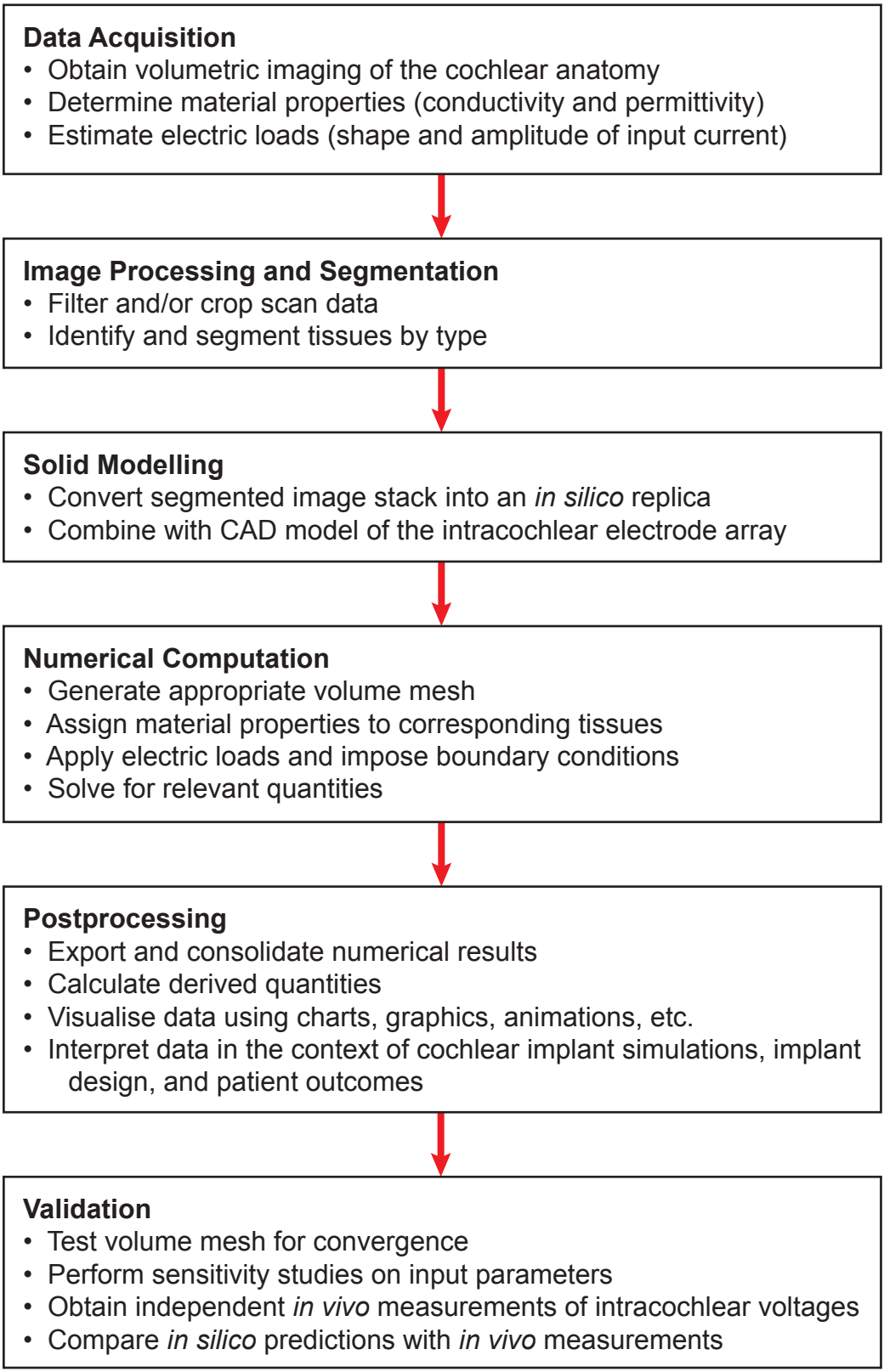
Data Acquisition
• Obtain volumetric imaging of the cochlear anatomy
• Determine material properties (conductivity and permittivity)
• Estimate electric loads (shape and amplitude of input current)
Image Processing and Segmentation
• Filter and/or crop scan data
• Identify and segment tissues by type
Solid Modelling
• Convert segmented image stack into an in silico replica
• Combine with CAD model of the intracochlear electrode array
Numerical Computation
• Generate appropriate volume mesh
• Assign material properties to corresponding tissues
• Apply electric loads and impose boundary conditions
• Solve for relevant quantities
Postprocessing
• Export and consolidate numerical results
• Calculate derived quantities
• Visualise data using charts, graphics, animations, etc.
• Interpret data in the context of cochlear implant simulations, implant design, and patient outcomes
Validation
• Test volume mesh for convergence
• Perform sensitivity studies on input parameters
• Obtain independent in vivo measurements of intracochlear voltages
• Compare in silico predictions with in vivo measurements