A comprehensive assessment of each subject included:

- **Auditory Brainstem Response (ABR)** - Estimates of Wave I, II, and III at presentation rates of 19.5/s, 234.3/s, and 507.8/s of a 80 dB nHL alternating polarity. 100µA click using continuous loop average demodulation (CLAD; Delgado and Oszlanyi, 2004). CLAD sequence (isolated neural adaptation, I/O Curves, and DPOAE) were acquired using vertical and horizontal montages with an extratympanic wick electrode.

- **Electrocochleography (ECoG)** - Estimates of cochlear microphonic, summation potential and action potential at presentation rates of 19.5/s, 234.3/s, and 507.8/s of an 80 dB click alternating polarity. 100µA click using CLAD. Responses were acquired using vertical and horizontal montages with an extratympanic wick electrode.

- **Measuring Psychoacoustic Tuning Curves (SWPTC)** - Estimates of absolute threshold, Q10 and tip frequency of tuning curve at 0.5, 1, 2 and 4 kHz (Śek et al., 2013). Boosted tuning indicates OH damage while flat shifts indicate cochlear dead regions.

- **Distortion Product Otoacoustic Emissions (DPOAEs)** - Kummer et al. (1988) protocol 01 – 02 DPOAE frequency sweep and input/output functions to estimate location of basilar boundaries.

- **Word Perception in Quiet and Noise** - AM-4 word list in quiet and multi-talker babble.

- **Impedance Testing** - Comprehensive immittance and middle-ear reflex tests using standard earphones, 3D tympanometry, audiometric air-bone gap and acoustic impedance.

- **Auditory Thresholds** - Pure tone air conduction (0.125, 0.25, 0.5, 1, 2, 3, 4, 6, 8, 10 kHz) and high frequencies at 9, 10, 12.5, 15, 18, and 20 kHz and bone conduction (0.5, 1, 2, 3 and 4 kHz) testing with masking. Clinical speech reception thresholds are also measured.

**ACKNOWLEDGEMENTS**

Thanks to the Research Participants, Colleagues, and Celebrations Overcoming Hearing Loss (COHL) at the Department of Otolaryngology at the University of Manitoba, Canada; Students, Postdocs and Staff - Nelly Abdelfatah, Taylor Burt, Ioan Curca, Yousof Erfani, Dante Galutria, Jim Houston, Josh Pardy, Justin Pater, Sarah Predham, Holly Rowsell, and Salem Werdyani.

**REFERENCES**

