

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed on Form Page 2.
Photocopy this page or follow this format for each person.

NAME	POSITION TITLE
Sidney A. Simon	Professor of Neurobiology Professor of Biomedical Engineering

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
IIT	B.S.	1965	Physics
Arizona State University	M.S.	1968	Physics
Northwestern University	Ph.D.	1973	Materials Science

RESEARCH AND PROFESSIONAL EXPERIENCE:

1973-1975 Research Associate and Associate, Dept. of Physiology and Pharmacology, Duke University (D.C. Tosteson, advisor)
 1975-1980 Assistant Professor, Department of Physiology and Pharmacology,
 1981-1987 Associate Professor, Department of Physiology,
 1988 Professor, Department of Physiology, Duke University
 1988-Present Professor, Department of Neurobiology Duke University
 2001- Present Professor, Department of Biomedical Engineering

Honors

Fellow : American Academy of Arts and Science

Current Editorial Responsibilities

Assistant Editor Journal of General Physiology
 Co-Editor Frontiers in Neuroscience Book Series 60 Volumes
 Co-Editor: Current Topics in Membranes Book Series 67 Volumes
 Chief Editor: Frontiers of Integrative Neuroscience

Selected Publications 2006-2011

Gutiérrez R, Carmena JM, Nicoletis MAL and Simon, SA (2006) Orbitofrontal ensemble activity predicts licking and distinguishes among rewards. J. Neurophysiol. 95: 119-133.

Liu L, Yang TM, Liedtke W and Simon SA (2006) Chronic IL-1 β signaling potentiates voltage dependent sodium currents in trigeminal nociceptive neurons. J. Neurophysiol. 95: 1478-1490.

Shlyonsky VG, Markin VS, Andreeva I, Pedersen SE, Simon SA, Benos DJ, Ismailov II. (2006) Role of membrane curvature in mechano-electrical transduction: ion carriers nonactin and valinomycin sense changes in integral bending energy. Biochim Biophys Acta. 758(11):1723-1731.

Markin VS, Shlyonsky VG, Simon SA, Benos DJ, Ismailov II. (2006) Mechanosensitivity of gramicidin channels in bulged bilayer membranes at constant tension. *Biofizika* 51: 1014-1018.

McIntosh TJ and Simon SA (2006) Roles of bilayer material properties in function and distribution of membrane proteins. *Annu. Rev. Biophys. Biomol. Struct.* 35: 177-198.

Stapleton JR, Levine M, Wolpert R, Nicolelis MAL, and Simon SA (2006) Rapid taste responses in the gustatory cortex during licking. *J. Neuroscience* 26: 4126-4138.

de Araujo IE, Gutierrez R, Oliveira-Maia AJ, Pereira Jr A, Nicolelis MAL and Simon SA (2006) Neural Ensemble Coding of Satiety States. *Neuron* 51: 483-494.

Zampighi GA, Zampighi LM, Fain N, Lanzavecchia S, Simon SA, and Wright EM (2006) Docked synaptic vesicles are hemi-fused with the active zone. *Biophysical J.* 91: 2910-2018.

Simon SA, de Araujo IE, Gutierrez R and Nicolelis MAL (2006) The neural mechanisms of gustation: a distributed processing code. *Nat Rev Neurosci* 7:890-901.

Costa RM, Gutierrez R, Kloth AD, Coelho M., de Araujo IE, Gainetdinov RR, Caron MG, Nicolelis MAL and Simon SA (2007) Dopamine modulates the updating of tastant values. *Genes, Brain & Behavior* 6: 314-320.

Liu L, Chen L, Liedtke W and Simon SA (2007) Changes in osmolality sensitize the response to capsaicin in trigeminal sensory neurons. *J. Neurophysiol.* 97: 2001-2015.

Soares E, Stapleton JR, Fitzsimmons N, Rodriguez A, Oliveria L, Nicolelis MAL and Simon SA (2007) Behavioral and neural responses to gustatory stimuli delivered non-contingently through intraoral cannulas. *Physiology and Behavior* 92:629-642.

Riera CE, Vogel H, Simon SA and le Coutre J (2007) Artificial sweeteners and salts producing metallic taste sensation activate TRPV1 receptors. *Am J. Physiology* 293: R626-R634.

McIntosh TJ and Simon SA (2007) Bilayers as protein solvents: role of bilayer structure and elastic properties. *J. Gen. Physiol.* 130 225-227.

Stapleton, JR, Lavine, ML, Nicolelis MAL and Simon, SA (2007) Ensembles of gustatory cortical neurons anticipate and discriminate between tastants in a single lick. *Frontiers of Neuroscience* 1: 161-174.

de Araujo IE, Nicolelis, MAL and Simon SA (2007) *Evolution of Gustation*. In: Volume 4 329-336.- *Evolution of Nervous System in Mammals*. Elsevier. Ed Jon Kass.

Rosenbaum, T. and Simon, S.A. (2006) TRPV1 Receptors and Signal Transduction. In: *TRP ion channel function in sensory transduction and cellular signaling cascades* Ed. W. Liedtke and S Heller CRC Press LLC of Taylor and Francis Books, Inc., (Boca Raton, FL). Chapter 5, pp. 69-84.

de Araujo I E., Oliveira-Maia AJ., Sotnikova TD, Gainetdinov RR, Caron MG, Nicoletis MAL and Simon SA (2008) Reward in the absence of taste receptor signaling. *Neuron* 57: 930-941.

Rawicz WW, Smith B, McIntosh TJ, Simon SA, and Evans EA (2008) Elasticity, permeability, and strength of lipid membranes containing raft microdomains. *Biophysics J.* 94:4725-4736

Simon SA, de Araujo IE, Stapleton JR and Nicoletis MAL (2008) Multisensory processing of gustatory stimuli. *Chem. Percept.* 1:95-102.

Tong J, Nguyen L, Vidal A, Simon SA, Skene JH, and McIntosh TJ. (2008) Role of GAP-43 in sequestering phosphatidylinositol 4,5-bisphosphate to raft bilayers. *Biophys J.* ;94: 125-133.

Simon SA and Liedtke W (2008) How irritating: the role of TRPA1 in sensing cigarette smoke and aerogenic oxidants in the airways. *J. Clin. Invest.* 118: 2383-2386.

Oliveira-Maia AJ, Simon SA, and Nicoletis MAL (2008) Neural Ensemble Recordings from Central Gustatory-Reward Pathways in Awake and Behaving Animals *In Methods for Neural Ensemble Recordings* 2nd Edition. .Chapter 10. pp 190-218. CRC Press Taylor and Francis Group. Boca Raton, FL USA.

Jara-Oseguera A, Simon SA and Rosenbaum T (2008) TRPV1: On the Road to Pain Relief (2008) *Current Molecular Pharmacology* 1(3): 255-269.

Simon SA (2008) The Merging of the Senses. *Front. Neurosci.* 2: 13-14.

Riera CE, Vogel H, Simon SA, Damak S and le Coutre J (2008) The capsaicin receptor participates in artificial sweetener aversion. *BBRC* 376: 653-657.

Gutierrez R and Simon SA (2008) Perinatal choline supplementation: a smart lifelong solution to age-related dementia (Commentary). *Frontiers of Neuroscience* 2: 135-136.

Oliveira-Maia AJ, Stapleton-Kotloski JR, Lyall V, Phan Tam-Hao T, Mummalaneni S, Melone P, DeSimone JA, Nicoletis MAL and Simon SA (2009) Nicotine activates TRPM5-dependent and independent taste pathways. *PNAS* 106: 1596-1601.

Li J, Ghio AJ, Cho S-H, Brinckerhoff CE, Simon SA and Liedtke W (2009) Diesel-exhaust particles activate the matrix-metalloproteinase-1 gene in human bronchial epithelia in a β -arrestin-dependent manner via activation of RAS. *Environmental Health Perspectives* 117: 400-409.

Riera CE, Vogel H, Simon SA, Damak S and le Coutre J (2009) Sensory attributes of complex tasting divalent salts are mediated by TRPM5 and TRPV1 channels. *J. Neurosci.* 25: 2654-2662.

de Araujo IE and Simon SA (2009) The gustatory system and multisensory integration. *Int J. Obesity* 33: Supp 2: S34-S43.

Riera C, Menozzi-Smarrito C, Affolter M, Michlig S, Munari C, Fabien R, Vogel H, Simon SA, and le Coutre J (2009) Covalent and non-covalent ligand interactions in TRPA1 and TRPV1 channels with spicy molecules from Sichuan and Melegueta peppers. *Br J. Pharm* 157:1398-409.

Macdonald C, Meck W, Simon SA and Nicolelis MAL (2009) Taste-guided response-selection differentially engages neuronal ensembles across gustatory cortices. *J. Neuroscience* 29:11271-82.

Gutierrez R, Simon SA, Nicolelis MAL (2009) Spike timing precision of licking-synchronized neurons in the taste-reward circuit is enhanced upon learning. *J Neuroscience* 30: 287-303

Kuhn C; Johnson, M, Thomaes A, Luo B, Simon SA, Zhou G, Walker QD (2010) The emergence of gonadal hormone influences on addictive behaviors during puberty. *Hormones and Behavior* 58(1):122-137.

Rosenbaum T, Simon SA and Islas LD (2010) Ion channels in analgesia research– *Methods in Molecular Biology* 617: 223-236.

Carleton A, Accolla R, and Simon SA (2010) Coding in the mammalian gustatory system. *TINS* 33: 326-334.

Oliveira-Maia J, Roberts, CD, Simon SA, Nicolelis MAL (2010) Gustatory and reward brain circuits in the control of food intake. *Adv Tech Stand Neurosurgery*. 36:31-59.

Li J, Kanju P, Patterson M, Chew W-L, Cho S-H, Simon SA and Liedtke W (2011) TRPV4-Mediated Calcium Influx into Human Bronchial Epithelia upon Exposure to Diesel Exhaust Particles. *Environ Health Perspect* 119: 784-793.

Gutierrez R and Simon SA (2011) Chemosensory processing in the taste – reward pathway Flavours and Fragrances. *J*. 26: 231-238.

Picazo-Juárez G, Romero-Suárez S, Llorente I, Briggs M, McIntosh TJ, Simon S A, De Guevara EL, Islas LD, and Rosenbaum T (2011) Identification of a Binding Motif in the S5 Helix That Confers Cholesterol Sensitivity to the TRPV1 Ion Channel. *Journal of Biological Chemistry* 286: 24966-24976.

Oliveira-Maia AJ, Roberts CD, Walker QD, Luo B, Kuhn C, Simon SA and Nicolelis MAL (2011) Intravascular Food Reward. *PloS One* (in press).

MacDonald CJ , Meck WH and Simon SA (2012) Distinct neural ensembles in rat gustatory cortex encode for water, osmotic pressure and the intensity of NaCl. *J. Physiol* (submitted).

Tandon S., Simon SA, and Nicolelis MAL (2012) Salt appetite

Tellez LA, Simon SA and Gutierrez R, (2012) Neuronal Dynamics in the Nucleus Accumbens Shell during Feeding and Sleep-Awake States

Principal Investigator/Program Director (Last, first, middle): Simon, Sidney A
