

# SimHERA 2023

NEW GAME MODE!  
AUTOSCORE ASSIGNMENTS!

## Simulated Human Evoked Response Audiometry

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

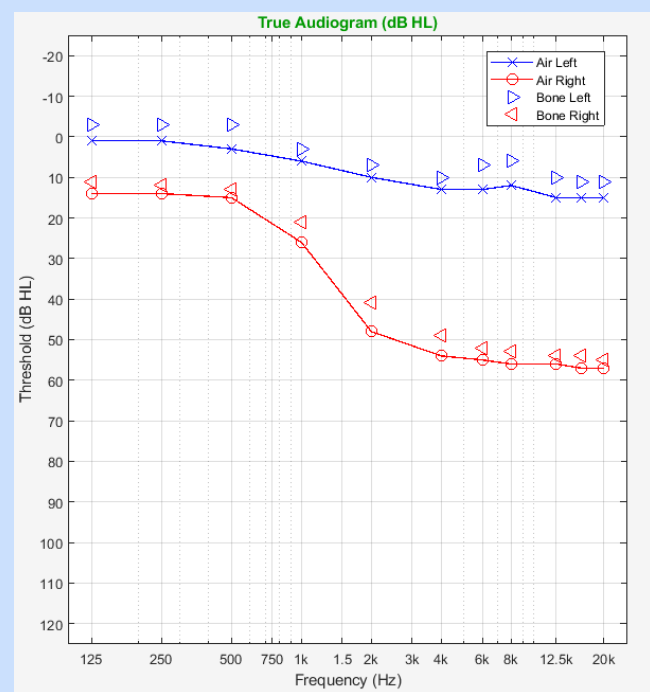


### Innovative Virtual Training of Human Evoked Response Audiometry (HERA) & Human Behavioural Audiometry (HBA)

- 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 and HBA testing of infants, children, 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 for over 10 years by Dr. Tony Herdman for teaching 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)



Example case of a 65-year old with retrocochlear involvement in right auditory pathway.

ABR Wave Latencies (ms)	I	II	III	IV	V	VI	I-III	I-V	% retro
LE =	1.71	2.80	3.63	4.95	5.55	7.59	1.92	3.84	0
RE =	1.95	2.94	5.54	6.90	7.85	9.13	3.59	5.90	72

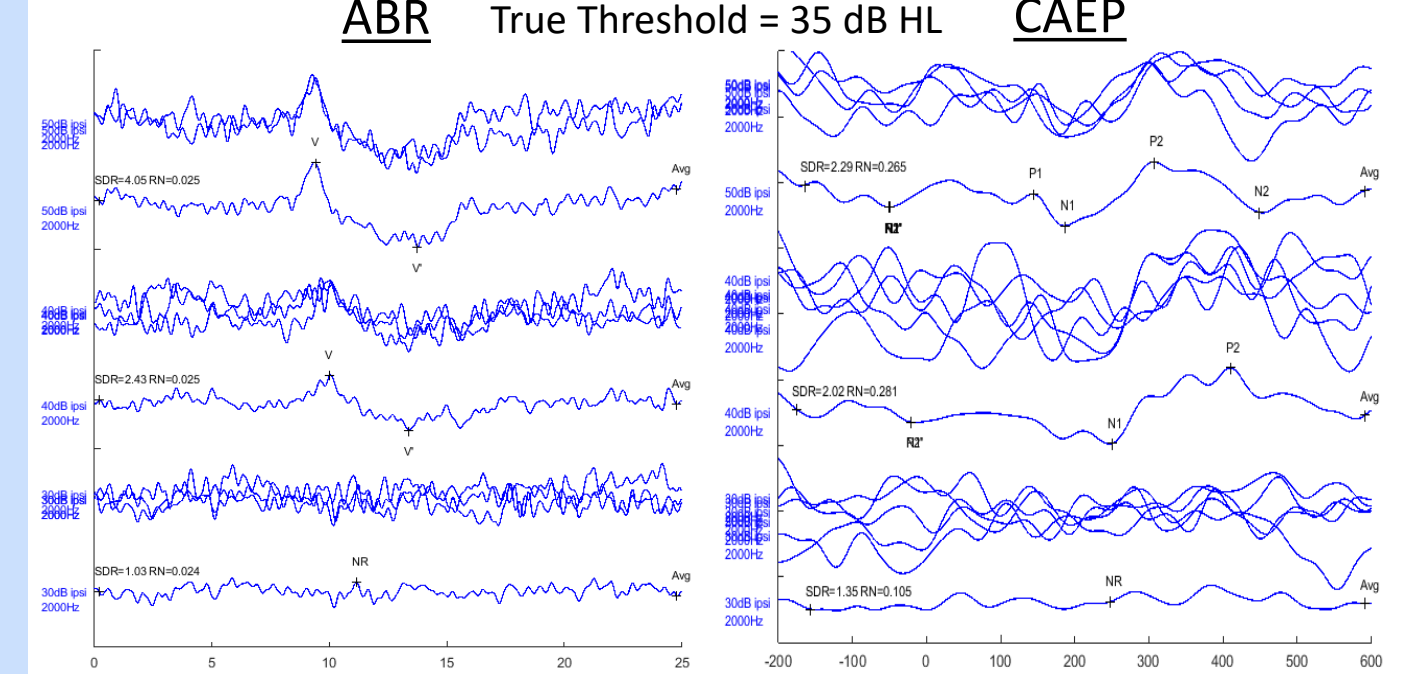
Adult norms are based results reported by Campbell et al., 1981.

- 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, ASSR 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 Auditory Steady-State Responses (ASSRs) on a single case
- Perform HERA using air- and bone-conducted stimuli

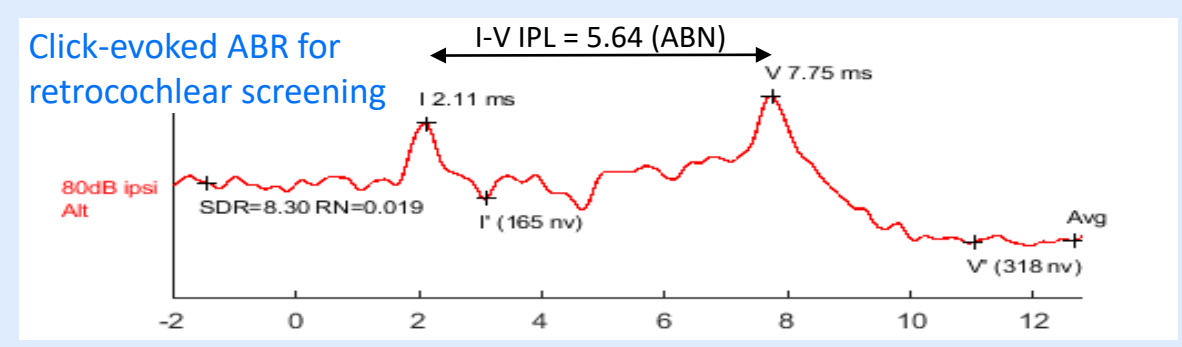
### Threshold Testing (6-month old infant)



### 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 13 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 20 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 650 students and clinicians across more than 35 universities world wide. SimHERA started off as an ABR simulator (sABR) that has now grown into an entire platform of simulators that includes:

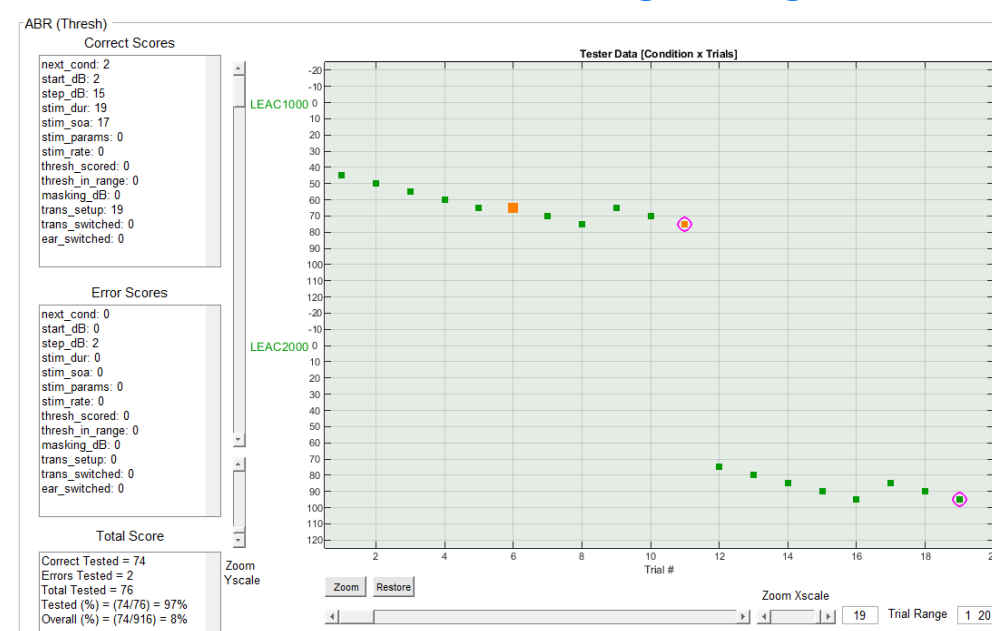
**Electrocochleography (EcochG)**  
**Auditory Brainstem Responses (ABR)**  
**Middle-Latency Responses (MLR)**  
**Cortical Auditory Evoked Potentials (CAEP)**  
**Tympanometry (Tymp)**  
**Otoacoustic Emissions (OAE)**  
**Acoustic Reflexes (AR)**  
and  
**Behavioural Audiometry (SimHBA)**

<https://audiospeech.ubc.ca/simhba/>

**New! "GAME MODE" Rank up working in Clinics!**



**NEW! Automatic Scoring of Assignments**



**NEW! Game Mode** allows users to test their skills in various clinics and gain experience points to rank themselves up as they progress in their game career. See how you measure up on the leader board of all SimHERA users across the globe!

**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 "training 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. **NEW! Automatic scoring during testing provides consistent detailed feedback to learners on how to improve. It also helps reduce grading demands of assignments for instructors.**

**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 8/10/11 and Mac OS (11.0-13.0) 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.

**SimHERA can be purchased** as a single-user license for 3-, 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. **You can try it for free for 30 days!**

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

## 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](mailto:aherdman@audiospeech.ubc.ca)

[audiospeech.ubc.ca/research/brane/simhera](https://audiospeech.ubc.ca/research/brane/simhera)

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