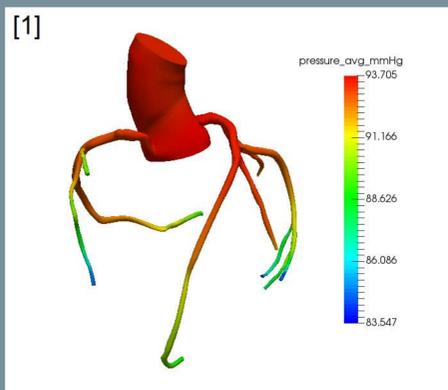


## Abstract

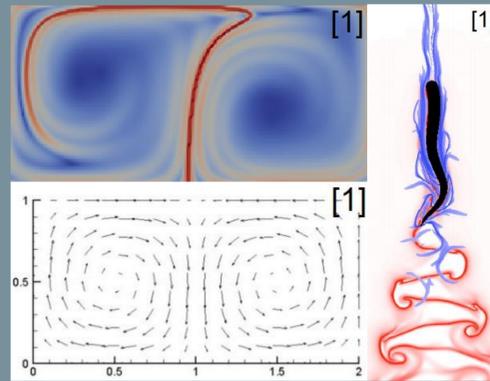
Cardiovascular disease is the leading cause of death worldwide. Previous studies indicate that blood transport may play a significant role in understanding the disease progression and the effectiveness of treatment inside the cardiovascular system. Therefore, a clear understanding of the blood transport in a patient-specific geometry is imperative for improving treatment. During this project, we integrated FlowVC as a plugin for SimVascular to perform blood transport analysis. We conducted a case study with blood flow in the left ventricle and abdominal aortic system.

## Introduction to SimVascular



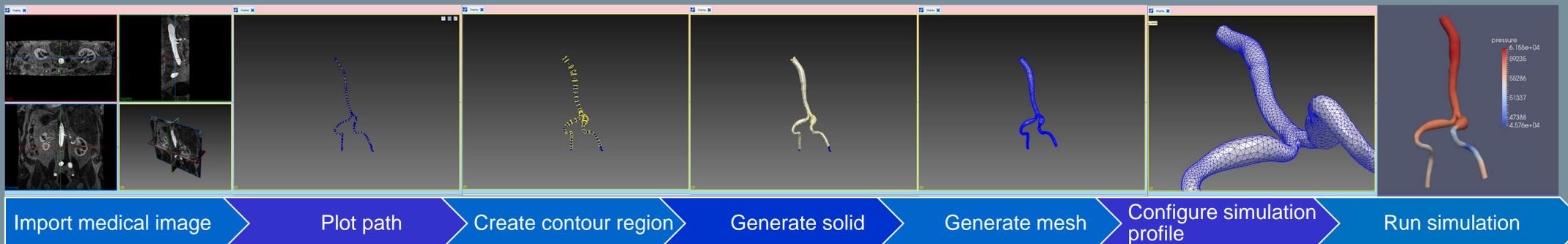
- Medical imaging pipeline
- Blood flow simulation and analysis
- Capable of complex simulation profiles
- Generates velocity data
- Mainframe for FlowVC plugin

## Introduction to FlowVC

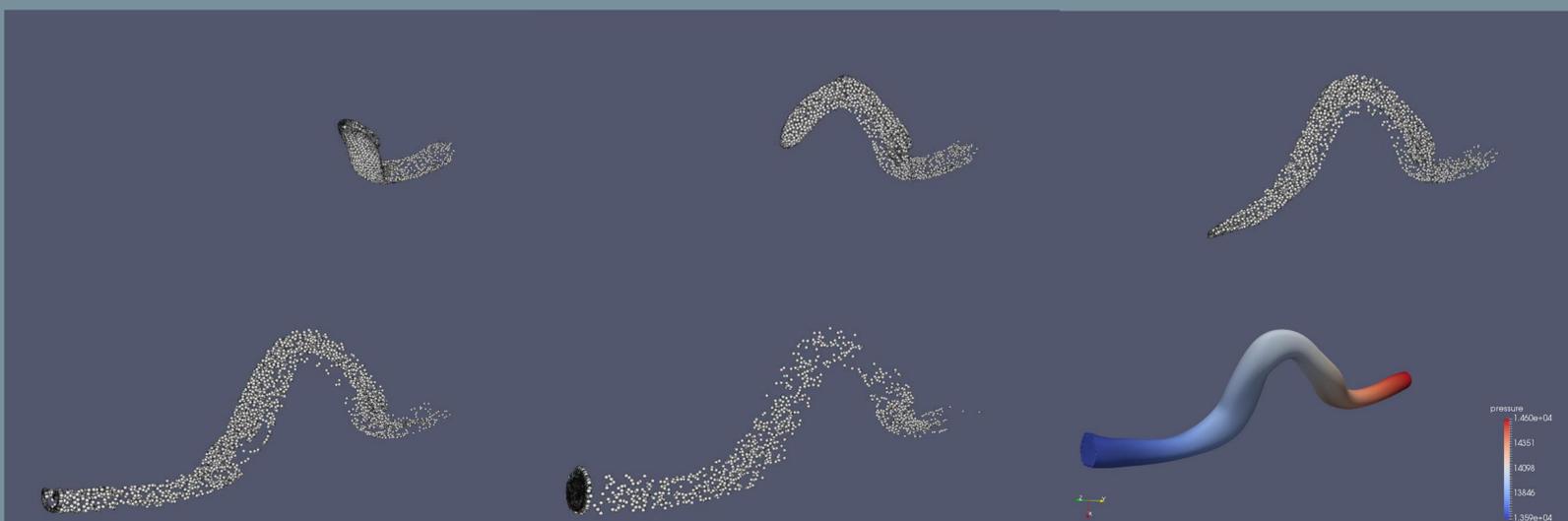


- Command line program
- Uses velocity data to compute FTLE fields, tracer/particle trajectories, interpolating data onto another mesh
- Conducts 2D and 3D calculations

## Simulation pipeline example for SimVascular



## Results of FlowVC using data from SimVascular



- Using SimVascular, generated velocity data (vtk format)
- Converted to FlowVC readable data (bin format)
- Ran FlowVC from terminal
- 100 timestamps generated
- Featuring five timestamps for results and vtk model with pressure highlighted