John E. Baenziger
IUPAB Treasurer

Dr. Baenziger received his B.Sc. in 1984 in Biochemistry from Queen's University. He completed a Ph.D. in 1989 working at the National Research Council of Canada with former IUPAB President, Dr. Ian C.P. Smith , a pioneer in the use of solid state NMR methods to study biology. Dr. Baenziger undertook postdoctoral studies jointly at Harvard Medical School and Boston University. In 1992, Dr. Baenziger joined the Department of Biochemistry at the University of Ottawa, where he is currently a full professor.

Research Emphasis

Dr. Baenziger uses biophysical tools to study the structure and function of a superfamily of proteins, called pentameric ligand-gated ion channels (pLGICs). The lab focuses on nicotinic acetylcholine receptors (nAChRs), which respond to the neurotransmitter acetylcholine to mediate synaptic communication. He is interested in understanding the molecular details of how the activity of nAChRs are modulated during both normal and abnormal synaptic function, with the goal of developing new strategies to correct the altered synaptic communication that occurs in diseased states.

Scientific Societies

Dr Baenziger has been President of the Biophysical Society of Canada since 2014. He was President of the Harvard Club of Ottawa from 2014-2016. He has served in numerous leadership roles at both the University of Ottawa and the Canadian Institutes of Health Research and sat on the Editorial Board of the Journal of Biological Chemistry from 2003-2008. Dr. Baenziger is currently editing a special issue on Biophysics in Canada for BBA Proteins & Proteomics.

Recent Publications

J.E. Baenziger, J.A. Domville & J.P. Daniel Therien
"The role of cholesterol in the activation of nicotinic acetylcholine receptors"
Current Topics in Membranes (2017) *in press*

J.P.D. Therien & **J.E. Baenziger**:
"Pentameric ligand-gated ion channels exhibit distinct transmembrane domain archetypes for folding/expression and function"
Scientific Reports (2017) **7**:450, 1-14.

C.M. Hénault & **J.E Baenziger**
"Functional characterization of two prokaryotic pentameric ligand-gated ion channel chimeras – role of the GLIC transmembrane domain in proton sensing
BBA Biomembranes (2017) **1859**, 218-227.

J. Sun & **J.E Baenziger**
"Probing the structure of the uncoupled nicotinic acetylcholine receptor"
BBA Biomembranes (2017) **1859**, 146-154.

C.M. Hénault, P.F. Juranka & **J.E. Baenziger**
"The M4 transmembrane α-helix contributes differently to both the maturation and function of two prokaryotic pentameric ligand-gated ion channels"
J. Biol.Chem. (2015) **290**, 25118-25128.

C.L. Carswell, C.M. Hénault, S. Murlidaran, J.P.D. Therien, P.F. Juranka, J.A. Surujballi, G. Brannigan & **J.E. Baenziger**
"Role of the fourth transmembrane α-helix in the allosteric modulation of pentameric ligand-gated ion channels
Structure (2015) **23**, 1655-1664.

J.E. Baenziger, C.M. Hénault, D.T. Therien, & J. Sun
"Nicotinic acetylcholine receptor-lipid interactions: mechanistic insight and biological function"
BBA-Biomembranes (2015) **1848**, 1806-1817.

C.L. Carswell, J. Sun, & **J.E. Baenziger**
"Intramembrane aromatic interactions influence the lipid sensitivities of pentameric ligand-gated ion channels"
J. Biol. Chem. (2015) **290** 2496-2507.

C.M. Hénault, J. Sun, J.P.D. Therien, C.J.B. daCosta, C.L. Carswell, J.M. Labriola, P.J. Juranka & **J.E. Baenziger**
"The role of the M4 lipid-sensor in the folding, trafficking, and allosteric modulation of nicotinic acetylcholine receptors"
Neuropharmacology (2015) **96**, 157-168.

C.J.B. daCosta, L. Dey, J.P.D. Therien & **J.E. Baenziger**
"A novel mechanism for activating uncoupled nicotinic acetylcholine receptors"
Nat. Chem. Biol. (2013) **9**, 701-707
*Highlighted in News and Views: Andersen, O.S. Nat. Chem. Biol. (2013) **9**, 667-668*

C.J.B. daCosta & **J.E. Baenziger**
"Gating of pentameric ligand-gated ion channels: structural insights and ambiguities
Featured review in *Structure* (2013) **21**, 1271-1283.

J.M. Labriola, A. Pandhare, M. Jansen, M.P. Blanton, P.-J. Corringer & **J.E. Baenziger**
"Structural sensitivity of a prokaryotic pentameric ligand-gated ion channel to its membrane environment"
J. Biol. Chem. (2013) **288**, 11294-11303.

J.E. Baenziger & C.J.B. daCosta
"Molecular mechanisms of acetylcholine receptor-lipid interactions: from model membranes to human Biology"
Biophys. Rev. (2013) **5**, 1-9.

C.J.B. daCosta, R.M. Sturgeon, A.K. Hamouda, M.P. Blanton & **J.E. Baenziger**
"Structural characterization and agonist binding to human α4β2 nicotinic receptors"
Biochem. Biophys. Res. Commun. (2011) **407**, 456-460.

J.E. Baenziger & P.J. Corringer
"3D structure and allosteric modulation of the transmembrane domain of pentameric ligand-gated ion channels"
Neuropharmacology (2011) **60**, 116-125.

J.M. Labriola, C.J.B. daCosta, S. Wang, D. Figeys, J.C. Smith, R.M. Sturgeon, & **J.E. Baenziger**
"Phospholipase C activity affinity purifies with the *Torpedo* nicotinic acetylcholine receptor"
J. Biol. Chem. (2010) **285**, 10337-10343.

R.M. Sturgeon & **J.E. Baenziger**
"Cations mediate interactions between the acetylcholine receptor and anionic lipids"
Biophys. J. (2010) **98**, 989-998.

N. Vuong, **J.E. Baenziger** & L.J. Johnston
"Preparation of reconstituted acetylcholine receptor membranes suitable for AFM imaging of lipid-protein interactions"
Chem. Phys. Lipids (2010) **163**, 117-126.

C.J.B. daCosta, S.A. Medaglia, N. Lavigne, S. Wang, C.L. Carswell & **J.E. Baenziger**
"Anionic lipids allosterically modulate multiple acetylcholine receptor conformational equilibria"
J. Biol. Chem. (2009) **284**, 33841-33849.

C.J.B. daCosta, & **J.E. Baenziger**
"A lipid-dependent uncoupled conformation of the acetylcholine receptor"
J. Biol. Chem. (2009) **284**: 17819-17825.

W.M. Sayeed & **J.E. Baenziger**
"Structural characterization of the osmosensor ProP"
BBA-Biomembranes (2009) **1788**:1108-15.