

SimHERA 2021

Windows 8/10
Mac OS (10.13-11.0)

SimHERA

Simulated Human Evoked Response Audiometry

EcochG, ABR, MLR, CAEP, ASSR, Behavioural, OAE, Tymps, Reflexes, ...



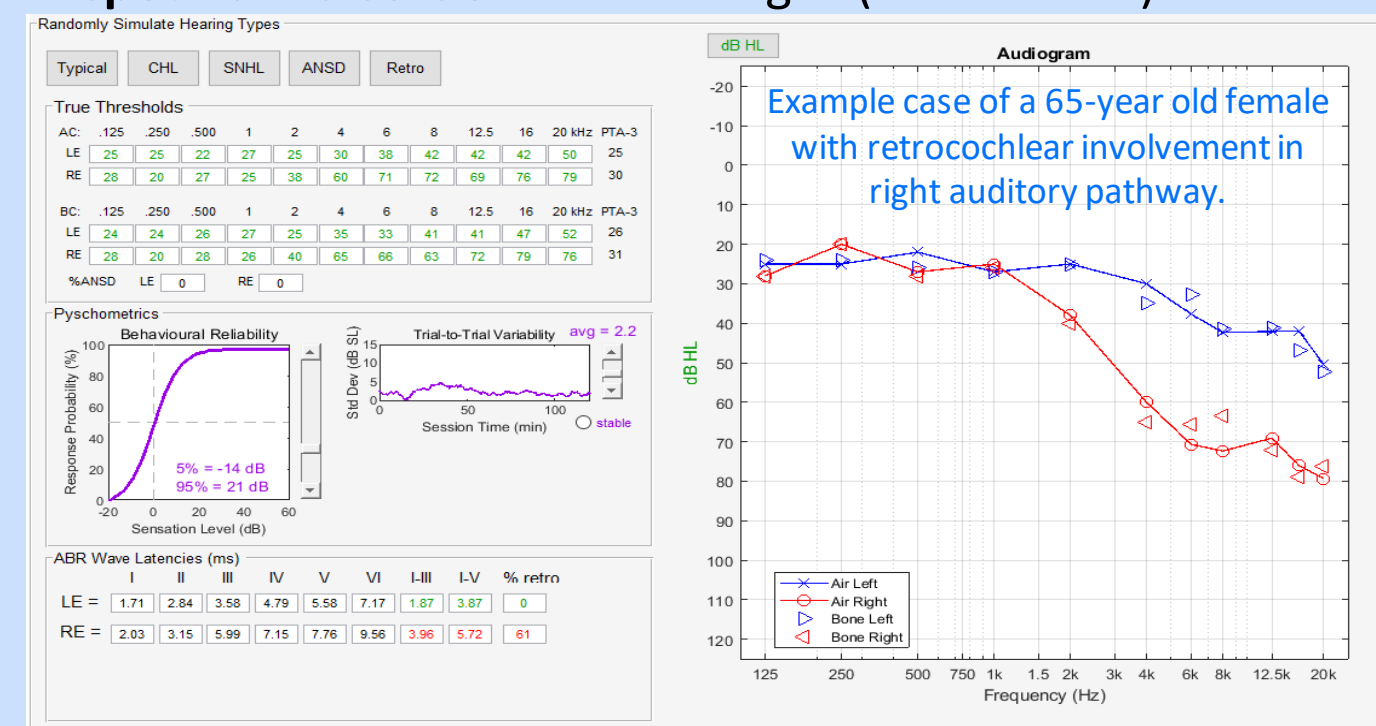
Innovative Virtual Training of Human Evoked Response Audiometry (HERA)

- SimHERA provides real-time simulations as if learners are performing live HERA testing on patients and clients
- SimHERA is a virtual suite of software tools loaded with features that are specifically designed for teaching clinical HERA testing of infants and adults with various levels and types hearing functions
- As a multipurpose educational software tool, SimHERA can be used for self-directed clinical training and practice, one-on-one teacher-to-student instruction, and full-course integration with random and predefined cases and instructor-protected assignments and exams for in-class or remote learning
- developed and tested over 10 years by Dr. Tony Herdman for teaching HERA at The University of British Columbia



SimHERA's case simulator

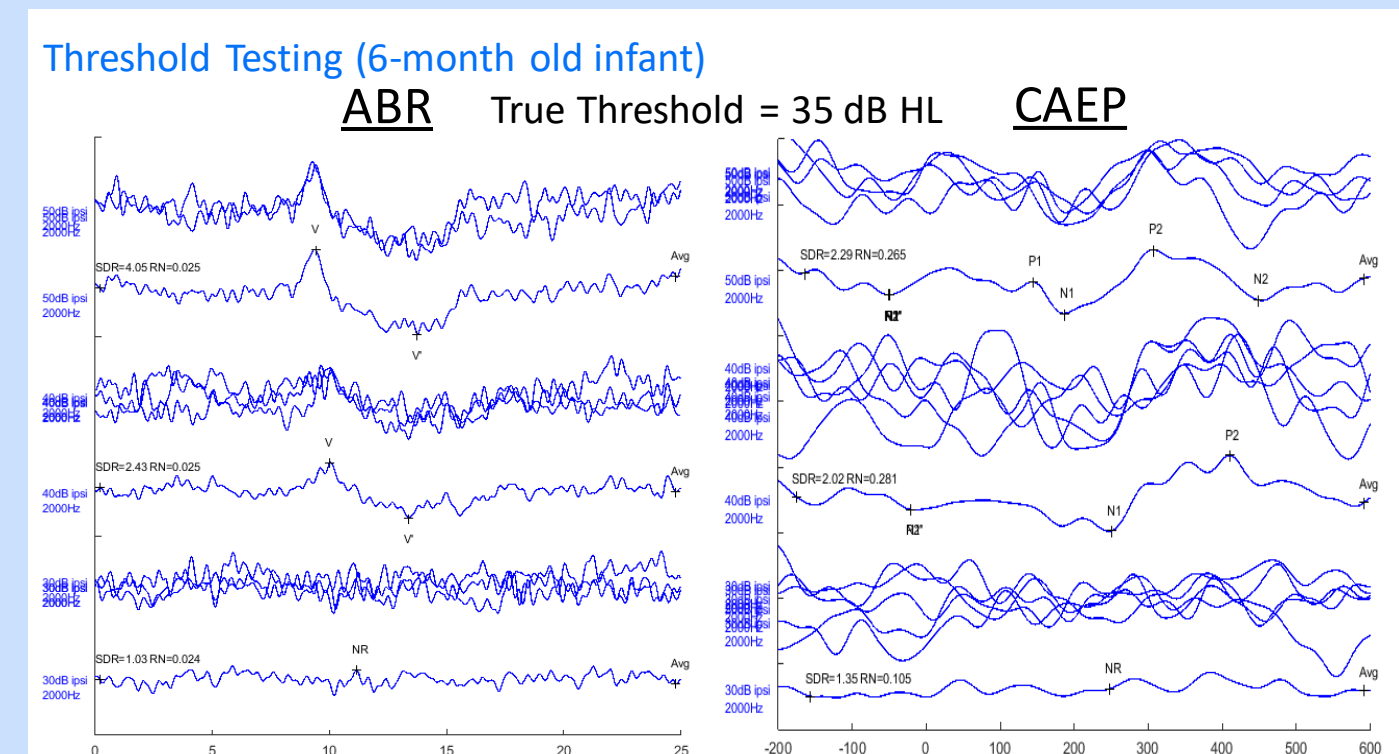
- Simulate any hearing case of **typical, conductive, sensorineural, retrocochlear, or auditory neuropathy spectrum disorder** across all ages (birth to 120)



- Build your own cases or allow SimHERA to randomly generate cases based on epidemiological prevalence
- Instructors can hide and lock specific case information in order to effectively and fairly evaluate student performances during remote or in-class SimHERA assignments and exams

SimHERA's simulators (EcochG, ABR, MLR, CAEP, and more to come)

- Easily perform multiple HERA tests, such as Electrocochleography (EcochG), Auditory Brainstem Response (ABR), Middle-Latency Responses (MLR), and Cortical Auditory Evoked Potentials (CAEP), and Audiotry Steady-State Responses (ASSRs) on a single case
- Perform HERA using air- and bone-conducted stimuli

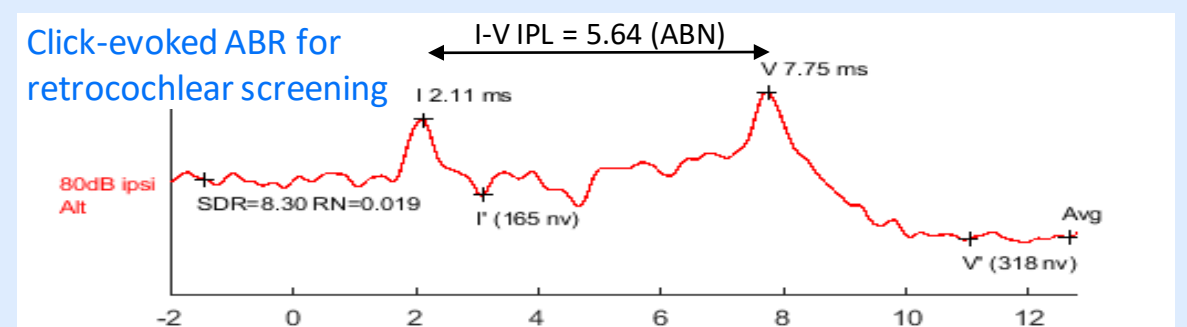


SimHERA's user-friendly interface

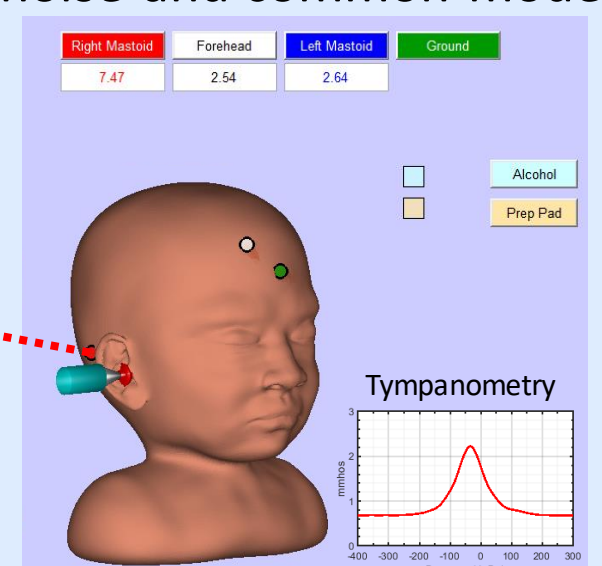
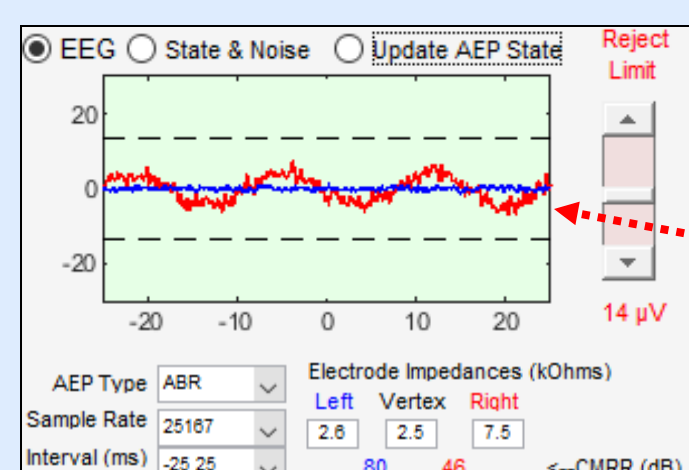
- Realistic online simulations for HERA testing just as if the learner was assessing real cases in the clinic



- Display the AEP wave and overlay the **signal-only** and **noise-only** waves to visualize true responses and noise
- Effortlessly change stimulus and recording parameters
- Easily mark waveforms and show peak amplitudes, peak latencies and waveform SDR, SNR, Fsp, and RN



- Set or randomly fluctuate EEG noise based on sleep/awake state across a user-set session time
- Standard and advanced waveform analyses: average, subtract, multiply, split buffer, FFT, wavelet
- Prep scalp and place electrodes on 3D models creating impedances that affect EEG noise and common-mode rejection ratio (CMRR)



SimHERA's suite of feature-packed simulators

EcochG
ABR
MLR
CAEP
ASSR

Behavioural
DPOAE
Tymps
Reflexes
with more to come

SimHERA was developed over the past 10 years by Dr. Tony Herdman for teaching UBC's advanced electrophysiological course. The simulators within SimHERA are based on over 75 years of literature along with Dr. Herdman's 15 years of experience teaching electrophysiology to clinical and research graduate students and over 20 years of research in the auditory neuroscience and neuroimaging fields. SimHERA has been part of training over 450 students and clinicians across more than 25 universities world wide. SimHERA started off as an ABR simulator (sABR) that has now grown into an entire platform of simulators that includes:

Electrocochleography (EcochG)

Auditory Brainstem Responses (ABR)

Middle-Latency Responses (MLR)

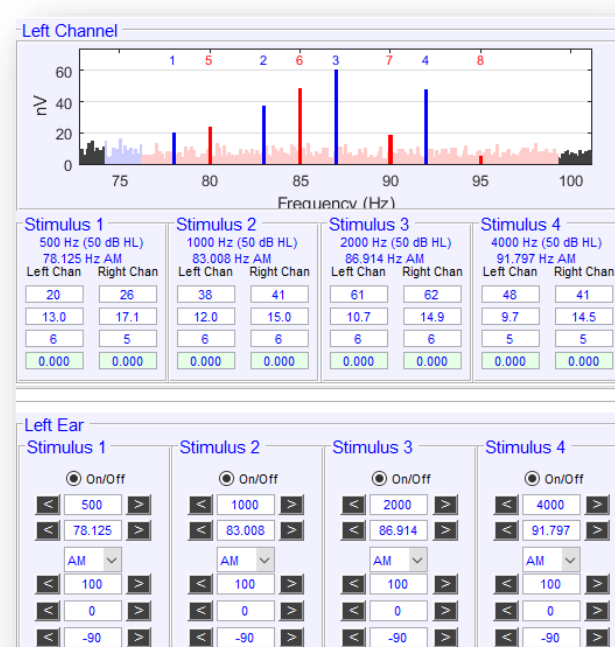
Cortical Auditory Evoked Potentials (CAEP)

Tympanometry (Tymp)

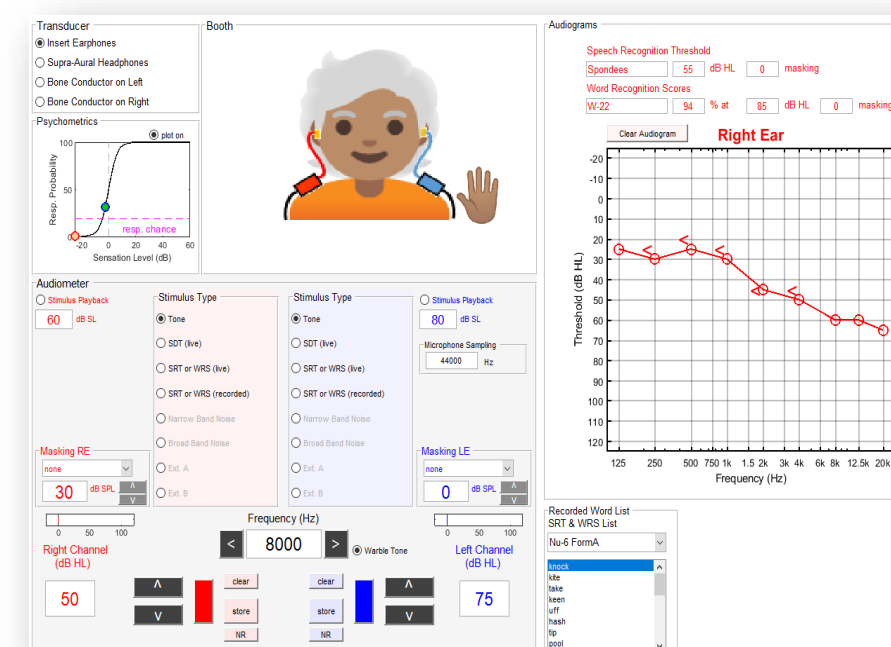
NEW! Otoacoustic Emissions (OAE)

NEW! Acoustic Reflexes (AR)

NEW! Auditory Steady-State Responses (ASSR)



NEW! Behavioural Audiometry (SimHBA)



Future SimHERA updates will include simulators for Late Auditory Evoked Potentials (LAEP; e.g., MMN, N2b, and P3). Dr. Herdman regularly updates SimHERA based on new research findings, user feedback, and user requests.

Student and Instructor versions of SimHERA were specifically designed to meet the versatile needs of both in-class and remote-learning delivery. Student versions can be run in "open mode" where students can create their own cases or allow SimHERA to randomly create one. In "assignment mode", students can conduct HERA testing on their own computers with certain features locked, such as hiding the audiogram information and retrocochlear latency delays. This maintains the integrity of assignments and exams because students can't discover the "true" case characteristics until the cases are unlocked by an instructor version that is password protected. Students perform the assignments, generate online marked-up waveforms, reports, and sends the digital report file to the instructor. The instructor version will unlock all features and reveal the true case information in order to easily grade the assignments and exams.

SimHERA's Open-Learning Community is rapidly growing. Instructors, clinical trainers, and students who wish to share their own created SimHERA cases can easily do this with other community members privately or through SimHERA case database. **Web tutorials are also freely available to view online on the SimHERA website.**

SimHERA can be installed on Windows 8/10 and Mac OS (10.13-11.0) computers with current laptop processing and memory capacities. SimHERA uses internet-based licensing so it can be quickly installed and running within an hour. There are no special dongles or hard-lock keys that need to be mailed or that can be lost or stolen. Also, SimHERA's internet-based licensing allows for easy transfer of a license to another computer in case of computer failure or the need to transfer back and forth from a student's to a university's computer. **This has been very useful for many universities during the COVID-19 pandemic.**

SimHERA can be purchased as a single-user license for 6- or 12-month durations. Class sets of student and instructor licenses can be purchased with additional educational offers. All updates to SimHERA are free for the duration of the license. Visit the SimHERA website for more information and purchasing or contact Dr. Herdman directly. **You can try it for free for 30 days!**

Purchase directly from Flintbox: <https://ubc.flintbox.com/#technologies/12131650-45d1-47b4-bd5b-8b66bbd956f5>

An online ABR course using SimHERA was also developed by Dr. Herdman and UBC's Centre for Professional Development to train audiologists, health practitioners, and students who might not have direct access to expert educators in HERA testing.

Special Educational Offers and Web-Demos Available

For special educational offers for a class set of SimHERA licenses and/or the online ABR course please contact Dr. Tony Herdman at aherdman@audiospeech.ubc.ca

audiospeech.ubc.ca/research/brane/simhera

Supporting Education in Audiology for over 10 years