Cardiac microvascular dysfunction

Insights from COVID-19, myocardial infarction, and anthracycline-induced cardiotoxicity

Jiang, Z.

Publication date
2026

Appendices

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List of Publications

[1] **Zhu Jiang**, Linghe Wu, Britt van der Leeden, Hans W.M. Niessen, Paul A.J. Krijnen. NOX2 and NOX5 are increased in cardiac microvascular endothelium of deceased COVID-19 patients. *International Journal of Cardiology*. Volume 370, 1 January 2023, 454-462.

[2] Linghe Wu, **Zhu Jiang**, Eva R. Meulendijks, Umit Baylan, Ingeborg S.E. Waas, Marianna Bugiani, Pieter R. Tuinman, Judith Fronczek, Leo M.A. Heunks, Joris R. de Groot, Hans W.M. Niessen, Paul A.J. Krijnen. Atrial inflammation and microvascular thrombogenicity are increased in deceased COVID-19 patients. *Cardiovascular Pathology*. Volume 64, May-June 2023, 107524.

[3] **Zhu Jiang**, Giulia Sorrentino, Suat Simsek, Joris J. T. H. Roelofs, Hans W.M. Niessen, Paul A.J. Krijnen. Increased perivascular fibrosis and pro-fibrotic cellular transition in intramyocardial blood vessels in myocardial infarction patients. *Journal of Molecular and Cellular Cardiology Plus*. Volume 10, December 2024,100275.

[4] **Zhu Jiang**, Ingeborg.S.E.Waas, Suat Simsek, Casper G. Schalkwijk, Joris J.T.H. Roelofs, Hans W.M. Niessen MD, Paul A.J. Krijnen. N^{ε}-(carboxymethyl)lysine-modified albumin exacerbates doxorubicin-induced NOX5-dependent oxidative stress in endothelial cells. *Biochemical and Biophysical Research Communications*. Volume 796, 18 January 2026,153135.

[5] **Zhu Jiang**, Giulia Sorrentino, Madalena Lopes Natário Pinto Gomes, Amber Swan-Taylor, Suat Simsek, Joris J.T.H. Roelofs, Hans W.M. Niessen, Paul A.J. Krijnen. Exposure of endothelial cells to Doxorubicin inhibits ECM production by dermal fibroblasts in a paracrine manner. *Toxicological Sciences.* March 2026; kfag027.

[6] **Zhu Jiang,** Suat Simsek, Aisha Raja, Joris J.T.H. Roelofs, Hans W.M. Niessen, Paul A.J. Krijnen. Endothelial Follistatin-like 3 expression is increased in Myocardial Infarction. *European Journal of Clinical Investigation.* Submitted

[7] **Zhu Jiang,** Ingeborg.S.E.Waas, Kelly. A. Taal, Mitchell D. Fiet, Suat Simsek, Casper G. Schalkwijk, Lourens F.H.J. Robbers, Joris J.T.H. Roelofs, Hans W.M. Niessen, Paul A.J. Krijnen. A comprehensive analysis of early and late effects of very low cumulative dose Doxorubicin on the heart in rats. In preparation

Portfolio of Education

Name of PhD student:	Zhu Jiang
PhD period:	January 2021 – January 2026
Name PhD supervisor:	Prof. dr. J.J.T.H. Roelofs Prof. dr. J.W.M. Niessen
Name PhD co-supervisor:	Dr. P.A.J. Krijnen Dr. S. Simsek

1. PhD training	**Year**	**ECTS**
Courses		
- Bridging program Vrije University Amsterdam	2021	6.5
- Cellular imaging	2021	0.6
- Research integrity Course	2021	2.0
- Advanced qPCR	2021	0.7
- Program cardiovascular training course	2021	2.0
- Entrepreneurship in healthy and life sciences	2021	2.0
- Practical Biostatistics	2022	2.0
- Cell-based Assays and Live Cell Imaging	2022	0.3
- Proteomics in biomedical research	2024	3.0
Seminars and Workshops		
- Talk like TED	2022	0.1
- Science & Awards Day	2022	0.9
- Science Communication	2023	0.3
- ACS PhD retreat 2022/2023/2024	2022-2024	3.0
- Weekly laboratory and group meetings	2021-2026	4.0
International Conference and Symposium		
- Frontiers in CardioVascular Biomedicine (FCVB); With abstract, oral and poster presentation;	2024	2.0
- IMARS-15, Glycation in food, health and disease; With abstract, poster presentation;	2024	1.0
- yICSA 2025 symposium, senescence researchers; With abstract, poster presentation;	2025	1.0
- ACS monthly/annually symposia at VUmc and AMC; Attending;	2021-2026	2.0
PhD training in total		**33.4**

2. Teaching	Year	ECTS
Supervising		
- Bachelor internship supervision, Ennia J. van Loon; 4 months;	2022	1.6
- Master internship supervision, Giulia Sorrentino; 9 months;	2022-2023	3.0
- Bachelor internship supervision, Amber Swan-Taylor; 9 months;	2023-2024	3.0
- Bachelor internship supervision, Kelly A.Taal; 9 months	2024-2025	3.0
- Master internship supervision, Aisha Raja; 6 months;	2025	2.0
Other		
- Praktijkstage academische Vorming (PVA), 1st year medical students, 6 months;	2022	1.0
Teaching in total		**13.6**

3. Publications	Year
Peer reviewed	
- **Z. Jiang**, L. Wu, B. Leeden, H.W.M. Niessen, P.A.J. Krijnen. NOX2 and NOX5 are increased in cardiac microvascular endothelium of deceased COVID-19 patients. *International Journal of Cardiology.* Volume 370, 1 January 2023, 454-462.	2022
- L.Wu, **Z. Jiang**, E.R.Meulendijks, U.Baylan, I.S.E. Waas, M. Bugiani, P. R. Tuinman, J. Fronczek, L. M.A. Heunks, J. R. de Groot, H. W.M. Niessen, P. A.J. Krijnen. Atrial inflammation and microvascular thrombogenicity are increased in deceased COVID-19 patients. *Cardiovascular Pathology.* Volume 64, May-June 2023, 107524.	2023
- **Z. Jiang**, G. Sorrentino, S. Simsek, J. J.T.H. Roelofs, H.W.M. Niessen, P. A.J. Krijnen. Increased perivascular fibrosis and pro-fibrotic cellular transition in intramyocardial blood vessels in myocardial infarction patients. *Journal of Molecular and Cellular Cardiology Plus*. Volume 10, December 2024,100275.	2024
- **Z. Jiang**, I.S.E.Waas, S. Simsek, C. G. Schalkwijk, J. J.T.H. Roelofs, H. W.M. Niessen MD, P.A.J. Krijnen. Nε-(carboxymethyl)lysine-modified albumin exacerbates doxorubicin-induced NOX5-dependent oxidative stress in endothelial cells. *Biochemical and Biophysical Research Communications*. Volume 796, 18 January 2026,153135.	2025

- **Z. Jiang**, G. Sorrentino, M. L. N. P. Gomes, A. Swan-Taylor, S. Simsek, J. J.T.H. Roelofs, H.W.M. Niessen, P.A.J. Krijnen. Exposure of endothelial cells to Doxorubicin inhibits ECM production by dermal fibroblasts in a paracrine manner. *Toxicological Sciences.*	2026
Other	
- **Zhu Jiang**, Suat Simsek, Aisha Raja, Joris J.T.H. Roelofs, Hans W.M. Niessen, Paul A.J. Krijnen. Endothelial Follistatin-like 3 expression is increased in Myocardial Infarction. *European Journal of Clinical Investigation*.	Submitted
- **Zhu Jiang**, Ingeborg.S.E.Waas, Kelly. A. Taala, Mitchell D. Fiet, Suat Simsek, Casper G. Schalkwijk, Lourens F.H.J. Robbers, Joris J.T.H. Roelofs, Hans W.M. Niessen, Paul A.J. Krijnen. A comprehensive analysis of early and late effects of very low cumulative dose Doxorubicin on the heart in rats.	In preparation

Curriculum Vitae

Zhu Jiang was born on December 4th , 1994, in Jilin Province, China. She obtained her Bachelor of Engineering degree in Biological Engineering from Jiangnan University (Jiangsu, China) in 2016. During her studies, she participated in an exchange program at Kasetsart University in Thailand with finical support from the China Scholarship Council, focusing on the screening of probiotics from human milk.

In 2019, she received her Master of Engineering in Fermentation Engineering from Jiangnan University. She focused on developing enzymatic pathways for glucosamine production and enhancing catalytic performance through protein engineering, where her research in enzyme engineering led to two first-author publications and an international patent now applied in industrial bioprocesses.

After completing her master's degree, she joined WuXi Biologics as a purification researcher, where she specialized in antibody purification and downstream process development for biopharmaceutical production.

Since January 2021, Zhu has been pursuing her PhD, supported by the China scholarship council, in the Department of Pathology at Amsterdam University Medical Centre (AUMC), The Netherlands. Her doctoral research investigates cardiac microvascular dysfunction, with special interest in endothelial dysfunction, fibrosis, and cellular communication in cardiovascular pathology.

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To **Madalena Lopes Natário Pinto Gomes**, as fellow international students far away from home, we shared many moments of loneliness, adjustment and quite understanding. I feel incredibly fortunate to have been welcomed into your life and to have met your family, which allowed me to witness what a loving and happy family truly looks like. Thank you for your companionship, empathy, and warmth throughout these years. I am very grateful to have met **Jackson (Linghe Wu)** during my first year of PhD. At the onset of the COVID-19 pandemic, a period marked by uncertainty, challenges, and unexpected opportunities. I feel fortunate that we were able to collaborate closely on two COVID-19 related projects. Working together during such a formative and demanding time was both meaningful and inspiring. Thank you for your help, support, and collaboration, which made that challenging period more productive and memorable. Sincerely thank **Britt van der Leeden** for your constant support throughout my PhD. Your help and advice, both academically and personally, made many challenging moments easier, Your kindness, patience, and willingness to help made a meaningful difference to me. I am deeply grateful for your presence and support during these years.

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I would like to thank all members of the **Department of Pathology** for their support and assistance throughout my PhD. I also express my sincere gratitude to the **China Scholarship Council (CSC)** for its financial support, and to **Amsterdam University Medical Center (Amsterdam UMC)** and **Amsterdam Cardiovascular Sciences (ACS)** for providing the institutional resources and research infrastructure that made this work possible.

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