

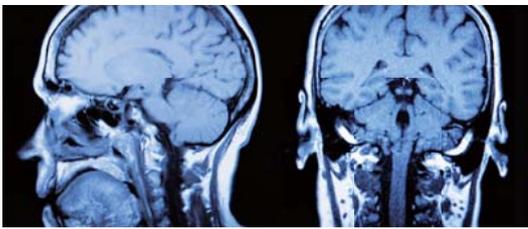
Automated Cerebral Aneurysm Analysis

SC/Tetra's Visual Basic for Applications (VBA) custom interface automatically generates a computational grid, runs simulations, and illustrates the results within minutes

Overview



Researchers may be turned away from using Computational Fluid Dynamics (CFD) to study aneurysms because of their unfamiliarity with the software, or simply a lack of time. Cradle answers these concerns by implementing a custom, easy-to-use interface to semi-automatically run patient specific simulations, either individually or with batch processing. Users can observe the difference in local pressure elevation and wall shear stress, under steady-state flow conditions without needing any advanced knowledge of CFD, such as mesh generation. The results are displayed using our simplified post processor and can be shared for free using CradleViewer.



Features

Simple User Interface

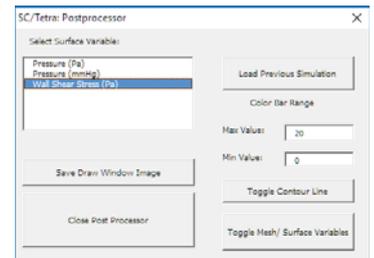
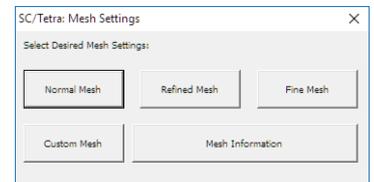
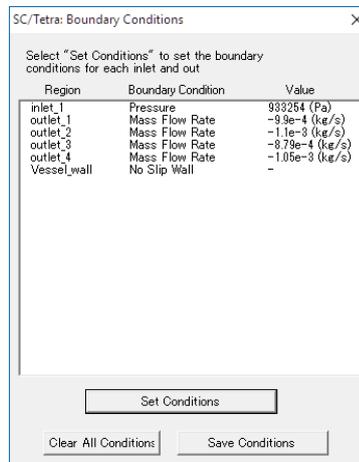
- Defining flow parameters, running simulations, and viewing results, are all streamlined

Batch Processing

- Run individual simulations in minutes, or queue multiple simulations for automatic batch processing overnight
- Specific mesh and boundary conditions for each simulation ensure reliable results

Easy Post Processing

- View, save, and distribute simulation results in 3D
- Surface Pressure Distribution
- Wall Shear Stress Distribution
- Mesh Resolution



Process of running a simulation

1. Load geometry

- .stl files are automatically scaled to mm and modified to fill inflow and outflow holes

2. Identify inlet and outlet regions

- Any number of inlets and outlets can be registered, allowing for unlimited blood vessels to be analyzed

3. Specify flow conditions

- Easily apply flow conditions for each inlet and outlet
- Either pressure inlet and outlet, or pressure inlet and mass flow rate conditions can be applied depending on your available resources

4. Choose mesh settings

- Meshing parameters are automatically determined for each model based off from the smallest diameter

5. Run simulation

- Cradle's pressure based solver obtains final results in minutes

6. Obtain results

- View wall shear stress, and surface pressure contour
- Distribute results to anyone for free using CradleViewer