

## Computational Fluid Dynamics Round Robin Study

### Welcome to the FDA's "Critical Path" Computational Fluid Dynamics (CFD)/Blood Damage Project.

Data on CFD and blood damage validation studies sponsored by the U.S. Food & Drug Administration, and funded by the FDA's Critical Path Initiative is available here.

#### Benchmark 1:

Computational Round Robin #1 was an international effort to assess the state of the art in biomedical computational fluid dynamics. We devised a benchmark standard model of a generic medical device, consisting of a nozzle with a conical change in diameter at one end of the throat, and a sudden change at the other end. We asked the CFD community in 2008-2009 to run a set of simulations under given flow conditions. We also performed experimental validations of flow in the nozzle for comparison. This website provides information on the study, the nozzle specifications, validation data from experiments, as well as reports as they are generated. .

[Click here](#) for data from **Benchmark 1**



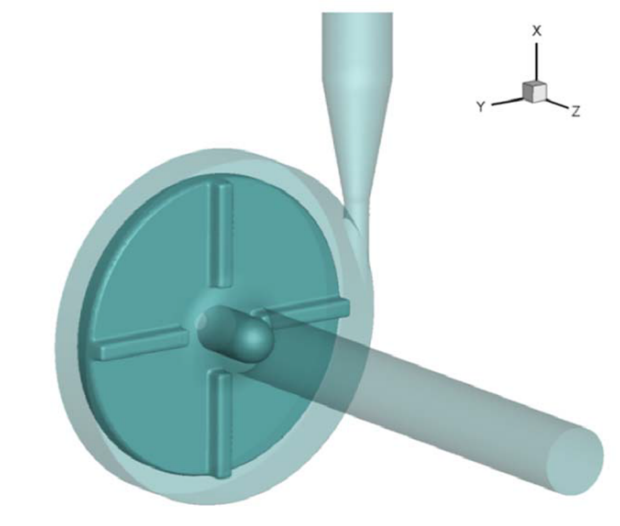
#### Benchmark 1: Nozzle

#### Benchmark 2

Computational Round Robin #2 is an international effort to assess the state of the art in biomedical computational fluid dynamics. We devised a benchmark standard model of a model centrifugal blood pump. We are asking the CFD community to run a set of simulations under given flow rates and pump speeds. We are also performing experimental validations of flow in the pump for comparison. This website provides information on the study, the pump

specifications as well as the raw data and reports as they are generated. All the data will eventually be provided in this website. Click on “Documentation” below to get to the instructions.

**data coming soon (May 2017)**



### **Benchmark 2: Blood Pump**

#### **Disclaimer**

This research study was performed at the Food and Drug Administration (FDA) by employees of the Federal Government in the course of their official duties. Pursuant to Title 17, Section 105 of the United States Code, this work is not subject to copyright protection and is in the public domain. Permission is hereby granted, free of charge, to any person obtaining a copy of the study results, to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, or sell copies of the Software or derivatives, and to permit persons to whom the Software is furnished to do so. FDA assumes no responsibility whatsoever for use by other parties of the Software, its source code, documentation or compiled executables, and makes no guarantees, expressed or implied, about its quality, reliability, or any other characteristic. Further, use of this code in no way implies endorsement by the FDA or confers any advantage in regulatory decisions. Although this software can be redistributed and/or modified freely, we ask that any derivative works bear some notice that they are derived from it, and any modified versions bear some notice that they have been modified.