-1988 President, Society of Latin American Biophysicists (SOBLA) (elected)

1989 Elizabeth R. Cole Award. Biophysical Society, USA for "A significant advance in biophysics which is accepted and used by others in the field".

1989 Distinguished Visiting Professor, Baylor College of Medicine, Houston, TX, U.S.A:

1990 John Simon Guggenheim Memorial Foundation Fellowship

1991 Best Teacher Award. Department of Biology, Faculty of Sciences, University of Chile.

1991 Third World Academy of Sciences Award in Biology.

1992 Dies Academicus, Main Speaker. University of Ulm, Ulm, Germany.

1993 Member of the Latin American Academy of Sciences.

1996 Presidential Cathedra Award, Santiago, Chile

1996 Rectorial Medal, University of Chile

1997 Fellow of the Third World Academy of Sciences.

1997 Vice President, International Union of Physiological Sciences (IUPS) (elected)

1998 Corresponding Member of the Brazilian Academy of Sciences

1999 Presidential Cathedra Award, Santiago, Chile (Competitive renewal)

- 1999 Foreign Associate, National Academy of Sciences of the United States of America
- 2002 Corresponding Member of the Chilean Academy of Sciences
- 2002 National Prize in Natural Sciences bestowed by the Chilean Government
- 2002 Rectorial Medal University of Chile
- 2003-2006 Member, Molecular, Biophysics of Synapsis, Channels and Transporters Study Section, National Institutes of Health, USA.
- 2003 Robert F. Kennedy Professor of Latin American Studies, Harvard University, Boston, MA.
- 2006 Council Member, Academy of Sciences of Latin America (Elected)
- 2007 Visiting Scholar, The University of Chicago Chicago Illinois, USA
- 2008 Mexican Award in Science and Technology, bestowed by the Mexican Government to distinguish scientists of Latin America (except Mexico), Spain and Portugal.
- 2010 Honorary Member of the Chilean Physiological Society
- 2010 Cathedra in Health Sciences Miguel Alemán Valdés, granted by the Miguel Aleman Valdés Foundation, Mexico
- 2012 Dr. *Honoris Causa*, Universidad de la República Oriental del Uruguay, Facultad de Medicina.
- 2012 Honorary Member of the Argentine Society for Research in Neuroscience
- 2012 Juan Negrín Award bestowed by the Spaniard Physiological Society for his contributions to the fields of Physiology and Biophysics and for his dedication to the advancement of Physiology in Latin America and Spain.

2014
Santamaría A.C. Cátedra Santiago Ramon y Cajal bestowed by the Facultad de Medicina, Universidad Nacional Autónoma de México y la Fundación José M. García Valdecasas

NAMED CONFERENCES

- 1993 **Conference Jaime Pi Sunyer:** Activation, conduction and inactivation in Ca^{2+} activated K^+ channels. II Ibero American Biophysics Congress, Puebla, México.
- 1994 **Conference Joaquin Luco:** The flavors of K^+ channels XVII. Latinoamerican Physiological Congress, Montevideo, Uruguay.
- 1996 **Conference Osvaldo Cori,** The Molecular Workings of a Ca^{2+} -activated K^+ Channel, VIII PABMB Congress. Pucón, Chile.
- 2000 **Conference Juan Negrín.** KAT1: a potassium channel with reverse gear. III Ibero American Biophysics Congress, Alicante, Spain
- 2002 **Conference Luis Izquierdo.** Cellular Biology Society Congress. Puerto Varas, Chile.
- 2003 **Peter Baker Lecture** – Molecular Workings of large conductance (BK) calcium-activated potassium channels. Meeting of the Physiological Society– King’s College – London – Great Britain.
- 2005 **Ranwel Caputto Lecture** – Too hot or too cold? TRP channels as temperature sensors. X Congress of the Panamerican Association for Biochemistry and Molecular Biology – Pinamar, Buenos Aires, Argentina.
- 2006 **Herman Niemeyer Lecture** – Molecular Basis of Thermal Sensitivity in Mammals. XXIX Congreso of the Spaniard Society of Biochemistry and Molecular Biology, Elche, Spain.

- 2012 **Society of Latin American Biophysicist (SoBLa) Conference.** 2012 Biophysical Society Meeting, San Diego, California, USA, February 25-29
- 2013 **Society of Latin American Biophysicist (SoBLa) Conference.** Joint Meeting SoBLa-Sociedad Chilena de Neurociencia, Valparaíso, Chile , October 2-4.

EDITORIAL BOARDS

- 1981-1984 Biophysical Journal
- 1984-1992 Journal of Bioenergetics and Biomembranes
- 1988-1996 Comments on Molecular and Cellular Biophysics
- 1988-1992 Archivos de Medicina Experimental
- 1991-1996 American Journal of Physiology
- 1991-1999 Physiological Reviews
- 1992-2003 News in Physiological Sciences. Associate Editor
- 1992- Biological Research
- 1996-2004 Brazilian Journal of Medical and Biological Research
- 2003-2008 Revista Atenea (Atenea Journal). Journal published by the University of Concepción, Chile.
- 2004- Proceedings of the National Academy of Sciences, USA
- 2004- Journal of General Physiology
- 2007- Channels
- 2008-2013 Journal of Biological Chemistry

2014-

Temperature

SOCIETIES

American Association for the Advancement of Science, U.S.A.

American Physiological Society, USA

Biophysical Society, U.S.A.

New York Academy of Sciences, U.S.A

Society of General Physiologists, U.S.A.

Sociedad Chilena de Biología

Sociedad Chilena de Fisiología

Sociedad Chilena de Bioquímica

Sociedad de Biofísicos Latinoamericanos

MAJOR RESEARCH INTEREST

Ion transport mediated by ion channels in biological and artificial membranes. Molecular aspects of ion channel conductance and gating. Metabolic modulation of ion channels. Ion channels and hormones

RESEARCH FELLOWSHIP AND GRANT AWARDS

1975-1981	Ion Channel Mechanisms, National Institutes of Health (NIH), (CO-PI).
1981-1983	Alamethicin Channel Formation, NIH, (PI).
1986-1989	Ionic Channels of Excitation Contraction Coupling, NIH, (PI).
1989-1992	Modulation of Ion Channel in Muscle, NIH, (PI).
1992-1995.	Molecular and Cellular Biology of Learning in Drosophila. The Human Frontier Science Program (HFSP), (CO-PI)
1999-2001	Maxi-K Channel Beta Subunit as the Target for Estrogens in the Membrane of Vascular Smooth Muscle. The Human Frontier Science Program (HFSP), (CO-PI)
2009-2013	Charge Translocation by the Na/K pump in the giant axon of the Humboldt Squid. FIRCA, NIH Grant (CO-PI)
2000-2007	Millennium Institute Centro de Estudios Cientificos, Valdivia. (CO-PI)
2011-2016	Millennium Institute Centro Interdisciplinario de Neurociencia de Valparaíso – (PI)

In addition to the above, Dr. Latorre has been the recipient of FONDECYT grants (Fondo Nacional de Investigación Científica y Tecnológica, Chile) since the National Award system was founded and Universidad de Chile grants.

GRADUATE STUDENTS

-	Oswaldo Alvarez	Ph.D.- 1974
-	James Donovan	Ph.D.- 1979
-	Cecilia Vergara	Ph.D.- 1983
-	Andrés Oberhauser	Ph.D.- 1987
-	David Naranjo	Ph.D.- 1991
-	Claudia Basso	Ph.D.- 1998
-	Felipe Díaz	Ph.D. -1998
-	Carlos González	Ph.D. -2004
-	Patricio Orio	Ph.D. -2004

-	Patricio Rojas	Ph.D.- 2005
-	Sebastián Brauchi	Ph.D.- 2006
-	Yolima Torres	Ph.D.- 2007
-	Ingrid Carvacho	Ph.D.- 2007
-	Francisco Morera	Ph.D. -2008
-	Cristian Zaelzer	Ph.D.- 2009
-	Marcelo Salazar	Ph.D. - 2012
-	Natalia Raddatz	Ph.D. -2013
-	David Báez	Ph.D. – 2013
-	Gustavo Contreras	Ph.D. – 2013
-	Horacio Poblete	Ph.D. - 2013
-	Hans Moldenhauer	Ph,D. - 2014
-	Juan Pablo Castillo	Ph.D. – 2014
-	Willy Carrasquel	Ph.D. –
-	Sara T. Granados	Ph.D. –
-	Amaury Pupo	Ph.D. –
-	Jenisleidy Lorenzo	Ph.D. -
-	Alfredo Villarroel	M.Sc. - 1986
-	Carmen Alcayaga	M.Sc. - 1987
-	Ricardo Delgado	M.Sc. - 1991
-	Claudio Laurido	M.Sc. - 1989
-	Enrique Estrada	M.Sc. - 1993
-	Sebastián Candia	M.Sc. - 1996
-	Yolima Torres	M.Sc. - 2002
-	Sofia Hammami	M.Sc. - 2007
-	Ingrid Oyarzún	M.Sc. –
-	Ester Otárola	M.Sc. - 2014

UNDERGRADUATES

-	Julio Amigo	Biochemist - 1999
-	María Isabel Bahamondes	Biochemist – 2000
-	Diego Cosmelli	Biochemist - 2000
-	Fabián Muñoz	Biochemist – 2004
-	José Ancalao	Biochemist – 2005
-	Guillermo Vargas	Physicist – 2005
-	Ingrid Oyarzún	Biochemist – 2005
-	Paula Manriquez	Biologist - 2006
-	Juan Pablo Castillo	Engineer in Molecular Biotechnology -2011
-	Valeria O. Márquez	Engineer in Bioinformatics - 2009
-	Constantino Dragicevic	Physicist – 2010
-	Daniela De Giorgis	Biologist – 2013
-	Ester Otárola	Biologist – 2013

POST-DOCTORAL FELLOWS

-	Juan Reyes	EE.UU
-	Roberto Coronado	EE.UU.
-	Edward Moczydlowski	EE.UU
-	Frank Greco	EE.UU
-	Walter Korosketz	EE.UU.
-	María Isabel Behrens	Chile
-	Marco Soto	Chile
-	Patricio Orio	Chile
-	Gerardo Orta Zalazar	México
-	Francisco Morera	Chile
-	Juan Pablo Castillo	Chile
-	Karen Castillo	Chile

PUBLICATIONS

1. Latorre, R., Hidalgo, C. 1969. Effect of temperature on resting potential in giant axons of squid. *Nature*. **221**: 962-963. (8)
2. Hidalgo, C., Latorre, R. 1970. Temperature dependence of non-electrolyte and sodium permeability in giant axon of squid. *J. Physiol.* (London) **211**: 173-191. (3)
3. Hidalgo, C., Latorre, R. 1970. Effect of stimulation and hyperpolarization of non-electrolyte and sodium permeability in perfused axons of squid. *J. Physiol.* (London) **211**: 193-202. (5)
4. Latorre, R., Dipolo, R. 1971. Temperature dependence of the resting potential in muscle fibers of the barnacle *Balanus nubilus*. *Acta Científica Venezolana* 22(5) Suppl. **2**: 69-70.
5. Dipolo, R., Latorre, R. 1972. Effect of temperature on membrane potential and ionic fluxes in intact and dialysed barnacle muscle fibres. *J. Physiol.* (London) **225**: 255-273. (29)
6. Latorre, R., Ehrenstein, G., Lecar, H. 1972. Ion transport through excitability-inducing material (EIM) channels in lipid bilayer membranes. *J. Gen. Physiol.* **60**: 72-85. (44)
7. Sachs, F., Latorre, R. 1974. Cytoplasmic solvent structure of single barnacle muscle cells studied by electron spin resonance. *Biophys. J.* **14**: 316-326. (31)
8. Latorre, R., Alvarez, O., Verdugo, P. 1974. Temperature characterization of the conductance of the excitability inducing material channel in oxidized cholesterol membranes. *Biochim. Biophys. Acta.* **367**: 361-365. (12)

9. **Ehrenstein, G., Blumenthal, R., Latorre, R., Lecar, H. 1974. Kinetics of the opening and closing of individual excitability-inducing material channels in a lipid bilayer. *J. Gen. Physiol.* 63: 707-721. (67)**
10. Alvarez, O., Díaz, E., Latorre, R. 1975. Voltage-dependent conductance induced by hemocyanin in black lipid films. *Biochim. Biophys. Acta.* 389: 444-448. (36)
11. Alvarez, O., Latorre, R., Verdugo, P. 1975. Kinetic characteristics of the Excitability-Inducing material channel in oxidized cholesterol and brain lipid bilayer membranes. *J. Gen. Physiol.* 65: 421-439. (17)
12. Lecar, H., Ehrenstein, G., Latorre, R. 1975. Mechanism for channel gating in excitable bilayers. *Ann. N.Y. Acad. Sci.* 294: 304-313. (19)
13. Latorre, R., Alvarez, O., Ehrenstein, G., Espinoza, M., Reyes, J. 1975. The nature of the voltage-dependent conductance of the hemocyanin channel. *J. Membrane Biol.* 25: 163-182. (31)
14. Hall, J., Latorre, R. 1976. Nonactin-K⁺ complex as a probe for membrane asymmetry. *Biophys. J.* 15: 99-103. (6)
15. Latorre, R., Hall, J. 1976. Dipole potential measurements in asymmetric membranes. *Nature.* 264: 361-363. (27)
16. **Melnik, E., Latorre, R., Hall, J.E., Tosteson, D. 1977. Phloretin-induced changes in ion transport across lipid bilayer membranes. *J. Gen. Physiol.* 69: 243-257. (87)**
17. **Alvarez, O., Latorre, R. 1978. Voltage-dependent capacitance in lipid bilayers made from monolayers. *Biophys. J.* 21: 1-17. (183)**
18. Ehrenstein, G., Lecar, H., Latorre, R. 1978. Inactivation in bilayers and natural excitable membranes. *In Membrane Transport Processes.* D.C. Tosteson, Y. A. Ovchinnikov, R. Latorre, eds. Raven Press, NY. 2: 175-182.
19. Latorre, R., Hall, J.E. 1978. Membrane asymmetry and surface potentials in artificial lipid bilayer membranes. *Membrane Transport Processes.* D.C. Tosteson, Y. A. Ovchinnikov, R. Latorre, eds. Raven Press, NY. 2: 313-323.
20. Donovan, J.J., Latorre, R. 1979. Inactivation of the alamethicin-induced conductance caused by quaternary ammonium ions and local anesthetics. *J. Gen. Physiol.* 73: 425-451. (13)

21. Donovan, J.J., Latorre, R. 1979. Pancuronium inactivates alamethicin-induced conductance in artificial membranes. *Biophys. J.* **25**: 549-554. (2)
22. **Reyes, J., Latorre, R. 1979. Effect of the anesthetics benzyl alcohol and chloroform on bilayers made from monolayers. *Biophys. J.* **28**: 259-279. (90)**
23. Latorre, R., Donovan, J.J. 1980. Modulation of alamethicin- induced conductance by membrane composition. *Acta. Physiol. Scand. Suppl.* **481**: 37-45. (1)
24. **Latorre, R., Alvarez, O. 1981. Voltage-dependent channels in planar lipid bilayer membranes. *Physiol. Rev.* **61**: 77-150. (197)**
25. Benos, D., Latorre, R., Reyes, J. 1981. Surface potentials and sodium entry in frog skin epithelium. *J. Physiol.* (London) **321**: 163-174. (9)
26. Cecchi, X., Alvarez, O., Latorre, R. 1981. A three-barrier model for the hemocyanin channel. *J. Gen. Physiol.* **78**: 657-681. (23)
27. Latorre, R., Donovan, J.J., Koroshetz, W., Tosteson, D.C., Gisin, B. 1981. Ion transport mediated by the valinomycin analogue *cyclo* (L-Lac-L-Val-D-Pro-D-Val)₃ in lipid bilayer membranes. *J. Gen. Physiol.* **77**: 387-417. (1)
28. Latorre, R., Miller, C.G., Quay, S.C. 1981. Voltage-dependent conductance induced by alamethicin-phospholipid conjugates in lipid bilayers. *Biophys. J.* **36**: 803-809. (29)
29. Verdugo, P., Latorre, R., Alvarez, O., Medel, M., Benos, D. 1981. Effects of copper and zinc on rat uterine muscle contraction and rabbit blastocyst fluid accumulation. *Biol. Reprod.* **25**: 502-510. (3)
30. Quay, S., Latorre, R. 1982. Molecular mechanisms of alamethicin channel gating. *Biophys. J.* **37**: 154-156. (6)
31. **Latorre, R., Vergara, C., Hidalgo, C. 1982. Reconstitution in planar lipid bilayers of a Ca²⁺ -dependent K⁺ channel from transverse tubule membranes isolated from rabbit skeletal muscle. *Proc. Natl. Acad. Sci. U.S.A.* **79**: 805-809. (236)**
32. **Simon, S., McIntosh, T., Latorre, R. 1982. Influence of cholesterol on Water penetration into bilayers. *Science.* **216**: 65-67. (110)**
33. **Coronado, R., Latorre, R. 1982. Detection of K⁺ and Cl⁻ channels from calf cardiac sarcolemma in planar lipid bilayer membranes. *Nature.* **298**: 849-852. (75)**
34. Coronado, R., Latorre, R. 1983. Phospholipid bilayers made from monolayers on patch-clamp pipettes. *Biophys. J.* **43**: 231-236. (221)

35. Latorre, R., Miller, C. 1983. Conduction and selectivity in potassium channels. *J. Membrane Biol.* 71: 11-30. (640)
36. Moczydlowski, E., Latorre, R. 1983. Gating kinetics of Ca²⁺-activated K⁺ channels from rat muscle incorporated into planar lipid bilayers: Evidence for two voltage-dependent Ca²⁺ binding reactions. *J. Gen. Physiol.* 82: 511-542. (347)
37. Moczydlowski, E., Latorre, R. 1983. Saxitoxin and ouabain binding activity of isolated skeletal muscle membrane as indicators of surface origin and purity. *Biochim. Biophys. Acta.* 732: 412-420. (61)
38. Vergara, C., Latorre, R. 1983. Kinetics of Ca²⁺-activated K⁺ channels from rabbit muscle incorporated into planar bilayers. Evidence for a Ca²⁺ and Ba²⁺ blockade. *J. Gen. Physiol.* 82: 543-568. (254)
39. Benos, D., Hyde, B.A., Latorre, R. 1983. Sodium flux ratio through the amiloride-sensitive entry pathway in frog skin. *J. Gen. Physiol.* 81: 667-685. (16)
40. Reyes, J., Greco, F., Motais, R., Latorre, R. 1983. Phloretin and phloretin analogs: mode of action in planar lipid bilayers and monolayers. *J. Membrane Biol.* 72: 93-103. (66)
41. Alvarez, O., Brodwick, M., Latorre, R., McLaughlin, A., McLaughlin, S., Szabo, G. 1983. Large divalent cations and electrostatic potentials adjacent to membranes: experimental results with hexamethonium. *Biophys. J.* 44: 333-342. (80)
42. Latorre, R., Vergara, C., Moczydlowski, M. 1983. Properties of a Ca²⁺-Activated K⁺ channel in a reconstituted system. *Cell Calcium* 4: 343-357. (22)
43. Basso P., Cruz Coke R., García G., Arancibia A., Díaz G., González J., Hernández A., Invernizzi L., Lagos G., Latorre R., Lavados J., Minguell, J., Oberhauser E., Sanfuentes A., and Saragoni R. 1984. A critical view of the University of Chile. *Rev. Med. Chile.* 112:706-710.
44. Latorre, R., Benos, D. 1984. Reconstitution of ionic channels into lipid bilayer membranes. In: "*Transmembrane signaling and sensation*", Oozawa, F., Yoshioka, T., Hayashi, H. eds., Japan Scientific Societies Press, Tokyo.
45. Cecchi, X., Latorre, R., Alvarez, O. 1984. Alkali metal ion selectivity of the hemocyanin channel. *J. Membrane Biol.* 77: 277-283. (4)

46. Coronado, R., Latorre, R., Mautner, H.G. 1984. Single potassium channels with delayed rectifier behavior from lobster axon membranes. *Biophys. J.* **45**: 289-299. (34)
47. **Latorre, R., Coronado, R., Vergara, C. 1984. K⁺ channels gated by voltage and ions. *Ann. Rev. Physiol.* **46**: 485-495. (86)**
48. **Sariban-Sohraby, S., Latorre, R., Burg, M., Olans, L., Benos, D. 1984. Amiloride-sensitive epithelial Na⁺ channels reconstituted into planar lipid bilayer membranes. *Nature.* **308**: 80-82. (86)**
49. **Vergara, C., Moczydlowski, E., Latorre R. 1984. Conduction, blockade and Gating in Ca⁺² Activated K⁺ channel incorporated into planar lipid bilayers. *Biophys J.* **45**: 73-76. (90)**
50. Latorre, R., Wolff, D. 1985. Canales iónicos, comunicación de la célula con el medio ambiente. *Creces.* **6**: 27-31.
51. Alvarez, O., Benos, D., Latorre, R. 1985. The study of ion channels in planar lipid bilayer membranes. *J. Electrophysiol. Tech.* **12**: 159-177. (24)
52. Latorre, R., Alvarez, O., Cecchi, X., Vergara, C. 1985. Properties of reconstituted ion channels. *Ann. Rev. Biophys. Chem.* **14**: 79-111. (27)
53. **Miller, C., Moczydlowski, E., Latorre, R., Phillips, M. 1985. Charybdotoxin, a protein inhibitor of single Ca²⁺-activated K channels from mammalian skeletal muscle. *Nature.* **313**: 316-318. (740)**
54. **Moczydlowski, E., Alvarez, O., Vergara, C., Latorre, R. 1985. Effect of phospholipid surface Charge on the conductance and Gating of a Ca²⁺-Activated K⁺ channel in planar lipid bilayers. *J. Membrane Biol.* **83**: 273-282. (145)**
55. Latorre, R. 1986. The Large calcium-activated potassium channel. In *Ion Channel Reconstitution*, Miller, C., ed., Plenum Press, N.Y. pp. 431-467.
56. **Eisenman, G., Latorre, R., Miller, C. 1986. Multi-ion conduction and selectivity in the High-conductance Ca⁺⁺-activated K⁺ channel from skeletal muscle. *Biophys. J.* **50**: 1025-1034. (139)**
57. Wolff, D., Vergara, C., Cecchi, X., Latorre, R. 1986. Characterization of large-unitary-conductance calcium-activated potassium channels in planar lipid bilayers. *Ionic channels in cell and model systems*, Latorre, R., Editor, Plenum Press, N.Y. pp. 307-322.

58. **Miller, C., Latorre, R., Reisin, I. 1987. Coupling of voltage-dependent gating and Ba⁺⁺ block in the high-conductance, Ca⁺⁺ -activated K⁺ channel. *J. Gen. Physiol.* **90**: 427-449. (109)**
59. **Cecchi, X., Wolff, D., Alvarez, O., Latorre, R. 1987. Mechanisms of Cs⁺ blockade in a Ca²⁺ -activated K⁺ channel from smooth muscle. *Biophys. J.* **52**: 707-716. (76)**
60. Latorre, R., and Alvarez, O. 1988. Ion conduction in ion channels: Some inferences about their gross structure. *Comments Mol. Cell. Biophys.* **5**: 193-210.
61. Oberhauser, A., Alvarez, O., Latorre, R. 1988. Activation by divalent cations of a Ca²⁺ -activated K⁺ channel from skeletal muscle membrane. *J. Gen. Physiol.* **92**: 67-86. (102)
62. Behrens, M.I., Vergara, C., Latorre, R. 1988. Calcium-activated potassium channels of large unitary conductance. *Brazilian J. Med. Biol. Res.* **21**: 1101-1117. (6)
63. Latorre, R., Oberhauser, A., Labarca, P., Alvarez, O. 1989. Varieties of calcium-Activated potassium channels. *Ann. Rev. Physiol.* **51**: 385-399. (664)
64. Villarroel, A., Alvarez, O., Oberhauser, A., and Latorre, R. 1988. Probing a Ca²⁺ -Activated K⁺ channel with quaternary ammonium ions. *Pflugers Arch.* **413**: 118-126. (128).
65. Alcayaga, C., Cecchi, X., Alvarez, O., and Latorre, R. 1989. Streaming potential measurements in Ca²⁺ -Activated K⁺ channels from skeletal and smooth muscle: coupling of ion and water fluxes. *Biophys. J.* **55**: 367-371. (40)
66. Behrens, M.I., Oberhauser, A., Bezanilla, F., Latorre, R. 1989. Batrachotoxin-modified sodium channels from squid optic Nerve in planar bilayers. Ion conduction and Gating properties. *J. Gen. Physiol.* **93**: 23-41. (37)
67. Delgado, R., Barla, R., Latorre, R., and Labarca, P. 1989. L-Glutamate Activates Excitatory and Inhibitory channels in *Drosophila* Larval muscle. *FEBS Lett.* **243**: 337-342. (30)
68. MacKinnon, R., Latorre, R., Miller, C. 1989. The role of surface electrostatics in the operation of a high-conductance Ca²⁺-activated channels. *Biochemistry.* **28**: 8092-8099. (139)
69. **Delgado, R., Hidalgo, P., Díaz, F., Latorre, R., Labarca, P. 1991. A cyclic AMP-activated channel in *Drosophila* larval muscle is persistently activated in *dunce*^{M14}. *Proc. Natl. Acad. Sci. U.S.A.* **88**: 557-560. (65)**

70. Correa, A. M., Latorre, R., Bezanilla, F. 1991. Ion permeation in normal and batrachotoxin-modified Na⁺ channels in the squid giant axon. *J. Gen. Physiol.* **97**: 605-625. (46)
71. Latorre, R., Bacigalupo, J., Delgado, R., Labarca, P. 1991. Four cases of direct ion channel gating by cyclic nucleotides. *J. Bioenerg. Biomemb.* **23**: 577-597. (12)
72. Behrens, M. I. Latorre, R. 1991. Potassium channels in developing excitable cells. *Current topics in Membrane and Transport.* **39**: 327-355. (1)
73. Latorre, R. 1991. Metabolic control of K⁺ channels: An Overview. *J. Bioenerg. Biomemb.* **23**: 493-497. (2)
74. Laurido, C., Candia, S., Wolff, D. Latorre, R. 1991. Proton modulation of a Ca²⁺-activated K⁺ channel from rat skeletal muscle incorporated into planar bilayers. *J. Gen. Physiol.* **98**: 1025 - 1043. (36)
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PATENT.

Immunoassay for the Detection and Quantitation of Toxins Causing Paralytic Shellfish Poisoning.