UNIVERSITY OF Southampton

Institute for Life Sciences

CURRICULUM VITAE: PETER JOHN SHAND SMITH

Current position Director, Institute for Life Sciences
Professor of Life Sciences, Faculty of Natural and Environmental Sciences

Qualifications B.Sc. 1976 (Aberdeen, Scotland) 1st Class Honours
Ph.D. 1980 (Graduated: Aberdeen, Scotland)
M.A. 1991 (Cambridge, England)
Fellow of the Royal Society of Biology (FRSB), Chartered Biologist (CBiol)

Address University of Southampton, Institute for Life Sciences
Life Sciences (B85), Highfield Campus
Southampton, England SO17 1BJ
Email: P.J.Smith@soton.ac.uk
Phone: (44) 02380 596701

Principal Postdoctoral & Career Appointments

2011-present	Founding Director, Institute for Life Sciences, University of Southampton, England
2011-present	Professor of Life Sciences, Faculty of Natural and Environmental Sciences, Univ. of Southampton.
2013-present	Visiting Fellow, Marine Biological Association, Plymouth, UK.
2011-present	Adjunct Senior Scientist, Cellular Dynamics Program, MBL, Woods Hole, MA, USA
2008-2011	Founding Director, Cellular Dynamics Program, Marine Biological Laboratory (MBL), USA
2008-2011	Adjunct Professor of Engineering (Research), Brown University, RI
2002-2008	Founding Director, Molecular Physiology Program, MBL
1999-2011	Senior Scientist, MBL
1996-2011	Director and Principal Investigator, NIH BioCurrents Research Center, MBL
1994-1996	Director and PI, NIH National Vibrating Probe Facility, MBL
1992-1993	Co-Director, NIH Nat'l Vibrating Probe Facility, MBL (With L. F. Jaffe)
1992-1999	Associate Scientist, MBL
1990-1991	Senior Scientific Officer and Lab. Leader, AFRC Laboratory of Molecular Signalling, Dept. of Zoology, University of Cambridge and the Babraham Research Institute, UK
1987-1990	Higher Scientific Officer, AFRC Unit of Insect Neurophysiology and Pharmacology, Dept. of Zoology, University of Cambridge, UK.
1986-1991	Fellow and Director of Studies in Natural Sciences, Sidney Sussex College, Cambridge, UK
1985-1987	Leverhulme Research Fellow, University of Cambridge, Dept. of Zoology, Cambridge.
1982-1984	Research Associate, University of Cambridge, Dept. of Zoology, Cambridge, UK. (With JE Treherne)
1979-1982	Research Associate, University of Manchester, UK. Neurobiology. (With DM Guthrie)

Early Career Awards and Honours

1985-1988	Leverhulme Research Fellowship, University of Cambridge
1985	Royal Society Grant from the Browne, Hill, Marshall and Orr Fund (to USA)
	Samuel Riker Fellowship from the Bermuda Biological Station (to Bermuda)
1984	Royal Society Study Visit (to USA)
1983	Royal Society European Exchange Program (to France)
1978	Research Grant from the Carnegie Trust (to France)
1976-1979	PhD Scholarship from the Carnegie Trust for the Universities of Scotland
1976	MacGillivary Prize in Zoology (Aberdeen Univ., UK)
1975	Turner Scholarship in Biology (Aberdeen Univ., UK)
	Nicol Prize in Zoology (Aberdeen Univ., UK)
1972-1975	6 Distinctions and 5 Merits (Aberdeen Univ., UK)

Additional Appointments

2016	Member, DataScience@Southampton Board (Chair, Prof. Dame Wendy Hall)
2014-present	Member, of REEG and USRGs - Southampton Neuroscience Group (Steering Group), Computationally Intensive Imaging (Steering Group), NAMRIP and MENSUS
2015	'External' Review Committee for the CRUK competitive renewal, Faculty of Medicine
2014-2015	Member, Review Panel for Southampton CRUK Interdisciplinary Awards.
2014-2015	Member, Steering Committee, Southampton Centre for Biomedical Research, Strategy Review.
2013-2014	Member, Oversight Board: Swindon and Wiltshire Health and Life Sciences Business Plan

2012-present External Reviewer for BBSRC
2012-present Member, Joint Research Strategy Board, University of Southampton and University Hospital Southampton
2012-present Chair, 2015 and Member, Health and Pharma, University Industrial Sector Team
2012 Review of Human Nutrition, Faculty of Medicine, University of Southampton
2011-present Appointed Trustee, Southampton University representative, Board, Wessex Medical Research.
2011-present Member, Faculty of Physical and Applied Sciences Faculty Research Committee
2011-present Member, Faculty of Medicine Research Management Committee.
2011-present University of Southampton representative: Euro-Bioimaging Project
2008-2011 Member and Steering Committee, Brown Univ. and Women and Infants Hospital, Clinical Translational Science Initiative
2008-2015 Advisory Committee, Rockefeller Neuroscience Institute, West Virginia
2007-2011 Member, Institute for Molecular & Nanoscale Innovation, Division of Engineering, Brown Univ.
2007 Consultant, Betastim, Haifa, Israel
2006 Sponsor and Co-Organizer, Session on 'The Physiology of Developmental Polarity', Annual meeting of the Society for Developmental Biology.
2004 Organizer/Chair, Metabolism Session, Gordon Conference: Bioelectrochemistry
2002 Co-Organizer, with R. Nuccitelli, New Techniques for Studying Living Cell Dynamics – Amer. Soc. Cell Biol. San Francisco
2001-2004 Consultant, Impulse Dynamics, Dutch Antilles
2001 & 2002 Ad hoc Member of the Endocrinology Study Section NIH
1999-present Consultant, CIR Biomedical Technology and Engineering, Falmouth
1999-2011 Steering Committee for the consortium in biomedical engineering, Univ. of Rhode Island
1995 Co-Organizer with J. Demarest FASEB Workshop - Use of Vibrating Probe Techniques in the Study of Epithelial Transport
1997-2011 Consultant on NIH/NIDDK award Program Project Grant NIH DK 38452 Renal Unit Massachusetts General Hospital/Harvard University, Protein Transport P.I.: D. Brown
1997-2009 Fellowship Committee, MBL, Woods Hole, MA
1996-2011 Chair, Optics Committee, Children's School of Science, Woods Hole, MA
1996-2008 Member Special Study Section NIH: NCRR & NIBIB: 1996, 2003, 2005, 2006, 2007 (twice), and 2008 (twice). NIH:SBIR panel Chair 2011 – invitation not taken up.
1996-2000 Advisor & Judge Falmouth Schools Science Fair

Selected Grants, Fellowships and Awards (for US grants, direct and indirect cost unless stated otherwise)

2016-2017 Co-awardee with Dr Alex Mant of **WAHSN** support (£20,000) for the FortisNet Project (Musculoskeletal ecosystem).
2016-2018 Co-Applicant. **Discovery Awards: Maths, Engineering and Life Sciences: Making connections for precision medicine.** With Deborah MacKay, John Holloway, Cyrus Cooper (Medicine), Jacek Brodzki and Ben MacArthur (Mathematics). MRC; £500K
2015-2019 Co-Investigator: **Joining the Dots: From data to insight**. With Jacek Brodzki (PI: Maths), Jeremy Frey (Chemistry), Ratko Djukanovic (Medicine), Steven Gilmour (Stats) and Mahesan Niranjan (ECS). EPSRC; £1.218M.
2014-2016 Principal Investigator: Global Partnership Award **'Exploration of polarisation contrast in super-oscillatory imaging'** – with the Marine Biological Laboratory, University of Chicago. £4,695.
2013-2016 Principal Investigator on University of Southampton Enterprise Fund, **Nanoscope: Translation to biomedical applications and markets.** Co-Is. Dr John Chad (FNES) Dr Tracey Newman (FoM). Advisor N. Zheludev (FPAS). £440K
2014-2015 Applicant Solent LEP and WAHSN **Scooping exercise to audit the regional life science enterprise activity**. £25,000
2013-2014 Co-Applicant: Swindon and Wiltshire Local Enterprise Partnership: **The development of a detailed evidence based business plan for the health life sciences sector in the Swindon and Wiltshire area.** With Martin Stephens, Chief Executive, Wessex AHSN, Kevin Brooks, AHSN and Karl Simpson, UoS. £30,000.
2013-2014 Co-Investigator on **Southampton Imaging: 3D Imaging at millimetre to nanometre scales for regenerative medicine using multiple complimentary modalities.** With Richard Oreffo (PI) Medicine, Anton Page (Medicine), Peter Lackie (Medicine), Ian Sinclair (Engineering). MRC Award £1.171M - Capital Equipment for Regenerative Medicine.
2013-2014 Co-Investigator on EPSRC **Laser-printable point-of-care sensors for low-cost medical diagnosis and disease monitoring.** Principal Investigator, Prof. Robert Eason, Optoelectronics Research Centre, Co-Investigators Dr Spiros Garbis Cancer Sciences, Dr Saul Faust Medicine, Researcher-Co-Investigator Dr Collin Lawrence. £186K (EPSRC)
2011-2014 Co-Principal Investigator on Australian Research Council Discovery Project (DP120104035): **Charting Intercellular Space**, M. H. Todd, P. J. Rutledge and P. J. Smith ($348K) Univ. of Sydney, Australia.
2010-2011 Principal Investigator on NIH ARRA High End Instrumentation (S10) award. **Purchase of a laser scanning confocal microscope.** $1,695,379 (direct cost only) MBL

2009-2011 Principal Investigator on NIH ARRA Administrative Supplement to P41 RR001395: **Mechanisms of cisplatin resistance in ovarian cancer.** $897,629 MBL

2006-2010 Principal Investigator on NIH/NCRR P41 RR001395 from NIH National Center for Research Resources to **BioCurrents Research Center**. $6,552,058 MBL

2007 Research contract with Betastim, Haifa, Israel. $35,306 MBL

2003-2006 Principal Investigator on NIH R21 DK063984 **Pancreatic Islets: Role of islet structure and function in regulated insulin release** $310,000 MBL

2003-2005 Investigator subcontract on NIH R43 GM069194-01: Phase I & II SBIR with RPN Enterprise Inc: **Development of bioelectric field imaging instrumentation**

2003-2005 Principal Investigator on R41 DK065351-01: Phase I STTR with BRInc: **Ultra-micro oxygen sensor development** $223,461 BRInc (direct costs)

2002-2005 Principal Investigator on NSF Major Research Instrumentation entitled: **Acquisition of a Confocal Laser Scanning Microscope for Cell Biology and Biophysics.** $542,952 MBL

2001-2002 Supplemental Award to beta cell project – ***In situ* activity of the pancreas**. $45,000 MBL

2001-2003 Co-Principal Investigator commercial contract entitled **Electrophysiology and endocrine response of electrically stimulated beta cells and islets**. $416,000 MBL

2001-2003 Co-Investigator with M. Sogin on NSF Lexen grant: **Adaptations of unicellular eukaryotes to extremely acidic environments**. $475,000 MBL

1999-2004 Principal Investigator on NIH/NCRR P41 RR001395 from NIH National Center for Research Resources to **BioCurrents Research Center**. $4,644,290 MBL

1997-1999 Co-Investigator with D. Keefe (Brown Univ & WIH), NIH/NCRR R21 RR12718; **Non-invasive assay of pre-implantation embryo viability**. Direct cost $150,075 MBL

1997 NIH Supplemental award of $96,000 for equipment purchase – **Attofluor Imaging system**.

1996-1999 Principal Investigator on NIH/NCRR P41 RR001395 from NIH National Center for Research Resources to **BioCurrents Research Center**. Direct Cost $1,471,466 MBL

1994 NIH Supplemental award of $32,775 for equipment purchase – Zeiss Axiovert 100.

1994-1996 Principal Investigator on NIH/NCRR P41 RR01395 awarded from NIH National Center for Research Resources. This grant was transferred from Dr. Lionel F. Jaffe in the third year of its five-year term. Direct Cost, $1,431,752 (1991-1996) MBL

Editorial Boards

2006 - 2014 IET Nanobiotechnology
2006 - 2011 Biology of the Cell.

Journal Reviews 2003-present

Amer. J. Physiology
Biophysical J.
Cambridge University Press
Carbon
Electroanalysis
J. Electroanalytical Chemistry
J. Experimental Biology
J. General Physiology
J. Zhejiang University Science
Kluwer Publishers
Physiological Reviews
Proc. National Acad. of Sciences
J. Biomed. Optics
Trends in Analytical Chemistry
Trends in Neuroscience
Trends in Cell Biology
Biology of the Cell
IET Nanobiotechnology

Grant Reviews 2003 – present

IfLS research and studentship committees
Southampton CRUK Interdisciplinary Awards
Rosetree Foundation
MBL Fellowship Committee
NIH – National Center for Research Resources
NIH – National Institute for Biomedical Imaging and Bioengineering
German Israel Foundation
BBSRC

Current Societies

Biophysical Society
International Brain Research Organization
Institute of Biology (UK)
Inter. Society for Electrochemistry
Society for Experimental Biology (UK)

Selected Invited Presentations

2016 M3 and Solent LEP scoping meeting for the national enterprise audit – joint presentation with Royal Holloway on regional Universities' Life Sciences portfolios.

2015 Hampshire County Council *Nucleus* event. Keynote address on regional opportunities for enterprise and the life sciences

2015 Solent LEP presentation on the life sciences audit and smart specialisations.

2014 TEDx University of Southampton – Lamarck Reloaded
Bristol University, Department of Physiology and Pharmacology (Postponed due to flooding)

2013 SCI's Separation Science and Technology Group: Opportunities for sensors and biosensors in analytical applications. London
University of Southampton annual Electrochemistry Conference
Oxford University, Department of Pharmacology

2011-present Annual: Marine Biological Association: Microelectrode Techniques for Cell Physiology, Plymouth

2011 PittCon: Ionophore subgroup, Atlanta, Georgia, USA

2010 NIH:NCRR P41 Meeting: Translational Research, Washington DC.
2009 Whitney Laboratory, University of Florida
2008 Matrafured Sensor Conference, Hungary.
Discussion Leader, Gordon Conference: Bioelectrochemistry
2007 Inst. for Molecular and Nanoscale Innovation, Dept. of Engineering, Brown University
International Society for Electrochemistry, Banff, Canada. Invited speaker and session chair
Society for Experimental Otolaryngology, Denver.
Dept. of Biomedical Engineering, University of Memphis
2006 Sigma Xi invited speaker, Wake Forest University, NC, "Windows on Cell Dynamics."
2004 Chair and presenter, Metabolism Session, Gordon Conference: Bioelectrochemistry, Connecticut College
2002 Workshop on New Techniques for Studying Living Cell Dynamics. Amer. Soc. Cell Biology – San Francisco. Co-Organizer with R. Nuccitelli.
Jet Propulsion Laboratory, Pasadena, CA.
2001 Workshop on Probing Individual Cells: Applications to Signaling, Structure and Function. Sponsored by the Cancer Institute NIH, Bethesda, Maryland
2000 Garmisch-Partenkirchen, Germany. 3rd International Symposium on Electrochemical Microsystem Technologies. "Development and application of self-referencing microsensors; from tissue to single cell." Chair, Microelectrochemistry in Biology and Medicine.

Patents and Publications (excluding conference abstracts)

Patents

Polarisation Nanoscope. Patent submitted 2015
Polarographic self-referencing probe and method for using. Patent no. 5,9683,40: 2000
Determining ion flux of embryos and oocytes. Patent no. 08/732,618: 2000
Self-referencing enzyme based microsensor and method of use. Patent no. 09/966,581
Application of the Kelvin probe technique to mammalian skin and other epithelial structures. Patent app. no. 60/534,910

Current Web Publications

http://issuu.com/southamptonmagazine/docs/southampton_magazine
http://issuu.com/university_of_southampton/docs/ifls_annual_report
http://www.southampton.ac.uk/ifls/institute_for_life_sciences_annual_report.page

Selected Academic Research Publications: Underlined in the author list are postdoctoral or other research personnel working on grants held by and/or under the supervision of P.J.S. Smith at the time of the research.

Invited book chapters from 13

1. Messerli M.A., Smith P.J.S. 2010 Construction, theory, and practical considerations for using self-referencing of Ca^{2+}-selective microelectrodes for monitoring extracellular Ca^{2+} gradients. Methods Cell Biol. 99:91-111.
2. Smith, P.J.S., Sanger, R.S. and Messerli, M.A. (2007) Principles, Development and Applications of Self-Referencing Electrochemical Microelectrodes to the Determination of Fluxes at Cell Membranes. In: Methods and New Frontiers in Neuroscience. Ed. Adrian C. Michael. CRC Press. Chapter 18

Invited articles from 14

3. Bartlett P. and Smith P.J.S. Guest Editors, Scanning electrochemical applications in biology. Proc Roy Soc A. In preparation
4. Smith P.J.S., Davis I, Galbraith C.G. and Stemmer, A. (2013) Guest Editors: Special issue on high-resolution optical imaging J. Opt. 15 090201 Editorial. (3pp)
5. Smith J., Morgan J.R., Zottoli S.J., Smith P.J.S., Buxbaum J.D., Bloom O.E. (2011) Regeneration in the era of functional genomics and gene network analysis. Bio Bull 221:18-34.
6. Smith P.J.S., Collis, L. and Messerli M. (2010) Windows to Cell Function and Dysfunction: Signatures Written in the Boundary Layers. Bioessays Vol 32(5): 514-523.

Research papers from 137

1. Mistry I., Smith P.J.S., Wilson D.I .and Tavassoli A. (2015) Probing the epigenetic regulation of HIF-1α transcription in developing tissue. Mol. BioSyst. 11:2780-2785
2. Alavian K.N., Dworetzky S.I., Bonanni L., Zhang P., Sacchetti S., Li H., Signore A.P., Smith P.J.S., Gribkoff V.K. and Jonas E.A. (2015) The mitochondrial complex V-associated large-conductance inner membrane current is regulated by cyclosporine and dexpramipexole. Mol Pharmacol. 87(1):1-8. Katis I.N., Holloway J.A., Madsen J., Faust S.N., Garbis S.D., Smith P.J.S., Voegeli D., Bader D.L., Eason R.W., Sones C.L.

(2014) Paper-based colorimetric Enzyme Linked Immunosorbent Assay fabricated by Laser Induced Forward Transfer. Biomicrofluidics 19;8(3):036502.

3. Brodsky, A.S., Fischer, A., Miller, D.H., Vang, S., MacLaughlan S., Wu, H.-T., Yu J., Steinhoff, M., Collins, C., Smith, P.J.S., Raphael, B.J. and Brard, L. (2014) Expression profiling of primary and metastatic ovarian tumors reveals differences indicative of aggressive disease. PLoS One. 9(4):e94476. Vang, S., Wu, H.-T., Fischer, A., Miller, D.H., MacLaughlan, S., Elijah Douglass, E., Steinhoff, M., Collins, C., Smith, P.J.S., Brard, L. and Brodsky, A.S. (2013) Identification of ovarian cancer metastatic miRNAs. PLoS ONE 8(3):e58226.
4. Jonas, E.A., Alavian, K.N., Dworetzky, S.I., Bonanni, L., Zhang, P., Sacchetti, S., Mariggio, M.A., Onofrj, M., Thomas, A., Li, H., Mangold, J.E., Signore, A.P., DeMarco, U., Demady, D.R., Nabili, P., Lazrove, E., Smith, P.J.S. and Gribkoff, V.K. (2012) Effects of dexpramipexole on brain mitochondrial conductances and cellular bioenergetic efficiency. Brain Res. 1446:1-11.
5. Heart, E., Palo, M., Womack, T., Smith, P.J.S., Gray, J.P. (2012) The level of menadione redox-cycling in pancreatic *β*-cells is proportional to the glucose concentration: Role of NADH and consequences for insulin secretion. Toxicology and Applied Pharmacology, 258:216-225
6. Gray, JP, Eisen, T, Cline, GW, Smith, PJS and Heart E (2011) Plasma membrane electron transport in pancreatic β-cells is mediated in part by NQO1 Am J Physiol Endocrinol Metab 301:E113-E121
7. Alavian, KN, Collis, L, Li, H, Bonanni, L, Zeng, L, Sacchetti, S, Lazrove, E, Nabili, P, Flaherty, B, Graham, M, Chen, Y, Messerli, S, Mariggio, MM, Rahner, C, McNay, E, Shore, G, Smith, PJS, Hardwick, JM and Jonas, EA (2011) Bcl-xL regulates metabolic efficiency of neurons through interaction with the mitochondrial F1FO ATP synthase. Nature Cell Biol. 13, 1224-1233
8. Menachery A, Graham D, Messerli SM, Pethig R, Smith PJS (2011) Dielectrophoretic tweezer for isolating and manipulating target cells. IET Nanobiotechnol. 5(1):1-7.
9. Fussell, KC, Udasin, RG, Smith, PJS, Gallo, MA, Laskin, JD (2011) Catechol metabolites of endogenous estrogens induce redox cycling and generate reactive oxygen species in breast epithelial cells. Carcinogenesis 32: 8, 1285-1293
10. Fussell KC, Udasin RG, Gray JP, Mishin V, Smith PJS, Heck DE, Laskin JD. (2011) Redox cycling and increased oxygen utilization contribute to diquat-induced oxidative stress and cytotoxicity in Chinese hamster ovary cells overexpressing NADPH-cytochrome P450 reductase. Free Radic Biol Med. 50(7):874-82.
11. Peyot, M-L, Gray, JP, Lamontagne, J, Smith, PJS, Holz, GG, Madiraju, SRM, Prentki M and Heart E (2009) Glucagon Like Peptide-1 Induced Signaling and Insulin Secretion do not Drive Fuel and Energy Metabolism in Primary Rodent Pancreatic β-Cells. PLos 4(7) (e6221):1-10.
12. Gleichmann M, Collis, LP, Smith PJS and Mattson MP (2009) Simultaneous single neuron recording of O_2 consumption, $[Ca^{2+}]i$ and mitochondrial membrane potential in glutamate toxicity. J Neurochem. 109:644-655.
13. Heart E, Cline, GW, Collis LP, Pongratz RL, Gray JP and Smith, PJS (2009) Role for malic enzyme, pyruvate carboxylation and mitochondrial malate import in glucose-stimulated insulin secretion. Am J Physiol. 296:E1354-1362.
14. Messerli, M.M., Collis, L. and Smith, P.J.S. (2009) Ion trapping with fast response, ion-selective microelectrodes enhances detection of extracellular ion channel gradients. Biophysical Journal 96(4):1597-1605.
15. Shum, W.W.C., Da Silva, N., McKee, M., Smith, P.J.S., Brown, D. and Breton, S. (2008) Transepithelial projections from basal cells are luminal sensors in pseudostratified epithelia. Cell 135(6): 1108-1117. ***Winner of the Mass. General Hospital Martin Prize for best basic research***.
16. Nuccitelli, R., Nuccitelli, P., Sanger, R., Ramlatchan, S. and Smith, P.J.S. (2008) Imaging the electric field associated with mouse and human skin wounds. Wound Repair and Regeneration 16(3):432-441.
17. Li, H., Chen, Y., Jones, A.F., Sanger, R.H., Collis, L.P., Flannery, R., McNay, E.C., Schwartzenbacher, R., Bossy, B., Bossy-Wetzel, E., Bennett, M.V.L., Pypaert, M., Hickman, J.A., Smith, P.J.S., Hardwick, J.M. and Jonas, E.A. (2008) The anti-apoptotic protein BCL-xL controls synapse formation. PNAS 105(6): 2169–2174.
18. Messerli, M.A., Kurtz, I. and Smith, P.J.S. (2008) Characterization of Optimized Na^+ and Cl^- liquid membranes for use with extracellular, self-referencing microelectrodes. Anal. Bioanal. Chem. 390(5):1355-1359.
19. Pethig, R., Menachery, A., Heart, E., Sanger R.H and. Smith, P.J.S. (2008) Dielectrophoretic assembly of insulinoma cells and fluorescent nanosensors into three-dimensional 'pseudo-islet' constructs. IET Nanobiotechnology. 2(2):31-38.
20. Nicolas Da Silva, Winnie W.C. Shum, Teodor G. Paunescu, Jaafar El-Annan, Mary McKee, Peter J.S. Smith, Dennis Brown and Sylvie Breton. (2007) Relocalization of the V-ATPase β_2 subunit to the apical membrane of epididymal clear cells of mice deficient in the β_1 subunit. Am J Physiol Cell 293: C199-C210.
21. Gray, J.P., Heck, D.E., Mishin, V., Smith, P.J.S., Hong, J.Y., Thiruchelvam, M., Cory-Slechta, D.A., Laskin, D.L., and Laskin, J.D. 2007. Paraquat increases cyanide-insensitive respiration in murine lung epithelial cells by activating an NAD(P)H: Paraquat Oxidoreductase: Identification of the enzyme as thioredoxin reductase. J. Biol. Chem. 282, 7939-7949.
22. Heart, E. and Smith, P.J.S. 2007. Rhythm of the beta-cell oscillator is not governed by a single regulator: Multiple systems contribute to oscillatory behavior. Am J Physiol Endocrinol Metab. 292, E1295-E1300.

23. Heart, E., Yaney, G., Corkey, R.F., Schultz, V., Luc, E., Liu, L., Deeney, J.T., Shirihai, O., Tornheim, K., Smith, P.J.S, and Corkey, B.E. 2007. Ca $^{2+,}$ NAD(P)H and membrane potential changes in pancreatic beta-cells by methyl-succinate: comparison with glucose. Biochem J. 403(1):197-205.
24. Osbourn, D., Sanger, R.H. and Smith P.J.S. (2005) Determination of single cell oxygen consumption with impedance feedback for control of sample-probe separation. Anal Chem 77, 6999-7004.
25. Pethig, R., Jakubek, L., Sanger, R.H., Heart, E., Corson, E. and Smith, P.J.S. (2005) Electrokinetic measurements of membrane capacitance and conductance for pancreatic β-cells. IEE Proc. Nanobiotechnology . 152, 189-193
26. Li, R., Chase, M., Jung, S.K., Smith, P.J.S. and Loeken, M.R. (2005) Hypoxic stress in diabetic pregnancy contributes to defective embryo gene expression and defective development by inducing oxidative stress. Am. J. Physiol. 289, E591-599.
27. MacLellan, J.D., Gowing, A., Gerrits, M., Smith, P.J.S., Sivitz, W., Wheeler, M.B. and Harper, M.-E. (2005) Increased uncoupling protein 3 stimulates fatty acid, but not glucose oxidation, and decreases reactive oxygen species in muscle cells. Diabetes 54, 2343-2350.
28. Twig, G., Graf, S., Messerli, M.A., Jung, S.K., Smith, P.J.S. and Shirihai, O. (2005) Chromogranin A acts through CD40 pathway, and synergizes with beta amyloid and INFg to elicit microglia neurotoxic response and mitochondrial depolarization. Am. J. Physiol. 288: C169-175.
29. Beaulieu, V., Da Silva, N., Pastor-Soler, N., Brown, C.R., Smith, P.J.S., Brown, D. and Breton, S. (2005) Modulation of the actin cytoskeleton via gelsolin regulates vacuolar H^+ATPase (V-ATPase) recycling. J. Biol. Chem. 280: 8452-8463.
30. Katzman, S.M, Messerli, M.A., Grossman, A., Harel, T., Barry, D.T., Smith P.J.S., Chenault, V.M. and Shirihai, O.S (2004) Mitochondrial metabolism reveals a functional architecture in intact islets of Langerhans from normal and diabetic *Psammomys obesus*. Am. J. Physiol, 287(6): E1090-E1099.
31. Pepperell, J.R., Porterfield, D.M., Keefe, D.L., Behrman, H. and Smith, P.J.S. (2003) Control of ascorbic acid efflux in rat luteal cells: Role of intracellular calcium and oxygen radicals. Am. J. Physiol. 285(3): C642-651.
32. Dumollard R, Hammar, K, Porterfield DM, Smith PJ, Cibert C, Rouviere C, Sardet C. (2003). Mitochondrial respiration and Ca^{2+} waves are linked during fertilization and meiosis completion. Development 130(4): 683-692.
33. Liu L., Trimarchi J., Smith P.J.S., Keefe D. (2002) Mitochondrial dysfunction leads to telomere attrition and genomic instability. Aging Cell 1:40-46.
34. Trimarchi, J.R. Liu, L. Smith P.J.S. and Keefe D.L. (2002) Apoptosis recruits two-pore domain potassium channels used for homeostatic volume regulation. Am J Physiol. 282(3):C588-94.
35. Lui, L., Hammar, K., Smith, P.J.S., Inoue, S. and Keefe, D.L. (2001) Mitochondrial modulation of calcium signaling at the initiation of development. Cell Calcium 30(6): 423-433.
36. Smith P.J.S., Haydon P.G, Hengstenberg, A. and. Jung, S.K. (2001) Analysis of cellular boundary layers and their modulation by plasma membrane transporters: Application of electrochemical microsensors. Electrochimica Acta 47 283-292.
37. Porterfield, D.M., Laskin, J.D., Jung, S.K., Malchow, R.P., Billack, B., Smith, P.J.S. and Heck, D.E. (2001) Direct measurement of nitric oxide fluxes from macrophages using a novel self-referencing electrode. Am J Physiol 281: L904-L912.
38. Jung, S. K., Trimarchi, J.T., Sanger, R.H. and Smith, P.J.S. (2001) Development and application of a self-referencing glucose microsensor for the measurement of glucose consumption by pancreatic β-cells. Anal. Chem. 73: 3759-3767.
39. Porterfield, D.M., Corkey, R.F., Sanger, R.H., Tronheim, K., Smith, P.J.S., and Corkey, B.E. (2000) Oxygen consumption oscillates in single clonal pancreatic β-cells (HIT). Diabetes 49: 1511-1516.
40. Herak-Kramberger, C.M., Sabolic, I., Blanusa, M., Smith, P.J.S., Brown, D., and Breton, S. (2000) Cadmium inhibits vacuolar H^+ ATPase-mediated acidification in the rat epididymis. Biol. Reprod. 63: 599-606.
41. Trimarchi, J.R., Liu, L., Porterfield, D.M., Smith, P.J.S. and Keefe, D.L. (2000) Oxidative phosphorylation-dependent and -independent oxygen consumption by individual preimplantation mouse embryos. Biol. Reprod. 62: 1866-1874.
42. Trimarchi, J. R., Liu, L., Smith, P.J.S. and Keefe, D. L. (2000) Non-invasive measurement of potassium efflux as an early indicator of cell death in mouse embryos. Biol. Reprod. 63: 851-857.
43. Breton, S., Nsuma, N.N., Galli, T., Smith, P.J.S. and Brown, D. (2000) Tetanus toxin-mediated cleavage of cellubrevin impairs proton secretion in the male reproductive system. Amer. J. Physiol. 278: F717-F725.
44. Katoh, K., Hammar, K., Smith, P.J.S. and Oldenbourg, R. (1999) Arrangement of radial actin bundles in the growth cone of Aplysia bag cell neurons shows the immediate past history of filopodial behavior. Proc. Natl. Acad. Sci. USA 96: 7928-7931.
45. J.L. Hill, Hammar, K., P.J.S. Smith and D.J. Gross (1999) Stage-Dependent Effects of Epidermal Growth Factor on Ca^{2+} Efflux in Mouse Oocytes. Molec. Reprod. Devel. 53:244-253.
46. Katoh, K., Hammar, K., Smith, P.J.S. and Oldenbourg, R. (1999) Birefringence imaging directly reveals architectural dynamics of filamentous actin in living growth cones. Mol. Biol of the Cell. 10: 197-210.
47. Breton, S., Hammar, K., Smith, P.J.S. and Brown, D. (1998) Proton secretion in the male reproductive tract: Involvement of chloride-independent bicarbonate transport. Amer. J. Phyiol. 275: C1134-C1142.

48. Shirihai, O., Smith, P.J S., Hammar, K. and Dagan, D. (1998) H^+ and K^+ gradient generated by microglia H/K ATPase. Glia 23, 339-348.
49. Yamoah, E.N., Lumpkin, E. A., Dumont, R. A., Smith, P.J.S., Hudspeth, A. J. and Gillespie, P.G. (1998) Plasma-membrane Ca^{2+}-ATPase ensures low Ca^{2+} concentration in hair-cell stereocilia. Neuroscience J. 18 (2): 610-624.
50. Brown, D., Smith, P.J.S. and Breton, S. (1997) Role of V-ATPase rich cells in acidification of the male reproductive tract. J. exp. Biol. 200 (2): 257-262 (cover).
51. Breton, S., Smith, P.J.S., Lui, B. and Brown, D. (1996) Acidification of the male reproductive tract by bafilomycin-sensitive H^+ ATPase. Nature Medicine 2: 470-472.
52. Smith, P.J.S. (1995) The non-invasive probes - tools for measuring transmembrane ion flux. (Method review) Nature 378: 645-646.