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## Short Bio

Dr. Markl is the Lester B. and Frances T. Knight Professor of Cardiac Imaging in the Departments of Radiology and Biomedical Engineering at Northwestern University. Dr. Markl received his PhD in Physics from the University of Freiburg, Germany (2000), and also served as a postdoctoral fellow at the Lucas MRI/S Center at Stanford University, Radiology (2001-2004). In 2004, he returned to the University Hospital in Freiburg, Germany as the Director of Cardiovascular MRI. Dr. Markl accepted a position at Northwestern University in 2011 and is now the Director of Cardiovascular Imaging Research in the Department of Radiology and directs Cardiovascular MR research in the Center for Translational Imaging, a Northwestern University core facility housed in Radiology. A central objective of Dr. Markl's research program is to develop multi-parametric imaging techniques that can afford a better understanding of the underlying physiologic mechanisms of heart disease and stroke as well as the impact of therapy. The work of his research group has been instrumental in establishing '4D Flow MRI' for the comprehensive assessment of cardiovascular hemodynamics in heart disease and stroke. Further accomplishments include the development, validation, and application of novel imaging tools for the evaluation of structure and function of the heart. Clinical applications have provided new insights into the specific links between pathology, therapy, intervention and functional changes within the heart and cardiovascular system. To date, his accomplishments include a total of >270 peer-reviewed publications, 600+ conference abstracts, 8 book chapters, 8 patents, and >130 invited presentations. Dr. Markl is a recipient of the RSNA Research Trainee Prize, the I.I. Rabi Award Young Investigator Award of the ISMRM, and the Distinguished Investigator Award of the Academy of Radiology Research. He is a Member of the Editorial Boards of the 'European Heart Journal - Cardiovascular Imaging' and 'JCMR', a Fellow of the ISMRM and SCMR, a member of the Board of Trustees of the SCMR, and the President-of the Society for Magnetic Resonance Angiography (SMRA).

## Key publications

1. Dyverfeldt P, Bissell M, Barker AJ, Bolger AF, Carlhall CJ, Ebbers T, Francios CJ, Frydrychowicz A, Geiger J, Giese D, Hope MD, Kilner PJ, Kozerke S, Myerson S, Neubauer S, Wieben O, **Markl M**. 4D flow cardiovascular magnetic resonance consensus statement. *J Cardiovasc Magn Reson*. 2015;17:72
2. **Markl M**, Lee DC, Furiasse N, Carr M, Foucar C, Ng J, Carr J, Goldberger JJ. Left atrial and left atrial appendage 4d blood flow dynamics in atrial fibrillation. *Circ Cardiovasc Imaging*. 2016;9:e004984
3. Mahadevia R, Barker AJ, Schnell S, Entezari P, Kansal P, Fedak PW, Malaisrie SC, McCarthy P, Collins J, Carr J, **Markl M**. Bicuspid aortic cusp fusion morphology alters aortic three-dimensional outflow patterns, wall shear stress, and expression of aortopathy. *Circulation*. 2014;129:673-682
4. Harloff A, Simon J, Brendecke S, Assefa D, Helbing T, Frydrychowicz A, Weber J, Olschewski M, Strecker C, Hennig J, Weiller C, **Markl M**. Complex plaques in the proximal descending aorta: an underestimated embolic source of stroke. *Stroke*. 2010;41:1145-1150
5. **Markl M**, Alley MT, Elkins CJ, Pelc NJ. Flow effects in balanced steady state free precession imaging. *Magn Reson Med* 2003;50(5):892-903.