April 2017

**CURRICULUM VITAE**

**IAN PARKER**

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Date of birth - 6th January 1951

Nationality – Dual U.S. / U.K.

**Education**

Degrees - B.Sc. (Physiology, University of London. 1972)

 Ph.D. (Physiology, University of London. 1984)

**Academic and Research Positions**

1975 - 1984 Research Assistant, Department of Biophysics, University College London, UK.

1984 - 1990 Assistant Professor, Department of Psychobiology, University of California, Irvine, U.S.A.

1990 - 1995 Associate Professor, Department of Psychobiology, University of California, Irvine, U.S.A.

1995 - 1996 Visiting Professor, Department of Physiology, University of Maryland School of Medicine, Baltimore, U.S.A.

1996 - 1997 Acting Chair, Department of Psychobiology, University of California, Irvine, USA

1995 - present Professor, Department of Neurobiology and Behavior, University of California, Irvine, U.S.A.

2006 – present Professor, Department of Physiology & Biophysics, University of California, Irvine, U.S.A.

**Awards and honors**

2001 Excellence in Teaching: School of Biological Sciences, U.C. Irvine.

2008 Elected Fellow of the Royal Society

2009 Elected Fellow of the American Association for the Advancement of Science

2011 MERIT Award, National Institute of General Medical Science

2012 Norman Weinberger Award for Distinction in Research, Teaching and Service: Department of Neurobiology & Behavior, UC Irvine

**Membership of Societies**

 The Physiological Society

 The Royal Society

 American Association for the Advancement of Science

**Editorial Boards**

 *Journal of General Physiology* (1998-present)

 *Biophysical Journal* (2006–2012)

**Service to Scientific Institutions**

 Royal Society International Joint Projects Committee (2009-2013)

 Royal Society International Networking Panel (2015-present)

**Invited Presentations (from 1993)**

Feb. 1993 Department of Molecular and Cellular Biology, University of California Davis.

April 1993 Southern California Confocal Microscopy Users Group

April 1993 Department of Physiology, University of California Los Angeles.

May 1993 XIth Annual Membrane Transport Workshop, "Ca2+ transport and homeostasis". University of Montreal, Canada.

Feb. 1994 Department of Pharmacology, University of California Irvine.

April 1994 Ciba Foundation Symposium #188 "Calcium Waves, Gradients and Oscillations". London, England

April 1994 Wellcome Centre for Medical Science open meeting on "Spatiotemporal Aspects of Calcium Signalling". London, England.

July 1994 Department of Physiology and Biophysics, University of Tennessee, Memphis.

Sept. 1994 Channels-Receptors-Transporters Group. University of California Irvine.

Dec. 1994 Workshop on Calcium Oscillations and Waves. Marconi Center, Bodega Bay, California.

April 1995 Experimental Biology '95 Symposium on "Spatial and Temporal Aspects of Cellular Calcium Signaling". Atlanta, Georgia.

April 1995 Department of Physiology, University of Maryland at Baltimore.

May 1995 EMBO Practical Course "Use of *Xenopus* oocytes to study membrane transport and signal transduction". Tel Aviv University, Israel.

May 1995 IVth European Oocyte Club Meeting, Tel Aviv University, Israel.

June 1995 Gordon Conference on Calcium Signaling. New England College, New Hampshire.

Sept. 1995 Society of General Physiology Annual Meeting on "Organellar Ion Channels and Transporters". Woods Hole, Massachusetts.

Nov. 1995 Department of Physiology, University of Rochester School of Medicine, Rochester, NY.

Sept. 1996 21st European Symposium on Hormones and Cell Regulation, Mt. St. Odille, Alsace, France.

March 1997 Symposium on “Local Ca2+ signalling in muscle and nerve” Annual meeting of Biophysical Society. New Orleans, LA.

April 1997 Workshop on “Mechanism of the Fertilization Ca2+ wave” Lake Tahoe, CA.

July 1997 Meeting on “Biological Applications of New Microscopies”. British Biophysical Society, London, U.K.

July 1997 “Calcium dynamics and cell signalling” International Society for Neurochemistry/American Society for Neurochemistry. Boston, MA.

Sept. 1997 “Invited guest” 22nd European Symposium on Hormones and Cell Regulation. Mt. St. Odille, Alsace, France.

Dec. 1997 Department of Physiology, U. Texas Southwestern Medical Center. Dallas, Texas.

Feb. 1998 Workshop on “Calcium Dynamics in Cells”. Institute for Mathematics and its Applications. Univ. Minnesota, Minneapolis, MN.

July 1998 UCI Brain Imaging Workshop, Irvine, CA.

Sept. 1998 Department of Physiology, University of Durham, U.K.

Sept. 1998 Department of Pharmacology, Cambridge University, UK.

Sept. 1998 Society of General Physiology Annual Meeting on “Mechanisms and Functions of Local Calcium Signaling”. Woods Hole, Massachusetts.

May 1999 Society for Industrial and Applied Mathematics. Fifth Conference on Dynamical Systems. Snowbird, Utah.

Aug. 1999 Gordon Conference on Calcium Signaling. New Hampshire.

Oct. 1999 Department of Neuroscience, Tokyo University, Japan

Oct. 1999 Eleventh International Symposium on Calcium-binding Proteins and Calcium Function in Health and Disease. Kisarazu, Japan.

Mar. 2000 Co-organizer and speaker. Workshop on “Nonlinear Dynamics of Calcium in Living Organisms”. Los Alamos National Laboratory, New Mexico.

June 2000 Department of Physiology, University of Massachusetts Medical School, Worcester, MA.

June 2000 Gordon Conference on Muscle: Excitation-Contraction Coupling. New Hampshire.

July 2000 Division de Physiologia, Universidad de Alicante, Spain.

July 2000  Instituto de Neurociencias, Universidad Miguel Hernandez, Spain

Sept. 2000 “Synaptic transmission 100 years after Luigi Luciani.” Rome, Italy.

Oct. 2000 Workshop on Experimental and Theoretical Calcium Dynamics. Max-Plank Institute for Physics of Complex Systems, Dresden, Germany.

May 2001 Biophotonics Cluster Program, University of Wisconsin, Madison, WI

June 2001 Physiological and Pathological Mechanisms of Calcium Signaling. AAAS meeting, UC Irvine

June 2001 School of Biological Sciences, University of East Anglia, U.K.

Oct. 2001 Department of Neurobiology and Behavior, UC Irvine.

Mar. 2002 Annual meeting of the American Physical Society, Indianapolis.

April 2002 Symposium on “Molecular bases for local Ca2+ signals.” FASEB Meeting, New Orleans.

Aug. 2002 Workshop on “Wave Dynamics in Biological Excitable Media”. Aspen Center for Physics, Colorado.

March 2003 Symposium on “Stochastic Effects in Soft Condensed Matter Physics” American Physical Society meeting, Austin, Texas.

May 2003 Optical Biology Interest Group, UCI.

June 2003 Department of Immunology, University of Glasgow, UK.

Aug. 2003 Organizer and speaker, session on ‘Emerging Trends in Fluorescence Microscopy’. 2nd International Symposium on Biophotonics, San Antonio, TX.

Sept. 2003 Joint organizer and speaker, Workshop on “Cellular Calcium Dynamics”, Kavli Institute for Theoretical Physics, UCSB.

Sept. 2003 Workshop on “Calcium Release and Cellular Calcium Signaling Domains”. Marbella, Chile.

Dec. 2003 Institute for Brain Aging and Dementia, UC Irvine.

Jan. 2004 Neuroscience Graduate Student Association, UC Riverside.

Jan. 2004 Workshop on “Signal Transduction: The Many Roles of Calcium”. Mathematical Biosciences Institute, Ohio State Univ.

Feb. 2004 Annual Meeting, Biophysical Society: Fluorescence Subgroup. Baltimore MD.

May 2004 Center for Theoretical Biological Physics, UCSD.

Aug. 2004 Special interest plenary lecture; ‘Imaging with Photons’. European Microscopy Congress, Antwerp, Belgium.

Sept. 2004 Session on “New Technologies for Tracking Cells *in vivo*”, 20th International Congress of the Transplantation Society. Vienna, Austria.

Sept. 2004 Department of Pharmacology, University of Cambridge , U.K.

Sept. 2004 EMBO Workshop on “Calcium Signaling and Disease”. Capri, Italy

March 2005 Department of Physiology, University of Massachusetts Medical Center

March 2005 3rd International Conference on Computational Cell Biology, Lenox, MA.

March 2005 Dept. Immunology & Microbiology, University of Washington, St. Louis

Sept. 2005 Southern California Institute for Research and Education, Long Beach VAMC

Sept. 2005 HHMI meeting on *in vivo* imaging. Washington, DC.

Nov. 2005 Department of Physiology & Biophysics, University of California, Irvine.

March 2006 Rosalind Franklin School of Medicine, Chicago.

Aug. 2006 8th J.J. Giambiagi Winter School: ‘Physics and Biology reloaded’. Universidad de Buenos Aries, Argentina.

Aug. 2006 Workshop on ‘New trends in *in vivo* imaging and single molecule detection’. Universidad de Buenos Aries, Argentina.

Sept. 2006 Gordon Conference on Bioelectrochemistry, Aussois, France.

Jan. 2007 2007 Advanced Optical Methods Workshop, UC Berkely.

April 2007 Workshop on "Emerging Techniques for Ion Channel Studies". Experimental Biology Meeting, Washington DC.

May 2007 Department of Physiology, University of Pennsylvania

July 2007 Summer School on "Biological Dynamics of Cellular Processes". Center for Theoretical Biological Physics, UC San Diego.

Oct. 2007 Department of Physiology and Biophysics, Lake Arrowhead Retreat, UC Irvine.

Dec. 2007 School of Biomedical Science, University of Queensland, Brisbanne, Australia.

Dec. 2007 Symposium on "Calcium channels, microdomains and muscle function". Australian Physiological Society and Australian Society for Biophysics, Sydney, Australia.

Dec. 2007 School of Biomedical Science, University of Newcastle, N.S.W., Australia.

Jan. 2008 2008 Advanced Optical Methods Workshop, UC Berkely.

May 2008 Distinguished Speaker Series, Physiology & Membrane Biology, UC Davis.

July 2008 New Fellows Seminar, Royal Society, London.

Dec. 2008 Beckman Laser Institute, UCI.

Nov. 2009 Department of Anesthesiology, University of Washington, St. Louis.

Jan. 2010 Plenary lecturer, ASI Workshop on New Developments in Optical Microscopy: Seeing into the Future of Cell Biology, Hong Kong.

June 2010 Keynote Address, FASEB meeting on Calcium Signaling and Cell Function. Steamboat, Colorado.

Sept. 2010 University of New Mexico Health Science Center, Albuquerque, NM.

June 2011 Gordon Conference on Calcium Signaling, Maine.

Oct. 2011 Symposium on "Ions, water and membranes", Department of Physiology & Biophysics, UCI.

Dec. 2011 Physiological Society meeting on vascular and smooth muscle physiology, Edinburgh, UK.

Dec. 2011 Pharmacology Department, University of Oxford, UK.

Dec, 2011 Pharmacology Department, University of Cambridge, UK.

March 2012 Norman M. Weinberger Award seminar, UC Irvine.

Feb. 2013 Department of Physiology, University of Pennsylvania.

May 2014 Department of Pharmacology, UC Irvine.

Aug 2014 Keynote Speaker, International Biophysics Congress, Brisbane, Australia.

Sept. 2014 International Conference on Cell Physics 2014, Saarbrucken, Germany.

Sept. 2014 Max Delbruck Center for Molecular Medicine, Berlin

June 2015 19th International Conference on Calcium Binding Proteins, Nashville TN.

July 2016 International Conference on Calcium Signaling: from Stores to Channels. Chapel Hill, NC

April 2017 Dean’s Distinguished Lecture, Ayala School of Biological Sciences, UCI.

May 2017 Signal Transduction Laboratory Series Seminar, NIEHS, Chapel Hill, N. Carolina

May 2017 Department of Physiology & Biophysics, UC Irvine

**Research Support**

**Current**

***Elementary Events of Calcium Signaling*.** NIH R37 MERIT award GM-48071. PI – I. Parker. 1992-2021.

This project aims to elucidate the mechanistic basis underlying the generation and functions of local and global Ca2+ signals.

***Cellular and Molecular Mechanisms of Regulatory T cells in EAE*** PI – M.D. Cahalan; Co-investigator – I. Parker. NIH. 2016-2021. This project will employ the experimental autoimmune encephalomyelitis (EAE) mouse model and advanced imaging tools to examine the molecular and cellular mechanisms in play to influence the pathogenesis, remission, and treatment of multiple sclerosis. My role on this project is to develop and direct a multi-photon imaging system for studying T cell behavior within intact lymphoid and spinal cord tissue, and to collaborate on analysis and interpretation of these data.

 ***Multi-scale observation and modeling of IP3/Ca signaling*.** NIH RO1GM065830 (multi-P.I. award together with J.E. Pearson (Los Alamos) and Daniel Mak (U. Penn.)). 2014-2017 This project utilizes multi-scale mathematical simulation to develop a comprehensive model of intracellular IP3-mediated Ca2+ signaling. My role is to provide experimental data and biological input on elementary Ca2+ events and waves, and to work in collaboration with mathematicians and physicists to develop mathematical models of these processes.

**Pending**

***Dysregulated IP3-mediated Ca2+ signaling in Autism Spectrum Disorder*.** NIH. RO1MH110718. (multi\_P.I. application together with Jay Gargus (Physiology & Biophysics, UCI) and Ian Smith (Neurobiology & Behavior, UCI).**Ian Parker - Publications**

**Peer-reviewed Journal Articles**

**[Google Scholar Citation Statistics April, 2017: h index, 72; 50 papers with > 100 citations; total citations 18636]**

1) Miledi, R., Parker, I. and Schalow, G. Measurement of calcium transients in frog muscle by the use of arsenazo III. *Proc. Roy. Soc*. **B 198**; 201-210, 1977.

2) Miledi, R., Parker, I. and Schalow, G. Calcium transients in frog slow muscle fibres. *Nature*, **268**;750-752, 1977.

3) Suarez-Kurtz, G. and Parker, I. Birefringence signals and calcium transients in skeletal muscle. *Nature*, **270**;746-748, 1977.

4) Miledi, R., Parker, I. and Schalow, G. Transition temperature of excitation-contraction coupling in frog twitch muscle fibres. *Nature*, **280**; 326-328, 1979.

5) Bregestovski, P.D., Miledi, R. and Parker, I. Calcium conductance of acetylcholine-induced endplate channels. *Nature*, **279**;638-639, 1979.

6) Miledi, R., Parker, I. and Schalow, G. Transmitter induced calcium entry across the post-synaptic membrane at frog end-plates measured using arsenazo III. *J. Physiol*. **300**;197-212, 1980.

7) Miledi, R. and Parker, I. Effects of strontium ions on end-plate channel properties. *J. Physiol*. **306**;567-577, 1980.

8) Bregestovski, P.D., Miledi, R. and Parker, I. Blocking of frog endplate channels by the organic calcium antagonist D600. *Proc. Roy. Soc*. **B 211**;15-24, 1980.

9) Miledi, R. and Parker, I. Blocking of acetylcholine induced channels by extracellular or intracellular application of D600. *Proc. Roy. Soc.* **B 211**;143-150, 1980.

10) Miledi, R., Nakajima, S. and Parker, I. Endplate currents in sucrose solution. *Proc. Roy. Soc*. **B 211**;135-141, 1980.

11) Miledi, R. and Parker, I. Calcium transients recorded with arsenazo III in the presynaptic terminal of the squid giant synapse. *Proc. Roy. Soc*. **B** 212;197-211, 1981.

12) Miledi, R., Parker, I. and Schalow, G. Calcium transients in normal and denervated slow muscle fibres of the frog. *J. Physiol*. **318**;191-206, 1981.

13) Miledi, R., Nakajima, S., Parker, I. and Takahashi, T. Effects of membrane polarization on sarcoplasmic calcium release in skeletal muscle. *Proc. Roy. Soc*. **B 213**;1-13, 1981.

14) Cull-Candy, S.G., Miledi, R. and Parker, I. Single glutamate-activated channels recorded from locust muscle fibres with perfused patch-clamp electrodes. *J. Physiol.* **321**;195-210, 1981.

15) Miledi, R. and Parker, I. Diltiazem inactivates acetylcholine-activated channels in skeletal muscle fibres. *Biomed Res*., **2**;587-589, 1981.

16) Cull-Candy, S.G. and Parker, I. Rapid kinetics of single glutamate receptor channels. *Nature*, **295**;410-412, 1982.

17) Miledi, R., Parker, I. and Zhu, P.H. Calcium transients evoked by action potentials in frog twitch muscle fibres. *J. Physiol*. **333**;655-679, 1982.

18) Miledi, R., Parker, I. and Sumikawa K. Properties of acetylcholine receptors translated by cat muscle mRNA in *Xenopus* oocytes. *EMBO Journal*, **1**;1307-1312, 1982.

19) Miledi, R., Parker, I. and Sumikawa, K. Synthesis of chick brain GABA receptors by frog oocytes. *Proc. Roy. Soc.* **B 216**;509-515, 1982.

20) Miledi, R., Parker, I. and Sumikawa, K. Recording of single -aminobutyrate and acetylcholine-activated channels translated by exogenous messenger RNA in *Xenopus* oocytes. *Proc. Roy. Soc*. **B** 218;481-484, 1983.

21) Miledi, R., Parker, I. and Zhu, P.H. Calcium transients in frog skeletal muscle fibres following conditioning stimuli. *J. Physiol*. **339**;223-242, 1983.

22) Miledi, R., Parker, I. and Zhu, P.H. Calcium transients studied under voltage-clamp control in frog twitch muscle fibres. *J. Physiol*. **340**;649-680, 1983.

23) Miledi, R., Parker, I. and Zhu, P.H. Changes in threshold for calcium transients in frog skeletal muscle fibres owing to calcium depletion in the T-tubules. *J. Physiol*. **344**;233-241, 1983.

24) Gundersen, C.B., Miledi, R. and Parker, I. Serotonin receptors induced by exogenous messenger RNA in *Xenopus* oocytes. *Proc. Roy. Soc.* **B 219**;103-109, 1983.

25) Gundersen, C.B., Miledi, R. and Parker, I. Voltage-operated channels induced by foreign messenger RNA in *Xenopus* oocytes. *Proc. Roy. Soc*. **B 220**;131-140, 1983.

26) Gundersen, C.B., Miledi, R. and Parker, I. Glutamate and kainate receptors induced by rat brain messenger RNA in *Xenopus* oocytes. *Proc. Roy. Soc*. **B** 221;127-143, 1984.

27) Miledi, R., Parker, I. and Zhu, P.H. Extracellular ions and excitation-contraction coupling in frog twitch muscle fibres.  *J. Physiol*. **351**;687-710, 1984.

28) Gundersen, C.B., Miledi, R. and Parker, I. Messenger RNA from human brain induces drug-and voltage-operated channels in *Xenopus* oocytes. *Nature*, **308**;421-424, 1984.

29) Gundersen, C.B., Miledi, R. and Parker, I. Slowly inactivating potassium channels induced in *Xenopus* oocytes by messenger ribonucleic acid from *Torpedo* brain. *J. Physiol*. **353**;231-248, 1984.

30) Gundersen, C.B., Miledi, R. and Parker, I. Properties of human brain glycine receptors expressed in *Xenopus* oocytes. *Proc. Roy. Soc.* **B 221**;235-244, 1984.

31) Czternasty, G., Thieffry, M. and Parker, I. Calcium transients in a crustacean motoneurone soma: Detection with arsenazo III. *Experientia*, **40**;106-108, 1984.

32) Sumikawa, K., Parker, I., Amano, T. and Miledi, R. Separate fractions of mRNA from *Torpedo* electric organ induce chloride channels and acetylcholine receptors in *Xenopus* oocytes. *EMBO Journal*, **3**;2291-2294, 1984.

33) Miledi, R. and Parker, I. Chloride current induced by injection of calcium into *Xenopus* oocytes. *J. Physiol*. **357**;173-183, 1984.

34) Sumikawa, K., Parker, I. and Miledi, R. Partial purification and functional expression of brain mRNAs coding for neurotransmitter receptors and voltage-operated channels. *Proc. Natl. Acad. Sci. U.S.A*., **81**;7994-7998, 1984.

35) Sumikawa, K., Parker, I. and Miledi, R. Messenger RNA from rat brain induces noradrenaline and dopamine receptors in *Xenopus* oocytes. *Proc. Roy. Soc*. **B 223**;255-260, 1984.

36) Parker, I., Gundersen, C.B. and Miledi, R. A transient inward current elicited by hyperpolarization during serotonin activation in *Xenopus* oocytes. *Proc. Roy. Soc*. **B** 223;279-292, 1985.

37) Miledi, R., Parker, I. and Zhu, P.H. Temperature dependence of calcium transients evoked by action potentials and voltage clamp pulses in frog twitch muscle fibres. *Chinese Journal of Physiol. Sci.* **1;**25-30, 1985.

38) Parker, I., Sumikawa, K. and Miledi, R. Messenger RNA from bovine retina induces kainate and glycine receptors in *Xenopus* oocytes. *Proc. Roy. Soc*. **B 225**;99-106, 1985.

39) Eusebi, F., Miledi, R., Parker, I and Stinnakre, J. Post-synaptic calcium influx at the giant synapse of the squid during activation by glutamate. *J. Physiol*. **369**;183-197, 1985.

40) Parker, I., Gundersen, C.B., and Miledi, R. Intracellular Ca2+-dependent and Ca2+ independent responses of rat brain serotonin receptors transplanted to *Xenopus* oocytes. *Neurosci. Res*. **2**;491-496, 1985.

41) Parker, I., Gundersen, C.B. and Miledi, R. On the orientation of foreign neurotransmitter receptors in *Xenopus* oocytes. *Proc. Roy. Soc.* **B 226**;263-269, 1985.

42) Parker, I., Gundersen, C.B. and Miledi, R. Actions of pentobarbital on rat brain receptors expressed in *Xenopus* oocytes. *J. Neurosci.* **6**;2290-2297, 1986.

43) Parker, I. and Miledi, R. Changes in intracellular calcium and in membrane currents evoked by injection of inositol trisphosphate into *Xenopus* oocytes. *Proc. Roy. Soc. Lond*. **B 228**;307-315, 1986.

44) Zhu, P.H., Parker, I. and Miledi, R. Minimal latency of calcium release in frog twitch muscle fibres. *Proc. Roy. Soc. Lond*. **B 229**;39-46, 1986.

45) Parker, I., Sumikawa, K. and Miledi, R. Neurotensin and substance P receptors expressed in *Xenopus* oocytes by messenger RNA from rat brain. *Proc. R. Soc*. **B 229**;151-159, 1986.

46) Parker, I. and Zhu, P.H. Effects of hypertonic solutions on calcium transients in frog twitch muscle fibres. *J. Physiol*. **383**;615-627, 1987.

47) Miledi, R., Parker, I. and Sumikawa, K. Oscillatory chloride currents evoked by temperature jumps during activation of muscarinic and serotonin receptors in *Xenopus* oocytes. *J. Physiol*. **383**;213-229, 1987.

48) Parker, I., Ito, Y., Kuriyama, H. and Miledi, R. -adrenergic agonists and cyclic AMP reduce intracellular resting free calcium in ileum smooth muscle. *Proc. Roy. Soc. Lond*. **B 230**;207-214, 1987.

49) Parker, I. and Miledi, R. Inositol trisphosphate activates a voltage-dependent calcium influx in *Xenopus* oocytes. *Proc. Roy. Soc. Lond*. **B 231**;27-36, 1987.

50) Parker, I., Sumikawa, K. and Miledi, R. Activation of a common effector system by different brain neurotransmitter receptors in *Xenopus* oocytes. *Proc. Roy. Soc. Lond.* **B 231**;37-45, 1987.

51) Parker, I. and Miledi, R. Injection of inositol 1,3,4,5-tetrakisphosphate into *Xenopus* oocytes generates a chloride current dependent upon intracellular calcium. *Proc. R. Soc. Lond*. **B 232**;59-70, 1987.

52) Parker, I. and Miledi, R. Tetrodotoxin-sensitive sodium current in native *Xenopus* oocytes. *Proc. R. Soc. Lond*. **B 232**;289-296, 1987.

53) Parker, I., Sumikawa, K., Gundersen, C.B. and Miledi, R. Expression of ACh-activated channels and sodium channels by messenger RNAs from innervated and denervated muscle. *Proc. R. Soc. Lond*. **B 233**;235-246, 1988.

54) Parker, I., and Miledi, R. A calcium-independent chloride current activated by hyperpolarization in *Xenopus* oocytes. *Proc. R. Soc. Lond*. **B 233**;191-199, 1988.

55) Parker, I., Sumikawa, K. and Miledi, R. Responses to GABA, glycine and b-alanine induced in *Xenopus* oocytes by messenger RNA from chick and rat brain. *Proc. R. Soc. Lond.* **B 233**;201-216, 1988.

56) Parker, I. and Miledi, R. Transient potassium current in native *Xenopus* oocytes. *Proc. R. Soc. Lond.* **B 234**;45-53, 1988.

57) Carpenter, M.K., Parker, I. and Miledi, R. Expression of GABA and glycine receptors by messenger RNA from the developing rat cerebral cortex. *Proc. R. Soc. Lond.* **B 234**;159-170, 1988.

58) Ito, Y., Kuriyama, H. and Parker, I. Calcium transients evoked by electrical stimulation of smooth muscle from guinea-pig ileum recorded by the use of fura-2. *J. Physiol.* **407**;117-134, 1988.

59) Sumikawa K., Parker, I. and Miledi, R. Effect of tunicamycin on the expression of functional brain neurotransmitter receptors and voltage-operated channels in *Xenopus oocytes*.  *Molec. Brain Res*. **4**;191-199, 1988.

60) Miledi, R. and Parker, I. Latencies of membrane currents evoked in *Xenopus* oocytes by receptor activation, inositol trisphosphate and calcium.  *J. Physiol*. **415**;189-210, 1989.

61) Parker, I. and Miledi, R. Non-linearity and facilitation in phosphoinositide signalling studied by the use of caged inositol trisphosphate in *Xenopus* oocytes. *J. Neurosci*. **9**;4068-4077, 1989.

62) Miledi, R., Parker, I. and Woodward, R. Membrane currents elicited by divalent cations in *Xenopus* oocytes. *J. Physiol*. **417**;173-195, 1989.

63) Parker, I., Panicker, M.M. and Miledi, R. Serotonin receptor expressed in *Xenopus* oocytes by mRNA from brain mediate a closing of K+ membrane channels. *Molec. Brain Res*. **7**;31-38, 1989.

64) Parker, I. Ionic and charge-displacement currents evoked by temperature jumps in *Xenopus* oocytes. *Proc. R. Soc. Lond*. **B** 237;379-387, 1989.

65) Parker, I. and Ivorra, I. A slowly inactivating potassium current in native oocytes of *Xenopus* *laevis*. *Proc. R. Soc. Lond*. **B 238**;369-381, 1990.

66) Carpenter, M.K., Parker, I. and Miledi, R. Changes in messenger RNAs coding for neurotransmitter receptors and voltage-operated channels in the developing rat cerebral cortex. *Devel. Biol*. **138**;313-323, 1990.

67) Parker, I. and Ivorra, I. Inhibition by Ca2+ of inositol trisphosphate-mediated Ca2+ liberation: A possible mechanism for oscillatory release of Ca2+. *Proc. Natl. Acad. Sci. USA* **87**;260-264, 1990.

68) Parker, I. and Ivorra, I. Localized all-or-none calcium liberation by inositol trisphosphate. *Science* **250**;977-979, 1990.

69) Parker, I. and Ivorra, I. Inositol tetrakisphosphate liberates stored Ca2+ in *Xenopus* oocytes and facilitates responses to inositol trisphosphate. *J. Physiol*. **433;**207-227, 1991.

70) Parker, I. and Ivorra, I. Caffeine inhibits inositol trisphosphate-mediated liberation of intracellular calcium in *Xenopus* oocytes. *J. Physiol*. **433;**229-240, 1991.

71) Tigyi, G. and Parker, I. Microinjection into *Xenopus* oocytes: A precise semi-automatic instrument and optimal parameters for injection of mRNAs. *J. Biochem. Biophys. Methods* **22**;243-252, 1991.

72) Ivorra, I., Gigg, R., Irvine, R.F. and Parker, I. Inositol 1,3,4,6-tetrakisphosphate mobilizes calcium in *Xenopus* oocytes with high potency. *Biochem. J.* **273**;317-321, 1991.

73) Panicker, M.M., Parker, I. and Miledi, R. Receptors of the serotonin 1C subtype expressed from cloned DNA mediate the closing of K+ membrane channels encoded by brain mRNA. *Proc. Natl. Acad. Sci. USA* **88**;2560-2562, 1991.

74) Parker, I. and Yao, Y. Regenerative release of calcium from functionally discrete subcellular stores by inositol trisphosphate. *Proc. R. Soc. Lond.* **B 246**, 269-274;1991.

75) Carpenter, M.K., Parker, I. and Miledi, R. Messenger RNAs coding for receptors and channels in the cerebral cortex of adult and aged rats. *Molecular Brain Research* **13**;1-5, 1992.

76) Ilyin, V. and Parker, I. Effects of alcohol on responses evoked by inositol trisphosphate in *Xenopus* oocytes. *J. Physiol*. **448**;339-354, 1992.

77) Parker, I. and Ivorra, I. Characteristics of membrane currents evoked by photorelease of inositol trisphosphate in *Xenopus* oocytes. *Am. J. Physiol.* **263;** C154-165, 1992.

78) Yao, Y. and Parker, I. Potentiation of inositol trisphosphate-induced Ca2+ mobilization in *Xenopus* oocytes by cytosolic Ca2+. *J. Physiol*. **458**;319-338, 1992.

79) Parker, I. and Ivorra, I. Confocal microfluorimetry of Ca2+ signals evoked in *Xenopus* oocytes by photo-released inositol trisphosphate. *J. Physiol*. **461**;133-165, 1993.

80) Yao, Y. and Parker, I. Inositol trisphosphate-mediated Ca2+ influx into *Xenopus* oocytes triggers Ca2+ liberation from intracellular stores. *J. Physiol*. **468**;275-296 1993.



81) Yao, Y. and Parker, I. Ca2+ influx modulates temporal and spatial patterns of inositol trisphosphate-mediated Ca2+ liberation in *Xenopus* oocytes. *J. Physiol*. **476**;17-28, 1994.

82) Callamaras, N. and Parker, I. Inositol 1,4,5-trisphosphate receptors in *Xenopus laevis* oocytes: localization and modulation by Ca2+. *Cell Calcium* **15;**60-72, 1994.

83) Parker, I. and Yao, Y. Relation between intracellular Ca2+ and Ca2+-activated Cl- current in *Xenopus* oocytes. *Cell Calcium* **15**; 276-288, 1994.

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**Patents**

Devices, compositions and related methods for diagnosing autism. Inventors Jay Gargus, Galina Schmunk, Ian Parker and Ian Smith. U.S. provisional application #62/219,085 filed 9/15/2016. U.S. application #14/821,555 filed 8/7/2015.