BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME	POSITION TITLE
DIANE LIPSCOMBE, PhD	PROFESSOR OF NEUROSCIENCE
eRA COMMONS USER NAME (credential, e.g., agency login) DIANE_LIPSCOMBE	

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR(s)	FIELD OF STUDY
University College London, London, U.K.	B.Sc. (Hon)	1982	Pharmacology
University College London, London, U.K.	Ph.D.	1986	Pharmacology
Yale University Sch. Med, New Haven, CT		1986-1989	Physiology
Stanford University Sch. Med, Stanford, CA		1989-1990	Physiology

NOTE: The Biographical Sketch may not exceed four pages. Follow the formats and instructions on the attached sample.

A. Positions and Honors. List in chronological order previous positions, concluding with your present position. List any honors. Include present membership on any Federal Government public advisory committee.

Positions

1978-1982 Technician at the Wellcome Research Laboratories, Beckenham, Kent, U.K. Supervised by Sir James W. Black. Full-time, 1978-79; Summers only, 1980-82.

1982-1986 Graduate Student, Department of Pharmacology, University College London, U.K. Supervised by Professors H.P. Rang and D. Colquhoun.

1986-1989 Postdoctoral Associate, Department of Cellular and Molecular Physiology, Yale University Medical School. Advisor: Prof. R.W. Tsien.

1989-1990 Postdoctoral Fellow of the American Heart Association, Department of Molecular and Cellular Physiology, Stanford University Medical Center. Advisor: Prof. R.W. Tsien.

1990 Visiting Scientist, Miles Institute for Preclinical Pharmacology, Miles Inc., West Haven. Director: Dr. A. Scriabine.

1990-1993 Assistant Professor of Physiology (Research), Section of Physiology, Division of Biology and Medicine, Brown University.

1993 Assistant Professor of Neuroscience (Tenure Track), Brown University.

1999-present Associate Professor of Neuroscience (Tenured), Brown University.

2006-present Professor of Neuroscience, Brown University.

Honors, Awards, Service

1982 Graduate student fellowship, Medical Research Council, U.K.

1989 Fellow of the American Heart Association, CA affiliate.

1995 Steinbach Fellow, Marine Biological Labs, MA.

1996 K02 Independent Scientist Award (NIH)

1998-99 Richard and Edna Salomon Assistant Professor

2001-2004 Council member Society of General Physiologists

2002-present Editorial Board, *Journal of Neurophysiology*

2003-2007 Reviewing Editor, *Journal of Neuroscience*

2007-2010 Publications Committee, *Society for Neuroscience*

2007 Daniel A. Nachshen Memorial Lecturer, University of Maryland Baltimore

2009 Harriet W Sheridan Award for Distinguished Contribution to Teaching at Brown

NIH study section and service

1993 Ad Hoc Member of NINDS (Neuro B1, Dr. Lillian Pubols).
1994,96 Member NSPA Special Review Panel NINDS (Dr. Katherine Woodbury)
2000 Ad Hoc SEP (MDCN2)
1999-2003 Regular Member Study Section NINDS (MDCN3, Dr. Michael Lang)
2004-2009 Ad Hoc reviewer for SEPs, BSCT, and JSPTP predoc training grants
2007-2008 Member, NIMH Advisory Council Workgroup on Research Training

B. Selected peer-reviewed publications (in chronological order). Do not include publications submitted or in preparation. For publicly available citations, URLs or PMC submission identification numbers may accompany the full reference; copies of publicly available publications are not accepted as appendix material.

Select Publications

Jakubek, L, Marangoudakis, S, Raingo, J , Liu, X, Lipscombe, D & Hurt, R (2009) Neuronal calcium ion channels are inhibited by trace yttrium released from carbon nanotubes. *Biomaterials* 30: 6351-6357.

Andrade, A, Sandoval, A, Lipscombe, D, Campbell, KP & Felix, R (2009). The $Ca_V\alpha_2\delta$ subunit augments expression and modifies the pharmacology of $Ca_V1.3$ L-type channels. *Cell Calcium, in press*

Lipscombe, D & Pan, JQ (2009). Tripping the HCN breaker. *Neuron* 62:747-750.

Fairbrother, W & Lipscombe, D. (2008) Repressing the neuron within. *Bioessays* 30:1-4

Lipscombe, D, Allen, S, Marangoudakis, S, & Raingo, J. (2009) "Alternative splicing of neuronal Ca_V2 calcium channels" For "Ion channels" Eds Lenard Kaczmarek and Valentin K. Gribkoff. Wiley Publishers

Lipscombe, D & Raingo, J (2007). Alternative Splicing Matters: N-type Calcium Channels in Nociceptors. *Channels* 1:225-227.

Richards, KS, Swensen, AM, Lipscombe, D & Bommert, K (2007). Novel Ca(V)2.1 clone replicates many properties of Purkinje cell Ca(V)2.1 current. *European Journal of Neuroscience* 26: 2950-296.

Castiglioni, AJ, Raingo, J & Lipscombe, D. (2006). Alternative splicing in the C-terminus of $Ca_V2.2$ controls surface expression and gating of N-type calcium channels. *Journal of Physiology.* 576:119-134.

Wyllie, DJA, Johnston, AR, Lipscombe, D & Chen, PE. (2006) Single-channel analysis of a point mutation of a conserved serine residue in the S2 ligand binding domain of the NR2A NMDA receptor subunit. *Journal of Physiology.574:477-489.*

Lipscombe, D & Raingo, J (2006) Internalizing channels: a mechanism to control pain?" *Nature Neuroscience* 9:8-10.

Lipscombe, D (2005). Neuronal proteins custom designed by alternative splicing. *Current Opinions in Neuroscience* 15:358-363.

Lipscombe, D. (2005) "Ion channels". The Encyclopedia of Life Sciences. Macmillan Press.

Helton, TD, Xu, W, & Lipscombe, D (2005). Neuronal L-type calcium channels open quickly and are blocked slowly. *J. Neuroscience* 25: 10247-10251.

Lin, Y, McDonough, SI, & Lipscombe, D. (2004) Alternative splicing in the voltage-sensing region of N -type $Ca_V2.2$ channels modulates channel activation and deactivation speed. *J. Neurophysiology* 92:2820-2830.

Lipscombe, D., Xu, W. & Helton, TD. (2004). "Neuronal L-type calcium channels: The low down". *J. Neurophysiology* 92:2633-2641.

Thaler, C, Gray, AC & Lipscombe, D. (2004) Cumulative inactivation of N-type Cav2.2 calcium channels modified by alternative splicing. *Proceedings of the National Academy of Science, USA*. 101:5675-5679.

Bell TJ, Thaler C, Castiglioni AJ, Helton, TD and Lipscombe D. (2004). Cell-specific alternative splicing increases calcium channel current density in the pain pathway. *Neuron* 41: 127-138.

Lipscombe, D & Castiglioni, AJ (2004). Alternative splicing in voltage-gated calcium channels. In "Calcium Channel Pharmacology" Kluwer/ Academic/ Plenum Publishing. Ed. Stefan I McDonough.

Lipscombe, D, Pan, QJ. & Gray, AC. (2002) Functional diversity in voltage-gated calcium channels generated by alternative splicing". *Molecular Neurobiology* 26:21-44.

Lipscombe, D (2002) L-type calcium channels: Highs and new lows. *Circulation Research*. 90:933-935.

Xu, W & Lipscombe, D. (2001) Neuronal $Ca_V1.3\alpha_1$ L-type channels activate at relatively hyperpolarized membrane potentials and are incompletely inhibited by dihydropyridines. *J. Neuroscience* 21:5944-5951.

Lipscombe, D. (2000) "Ion channels". The Encyclopedia of Life Sciences. Macmillan Press.

Pan, JQ & Lipscombe, D (2000). Alternative splicing in the II-III loop of the N-type Ca channel α_{1B} subunit: Functional differences are β-subunit specific. *J. Neuroscience* 20:4769-4775.

Schorge, S, Gupta, S, Lin, Z, McEnery, M & Lipscombe, D. (1999) Voltage and calcium-dependent stabilization of a Ca channel mRNA. *Nature Neuroscience* 2:785-790.

Lin, Z, Lin, Y, Schorge, S, Pan, J, Beierlein, M & Lipscombe, D. (1999) Alternative splicing of a short cassette exon in α_{1B} generates functionally distinct N-type calcium channels in central and peripheral neurons. *J. Neuroscience* 19:5322-5331.

Lin, Z, Haus, S, Edgerton, J & Lipscombe, D (1997) Identification of functionally distinct isoforms of the N-type Ca channel in rat sympathetic ganglia and brain. *Neuron* 18:153-166.

Lin, Z, Harris, CA & Lipscombe, D (1996) Molecular identity of Ca channel α_1-subunits underlying Ca channel currents in rat sympathetic neurons. *J. Molecular Neuroscience* 7:257-267

Tsien, RW, Lipscombe, D, Madison, DV, Bley, K, & Fox, AP (1995). Reflections on Ca^{2+} channel diversity 1988-1994. *Trends in Neuroscience* 18, 52-53.

Delcour, AH, Lipscombe, D, & Tsien, RW (1992). Multiple modes of N-type Ca channel activity distinguished by differences in gating kinetics. *Journal of Neuroscience* 13, 181-194.

Lipscombe, D., Kongsamut, S. & Tsien, R.W. (1989). α-Adrenergic Inhibition of Sympathetic Neurotransmitter Release Mediated by Selective Modulation of N-type Calcium Channel Gating. *Nature*. 340, 639-642.

Tsien, R.W., Lipscombe, D., Madison, D.V., Bley, K. & Fox, A.P. (1988). Multiple types of calcium channels and their selective modulation. *Trends in Neuroscience*. 11, 431-438.

Lipscombe, D. Madison, D.V., Poenie, M., Reuter, H., Tsien, R.W. & Tsien, R.Y. (1988). Imaging of cytosolic Ca^{2+} transients arising from Ca^{2+} stores and Ca^{2+} channels in sympathetic neurons. *Neuron.* 1, 355-365.

Lipscombe, D. Madison, D.V., Poenie, M., Reuter, H., Tsien, R.Y. & Tsien, R.W. (1988). Spatial distribution of calcium channels and cytosolic calcium transients in growth cones and cell bodies of sympathetic neurons. *Proceedings of the National Academy of Science U.S.A*. 85, 2398-2402.

Lipscombe, D. & Rang, H.P. (1988). A ganglionic nicotinic receptor similar in pharmacology to that of skeletal muscle. *Journal of Neuroscience*. 8, 3258-3265.

Selected abstracts not yet published as full papers:

Lipscombe, Andrade, A, D, Denome, S, Jiang, Y-Q, & Marangoudakis, S (2009). Nociceptors Modulate Calcium Channel Activity by Alternative Splicing. ISAN Meeting, Sydney, Australia

Lipscombe, D, Denome, S, Andrade, A, Jiang, Y-Q, & Marangoudakis, S (2009). Nociceptors Modulate Calcium Channel Activity by Alternative Splicing. Keystone Pain Symposium.

Hurt, R, Kane, A & Lipscombe, D (2009). "Design of biocompatible nanocarbons". Annual Meeting of the American Chemical Society

Phillips, CG & Lipscombe, D (2009) G protein-coupled receptor inhibition of N-type channel splice-variants. *Soc Neuroscience Abstracts* 35.

Marangoudakis S & Lipscombe D (2009) Isoform-specific ubiquitination of the N-type voltage-gated calcium channel. *Soc Neuroscience Abstracts* 35.

Jiang, Y-Q, Andrade, A. Denome, S. & Lipscombe, D. (2009) Alternative Spliced isoforms of N type Calcium Channel contribute differently to nociceptive and chronic pain. *Soc. Neuroscience Abstracts 35.*

Andrade, A, Denome, S, Marangoudakis, S & Lipscombe, D. (2009) Exon-substitution in the mouse CACNA1B gene shows that alternative splicing controls N-type calcium channel sensitivity to baclofen in sensory neurons. *Soc. Neuroscience Abstracts 35.*

Phillips, CG & Lipscombe, D (2008). Modulation of N-type calcium channels associated with b2a subunits. *Soc Neuroscience Abstracts* 34.

Marangoudakis S & Lipscombe D (2008) Isoform-Specific Ubiquitination of the $Ca_v2.2$ C-terminus *Soc Neuroscience Abstracts* 34.

Allen, SA & Lipscombe, D (2008). Fox proteins regulate the tissue-specific and development-specific alternative splicing of an N-type calcium channel exon. *Soc Neuroscience Abstracts* 34.

Lipscombe, D, Jakubek, L, Marangoudakis, Raingo, J & Hurt, B (2008) "Single walled carbon nanotubes disable neuronal calcium ion channels through yttrium release" *Soc Neuroscience Abstracts* 34.

Raingo, J, Phillips, C & Lipscombe, D (2007). Cell-specific alternative splicing specifies G protein signaling to the N-type calcium channel. *Soc Neuroscience Abstracts* 33.

Gray, AC, Karashchuk, G, Bayliss, DA & Lipscombe, D. (2006) A novel protein interaction between the $Ca_V2.2$ synprint site and synaptotagmin-like protein 1/JFC1. *Soc. Neuroscience Abstracts* 32.

C. Research Support. List selected ongoing or completed (during the last three years) research projects (federal and non-federal support). Begin with the projects that are most relevant to the research proposed in this application. Briefly indicate the overall goals of the projects and your role (e.g. PI, Co-Investigator, Consultant) in the research project. Do not list award amounts or percent effort in projects.

Current funding:

Title: "N-type calcium channel in nociceptive neurons"
Principle Investigator: Diane Lipscombe
Agency: NIH NINDS
Type: R01 NS055251-01
Period 7/1/06-3/31/10 (Years 1-4)

Title: "Neuronal Ca channels: Regulation and Function".
Principle Investigator: Diane Lipscombe
Agency: NIH NINDS
Type: R01 NS29967 (Years 14-17)
Period 1/1/06 -12/31/10

Title: "Predoctoral Training Program in Neuroscience"
Principle Investigator: Diane Lipscombe
Agency NIH-NIMH
Type: T32MH020068 (Years 6-10)
Period 7/1/06-6/30/11

Pending:

Title: "Single nucleotide polymorphisms of neuronal CACNA1C L-type calcium channels Associated with biopolar disorder"
Principle Investigator: Diane Lipscombe
Agency: NIH NIMH
Type: R21 MH087969 (Years 14-17)
Requested: 12/1/09 -11/31/10

Title: "N-type calcium channel in nociceptive neurons"
Principle Investigator: Diane Lipscombe
Agency: NIH NINDS
Type: R01 NS055251-05
Requested period 2/1/10-1/31/15 (Years 5-9)