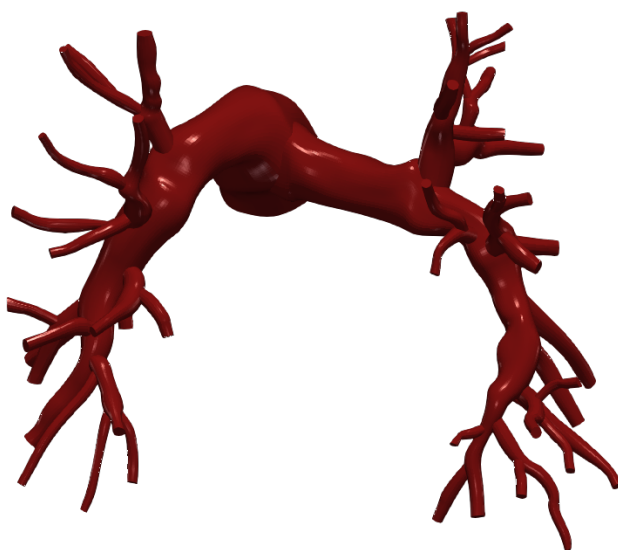


# Vascular Model Repository

## Specifications Document



# SU0251

<b>Species</b>	Human
<b>Anatomy</b>	Pulmonary
<b>Disease</b>	Healthy
<b>Procedure</b>	-

# Clinical Significance and Background

## Pulmonary

The pulmonary arteries are blood vessels that carry systemic venous blood returning to the right side of the heart through to the microcirculation of the lungs. Unlike in other organs where arteries supply oxygenated blood, the blood carried by the pulmonary arteries is deoxygenated, as it is venous blood returning to the heart. The main pulmonary arteries emerge from the right side of the heart, and then split into smaller arteries that progressively divide and become arterioles, eventually narrowing into the capillary microcirculation of the lungs where gas exchange occurs.

## Clinical Data

### General Patient Data

Age (yrs)	18
Sex	Male

### Specific Patient Data

Weight (kg)	65.6
Height (cm)	186.6
Qp (L/min)	7.05
RVEDV (ml)	164
RVESV (ml)	72

## Notes

See below for information on the image data and boundary conditions associated with the model.

**Image Modality:** MRA, 4DMRI

**Image Type:** DICOM

**Image Source:** Lucille Packard Children's Hospital

## Publications

See the following publications which include the featured model for more details:

Yang, W., Dong, M., Rabinovitch, M., Chan, F. P., Marsden, A. L., & Feinstein, J. A. (2019). Evolution of hemodynamic forces in the pulmonary tree with progressively worsening pulmonary arterial hypertension in pediatric patients. *Biomechanics and modeling in mechanobiology*, 18(3), 779-796.

<http://www.doi.org/10.1007/s10237-018-01114-0>

Dong, M., Yang, W., Tamaresis, J. S., Chan, F. P., Zucker, E. J., Kumar, S., ... & Feinstein, J. A. (2020). Integrative Cardiovascular Physiology and Pathophysiology: Image-based scaling laws for somatic growth and pulmonary artery morphometry from infancy to adulthood. *American Journal of Physiology-Heart and Circulatory Physiology*, 319(2), H432.

<http://www.doi.org/10.1152/ajpheart.00123.2020>

# License

Copyright (c) Stanford University, the Regents of the University of California, Open Source Medical Software Corporation, and other parties.

All Rights Reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this data to use the data for research and development purposes subject to the following conditions:

The above copyright notice and the README-COPYRIGHT file shall be included in all copies of any portion of this data. Whenever reasonable and possible in publications and presentations when this data is used in whole or part, please include an acknowledgement similar to the following:

"The data used herein was provided in whole or in part with Federal funds from the National Library of Medicine under Grant No. R01LM013120, and the National Heart, Lung, and Blood Institute, National Institutes of Health, Department of Health and Human Services, under Contract No. HHSN268201100035C"

AND/OR

N.M. Wilson, A.K. Ortiz, and A.B. Johnson, "The Vascular Model Repository: A Public Resource of Medical Imaging Data and Blood Flow Simulation Results," J. Med. Devices 7(4), 040923 (Dec 05, 2013) doi:10.1115/1.4025983.

AND/OR

Reference the official website for this data: [www.vascularmodel.com](http://www.vascularmodel.com)

THE DATA IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE DATA OR THE USE OR OTHER DEALINGS IN THE DATA.