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
Chua, Michael	Assistant Professor of Cell & Molecular Physiology
eRA COMMONS USER NAME	

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
Monash University, Melbourne, Australia	B.Sc.Hons	76-79	Physiology & Biochem.
Australian National University, Canberra	Ph.D.	83-86	Physiology
University of Colorado, Denver, CO	Res. Fellow	86-89	Physiology

NOTE: The Biographical Sketch may not exceed four pages. Items A and B (together) may not exceed two of the four-page limit. 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 and Employment

1986-89 Postdoctoral Research Fellow, University of Colorado, Denver, CO.
1989-93 Research Assistant Professor of Neurology, Department of Neurology and Neurosurgery, Washington University School of Medicine, St. Louis, MO
1993 – 95 Research Assistant Professor of Cell Biology and Physiology, Washington University School of Medicine, St. Louis, MO
1995-1996 Visiting Research Associate in Cell Biology Department, Washington U. Medical School, St. Louis, MO
1996 Consultant to Dr. P. D. Stahl, Washington U. Medical School, St Louis, MO
1997-2001 Research Instructor, University of North Carolina, Chapel Hill, NC
2001 Adjunct Investigator, National Institute of Neurological Disorders & Stroke, Bethesda, MD.
2001-present Assistant Professor of Cell & Molecular Physiology Department, University of North Carolina, Chapel Hill, NC

Other Experience and Professional Memberships

1997-2001 Director of Confocal Facility, UNC Physiology/Neuroscience Center, Chapel Hill, NC
2001-2002 Assistant-Director, Michael Hooker Microscopy Facility, University of North Carolina, Chapel Hill, NC
2002-2004 co-Director of the Michael Hooker Microscopy Facility, University of North Carolina, Chapel Hill, NC
2003 Imaging Task Force Committee, School of Medicine UNC, co-author of report to Dean
2004-present Working group, Biomedical Research Imaging Center, University of North Carolina
2004-present Director of the Michael Hooker Microscopy Facility (http://microscopy.unc.edu)

RESEARCH INTERESTS

I am an electrophysiologist who saw the light of optically imaging many cells at once rather than sample cells one at a time with a glass microelectrode.

1. The microenvironment in ciliated airways
2. Mucus packaging in airway epithelial cells.
3. Live cell imaging: Fluorescent microscopy and electrophysiology: the use of vital dyes to measure the concentration of ions inside intact cells.
4. Computational microscopy: 3-D reconstruction, image enhancement, analysis of confocal microscope systems.
5. Imaging of sensory and motor nerve endings in living tissue: measurement of geometric changes during mechano-transduction at the muscle spindle. Metabolism of vital dyes by spindle afferent nerves. Following transmitter vesicle cycling at the NMJ using internalizeable membrane dyes.
6. Mechanical transduction in the muscle spindle: the mechanism of how stretch of receptor nerves is encoded into electrical signals at the cellular level. Micro-anatomical studies of the primary sensory endings of the muscle spindle using vital dyes, confocal microscopy and digital image analysis. Localization of voltage gated Na-channels using immunohistochemistry.
7. Ionic currents in excitable tissues: *in vitro* and *in vivo* study of electrical signaling.

Honors

1983-1986 Commonwealth Post Graduate Research Award
1986-1988 Muscular Dystrophy Association Fellowship

B. Selected peer-reviewed publications (in chronological order). Do not include publications submitted or in preparation.

McLachlan, E. M. & Chua, M. (1983). Rapid adjustment of sarcomere length in tenotomized muscle depends on an intact innervation. Neuroscience Letters, 35, 127-133.

Chua, M. & Dulhunty, A. F. (1987). Diazepam reveals different rate limiting processes in rat skeletal muscle contraction. Canadian Journal of Physiology and Pharmacology, 65, 272-273.

Chua, M. & Dulhunty, A. F. (1988). Inactivation of excitation-contraction coupling in rat extensor digitorum longus muscle and soleus muscles. Journal of General Physiology, 91, 737-757.

Chua, M. & Dulhunty, A. F. (1989). Non-inactivating tension in rat skeletal muscle: effects of thyroid hormone. Journal of General Physiology. 94, 183-203.

Betz, W. J., Chua, M. & Ridge, R. M. A. P. (1989). Inhibitory interactions between motoneurone terminals in neonatal rat lumbrical muscle. Journal of Physiology. 417, 25-51.

Chua, M. & Betz, W. J. (1991). Characterization of ion channels on the surface membrane of adult rat skeletal muscle. Biophysical Journal. 59, 1251-1260.

Petit, J., Chua, M. & Hunt, C. C. (1993). Maximum shortening speed of motor units of various types in cat lumbrical muscles. Journal of Neurophysiology. 69, 442-448.

Schieber, M.H., Chua, M., Petit, J. & Hunt, C.C. (1997) Tension distribution of single motor units in multitendoned muscles: Comparison of a homologous finger muscle in cats and monkeys. Journal of Neuroscience 17, 1734-1747.

Roberts, R.L., Barbieri, M.A., Pryse, K. M., Chua, M. Morisaki, J.H. & Stahl, P.D. (1999) Endosome fusion in living cells overexpressing GFP-rab5. Journal of Cell Science, 112, 3667-3675.

Patrick, V., Chua, M., Nogué, F., Fairbrother, A., Mekeel, H., Xu, Y., Bibikova, T. N., Gilroy, S. and Bankaitis, V. A., (2005) A Sec14p-nodulin domain phosphatidylinositol transfer protein polarizes membrane growth of *Arabidopsis thaliana* root hairs. Journal of Cell Biology, 168, 801-812.

Faculty of 1000: evaluations for Vincent P et al *J Cell Biol* 2005 Feb 22 : http://www.f1000biology.com/article/15728190/evaluation

Perez-Vilar, J.,Olsen, J.C., Chua, M., & Boucher, R.C. (2005) pH-dependent Intraluminal Organization of Mucin Granules in Live Human Mucous/Goblet Cells. Journal of Biological Chemistry, 280, 16868 – 16881.

Berkowitz, P. Hu, P., Liu, Z., Diaz, L.A., Enghild, J.J., Chua, M.P., & Rubenstein, D.S. (2005) Desmosome signaling: Inhibition of p38MAPK prevents pemphigus vulgaris IgG induced cytoskeleton reorganization. Journal of Biological Chemistry, 10.1074 (published on line)

C. Research Support.

Ongoing Research Projects

2 P50 HL 060280-06 (Boucher, PI) 09/1/2003 - 08/31/2008 25%
NIH/MHBLI
SCOR Airway Biological/Pathogenisis of Cystic Fibrosis
Core C: Histology & Imaging Core (M. Chua, core director)
The major goal of this core is to provide histology, light microscopy, and electron microscopy services, facilities and training to the SCOR investigators.

1 P30 DK 65988-01 (Boucher, PI) 04/01/04 – 03/03/09 25%
NIH/NIDDK
Molecular Therapy Core Center
Core D: Histology & Imaging Core
The major goal of this Core is to provide a series of important new imaging technologies, as well as histology and EM capabilities to the UNC-CH molecular therapeutics community.

2 P01 HL 051818-11 (Samulski, PI) 08/01/04 - 07/31/09 10%

NIH/NHLBI
Gene Therapy for Cystic Fibrosis
Core D: Histology and Imaging

The major goal of this core is to facilitate performance of morphologic, immunohistochemical, and morphometric studies.

PROFESSIONAL ORGANIZATIONS

Biophysical Society. Member since 1990.
American Association for the Advancement of Science. Member since 1993.
Society of general Physiologists. Member since 1994.

TECHNICAL EXPERTISE

Analog and digital electronics. Design and construction of electronic equipment for physiological research. E.g. microprocessor controller, 8th order low pass Bessel filter, and transducer amplifiers. Presented course on analog filters at the University of Colorado Health Sciences Center. Proficient with the C-language, familiar with MS-DOS, WindowsNT/2003 operating systems, Active Directory, networking and 32 bit programming, PC hardware and interfacing, Web page design and management (e.g. http://www.confocal.org).

Supervise and maintain operation of a LeicaSP2, Zeiss 510 Meta confocals, intensified CCD camera systems, fluorescent microscopes. .