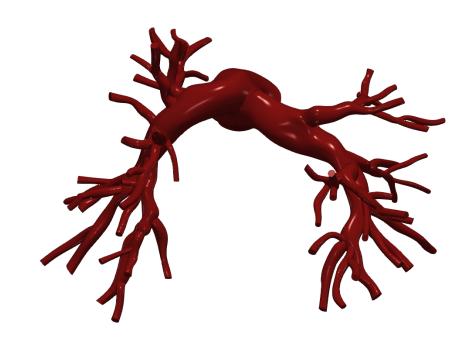
# Vascular Model Repository Specifications Document



## SU0249

Species	Human	
Anatomy	Pulmonary	
Disease	Healthy	
Procedure	_	

## 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)	15
Sex	Male

#### **Specific Patient Data**

Weight (kg)	90
Height (cm)	162
Qp (L/min)	8.43
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

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"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

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