CURRICULUM VITAE

Robert L. Smith, PhD

Department: Department of Biomedical and Chemical Engineering
and Institute for Sensory Research, Syracuse University

College: Engineering and Computer Science

Education:

B.E.E	City College of New York	1962
M.S.E.E.	New York University, New York	1966
Ph.D.	Sensory Systems, Syracuse University	1973

Honors:

Research Professor Emeritus, Syracuse University, 2008
Fellow, Acoustical Society of America, 1984.
Founding Officer: IEEE Engineering in Medicine and Biology (EMBS) Society, Syracuse Chapter. 2007
Associate Editor for Physiological Acoustics, *Journal of the Acoustical Society of America*. 1986 - 1992.
Eta Kappa Nu, Tau Beta Pi

Academic Positions:

City College of New York:
Lecturer, Department of Electrical Engineering, 1964-1966.
Syracuse University, Syracuse, New York:
Instructor, Electrical and Computer Engineering, 1970-1974.
Member, Institute for Sensory Research (ISR), 1974-present.
Professor, Bioengineering and Neuroscience, 1986-present.
Head, Division of Bioengineering Systems, 1996- 2002.
Director, Institute for Sensory Research, 1993- present
Professor Emeritus, 2008.
State University of New York Health Science Center at Syracuse:
Adjunct Professor of Otolaryngology and Communication Science, 1996-present
New York University Medical School: Research Professor of Otolaryngology, 2007.

Professional Specialization:

Psychophysics of cochlear implant hearing. Encoding and processing of information by the auditory nervous system. Recording from single cells of the cochlea, auditory nerve, and cochlear nucleus. Mathematical modeling and systems analysis of the auditory system. Determination of the physiological bases for behavioral and perceptual phenomena in audition. Comparisons between the auditory system and other sensory systems.

Recent Research Grants and Awards:

PI of NIH RO1 "Morphological Investigation of Cutaneous Mechanoreceptors" $1 million in total expenditures, 2003-2006.

PI "Growth of Loudness in Cochlear Implant Listening" Cochlear Americas, Inc. $25,000, 2005.

Co Leader, Human Health and Performance Subsection: New York Environmental Quality Systems Center 2002-2007. $100,000 in capital expenditures

PI on F33 NIH: Senior Research Training Fellowship "Dynamic Encoding in Cochlear Implants. 1/16/02 – 8/1/02. $26,000 total award.

P.I. on Program Project Component Grant #3, NIH, NS-24255, "Intensity Effects in the Auditory and Tactile Systems" 12/1/87 to 7/1/95; 5/1/97 -4/30/04; est $7 million current total award, $1.4 million to project 3.

P.I., NSF Research Experience for Undergraduates. "Engineering Analysis of Biological Systems" 6/1/97-6/30/03; $300,000 total award.

Selected Recent Publications

FRISINA, R. D. , SMITH, R. L., and CHAMBERLAIN, S. C. Differential encoding of rapid changes in sound amplitude by second-order auditory neurons. *Exp. Brain Res.* 60:417-422, 1985.

LÜTKENHÖNER, B. and SMITH, R. L. Rapid adaptation of auditory-nerve fibers: Fine structure at high stimulus intensities. *Hearing Research* 24:289-294, 1986.

WESTERMAN, L. A. and SMITH, R. L. Conservation of adapting components in auditory-nerve responses. *Journal of the Acoustical Society of America* 81:680-691, 1987.

WESTERMAN, L. A. and SMITH, R. L. A diffusion model of the transient response of the cochlear inner hair cell synapse[a]. *Journal of the Acoustical Society of America* 83:2266-2276, l988.

ZWISLOCKI, J. J. and SMITH, R. L. Phase reversal in OHC response at high sound intensities. In: *Mechanics of Hearing—A NATO Advanced Research Workshop*, J. P. Wilson and D. T. Kemp (Eds.), University of Keele, England, July 4-8, 1988.

SMITH, R. L. Encoding of sound intensity by auditory neurons. In: *Auditory Function*, G. M. Edelman, W. E. Gall, and W. M. Cowan (Eds.), John Wiley & Sons, Inc., pp. 243-274, 1988.

FRISINA, R. D., SMITH, R. L., and CHAMBERLAIN, S. C. Encoding of amplitude modulation in the cochlear nucleus: I. A hierarchy of enhancement. *Hearing Research* 44, 99-122, 1990.

FRISINA, R. D. , SMITH, R. L., and CHAMBERLAIN, S. C. Encoding of amplitude modulation in the cochlear nucleus: II. Possible neural mechanisms. *Hearing Research* 44, 123-142, 1990.

STATLER, K.D., CHAMBERLAIN, S.C., SLEPECKY, N.B. and SMITH, R.L. Development of mature microcystic lesions in the cochlear nuclei of the Mongolian gerbil, *Meriones unguiculatus. Hearing Research* 50, 275-288 1990.

RELKIN, E.M. and SMITH, R.L. Forward masking of the compound action potential: Thresholds for detection of the N_1 peak. *Hearing Research* 53: 131-140, 1991

LÜTKENHÖNER, B and SMITH, R.L. A theoretical basis for conditional probability analyses of neural discharge activity. *Biological Cybernetics* 67. 1-10, 1992.

ZWISLOCKI, J.J., SLEPECKY, N.B., CEFARATTI, L.K. and SMITH, R.L. Ionic coupling among cells of the organ of Corti. *Hearing Research* 57, 175-194, 1992.

CHATTERJEE, M. and SMITH, R.L. Physiological overshoot and the compound action potential. *Hearing Research* 69: 45-54 1993

SMITH, R.L. Adaptation and dynamic responses in the auditory periphery. in *Sensory Processes: Multimodal perspectives.* Edited by R.T. Verrillo. Lawrence Erlbaum Associates,Hillsdale N.J., 35-53, 1993

BURKARD, R., VOIGHT, H., and SMITH, R.L. A comparison of WNAP and WAVE i of the BAER in Mongolian gerbil. *Journal of the Acoustical Society of America* 93, 2069-2076, 1993.

SMITH, R.L. Auditory-nerve responses to amplitude modulation: some implications for synaptic transmission. in *Psychophysical and Physiological Advances in Hearing* edited by A.R. Palmer, A. Rees, A.Q. Summerfield and R. Meddis. Whurr Publishers, Ltd. London, 162-169, 1998

SMITH, R.L., BAPTISTE, D. and LUTKENHONER, B Incremental responses in the auditory periphery and the auditory cortex, and a possible relationship to psychophysical overshoot. in *Physiological and Psychophysical Bases of Auditory Function* edited by D.J. Breebart, A.J.M. Houtsma, A. Kohlrausch, V.F. Prijs, R. Schoonhoven. Shaker Publishing BV, Maastricht. 306-312 , 2002

SANPETRINO, N.M and SMITH, R.L. "Growth of Loudness Functions in Cochlear Implant Listeners Using Absolute Magnitude Estimation and Compared Using Akaike's Information Criterion" Proceedings of the 28th IEEE EMBS Annual International Conference, 1642-1644. 2006.