

Auditory Temporal Processing Symposium Biographies

Claude Alain graduated from Université du Québec à Montréal in 1991. He then moved to the VA Medical Center at Martinez, California for his postdoctoral training where he worked with Dr. David Woods until 1996. Claude is currently a scientist at the Rotman Research Institute at Baycrest Center for Geriatric Care and Associate Professor in the Department of Psychology at the University of Toronto. He received several awards including the Canadian Institute for Health Research Scholarship and the Premier Research Excellence Award from the Government of Ontario. His research is in the field of cognitive neuroscience and focuses on the brain processes supporting auditory scene analysis. Claude is using a combination of neuroimaging techniques (e.g., EEG, MEG, and fMRI) to investigate which, and how, different brain areas work together during auditory scene analysis. He will be presenting some of his recent work on aging and auditory scene analysis.

Jeff Bondy received his B.A.Sc. from the University of Waterloo. He spent several years in industry as an RF engineer and as a consulting engineer before returning to school to pursue his Masters in a more human-centric field. He has been studying the new possibilities for signal processing in digital hearing aids ever since. The various subprojects he has looked at revolve around the goal of providing signal processing strategies that would return near normal neural representations to the hearing impaired ear. This central aim has led down a wide range of avenues including signal processing, machine learning, psychophysics and neuroscience. He hopes to be done his dissertation very soon and find some employment that allows him to further pursue how to improve the quality of hearing by people with sensorineural hearing loss.

Ian Bruce is an Assistant Professor in Electrical and Computer Engineering, the Barber-Gennum Chair in Information Technology, and an Associate Member of the Department of Psychology at McMaster University. Prior to joining McMaster in 2002, he held a postdoctoral fellowship in the Department of Biomedical Engineering at Johns Hopkins University in Baltimore, Maryland. Dr. Bruce obtained his Ph.D. from the University of Melbourne in Australia. His research is focused on using engineering methods to study and model the physiological mechanisms that contribute to hearing loss and tinnitus. The results of these studies are then applied to the improvement of assistive devices for the hearing impaired such as hearing aids and cochlear implants. Dr. Bruce has been involved in developing research and academic programs in biomedical engineering at McMaster, including an undergraduate program in Electrical and Biomedical Engineering and the new McMaster School for Biomedical Engineering.

Meredyth Daneman has a B.A. in Psychology and Linguistics from the University of the Witwatersrand, and a Ph.D. in Psychology from Carnegie Mellon University. She is Professor of Psychology at the University of Toronto at Mississauga. Her primary research program is concerned with developing ways to measure, understand, and improve language comprehension skills. A major contribution of this research has been to develop a measure of the language user's working memory capacity, and to show that this measure is an excellent predictor of individual differences in language comprehension ability. As a secondary research interest, she has been involved in a research team that is investigating the sensory and cognitive factors that contribute to age-related declines in speech and language comprehension.

Auditory Temporal Processing Symposium Biographies

Pierre Divenyi is Chief of Speech and Hearing Research at the VA Medical Center in Martinez, California. He was educated in music (piano performance) in Budapest, Geneva, Vienna, and Seattle, and received his doctorate in Systematic Musicology at the University of Washington. First at Central Institute for the Deaf in St. Louis and later at the VA in Martinez, he did research in the psychoacoustics of temporal processing, localization, and auditory scene analysis and has also studied perceptual consequences of the dynamics of speech. His interest in the “cocktail-party effect” has led him to investigate auditory functions that correlate with its loss in elderly individuals. He is the editor of a recent book on Speech Separation by Humans and Machines. He was organizer and director of a NATO Advanced Study Institute and several international and interdisciplinary symposia and workshops. Dr. Divenyi is a Fellow of the Acoustical Society of America and a Visiting Professor at the Department of Telematics of the Budapest University of Technology.

Christian Giguère was trained as an engineer and has worked in the fields of acoustics, psychoacoustics, hearing technology, auditory modeling and speech communication for the past 20 years. He is currently Associate Professor at the Audiology & Speech-Language Pathology Program and at the School of Information Technology and Engineering at the University of Ottawa. His main research achievements include: (1) the development of an anthropomorphic acoustic test fixture to measure the attenuation of hearing protectors, (2) a software tool for the analysis and control of HVAC noise in buildings, (3) the development of a psychoacoustic laboratory to assess basic auditory functions and measure hearing protector attenuation, (4) a mathematical model of the peripheral auditory system to simulate hearing loss and assess signal processing strategies for hearing aids, (5) the development of a System for Evaluating sound Localization Acuity (SELA), (6) a software tool “Detectsound Version 2” to design optimal auditory warning signals in noisy occupational settings, and (7) the development of hearing standards for the Canadian Coast Guard and the Conservation & Protection sections of the Department of Fisheries and Oceans Canada in collaboration with colleagues at the University of Ottawa (Dr. Chantal Laroche) and at the House Ear Institute (Dr. Sigfrid Soli). Dr. Giguère is currently co-chair of Team II (Noise and Communication) for the International Commission on the Biological Effects of Noise (2003-2008), and Awards Coordinator for the Canadian Acoustical Association (2002-2006).

John Grose first became interested in hearing science during his undergraduate studies at Keele University, England, where he was mentored by the eminent auditory physiologist Ted Evans. Following a Masters degree in Audiology at Southampton University, England, he went on to complete a PhD at Northwestern University in the US. In 1987 he began his long association with the University of North Carolina at Chapel Hill when he moved there for post-doctoral work under the direction of Joseph Hall III. Now a Professor within the Dept. Otolaryngology, Dr. Grose helps direct the Hearing Research Laboratory along with Drs. Joseph Hall III and Emily Buss. His NIH-funded research deals with complex sound perception in listeners with normal and impaired auditory systems. In addition to his research activities, Dr. Grose is involved clinically in the evoked potential testing of infants and toddlers, and also teaches courses to doctoral students in Audiology.

Auditory Temporal Processing Symposium Biographies

Erin Hannon is a doctoral student at Cornell University and a visiting graduate student at University of Toronto at Mississauga. She received a B.A. from New College of Florida, with a double concentration in Psychology and Music. Her research investigates how listeners perceive and learn about temporal structure in complex auditory structures such as music, with the long-term goal of understanding the general functions of rhythm and timing in communication. In her dissertation research, Erin examined the perceptual learning mechanisms that lead to enculturation of musical rhythm perception in infants and adults. Erin will receive her Ph.D. this summer and start an assistant professorship in the fall.

Antje Heinrich is currently a joint post-doctoral research fellow at Queen's University in Kingston, Ontario, and at the Cognition and Brain Sciences Unit of the MRC in Cambridge (U.K.). She obtained her undergraduate training at the Technische Universitaet Dresden (Germany) and has recently completed her doctorate degree in Psychology at the University of Toronto at Mississauga. In her research she pursues a multi-methodological approach by using psychophysical, cognitive, as well as a combination of neuroimaging techniques (EEG, fMRI). Her primary research interest lies in the interplay of sensory and cognitive processes. In her Ph.D. research, Antje investigated how different types of unfavorable listening conditions affect speech perception and memory performance. A particular focus of the thesis was on how the interaction between speech perception and memory performance changes with age. Other research interests include basic aspects of temporal auditory processing such as gap detection. Currently, Antje has joint forces with Ingrid Johnsrude to investigate how different brain areas work together to process various aspects of speech.

Ingrid Johnsrude studies the brain bases of auditory and speech perception. She received her PhD in Clinical Psychology from McGill University (supervised by Brenda Milner) in 1997. She then took a Wellcome postdoctoral fellowship at the Wellcome Department of Imaging Neuroscience, London UK (supervised by Richard Frackowiak) for two years, before joining the MRC Cognition and Brain Sciences Unit in Cambridge UK. In July 2004 she moved to Kingston, where she is Canada Research Chair in Cognitive Neuroscience (Tier II) at Queen's University.

Auditory Temporal Processing Symposium Biographies

Ulrich Krull is appointed as a Professor of Analytical Chemistry at the University of Toronto, and holds the AstraZeneca Chair in Biotechnology. He is the Vice-Principal:Research at the University of Toronto at Mississauga. His research interests are in the area of biosensor technology, and its applications to biotechnology, forensic, clinical and environmental chemistry. His research work has explored chemoreceptive lipid membranes as biosensors, and more recently, the use of single-stranded DNA as receptors to detect DNA and RNA using optical methods for transduction. Some of these device technologies are presently being commercialized. Krull is a Fellow of the Chemical Institute of Canada. He has received both the McBryde Medal, and the Maxxam Award (top prizes in Analytical Chemistry), of the Canadian Society for Chemistry. He has been a recipient of the University of Toronto Faculty Excellence Award. He has served as the Associate Dean-Sciences, Vice-President of the Royal Canadian Institute, and presently is an editor of *Analytica Chimica Acta*, a major international journal for analytical chemistry. He serves on a number of Scientific Advisory Boards for industry. Krull is heading the consortium of industry, government and institutions that form the Western GTA life sciences cluster (<http://wgta.hal.ca>).

Liang Li has a B.A. and a M.Sc. in Psychology from Peking University, and a Ph.D. in Psychology from Carleton University. He is now Professor of Psychology at Peking University, and Associate Professor at the University of Toronto at Mississauga. His primary programs are concerned with psychological and neural mechanisms underlying sound localization, auditory precedence effect, informational and energetic masking of speech, and auditory sensorimotor gating. Currently he is investigating the sensory and cognitive factors that contribute to age-related declines in speech recognition under noisy, reverberant environments. His secondary research programs include those searching for neural mechanisms underlying auditory fear conditioning and expression. He uses various experimental techniques in his investigations.

Ewen MacDonald is a PhD Candidate in the Sensory Communications Lab at the University of Toronto. He is currently enrolled in the collaborative program of the Institute for Biomaterials and Biomedical Engineering and the Department of Electrical and Computer Engineering. He is also a trainee in the CIHR Strategic Training Grant on Communication and Social Interaction in Healthy Aging. His research focus is on supra-threshold aspects of hearing loss that can occur with aging. His doctoral research examines techniques of simulating these effects of aging in a normal auditory system. In the future these simulations may be used to help control for peripheral auditory differences in aging studies as well as provide some insight into the communication challenges faced by an older listener.

Vijay Parsa received the B.Eng. degree from the Osmania University, India, in 1989 and the M.E.Sc. and Ph.D. degrees in Biomedical Engineering from the University of New Brunswick, Fredericton, NB, Canada, in 1992 and 1996, respectively. He joined the Hearing Health Care Research Unit (HHCRU) in 1996 as a post-doctoral fellow where he received the Shaw Memorial Postdoctoral award from the Canadian Acoustics Association for his work on advanced electroacoustic measurements of hearing aid performance. He continued to work at the HHCRU as a Research Engineer developing speech and audio processing algorithms for Audiology and Speech Language Pathology applications. In July 2002, he was appointed as the Oticon

Auditory Temporal Processing Symposium Biographies

Foundation's Chair in Acoustic Signal Processing, a joint position between the Faculties of Health Sciences and Engineering. His research interests are in speech and audio signal processing with applications to hearing aids, assistive listening devices, and augmentative communication devices.

Roy Patterson is the Head of the Centre for the Neural Basis of Hearing (CNBH) which is a Research Group located in the Physiology Department at the University of Cambridge. The CNBH is funded by the UK Research Councils and several European charities to do basic research on 'temporal processing in the auditory system from cochlea to cortex'. The current focus of the perceptual research at the CNBH is the robustness of human speech recognition. For example, when a child and an adult say the same word, it is only the message that is the same. The child has a shorter vocal tract and lighter vocal cords, and as a result, the waveform carrying the message is quite different for the child. Recent, perceptual experiments (Smith et al., 2005) have demonstrated that human listeners are virtually immune to changes in Vocal Tract Length (VTL) and Glottal Pulse Rate (GPR), even when the values of GPR and VTL go well beyond those ever produced by humans. The fact that we hear the same message, independent of GPR and VTL, implies that the auditory system 'normalizes' speech sounds for GPR and VTL at an early stage in the processing to extract the message (at the syllable level) from the sound that carries the message from the speaker to the listener (Irino and Patterson, 2002). These normalization processes also extract specific VTL and GPR values from each syllable as an utterance proceeds, and in noisy environments with multiple speakers, the brain uses these streams of GPR and VTL values to track the target speaker. Current speech recognition systems use spectrographic preprocessors that preclude time-domain normalization like that in the auditory system, and this is one of the main reasons why Automatic Speech Recognition (ASR) is so much less robust than Human Speech Recognition (HSR) in multi-source environments. Currently our research is focused on extending the Auditory Image Model (AIM) to include VTL normalization in an attempt to produce an auditory preprocessor for ASR systems and Cochlear Implants (CIs) that would make them more robust in noisy environments and more efficient in all environments. An introduction to the Auditory Image Model and the robustness of human speech recognition is provided on his web site along with a complete list of publications.

Kathy Pichora-Fuller is currently Associate Professor in the Department of Psychology at the University of Toronto at Mississauga. This year she holds a CHIR Mid-Career Award in Aging Research. She obtained a B.A. in Linguistics from the University of Toronto, an M.Sc. in Audiology and Speech Sciences from the University of British Columbia, and a Ph.D. in Psychology from the University of Toronto. She worked for several years as a Clinical Audiologist and the Audiology Supervisor at Mount Sinai Hospital in Toronto before she undertook doctoral studies in Psychology. She was on faculty in the School of Audiology and Speech Sciences at the University of British Columbia for ten years before coming to UTM in 2002. At UBC, she was also the Director of the Institute for Hearing Accessibility Research and she continues to be an Adjunct Professor in the Faculty of Graduate Studies at UBC. She has also recently been appointed as an Adjunct Scientist at the Toronto Rehabilitation Institute. She has been a Director on the Board of the Canadian Academy of Audiology and a President of the Canadian Association of Speech-

Auditory Temporal Processing Symposium Biographies

Language Pathologists and Audiologists. Her basic research program concerns auditory aging and her clinical research concerns audiological rehabilitation for older adults. She has earned an international reputation for her interdisciplinary approach in linking research on auditory and cognitive processing during communication in everyday life.

Terence Picton obtained his M.D. from the University of Toronto in 1967 and received his Ph.D. in Neurosciences from the University of California at San Diego in 1973. Since 1994 he has been a Research Scientist at the Rotman Research Institute in the Baycrest Centre for Geriatric Care in Toronto, and he is presently the Anne and Max Tanenbaum Professor of Cognitive Neuroscience at the University of Toronto. His research interests include investigating new techniques to determine the intracerebral sources for scalp-recorded electrical activity, evolving new procedures to evaluate the mental deterioration that occurs with aging and with dementia, and evaluating new electrophysiological tests of hearing.

Bruce Schneider is a Professor of Psychology at the University of Toronto at Mississauga. He obtained his undergraduate training at the University of Michigan and his doctorate from Harvard University. He has a long-standing interest in human auditory development and human communication over the lifespan. Currently, his primary research interest is in the relationship between sensory and cognitive aging and he leads a eight-member and multi-university research group on the topic of Sensory and Cognitive Aging funded by the Canadian Institutes of Health Research (CIHR). He is also the leader of the award-winning CIHR Strategic Training Program on Communication and Social Interaction in Healthy Aging. This program is designed to train graduate students, postdoctoral fellows, and clinicians to be able to conduct multi-disciplinary research on problems related to communication and social interaction in the elderly. It includes mentors and trainees from many different departments and from a number of Canadian universities. Currently, Professor Schneider is the Director of the Centre for Research on Biological Communication Systems (CRBCS), the first research centre in the world to take an integrated systems approach to the study of the biological basis of animal and human communication. The Centre has recently been awarded \$11,750,000 from the Canadian Foundation for Innovation, the Ontario Innovation Trust Fund, and the City of Mississauga to expand its human communication and biological and genetic research facilities at UTM, and to link researchers at UTM to their counterparts at Queen's University and at Sheridan College.

Bob Shannon has been researching auditory perception and psychoacoustics for more than 30 years. He joined the House Ear Institute as head of its Department of Auditory Implants and Perception Research in 1989 to advance studies in cochlear and auditory brainstem implants. Since that time, Dr. Shannon has led research at the Institute ranging from the design of speech processors for auditory prostheses, to temporal processing in cochlear implants and neural patterns of activation resulting from electrical stimulation of the inner ear, the hearing nerve and the cochlear nucleus. Most recently, Dr. Shannon has been a primary investigator on research studies that advance the technology and effectiveness of the auditory brainstem implant (ABI), an auditory prosthesis that was invented and developed at the House Ear Institute for people who have a non-functioning auditory nerve. The ABI is the first device approved by the FDA for

Auditory Temporal Processing Symposium Biographies

prosthetic electrical stimulation of the human brainstem. During his tenure at the House Ear Institute, Dr. Shannon has published more than 80 scientific articles on his research and serves as an editor and reviewer for several prominent scientific journals in his field. In 1991, Discover Magazine recognized Dr. Shannon for Technological Excellence in the Category of Sound. In addition to conducting research at the Institute, Dr. Shannon is an Adjunct Professor of Biomedical Engineering at the University of Southern California, Los Angeles. He has been a member of the Acoustical Society of America since 1971, and frequently appears as a lecturer and keynote speaker at national conferences that address issues of auditory prostheses and neuroscience. A native of Iowa, Bob earned his Bachelor's Degree in Mathematics and Psychology at the University of Iowa, before attending the University of California at San Diego to earn his Doctoral Degree in Psychology. Bob later attended the Institute for Perception TNO in the Netherlands for post-doctoral training in Psychophysics, and the University of California at Irvine for post-doctoral training in Psychobiology.

Gurjit Singh is currently a doctoral student in the Department of Psychology at the University of Toronto where he is a student trainee in the CIHR Strategic Training Grant on Communication and Social Interaction in Healthy Aging. He received his B.A. (Hons.) in Psychology from the University of Manitoba, a M.A. (Psychology) from the University of Waterloo, and his M.Sc. (Audiology) from the University of Western Ontario. In addition to having presented at several conferences (CAA, CPA, IHCON, WWC), Gurjit is also a registered audiologist with both CASLPO and CASLPA. Gurjit's current research examines cognitive and rehabilitative factors impacting auditory function in older and clinical populations.

Astrid vanWieringen completed a PhD at the University of Amsterdam in 1995. Since then she works as a researcher at the Lab Exp ORL of the Katholieke Universiteit Leuven (Belgium). Her research focuses on the perception of electrical stimulation in hearing (pitch, gap detection, pulse shapes), the development and evaluation of speech tests in adults, and the development of psychophysical and speech tests in young pre-school children. She is also an associate professor of the Logopedic and Audiology programme, and teaches subjects related to speech science to graduate and post-graduate students. She has published in several peer-review journals (<http://www.kuleuven.ac.be/exporl>).

Auditory Temporal Processing Symposium Biographies

Art Wingfield is the Nancy Lurie Marks Professor of Neuroscience and Director of the Volen National Center for Complex Systems at Brandeis University, an interdisciplinary institute for research on the interface between neuroscience, cognitive science, and computer science. Dr. Wingfield received his doctorate in Experimental Psychology from Oxford University after receiving a Master's degree in Speech Pathology and Audiology from Northwestern University. Dr. Wingfield's research on spoken language comprehension and memory in adult aging has been recognized by two successive MERIT Awards from the National Institute on Aging of NIH, as well as an Editor's Award from the Journal of Speech and Hearing Research for his early work on time-compressed speech. He has been a visiting professor at the University of Cambridge, England, the University of Copenhagen, and UCLA. His research is supported by grants from the National Institute on Aging (NIA) and the National Institute on Deafness and other Communication Disorders (NIDCD).

Willy Wong obtained his doctoral degree from the University of Toronto in physics and biomedical engineering in 1996. His research interests are in signal processing and pattern recognition in sensory systems. He also carries an active interest in modelling the senses as communications systems. He is currently assistant professor at the Edward S. Rogers Department of Electrical and Computer Engineering and holds a cross-appointment at the Institute of Biomaterials and Biomedical Engineering at the University of Toronto.

Eric Young is a professor of Biomedical Engineering at Johns Hopkins University. With Murray Sachs, he began studying the neural representation of speech in the 1970s. Results from that work have defined the basic properties of the neural representation of spectral and temporal features of speech. Recently, this group turned to the effects of hearing impairment (acoustic trauma) on the neural representation. The results include characterization of the loss of spectral resolution of speech and a demonstration that loudness recruitment may not be accounted for by changes in basilar membrane compression. He is the author of over 60 peer-reviewed papers on auditory neurophysiology. He is currently Editor-in-chief of JARO, the Journal of the Association for Research in Otolaryngology.