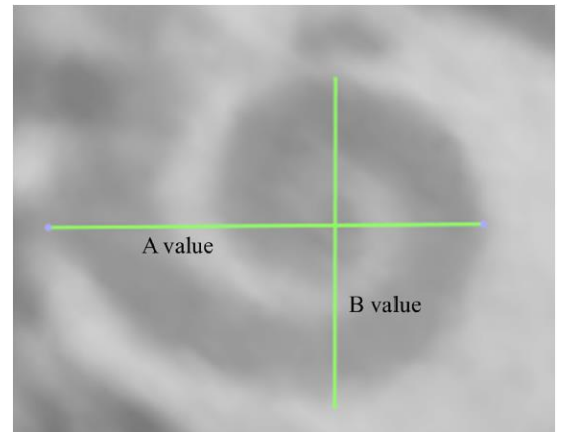


## Guinea Pig CI Research Tool

The Segmentation of cochlear structures along the contour of Scala tympani to estimate perilymph volume is very complex. We have developed a tool for the determination of the individual perilymph volume of the Scala tympani of guinea pig by means of geometric parameters basal turn diameter  $A$  and basal turn width  $B$  of the e.g. with 3D-Slicer (Fig. 1 shows the determination of  $A$  and  $B$ , for detailed explanation see doi:[10.1177/2473974X18800238](https://doi.org/10.1177/2473974X18800238)<sup>1</sup>).



First, you have to install Matlab Run Time ([MATLAB Runtime - MATLAB Compiler - MATLAB \(mathworks.com\)](#)). Then start GP\_Tool.exe

Tool starts with preset  $A/B$  value (average value over 48 cochlea's). You can set the individual  $A/B$  value, the dimensions of the electrode to be implanted and the coating thickness (red oval input parameter). Insertion via the round window is preset, cochleostomy can also be selected. Output values are the volume surrounding the implant and the volume apical to the electrode, as well as the Total Scala tympani volume (blue square output values).

Figure 1: Visualization of measurements of  $A$  (defined as the distance from the round window through the modiolus to the opposite wall of the cochlea) and  $B$  (maximal distance orthogonal to  $A$ ).

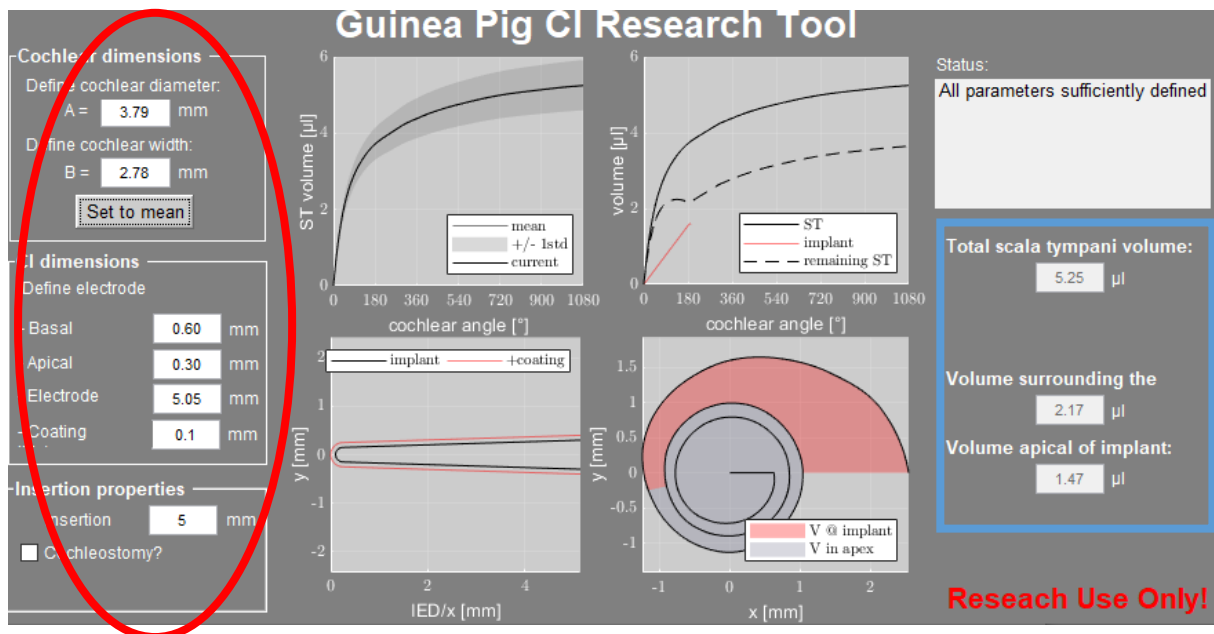


Figure 2: Guinea Pig CI Research Tool.

<sup>1</sup>Schurzic D, Timm ME, Batsoulis C, et al. A Novel Method for Clinical Cochlear Duct Length Estimation toward Patient-Specific Cochlear Implant Selection. *OTO Open*. 2018;2(4)