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## BIOGRAPHICAL SKETCH

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NAME Zhongjun "Jon" Wu	POSITION TITLE Associate Professor of Surgery University of Maryland, Baltimore, MD		
eRA COMMONS USER NAME zhongjunwu			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Tsinghua University, Beijing, P.R.China	B.S.	1986	Optical Instruments
Shanghai Institute of Optics & Fine Mechanics Chinese Academy of Sciences, Shanghai,	M.S.E.	1989	Optical Engineering
University of Miami, Coral Gables, Florida	Ph.D.	1996	Biomedical Engineering

### A. Positions and Honors.

#### Positions and Employment

1986-1989	Graduate Student Researcher, Shanghai Institute of Optics and Fine Mechanics, Shanghai, P. R. China
1989-1992	Research Engineer, Shanghai Institute of Optics and Fine Mechanics, Shanghai, P. R. China
1992-1996	Graduate Student Researcher, Dept. of Biomedical Engineering, University of Miami, Coral Gables, FL
1996-1996	Research Associate, Dep. of Biomedical Engineering, University of Miami, Coral Gables, FL
1996-1998	Research Staff, Laboratory Project Coordinator, Dept. of Surgery University of Pittsburgh, Pittsburgh, PA
1998-2000	Visiting Research Assistant Professor, Dept. of Surgery, University of Pittsburgh, Pittsburgh, PA
2000-2003	Research Assistant Professor, Department of Surgery, University of Pittsburgh, Pittsburgh, PA
2003-present	Assistant Professor/Associate Professor, and Director of Artificial Organs Laboratory, Department of Surgery, University of Maryland School of Medicine, Baltimore, MD
2004-present	Adjunct Faculty Member, Department of Bioengineering, University of Maryland, College Park, MD

#### Professional Memberships

1995 - present	American Society for Artificial Internal Organs (ASAIO)
1997 - present	International Society for Optical Engineering (SPIE)
1999 - present	Biomedical Engineering Society (BMES)
2002 - present	American Society of Mechanical Engineers (ASME)

#### Honors

1991	Scientific and Technological Progress Award, Chinese Academy of Sciences
1994	Travel Fellowship Award, American Society for Artificial Internal Organs
1996	Award of Academic Merit, University of Miami

### B. Selected Peer-Reviewed Publications

1. Wu ZJ, Shu MC, Scott DR and Hwang NH. The Closing behavior of Medtronic Hall Mechanical Heart Valves. ASAIO J 40: 702-706,1994.
2. Wu ZJ, Wang Y and Hwang NH. Occluder Closing Behavior: A key Factor in Mechanical Heart Valve Cavitation. J Heart Valve Dis 3 (Suppl. I): 25-34, 1994.
3. Wu ZJ, Gao BZ and Hwang NH. Transient Pressure at Closing of a Monoleaflet Mechanical Heart Valve Prosthesis: Mounting Compliance Effect. J Heart Valve Dis 4:553-567, 1995.

4. Wu ZJ and Hwang NH. Ventricular Pressure Slope (dp/dt) and Bileaflet Mechanical Heart Valve Closure. *ASAIO J* 41:763-767, 1995.
5. Wu ZJ and Hwang NH. Asynchronous Closure and Leaflet Impact Velocity of Bileaflet Mechanical Heart Valves. *J Heart Valve Dis* 4: (Suppl. I): 38-49, 1995.
6. Wu ZJ, Slonin JH and Hwang NH. Transient Pressure Signals in Mechanical Heart Valve Cavitation. *ASAIO J* 42: 555-561, 1996.
7. Wu ZJ, Gao BZ, Slonin JH and Hwang NH. Bileaflet Mechanical Heart Valves at Low Cardiac Outputs. *ASAIO J* 42: 747-749, 1996.
8. Amin DV, Antaki JF, P Litwak, Thomas D, Wu ZJ, Yu YC, Choi S, Boston JR and Griffith BP. Controller for an Axial Flow Blood Pump. *Biomed Instrum Technol* 31:483-487, 1997.
9. Thomas DC, Butler KC, Taylor LP, Le Blanc P, Griffith BP, Kormos RL, Borovetz HS, Wu ZJ and Antaki JF. Continued Development of the Nimbus/University of Pittsburgh (UOP) Axial Flow Left Ventricular Assist System. *ASAIO J* 43:564-566, 1997.
10. Curtis AS, Wu ZJ, Kormos RL and Antaki JF. A Novel Ventricular Apical Cannula: In-Vitro Evaluation Using Transparent Compliant Casts. *ASAIO J* 44: 691-695, 1998.
11. Thomas D, Butler KC, Taylor L, LeBlanc P, Griffith B, Kormos R, Borovetz H, Litwak P, Kameneva M, Choi S, Burgreen G, Wu Z, Antaki J. Year two progress of the Nimbus-University of Pittsburgh (UoP) axial flow left ventricular assist system. *ASAIO J* 44: M521-524, 1998.
12. Amin DV, Antaki JF, Litwak P, Thomas D, Wu ZJ, Watach M. Induction of ventricular collapse by an axial flow blood pump. *ASAIO J* 44: M685-690, 1998.
13. Wu ZJ, Antaki JF, Burgreen GW, Thomas D, Butler KC and Griffith BP. Fluid Dynamic Characterization of Operating Conditions for Continuous Flow Blood Pumps. *ASAIO J* 45: 442-449, 1999.
14. Burgreen GW, Antaki JF, Wu ZJ, LeBlanc P and Butler KC. A Computational and Experimental Comparison of Two Outlet Stators for the Nimbus LVAD. *ASAIO J* 45:328-333, 1999.
15. Wu ZJ, Gottlieb RK, Burgreen GW, Holmes JA, Borzelleca DC, Kameneva MV, Griffith BP, and Antaki JF. Investigation of Fluid Dynamics within a Miniature Mixed Flow Blood Pump. *Experiments in Fluids* 31:615-629, 2001.
16. Burgreen GW, Antaki JF, Wu ZJ, Holmes JA. Computational fluid dynamics as a development tool for rotary blood pumps. *Artificial Organs* 25:336-340, 2001.
17. Antaki JF, Boston JR, Simaan M, and Wu Z. Current strategies for control of turbodynamic blood pumps. *Proceedings of 2<sup>nd</sup> Joint Conference of the IEEE Engineering in Medicine and Biology Society and the Biomedical Engineering Society*, Houston, October, 2002.
18. Wu ZJ, K Sturk, P Marascalco, J Marhefka, MV Kameneva. Modification of Flow Behavior of Red Blood Cells by Blood Soluble Drag-Reducing Polymers. *Proceedings of International Congress on Biological and Medical Engineering*, Singapore, December, 2003.
19. Kihara S, Litwak LN, Nichols L, Litwak P, Kameneva MV, Wu ZJ, Kormos RL, Griffith BP. Long-Term Rotary Pump Left Ventricular Assist Causes Smooth Muscle Cell Hypertrophy of Renal Cortex Arteries in Calves. *Annals of Thoracic Surgery* 75: 178-83, 2003.
20. Litwak KN, Kihara S, Kameneva MV, Litwak P, Uryash A, Wu ZJ, Griffith BP. Effects of continuous flow left ventricular assist device support on skin tissue perfusion and aortic hemodynamics. *ASAIO Journal* 49:103-107, 2003.
21. Wu ZJ, JF Antaki, K Litwak, MV Kameneva, HS Borovetz, RL Kormos. Ventricular assist devices: current status and future perspective. In *New Frontiers in Biomedical Engineering*. Hwang and Woo (ed), Kluwer Academic Publisher, New York, 2003.
22. Hildebrand D, Wu ZJ, Mayer J, Sacks M. Design and Hydrodynamic Evaluation of A Novel Pulsatile Bioreactor for Biologically Active Heart Valves. *Annals of Biomedical Engineering* 32(8):1039-1049, 2004.
23. Kameneva MV, Wu ZJ, Urash A, Repko B, Litwak KN, Billiar TR, Fink MP, Simmons RL, Griffith BP, Borovetz HS. Blood soluble drag-reducing polymers prevent lethality from hemorrhagic shock in acute animal experiments. *Biorheology* 41(1):53-64, 2004.

24. Burgreen GW, Loree HW, Bourque K, Dague C, Poirier VL, Farrar D, Hampton E, Wu ZJ, Gempp TM, Schöb R. Computational Fluid Dynamics Analysis of a Maglev Centrifugal Left Ventricular Assist Device. *Artificial Organs* 28: 874-881, 2004.
25. Litwak KN, Koenig SC, Tsukui H, Kihara S, Wu Z, Pantalos GM. Effects of left ventricular assist device support and outflow graft location upon aortic blood flow. *ASAIO J* 50:432-7, 2004.
26. Wu ZJ, Gartner M, Litwak KN, Griffith BP. Progress toward an ambulatory artificial lung. *J Thorac Cardiovasc Surg.* 130 (4):973-8, 2005.
27. Kilic A, Li T, Nolan TDC, Nash JR, Li S, Prastein DJ, Schwartzbauer G, Moainie SL, Yankey GK, DeFilippi C, Wu ZJ and Griffith BP. Strain-Related Regional Alterations of Calcium-Handling Proteins in Myocardial Remodeling. *J Thorac Cardiovasc Surg.* 132(4):900-8, 2006.
28. Zhang J, Gellman B, Koert A, Dasse KA, Gilbert RJ, Griffith BP, Wu ZJ. Computational and Experimental Evaluation of the CentriMag® Blood Pump. *Artificial Organs* 30 (3):168-177, 2006.
29. Zhao R, Antaki JF, Naik T, Bachman TN, Kameneva MV and Wu ZJ. Microscopic Investigation of Erythrocyte Deformation Dynamics. *Biorheology*, Vol. 43: 747 – 765, 2006.
30. Zhang J, Koert A, Gellman B, Gempp T, Dasse KA, Gilbert RJ, Griffith BP and Wu ZJ. Optimization of a Miniature Maglev Ventricular-Assist Device (VAD) for Pediatric Circulatory Support. *ASAIO J.* 53(1):23-31, 2007.
31. Zhang J, Nolan TDC, Zhang T, Griffith BP and Wu ZJ. Characterization of membrane blood oxygenation devices using computational fluid dynamics. *Journal of Membrane Science* 288(1-2): 268-279, 2007.
32. A Kilic, TDC Nolan, T Li, GK Yankey, DJ Prastein, RK Jarvik, **ZJ Wu** and BP Griffith. Early In-Vivo Experience with the Pediatric Jarvik 2000 Heart. *ASAIO Journal* 53 (3):374-8, 2007.
33. GK Yankey, T Li, A Kilic, G Cheng, A Satpute, K Savai, S Li, SL Moainie, D Prastein, Cr DeFillipi, **ZJ Wu**, BP Griffith. Regional Remodeling Strain and Its Association with Myocardial Apoptosis Post-Myocardial Infarction in Ovine Model. *J Thorac Cardiovasc Surg* 2008 May;135 (5):991-8, 998.
34. T Zhang, G Cheng, A Koert, J Zhang, B Gellman, GK Yankey, A Satpute, KA Dasse, RJ Gilbert, BP Griffith, **ZJ Wu**. Functional and Biocompatibility Performances of an Integrated Maglev Pump-Oxygenator. *Artificial Organs* 33:36-45, 2009.

## C. Research Support

### Ongoing Research Support

HHSN268200448190C Robert Jarvik/Bartley P Griffith (PIs) 04/01/2004–03/31/2009  
NIH/NHLBI

#### Pediatric Circulatory Support

The purpose of this contract is to support the development of novel circulatory assist devices for infants and children with congenital and acquired cardiovascular disease who experience cardiopulmonary failure and circulatory collapse.

Role: Co-Investigator/University of Maryland Project Director

R01 HL 081106 Griffith (PI) 04/01/2006 – 03/31/2011  
NIH/NHLBI

#### Strain Controlled LVAD Unloading and Post MI Remodeling

The major goals of this project are to better understand how early regional biomechanical changes after myocardial infarction relate to graded remodeling reflected by scar expansion and non-ischemic myocardial hypertrophy and dysfunction and to ameliorate or reverse remodeling with the use of a VAD to directly control ventricular loading to explore the clinically relevant potential of intervention by ventricular unloading.

Role: Co-Investigator

R01 HL082631 Griffith(PI) 05/07/2007 - 04/30/2012  
Development of an Artificial Pump-Lung for Respiratory Failure

The goal of this proposal is to combine biomedical disciplines and new approaches to design a wearable artificial pump lung (APL). The APL will provide the total respiratory needs of adults with acute and chronic lung failure.

Role: Co-Investigator/BRP Program Coordinator

R42 HL084807 (Dasse/Wu)

4/3/2008 to 3/30/2010

NIH/NHLBI

Integrated Maglev Pump-Oxygenator for Respiratory Failure

The goal of this project is to develop an integrated pump-oxygenator device which incorporates durable membranes and magnetically levitated blood pump technology to produce a highly efficient respiratory system.

Role: STTR Research Institution PI

R01 HL 088100-01 Wu (PI)

9/1/2008 to 5/31/2012

NIH/NHLBI

Linking Multiscale Dynamics of Shear-Induced Blood Damage to CFD Modeling

The goal of this project is to extend the current use of CFD modeling of blood flow to the clinically relevant measures.

Role: PI

**Completed Research Support**

R41 HL083621-01 Biancucci/Wu (PIs)

02/1/2006 to 01/31/2008

NIH/NHLBI

Impeller optimization for a combined pump-oxygenator

The goal of this proposal is to design an optimized impeller for MC3 BioLung to achieve an innovative paracorporeal pump-oxygenator for adult respiratory support.

Role: STTR Research Institution PI

R41 HL084807-01 Dasse/Wu (PIs)

04/01/2006 – 09/30/2007

NIH/NHLBI

Integrated Maglev Pump-Oxygenator for Respiratory Failure

The goal of this project is to develop an integrated pump-oxygenator device which incorporates durable membranes and magnetically levitated blood pump technology to produce a highly efficient respiratory system.

Role: STTR Research Institution PI

R01EB002076-04 Bartley Griffith (PI)

05/01/2000-04/30/2005

NIH/NIBIB

Bioengineering-biologic study of non-pulsatile perfusion

This project proposes to study the effects of diminished pulse flow or totally non-pulsatile flow on bioengineering and biologic properties of vasculature system in large animals.

Role: Co-Investigator

1R01HL70051 William Federspiel (PI)

04/01/2002 - 03/31/2006

NIH/NHLBI

Percutaneous Respiratory Assist Catheter

Develop a percutaneous respiratory assist catheter (PRAC) that can be inserted into the venous system to provide supplemental breathing support, independent of the lungs, for patients requiring short-term (< 1-2 weeks) respiratory assistance.

Role: Co-Investigator/Consultant