

## Curriculum Vitae

Name: F. Gerald Greil, MD, PhD

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Pediatric Cardiology  
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Place of birth: Neuburg an der Donau, Germany

Languages: fluent in German, English, French

June 1986 Abitur (school leaving examination and university entrance qualification)  
Neuburg/ Donau, GE

July 1986 - Sept. 1987 Military Service (Medical Division)

### Education

Year	Degree (Honors)	Field of Study (Thesis advisor for PhDs)	Institution
1989	Preclinical National Board Examination	Medicine	University of Regensburg, Germany
1994	M.D. Degree	Medical	Technical University of Munich, Germany
07/1995	Doctor in Medicine	Thesis in Medicine	Ludwig Maximilian University Munich, Germany
1996	License to Practice Medicine	Medicine	Bavarian State Department of Labor and Social Security, Family Affairs, Women and Health, Bavaria, Germany
09/2007	Habilitation (Ph.D. equivalent)	Department of Pediatrics	University of Tübingen, Germany

## **Postdoctoral Training**

Year(s)	Titles	Specialty/Discipline (Lab PI for postdoc research)	Institution
06/1994- 12/1995	Intern	Pediatric Cardiology	German Heart Center Munich, Germany
01/1996- 12/1998	Resident	Pediatrics/Pediatric Cardiology	Children's Hospital Tübingen, University of Tübingen, Germany
01/1999- 06/2001	Senior Clinical Fellowship	Pediatric Cardiac MRI	Children's Hospital Boston, Harvard Medical School
08/2001- 07/2002	Fellowship	Department of Pediatrics	Children's Hospital Tübingen, University of Tübingen, Germany
08/2002- 09/2003	Fellowship	Department of Neonatology	Children's Hospital Tübingen, University of Tübingen, Germany
10/2003- 10/2006	Fellowship	Department of Pediatric Cardiology	Children's Hospital Tübingen, University of Tübingen, Germany

## **Faculty Academic Appointments**

Year(s)	Academic Title	Department	Academic Institution
2006-2013	Clinical Senior Lecturer	Pediatric Cardiology	King's College London, Guy's and St. Thomas' Hospital, UK
2011-	Professor (APL)	Pediatrics	University of Tübingen, Germany
2013-2015	Reader	Pediatric Cardiology	King's College London, UK
2015-	Professor	Pediatric Cardiology/ Radiology	University of Texas Southwestern Medical Center

## **Current Licensure and Certification**

### Licensure

Approbation (License to Practice Medicine), Munich, GE (February 13, 1996)  
Certificate of Full Registration as a Medical Practitioner, General Medical Council (GMC), London UK,  
GMC number 6151758 (August 10, 2006)  
Faculty Temporary License – Texas Medical Board - #46310 (Since 4/7/2016)  
EACVI level 3 certification in CMR in congenital and pediatric heart disease (2018)

### **Board and Other Certification**

1994 National Board Examination  
1995 ECFMG Step I/ II (since March 1999 valid indefinitely)  
2000 Certification of Human Subject Protection Education/Training  
2003 Certificate for Teaching in Medicine - Qualification Level I  
2005 National Board Examination: Pediatrics  
2005 National Board Examination: Pediatric Intensive Care  
2006 National Board Examination: Pediatric Cardiology

- 2008 Certificate for Pediatric Cardiac Magnetic Resonance Imaging
- 2009 GUCH (Grown-up with Congenital Heart Disease - DGPK examination)
- 2010 National Board Examination: Neonatology
- 2011 Comprehensive Cardio CT-Training Part A
- 2011 Comprehensive Cardio CT-Training Part B
- 2013 Cardiac MRI SCMR Level III
- 2014 Cardiovascular Magnetic Resonance Level 3 (European Certification)

**Honors and Awards**

Year	Name of Honor/Award	Awarding Organization
04/11/2011	Local Clinical Excellence Award (LCEA)	Guy's & St. Thomas' NHS Foundation Trust, London, UK
03/21/2014	Local Clinical Excellence Award (LCEA)	Guy's & St. Thomas' NHS Foundation Trust, London, UK
05/2015	Pogue Family Distinguished Chair in Pediatric Cardiology	UT Southwestern Medical Center, Dallas
12/2017	Achievement in Healthcare Innovation: 3D Imaging Technology	D CEO – D Magazine

**Appointments at Hospitals/Affiliated Institutions**

<b><u>Past</u></b>			
Year(s)	Position Title	Department/Division	Institution
1994-1995	Intern	Pediatrics/Pediatric Cardiology	German Heart Center Munich, Germany, GE
1996-1998	Attending Physician	Pediatric Cardiology	Children's Hospital Tübingen, GE
1999-2001	Attending Physician	Cardiac MRI	Children's Hospital Boston, Harvard Medical School, USA
2001-2006	Attending Physician	Pediatric Cardiology	Children's Hospital Tübingen, GE
2006-2015	Attending Physician	Pediatric Cardiology	Guy's and St. Thomas' Hospital NHS Foundation Trust / Evelina Children's Hospital, UK
2010-2015	Lead of the Congenital Cardiac MRI service	Congenital Cardiac MRI Service	Guy's and St. Thomas' Hospital NHS Foundation Trust / Evelina Children's Hospital, UK
<b><u>Current</u></b>			
Year(s)	Position Title	Department/Division	Institution
2011-	Adjunct Professorship	Pediatric Cardiology	Children's Hospital Tübingen, GE

2015 -	Division Chief	Pediatric Cardiology	University of Texas Southwestern Medical Center Children's Medical Center, Dallas, TX, USA
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### **Major Administrative/Leadership Positions**

Year(s)	Position Title	Institution
2010 - 2015	Lead of the Congenital Cardiac MRI Imaging Service at Guy's and St. Thomas' Hospital NHS Foundation Trust / Evelina Children's Hospital / King's College London, London, UK	Division of Imaging Sciences & Biomedical Engineering, The Rayne Institute, King's College London / Guy's & St. Thomas' NHS Foundation Trust, London, UK
2015 -	Division Chief, Pediatric Cardiology	University of Texas Southwestern Medical Center, Dallas, TX, USA

### **Committee Service** (*Member, unless noted otherwise*)

Year(s)	Name of Committee	Institution/Organization
<b><u>National/International</u></b>		
Since 2008	Pool of Scientific Advisors on Risk Assessment of European Union (Scientific Committees and Experts set up by Commission Decision 2008/721/EC)	European Union
2018-	SCMR Program Committee	
????-	Imaging Working Group Chair	Association of European Paediatric Cardiologists

### **Professional Societies**

Year(s)	Society Name, member
Since 2007	Royal College of Physicians (MRCP), Member since 2007
Since 2008	Society of Cardiovascular Magnetic Resonance (SCMR), Member since 2008
Since 2008	Association for European Pediatric Cardiology (AEPC), Member since 2008
Since 2008	Deutsche Gesellschaft für Paediatrische Kardiologie (DGPK), Member since 2008
Year(s)	Committees
Since 2010	Society of Cardiovascular Magnetic Resonance (SCMR) Member Working Group <i>Pediatric Cardiology</i> since 2010
Since 2013	Association for European Pediatric Cardiology (AEPC), Secretary of the Working Group <i>Imaging</i> since 2013

### **Grant Review Activities**

Year(s)	Name of Review Committee	Organization
2010	Grant reviewer	National Institute for Health Research (NIHR), UK
2015	Grant reviewer	British Heart Foundation, Greater London House, London

### **Editorial Activities**

Year(s)	Journal Name
<b><u>Editorial Board</u></b>	
2015-	Circulation, Associate Editor, Pediatrics
<b><u>Ad Hoc Reviewer</u></b>	
2005-	Clinical Anatomy
2005-	Circulation
2005-	International Journal of Cardiology
2007-	Journal of Cardiovascular Magnetic Resonance Imaging
2008-	Cardiology in the Young
2009-	European Journal of Radiology
2009-	Annals of Pediatric Cardiology
2010-	JACC: Cardiovascular Imaging
2010-	NIHR (National Institute for Health Research), UK
2012-	Circulation Cardiovascular Imaging
2013-	The Lancet
2013-	International Journal of Obesity
2016-	BMC Cardiovascular Disorders
2017-	Pediatric Nephrology

### **Dissertation Review Activities**

Year(s)	Name of Dissertation/Writer	
2016	Computer-Assisted Quantitative Mitral Valve Surgery – Sandy Engelhardt	Heidelberg, Germany

### **Invited Lectures (selection)**

Year(s)	Title	Location
<b><u>International</u></b>		
2000	• MR flow imaging: Technology and clinical applications in Pediatric Cardiology	Symposium to honor Prof. Apitz, Department of Pediatric Cardiology, University of Tuebingen, Tuebingen, Germany

2005	<ul style="list-style-type: none"> <li>• MRI Assessment of Great Vessels and Coronary Arteries.</li> </ul>	World Congress of Pediatric Cardiology and Cardiac Surgery (WCPCCS), Buenos Aires, Argentina.
2006	<ul style="list-style-type: none"> <li>• MRI Assessment of Great Vessels and Coronary Arteries.</li> </ul>	Symposium of the Pediatric Cardiology Society of Croatia, Zagreb, Croatia
2006	<ul style="list-style-type: none"> <li>• Contemporary three-dimensional imaging of the heart and great vessels in children and adults with acquired and congenital heart disease.</li> </ul>	Hospital for Sick Children, University of Toronto, Toronto, Canada
2006	<ul style="list-style-type: none"> <li>• Coronary imaging in infants, children, and adolescents with acquired and congenital heart disease.</li> </ul>	Hospital for Sick Children, University of Toronto, Canada
2006	<ul style="list-style-type: none"> <li>• Functional assessment of the heart with magnetic resonance imaging. What do we need?</li> </ul>	Hospital for Sick Children, University of Toronto, Canada
2006	<ul style="list-style-type: none"> <li>• CMR and arrhythmia interventions: Future aspects, in Cardiovascular magnetic resonance in the clinical arena.</li> </ul>	10 <sup>th</sup> annual Euroecho Meeting, Prague, Czech Republic
2006	<ul style="list-style-type: none"> <li>• Kawasaki Disease, in The coronary arteries in congenital and paediatric heart disease.</li> </ul>	10 <sup>th</sup> annual Euroecho Meeting, Prague, Czech Republic
2007	<ul style="list-style-type: none"> <li>• CMR for Interventions.</li> </ul>	11 <sup>th</sup> annual Euroecho Meeting, Lisbon, Portugal
2008	<ul style="list-style-type: none"> <li>• Key Issues for Good MRCA Exams.</li> </ul>	11 <sup>th</sup> Annual Scientific Sessions, Lisbon, Portugal
2009	<ul style="list-style-type: none"> <li>• All about 3D/ 4D Imaging and Virtual Surgery, Cardiovascular Imaging.</li> </ul>	Hospital for Sick Children, Toronto, Canada
2009	<ul style="list-style-type: none"> <li>• Contrast agents in MR: Present and future.</li> </ul>	Hospital for Sick Children, Toronto, Canada
2009	<ul style="list-style-type: none"> <li>• 3D MRI - from imaging to intervention.</li> </ul>	23 <sup>rd</sup> EACTS Meeting, Vienna, Austria, Congenital Domain Techno-College
2010	<ul style="list-style-type: none"> <li>• 9th Pediatric Cardiology Symposium of the Pediatric Cardiology Heart Center Bonn, Bonn, Germany</li> </ul>	Morphology and imaging of congenital heart disease: The “straight forward” aortic isthmus stenosis.
2011	<ul style="list-style-type: none"> <li>• Coronary artery imaging in CHD.</li> </ul>	Society of Cardiac Magnetic Resonance (SCMR), Nice, France
2011	<ul style="list-style-type: none"> <li>• Virtual Surgery.</li> </ul>	Society of Cardiac Magnetic Resonance (SCMR), Nice, France
2011	<ul style="list-style-type: none"> <li>• Technologist Workshop Session / The Future of CMR.</li> </ul>	Society of Cardiac Magnetic Resonance (SCMR), Nice, France
2011	<ul style="list-style-type: none"> <li>• Assessment of Right and Left Ventricular Function with newly developed 3D and 4D MRI imaging and post-processing methods.</li> </ul>	22nd Saudi Heart Association Scientific Sessions (SHA22), Riyadh, Saudi Arabia
2011	<ul style="list-style-type: none"> <li>• Coronary imaging in pediatric and adult with congenital heart disease.</li> </ul>	22nd Saudi Heart Association Scientific Sessions (SHA22), Riyadh, Saudi Arabia

2011	<ul style="list-style-type: none"> <li>• 3D imaging of the heart.</li> </ul>	IPR London 2011- 6th Congress and Exhibition of the Joint Societies of Paediatric Radiology, London, UK
2011	<ul style="list-style-type: none"> <li>• The Current Role of MRI Imaging of Coronary arteries.</li> </ul>	SCMR Level 1, King's College London, Division of Imaging Sciences
2011	<ul style="list-style-type: none"> <li>• Multidimensional Imaging And Its Application in Children and Adults with Congenital Heart Disease - Where Are We Now?</li> </ul>	Global Pediatric Network Meeting in Beijing, P.R.China
2012	<ul style="list-style-type: none"> <li>• Sharpening you CMR Tools: 3D SSFP Whole Heart Imaging – A Recipe for a Clear Picture.</li> </ul>	2011 SCMR / Euro CMR Joint Scientific Sessions - Pre-Conference Course, Orlando, Florida, USA
2012	<ul style="list-style-type: none"> <li>• Vascular Imaging in Children &amp; Adults with Congenital Heart Disease: What MRI Can Offer Multidimensional &amp; Multimodality Imaging: Its Application in Children and Adults with Congenital Heart Disease</li> </ul>	Department of Pediatric Cardiology, Texas Children's Hospital/Baylor College of Medicine, Houston, Texas
2012	<ul style="list-style-type: none"> <li>• MRI and CT: Applications to Congenital Heart Diseases: When is CT the Best Imaging Modality.</li> </ul>	ICI – Imaging in Cardiovascular Interventions, Frankfurt, Germany
2013	<ul style="list-style-type: none"> <li>• Multidimensional Imaging and its application in children and adults with congenital heart disease – where are we now?</li> </ul>	6th World Congress of Paediatric Cardiology and Cardiac Surgery; Cape Town, South Africa
2013	<ul style="list-style-type: none"> <li>• A one stop clinic in the MRI machine.</li> </ul>	6th World Congress of Paediatric Cardiology and Cardiac Surgery; Cape Town, South Africa
2013	<ul style="list-style-type: none"> <li>• Progress in MRI and CT Applications for Congenital Heart Disease (Session Chair); 4D flow studies by MRI in CHD.</li> </ul>	Imaging in Cardiovascular Interventions (iCi) 2013 Congress, Frankfurt, Germany
2013	<ul style="list-style-type: none"> <li>• Role of CT Scanning.</li> </ul>	Imaging in Cardiovascular Interventions (iCi) 2013 Congress, Frankfurt, Germany
2013	<ul style="list-style-type: none"> <li>• Multidimensional &amp; Multimodality Imaging: Its Application in Children and Adults with Congenital Heart Disease.</li> </ul>	Heart Centre Giessen, University of Giessen, Germany
2013	<ul style="list-style-type: none"> <li>• Work in Progress at the Division of Imaging Sciences and Biomedical Engineering at King's College London, UK.</li> </ul>	The 9 <sup>th</sup> Advanced Course in Pediatric Cardiovascular Imaging, Toronto, Canada
2013	<ul style="list-style-type: none"> <li>• CMR in Adults with Congenital Cardiac Disease - Challenges and Promises; Aortic Coarctation in the Adult – New Light on an Old Problem</li> </ul>	Society of Cardiac Magnetic Resonance (SCMR), 16 <sup>th</sup> Annual Scientific Sessions, San Francisco, CA

2014	<ul style="list-style-type: none"> <li>• Lecture series:</li> <li>• - Basics of cardiac function and hemodynamics</li> <li>• - MR protocol for ventricular functional assessment</li> <li>• - Also leading case studies, discussion rounds, hands on sessions.</li> </ul>	The Philips Cardiovascular Hands-on Course (sponsored by the Pediatric Radiology Society China), Suzhou, China
2014	<ul style="list-style-type: none"> <li>• Anomalous origin of coronaries and Kawasaki Disease.</li> </ul>	12 <sup>th</sup> Annual Euro CMR Meeting, Advanced Course for Congenital Cardiac MR, Vienna, Austria
2014	<ul style="list-style-type: none"> <li>• Tetralogy of Fallot.</li> </ul>	12 <sup>th</sup> Annual Euro CMR Meeting, Advanced Course for Congenital Cardiac MR, Vienna, Austria
2014	<ul style="list-style-type: none"> <li>• Novel approaches in clinical imaging: 3D/4D MRI changes the future of patients with CHD.</li> </ul>	48th Annual Meeting of the Association for European Paediatric and Congenital Cardiology (AEPC), Helsinki, Finland
2014	<ul style="list-style-type: none"> <li>• Assessment of the transplanted heart: How can CMR help?</li> </ul>	The 10 <sup>th</sup> Advanced Course in Pediatric Cardiovascular Imaging, Oakland, USA
2015	<ul style="list-style-type: none"> <li>• Virtual Cardiac Imaging</li> </ul>	Chairperson – Session: Working Group Symposium: Imaging. 49th Annual AEPC (Association for European Paediatric and Congenital Cardiology May 22, 2015, Prague
2015	<ul style="list-style-type: none"> <li>• Complex heart disease 1</li> </ul>	2015 Annual Scientific Meeting (ASM) of the Cardiac Society of Australia and New Zealand, Aug 12, Melbourne
2015	<ul style="list-style-type: none"> <li>• The Aorta &amp; coronaries</li> </ul>	2015 Annual Scientific Meeting (ASM) of the Cardiac Society of Australia and New Zealand, Aug 12, Melbourne
2015	<ul style="list-style-type: none"> <li>• Complex heart disease 2</li> </ul>	2015 Annual Scientific Meeting (ASM) of the Cardiac Society of Australia and New Zealand, Aug 13, Melbourne
2015	<ul style="list-style-type: none"> <li>• Stress and strain</li> </ul>	2015 Annual Scientific Meeting (ASM) of the Cardiac Society of Australia and New Zealand, Aug 13, Melbourne
2015	<ul style="list-style-type: none"> <li>• Management of Complex Transposition of the Great Arteries</li> </ul>	2015 Annual Scientific Meeting (ASM) of the Cardiac Society of Australia and New Zealand, Aug 14, Melbourne
2015	<ul style="list-style-type: none"> <li>• Optimal management of the functional single ventricle</li> </ul>	2015 Annual Scientific Meeting (ASM) of the Cardiac Society of Australia and New Zealand, Aug 15, Melbourne
2015	<ul style="list-style-type: none"> <li>• Imaging in Children and Adults with Congenital Heart Disease – Where are we now?</li> </ul>	September 9, 2015. Pediatric Grand Rounds, Children’s Medical Center, Dallas
2015	<ul style="list-style-type: none"> <li>• Quantitative Perfusion: Promise &amp; Pitfalls</li> </ul>	October 17, 2015, SPR 2015 Pediatric



		Cardiovascular Imaging Advanced Symposium – Chicago, IL
2015	<ul style="list-style-type: none"> <li>• Imaging in Children and Adults with Congenital Heart Disease – Where are we now?</li> </ul>	November 3, 2015, UT Southwestern, Dept of Pediatrics, Multidisciplinary Conference, Moderator
2016	<ul style="list-style-type: none"> <li>• Congenital Scanning: Beyond Structure and Function</li> </ul>	January 29, 2016, Session 4, Moderator, SCMR in Los Angeles,
2016	<ul style="list-style-type: none"> <li>• Echo is the best non-invasive imaging tool we have for monitoring patients with Kawasaki Disease! Against (Rebuttal)</li> <li>• Chairperson: Risk stratification in Hypertrophic cardiomyopathy</li> </ul>	Scientific session WGs Imaging, Pulmonary Hypertension and Heart Failure, Genetics and Basic Science, Cardiac Dysrhythmias and Electrophysiology. 50th Annual AEPC Meeting, June 3, 2016
2016	<ul style="list-style-type: none"> <li>• MR protocol for ventricular functional</li> </ul>	October 11, 2016, 14 <sup>th</sup> SPR Hands-On Course on Pediatric Cardiovascular MR, Houston, TX
2016	<ul style="list-style-type: none"> <li>• Hands-on post-processing</li> </ul>	October 12, 2016, 14 <sup>th</sup> SPR Hands-On Course on Pediatric Cardiovascular MR, Houston, TX
2016	<ul style="list-style-type: none"> <li>• Interactive MR scanning</li> </ul>	October 13, 2016, 14 <sup>th</sup> SPR Hands-On Course on Pediatric Cardiovascular MR, Houston, TX
2016	<ul style="list-style-type: none"> <li>• Coronary MRI in Adults and Pediatrics Presentation: Clinical utility of MRI in Imaging of coronary vessels in adults and pediatrics</li> <li>• Moderator: Clinical Imaging Update 2: Coronary Imaging</li> </ul>	October 15-16, 2016, 12th SPR Advanced Symposium on Cardiovascular Imaging, Houston, TX  (CME 12.50)
2017	<ul style="list-style-type: none"> <li>• Coronary MRI in Adults and Pediatrics Presentation: Clinical utility of MRI in Imaging of coronary vessels in adults and pediatrics</li> </ul>	February 4, 2017, SCMR, Washington, DC
2017	<ul style="list-style-type: none"> <li>• Moderator: Advanced techniques in congenital CMR: Ready for wide clinical use? Memorial to Sohrab Fratz, M.D.</li> </ul>	February 4, 2017, SCMR, Washington, DC
2017	<ul style="list-style-type: none"> <li>• Imaging of the Aorta from Infancy to Adulthood. Session: Aortic Coarctation: Morphology predicting outcomes in Adulthood</li> <li>• Moderator: 3D Printing of Congenital Heart Disease - Current Progress: implementation in clinical practice and education</li> <li>• Coronary evaluation - are CT, MRI and catheterization complementary? Session: 3D/4D Imaging – Novel developments and clinical application</li> </ul>	March 30, 2017, AEPC, Lyon, France  (22 CME)

	<ul style="list-style-type: none"> <li>• Moderator: Imaging Right Ventricle-Pulmonary Artery - Unit in volume and pressure overload</li> </ul>	
2017	<ul style="list-style-type: none"> <li>• Imaging, Rheumatic and Kawasaki Together Bridging Together Session: Coronary artery lumen and vessel wall imaging in children – how and when to use echo, MR, CT, or other modalities</li> </ul>	July 18, 2017, WCPCCS, Barcelona, Spain (34 CME)
2018	<ul style="list-style-type: none"> <li>• Moderator for Session: Pediatric/Congenital Preconference: Pediatric/Congenital Basics</li> </ul>	February 1, 2018, SCMR 2018, Barcelona, Spain
2018	<ul style="list-style-type: none"> <li>• Invited speaker – Sessions: Difficult Adult Congenital Heart Disease Cases: Ask the Expert “A case of Coronary anomaly: from Imaging to treatment”</li> <li>• Session Chair: CMR of the Fetal and Neonatal Heart</li> <li>• Session Chair, Moderated Oral Poster Session: Imaging</li> </ul>	May 11, 2018 AEPC 2018, Athens, Greece  May 10, 2018 AEPC 2018, Athens, Greece  May 11, 2018 AEPC 2018, Athens, Greece
2018	<ul style="list-style-type: none"> <li>• Invited speaker Works-in-Progress: Part 1: Update on Big Data</li> <li>• Moderator: Optional Early Bird Session: Hands on Virtual Reality in CHD</li> </ul>	Oct , 2018 14 <sup>th</sup> SPR SAdvanced yposium, Walnut Creek, CA
2019	<ul style="list-style-type: none"> <li>• Invited speaker: Session: Congenital Pre-Conference: Session 2: Acquired Pediatric Heart Disease</li> <li>• Moderator: Session 1: New Technology Solutions for Interventional Cardiac MRI (ICMR)</li> </ul>	Feb 7 <sup>th</sup> , 2019 SCMR, Bellevue, WA
2019	<ul style="list-style-type: none"> <li>• Session Chair - Innovations in Pediatric Cardiac Care: A Peak Around the Corner</li> </ul>	March 17, 2019, ACC, New Orleans, LA

## **Bibliography**

### **Peer-Reviewed Publications**

#### Original Research Articles

1.	Malcic I, Sauer U, Greil G, Soppa Ch, Vogt M, Kirchner K, Genz Th, Sebening W, Bühlmeier K. Protein losing enteropathy after fontan operation. Paediatr Croat 1998; 42:61-68.
2.	Greil GF, Geva T, Maier SE, Powell AJ. Effect of acquisition parameters on the accuracy of velocity encoded cine magnetic resonance imaging blood flow measurements. J Magn Reson Imaging 2002; 15(1):47-54.
3.	Greil GF, Powell AJ, Gildein HP, Geva T. Gadolinium-enhanced three-dimensional magnetic resonance angiography of pulmonary and systemic venous anomalies. J Am Coll Cardiol 2002; 39(2):335-341.
4.	Greil GF, Stuber M, Botnar RM, Kissinger KV, Geva T, Newburger JW, Manning WJ, Powell AJ.

	Coronary magnetic resonance angiography in adolescents and young adults with kawasaki disease. <i>Circulation</i> 2002; 105(8):908-911.
5.	Geva T, Greil GF, Marshall AC, Landzberg M, Powell AJ. Gadolinium-enhanced 3-dimensional magnetic resonance angiography of pulmonary blood supply in patients with complex pulmonary stenosis or atresia: comparison with x-ray angiography. <i>Circulation</i> 2002; 106(4):473-478.
6.	Powell AJ, Tsai-Goodman B, Prakash A, Greil GF, Geva T. Comparison between phase-velocity cine magnetic resonance imaging and invasive oximetry for quantification of atrial shunts. <i>Am J Cardiol</i> 2003; 91(12):1523-1525.
7.	Danton MH, Greil GF, Byrne JG, Hsin M, Cohn L, Maier SE. Right ventricular volume measurement by conductance catheter. <i>Am J Physiol Heart Circ Physiol</i> 2003; 285(4):H1774-1785.
8.	Greil GF, Kuettner A, Sieverding L, Schoebinger M, Meinzer HP, Rauch R, Schaefer JF, Claussen CD, Hofbeck M. Multimedia articles. Images in cardiovascular medicine. Cervical origin of the subclavian artery: imaging of a rare but clinically relevant anomaly. <i>Circulation</i> 2004; 109(14):177-178.
9.	Sørensen TS, Korperich H, Greil GF, Eichhorn J, Barth P, Meyer H, Pedersen EM, Beerbaum P. Operator-independent isotropic three-dimensional magnetic resonance imaging for morphology in congenital heart disease: a validation study. <i>Circulation</i> 2004; 110(2):163-169.
10.	Kramer U, Greil G, Dammann F, Schick F, Miller S, Fenchel M, Sieverding L, Claussen CD. Clinical implication of parameter-optimized 3D-FISP MR angiography (MRA) in children with aortic coarctation: comparison with catheter angiography. <i>Rofo</i> 2004; 176(10):1458-1465.
11.	Greil GF, Kramer U, Dammann F, Schick F, Miller S, Claussen CD, Sieverding L. Diagnosis of vascular rings and slings using an interleaved 3D double-slab FISP MR angiography technique. <i>Pediatr Radiol</i> 2005; 35(4):396-401.
12.	Greil GF, Schoebinger M, Kuettner A, Schaefer JF, Dammann F, Claussen CD, Hofbeck M, Meinzer HP, Sieverding L. Imaging of aortopulmonary collateral arteries with high-resolution multidetector CT. <i>Pediatr Radiol</i> 2006; 36(6):502-509.
13.	Sørensen TS, Greil GF, Hansen OK, Mosegaard J. Surgical Simulation - A new tool to evaluate surgical incisions in congenital heart disease? <i>Interact Cardiovasc Thorac Surg</i> 2006; 5(5):536-539.
14.	Sørensen TS, Mosegaard J, Greil GF, Miller S, Seeger A, Hansen OK, Sieverding L. Virtual Cardiotomy for Preoperative Planning. <i>Circulation</i> 2007; 115(9):e312.
15.	Martirosian P, Greil GF, Fenchel M, Kramer U, Miller S, Greiser A, Claussen CD, Schick F, Sieverding L. Optimization of blood-myocardial contrast in 3D true FISP cardiac imaging at 1.5 T. <i>Magn Reson Med</i> 2007; 57(1):213-219.
16.	Greil GF, Desai MY, Fenchel M, Miller S, Sieverding L, Stuber M. Reproducibility of free-breathing magnetic resonance coronary angiography. <i>J Cardiovasc Magn Reson</i> 2007; 9(1):49-56.
17.	Greil GF, Kuettner A, Flohr T, Grasruck M, Sieverding L, Meinzer HP, Wolf I. High-resolution reconstruction of a waxed heart specimen with flat panel volume computed tomography and rapid prototyping. <i>J Comput Assist Tomogr</i> 2007; 31(3):444-448.
18.	Fenchel M, Greil GF, Martirosian P, Kramer U, Schick F, Claussen CD, Sieverding L, Miller S. Three-dimensional morphologic magnetic resonance imaging in infants and children with congenital heart disease. <i>Pediatr Radiol</i> 2006; 36(12):1265-1272.
19.	Kettering K, Greil GF, Busch M, Miller S, Sieverding L, Schreieck J. Catheter ablation of atrial fibrillation: ongoing atrial fibrillation inside a single pulmonary vein after successful electrical disconnection and restoration of sinus rhythm in both atria. <i>Clin Res Cardiol</i> 2007 Dec; 95(12):663-7.
20.	Greil GF, Wolf I, Kuettner A, Fenchel M, Miller S, Martirosian P, Schick F, Oppitz M, Meinzer, H-P, Sieverding L. Stereolithographic reproduction of complex cardiac morphology based on high spatial resolution imaging. <i>Clin Res Cardiol</i> 2007; 96(3):176-185.

21.	Greil GF, Boettger Th, Germann S, Klumpp B, Baltes Ch, Kozerke S, Bialkowski A, Urschitz MS, Miller S, Wolf I, Meinzer, H-P, Sieverding L. Quantitative assessment of ventricular function using three dimensional SSPF magnetic resonance angiography. <i>J Magn Reson Imaging</i> August 2007; 26(2):288-295.
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### Chapters, Reviews, Monographs and Editorials

#### Book Chapters:

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9.	<i>Cardiovascular Magnetic Resonance Imaging of Coronary Arteries</i> in: 3D Imaging Technologies in Atherosclerosis. Editors: Rikin Trivedi, Luca Saba, Jasjit S. Suri. Springer Science Business Media New York 2015 1. DOI 10.1007/978-1-4899-718-5_1
10.	<i>Aortenbogen- und Pulmonalarterienanomalien</i> in Bildgebende Diagnostik angeborener Herzfehler mit bildgestützter Therapie. Greil G, Lehmkuhl L, Latus H. Editors??? 2017 1. Auflage, MN 200101
11.	<i>Angeborene Koronararterienanomalien</i> in Bildgebende Diagnostik angeborener Herzfehler mit bildgestützter Therapie. Makowski M, Greil G, Lehmkuhl L. Editors??? 2017 1. Auflage, MN 200101
12.	<i>Aortopulmonale Kollateralen</i> in Bildgebende Diagnostik angeborener Herzfehler mit bildgestützter Therapie. Greil G, Lehmkuhl L, Latus H. Editors??? 2017 1. Auflage, MN 200101
13.	<i>Kawasaki-Syndrom</i> in Bildgebende Diagnostik angeborener Herzfehler mit bildgestützter Therapie. Makowski M, Greil G. Editors??? 2017 1. Auflage, MN 200101
14.	<i>Marfan-Syndrom</i> in Bildgebende Diagnostik angeborener Herzfehler mit bildgestützter Therapie. Latus H, Greil G. Editors??? 2017 1. Auflage, MN 200101
15.	<i>Williams-Beuren-Syndrom</i> in Bildgebende Diagnostik angeborener Herzfehler mit bildgestützter Therapie. Latus H, Greil G. Editors??? 2017 1. Auflage, MN 200101

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1.	Greil GF, Beerbaum P, Razavi R, Miller O. Imaging the Right Ventricle, <i>Heart</i> . 0/2008 94():803-8.
2.	Attili AK, Parish V, Valverde I, Greil GF, Baker E, Beerbaum P. Cardiovascular MRI in childhood. <i>Arch Dis Child</i> 2011 Dec; 9(12):1147-55.
3.	Mavrogeni S, Papadopoulos G, Hussain T, Chiribiri A, Botnar R, Greil GF. The emerging role of cardiovascular magnetic resonance in the evaluation of Kawasaki disease. <i>Int J Cardiovasc Imaging</i> 2013 Dec; 29(8):1787-98.
4.	Dedieu N, Greil G, Wong J, Fenton M, Burch M, Hussain T. Diagnosis and management of coronary allograft vasculopathy in children and adolescents. <i>World J Transplant</i> 2014 Dec 24; 4(4):27-93.
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2.	Greil GF, Gass M, Kuehlkamp V, Botnar RM, Wolf I, Miller S, Sieverding L. Radiofrequency ablation of right ventricular outflow tract tachycardia using a magnetic resonance 3D model for interactive catheter guidance. <i>Clin Res Cardiol</i> 200; 95(11):10-13.
3.	Sørensen TS, Mosegaard J, Greil GF, Miller S, Seeger A, Hansen OK, Sieverding L. Images in cardiovascular medicine. <i>Circulation</i> 2007; 115(9):312.
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5.	Usta E, Hofbeck M, Kaulitz R, Sieverding L, Greil G, Ziemer G. Giant infantile fibroma of the right ventricle - surgical debulking and tumor plication. <i>Thorac Cardiovasc Surg</i> 2009 Aug; 57(5):304-305.
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12.	Wong J, Pushparajah K, Hussain T, Giese D, Dedieu N, Mathur S, Greil GF, Razavi R, Bell A. Streaming in transposition of the great arteries by using cardiac magnetic resonance imaging. <i>Circulation</i> 2014 Mar 11; 129(10):119-1170.
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2.	Bratis K, Chiribiri A, Hussain T, Krasemann T, Henningsson M, Phinikaridou A, Mavrogeni S, Botnar R, Nagel E, Razavi R, Greil G. Abnormal myocardial perfusion in Kawasaki disease convalescence. JACC Cardiovasc Imaging 2015 Jan; 8(1):10-18.

### Proceedings of Meetings

1.	Greil GF, Makabe MH, Meinzer HP, Geva T, Van Praagh S, Van Praagh R. 3D computer modeling of rare congenital heart defects. Conference Proceedings, 20th World Conference On Open Learning and Distance Education, Düsseldorf, Germany, 2001.
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### Clinical Practice Guidelines & Committee

1.	Fratz S, Chung T, Greil GF, Samyn MM, Taylor AM, Valsangiacomo Buechel ER, Yoo SJ, Powell AJ. Guidelines and protocols for cardiovascular magnetic resonance in children and adults with congenital heart disease: SCMR expert consensus group on congenital heart disease. J Cardiovasc Magn Reson 2013 Jun; 15:51.
2.	Petersen SE, Almeida AG, Alpendurada F, Boubertakh R, Bucciarelli-Ducci C, Cosyns B, Greil GF, Karamitsos TD, Lancellotti P, Stefanidis AS, Tann O, Westwood M, Plein. On behalf of the Education Committee of the European Association of Cardiovascular Imaging Association (EACVI). Update of the European Association of Cardiovascular Imaging (EACVI) Core Syllabus for the European Cardiovascular Magnetic Resonance Certification Exam. Eur Heart J Cardiovasc Imaging 2014 Jul; 15(7):728-9.
3.	Valsangiacomo Buechel ER, Grosse-Wortmann L, Fratz S, Eichhorn J, Sarikouch S, Greil GF, Beerbaum P, Bucciarelli-Ducci C, Bonello B, Sieverding L, Schwitter J, Helbing WA; Document reviewers: EACVI: Maurizio Galderisi, (Italy), Owen Miller, (UK), Rosa Sicari, (Italy), John Simpson, (UK), Erik Thaulow, (Norway), Thor Edvardsen, (Norway), AEPC: Konrad Brockmeier, (Germany), Shakeel Qureshi, (UK), and Joerg Stein, (Austria). Indications for cardiovascular magnetic resonance in children with congenital and acquired heart disease: an expert consensus paper of the Imaging Working Group of the AEPC and the Cardiovascular Magnetic Resonance Section of the EACVI. Cardiol Young 2015 Mar; 5:1-20.

### Abstracts:

1.	
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### Presentations:

1.	Fontan Fenestration Test Occlusion Evaluation in the iCMR Suite. Yousef Arar, MD, Tarique Hussain, MD, Ph.D, Riad Abou Zahr, MD, Jennifer Hernandez, MD, Gerald Greil, MD, Ph.D, Surendranath R. Veeram Reddy, MD. Conference: SCMR, Feb. 2019 - Poster presentation, Bellevue, WA
2.	Fick versus Flow- A Real-Time Interventional CMR Reproducibility Study. Yousef Arar, MD, Tarique Hussain, MD, Ph.D, Riad Abou Zahr, MD, Mari Nieves Velasco Forte, MD, Sébastien Roujol, Ph.D, Zachary Blair, BSc, Jennifer Hernandez, MD, Gerald Greil, MD, Ph.D, Surendranath R. Veeram Reddy, MD. Conference: SCMR, Feb 2019 - Oral presentation, Bellevue, WA
3.	MRWire Experience in Congenital Heart Disease. Yousef Arar, MD, Surendranath R. Veeram Reddy, MD, Riad Abou Zahr, MD, Ph.D, Jennifer Hernandez, MD, Mari Nieves Velasco Forte, MD, Sébastien Roujol, Ph.D, Zachary Blair, BSc, Gerald Greil, MD, Ph.D, Tarique Hussain, MD, Ph.D. Conference: SCMR, Feb 2019 - Oral presentation, Bellevue, WA
4.	Murala JSK, TandonA, Mckenzie P, Gooty V, Greil G, Jaquiss J, Hussain T. Use of virtual reality in congenital heart diseases-a Primer. Poster Presentation, IACTS, Feb 21-24, 2019, Chennai, India
5.	

## Grants:

- G1. Radiation-Free Cardiac Catheterization using MRI guidance. Moss Foundation. Role: Co-Investigator. 09/2017 to 03/2019. \$250,000.00
- G2. Biplane Overlay of Cross-Sectional Imaging onto Cardiac Catheterization: Siemens, USA. Role: Co-Investigator. 02/2019 to 08/2020
- G3. A. Tandon, T. Hussain, S.V. Reddy, R. Chopra, A. Kane, R. Hallac, G. Greil. 3D Printing of Patient Specific Congenital Heart Defects and Comparisons to Conventional Imaging Methods. Children's Clinical Research Advisory Council, CMC Dallas. Duration 24 months 02/2016 to 02/2018 \$59,050.
- G4. Velasco-Forte M, Valverde I, Hussain T, Simpson J, Greil G, Jongbloed M, Roest A. 3D printing of congenital heart disease: hands-on imaging from fetal development to long term follow up. Association of European Cardiology. Duration 12 months Feb 2016 to Feb 2017. £30,000.00/(\$45,000).
- G5. Hussain, MT, Botnar R, Greil G, Lombardi G: Regulatory T-cell therapy for Orthotopic Heart Transplantation in Children. MRC. MRC Confidence in Concept 2014. MC\_PC\_14105 v.2. Awarded 02/2/2015. Duration 04/01/2015 – 03/31/2016. £99,954 (\$154,354.25)
- G6. Action Medical Research and Great Ormond Street Hospital Children's Charity
- G7. C. Prieto Vasquez (PI), G. Greil, T. Schaeffter. Accelerated 3D Cardiac Functional Assessment using Cardiac Self-gating and Undersampled Respiratory Motion Compensation Techniques. Medical Research Foundation, 1 months, £914.00 (\$1,371), start date 05/01/2015 to 06/10/2015
- G8. G. F. Greil (PI), K. Rhode, Th. Krasemann, T. Hussain, Y. Ma. MRI-augmented guidance for X-ray fluoroscopic paediatric cardiovascular interventions. NIHR, Reference: II-LB-0814-20001, 24 months, final award pending on approval of research agreement with Siemens Medical Systems, £405,000.00 (\$607,500), planned start date 01/12/2015 – 01/12/2017

- G9. T. Schaeffter (PI), T. Voigt, R. Botnar, G. F. Greil, A. Figueroa, Alastruey J. Atherosclerosis stratification using advanced imaging and computer-based models. Technology Strategy Board (EPSRC), 3 months, £1492.00 (KCL is the academic partner and receives £309,709.00/\$450,000, Philips Healthcare is the industrial partner), start date 01/01/2014 to 12/2016.
- G10. G. F. Greil (PI), A. Wiethoff, R. Botnar, T. Schaeffter. High resolution three dimensional MRI of the heart and intrathoracic vessels in patients with congenital heart disease. Investigator initiated study. BRACCO Imaging SpA, 24 months, £ 40,000.00 (\$50,000), start date 10/2013 – 10/2015
- G11. R. Razavi (PI), A. Chiribiri, G. Greil, T. Hussain, G. Penney, D. Perera, et al. Healthcare Technology Co-operative: Cardiovascular Technologies NIHR - National Institute for Health Research, £517,954.00 (01/13 → 12/16) (\$750,000)
- G12. G. F. Greil. Philips Health Care China; Fellowship Grant for Exchange programme: Shanghai Children's Medical Center, China - Division of Imaging Sciences & Biomedical Engineering, KCL, London 1 year, **£ 5,000.00**, start date 11/2012 (CLOSED)
- G13. G. F. Greil (PI), T. Hussain, M. Burch, R. Botnar, R. Razavi. Detection and Grading of Coronary Allograft Vasculopathy in Children Using Magnetic Resonance Imaging. British Heart Foundation, Project Grant no. PG/12/5/29350, 24 months, **£ 135,858.00**, start date 08/2012. Closed 10/2014
- G14. G. F. Greil (PI), T. Hussain, M. Burch, R. Botnar, R. Razavi. Magnetic Resonance Imaging for follow up of Paediatric Heart Transplantation. Guy's & St. Thomas' Charity, 3 months, **£ 51,000.00**, start date 01/02/2011. Closed 12/2013
- G15. G. F. Greil (PI), A. Hunter, R. Razavi. Teaching Human Anatomy in the 21<sup>st</sup> Century: Advanced Teaching using Cutting Edge Computer Technology. King's College Teaching Fund, the School of Medicine, BHS and the Division of Imaging Sciences, 0 months, **£ 15,000.00**, start date 09/2010 (CLOSED)
- G16. G. F. Greil (PI), Prof. Ian Macdonald (PI, University of Nottingham): MR analysis of abdominal fat content in a trial of the potential beneficial effects of green tea catechins on cardiometabolic risk factors. Industry sponsored study by Unilever. The water-fat analysis was performed at the *Division of Imaging Sciences* as a reference centre under the supervision of G. F. Greil (start date 05/2010; **£ 24,099.00**) (CLOSED)
- G17. PJ Chowienczyk (PI), Smith, Waltham, Shanahan, Greil, Botnar, Beerbaum, Wolfe, Heuschmann, Grieve, Spector, Goldsmith. **ARterial Inflammation, STiffening and Calcification ARTISTIC**. National Institute for Health Research (NIHR) comprehensive Biomedical Research Centre (BRC) at Guy's and St Thomas' NHS Foundation Trust and King's College London. 3 months, £ 914,42.00, start date 2009. (CLOSED)
- G18. G. Greil (PI), R. Razavi, R. Botnar: Magnetic Resonance Imaging of the Vessel Wall in Paediatric Coronary Vasculopathy as a model for Vasculitis. National Institute for Health Research (NIHR) comprehensive Biomedical Research Centre (BRC) at Guy's and St Thomas' NHS Foundation Trust and King's College London. 12 months, **£ 5,82.00**, start date 11/2008. (CLOSED)  
After patients with Kawasaki disease were investigated initially, a collaborative project with Great Ormond Street Hospital (GOSH) started to investigate the children after heart transplantation with

MRI and to compare the results with currently used invasive cardiac catheterization including intravascular ultrasound (IVUS). The project is strongly supported by Dr. M. Burch (Head of the Heart Transplant Team). Further funding of MRI scanning hours is funded by the BRC (£ 1250.00).

G19. Personalised & Integrated Cardiac Care: Patient-specific Cardiovascular Modelling and Simulation for *In Silico* Disease Understanding & Management and for Medical Device Evaluation & Optimization; EU Heart grant 224495, Large-scale Integrating Project (IP), ICT Call FP7-ICT-2007- Information and Communication Technologies (ICT), Framework Programme (FP) 7; 48 months, € 1.937,200.00. I am not applicant on this grant, but I am project leader for clinical data acquisition for Work Package 7 (Heart Failure). (CLOSED)

G20. Stiftung zur Foerderung der Erforschung von Zivilisationserkrankungen, Baden-Baden, Deutschland“ (€ 875.000). Co-applicant. 01/2004 – 12/2007

G21. Fortuene-Projekt 1075-1-0 (€ 29.00), Principal Investigator. 07/2003 – 07/2004

G22. Deutsche Forschungsgemeinschaft (DFG), Antrag # 1751/1-1 und # 1751/1-2 (€ 5.000). Principal Investigator 01/1999 – 12/2000

## G23. Research:

Using MRI in patients with acquired and congenital heart disease in our institution MRI proved to be cost effective and showed great benefit for our patients in the clinical environment (Congenital Heart Disease, accepted 27/11/2012). In particular during the last years I have developed advanced 3D MRI technology to image the lumen and vessel wall of the cardiovascular system in patients with acquired & congenital heart disease, including the coronary arteries, which is now common clinical practice. These technologies have also been implemented successfully in our interventional cardiac MRI programme. Further developments of this technology were implemented rapidly into clinical routine for patient benefit, which has been shown in large patient studies at our institution and later in others. From there I moved forward into the field of atherosclerosis imaging supported by our interdisciplinary group in the Department of Imaging Sciences & Biomedical Engineering using novel MRI sequence technology and molecular imaging methods including contrast agents. I developed the research methodology described below and validated it with volunteer studies. This resulted in the award of a BHF grant for a collaborative project with GOSH to assess coronary artery vasculopathy in patients after heart transplantation (G3). Currently multicentre studies are planned to further prove the clinical benefit of our methods. The different aspects of my research are outlined in more detail below:

**1) Morphology and function assessed by whole heart imaging – improved diagnosis in congenital heart disease (CHD) patients:** The whole heart approach has been shown to be a very effective and operator independent method to obtain a complete and accurate cardiovascular diagnosis in CHD patients (Circ. 2004;110:13-19). I have shown that this method improves assessment of right ventricular volumes significantly if whole heart data are acquired during systole and diastole (JMRI. 2007; 2:288-295; Radiology. 08/2008;248(2):0-14). Alternatively new MRI technology allowed the acquisition of the whole heart during one breath hold. These data were sufficient to assess accurately left ventricular function (JMRI. 03/2008 (27):510–515). The use of contrast agents allowed even faster ventricular function assessment with good diagnostic quality compared to much more time consuming previous imaging technology (JMRI. 2010 Apr;31(4):838-844; JCMR. 2012 31;14(1):53).

**2) Improved diagnosis in patients with acquired and congenital heart disease (CHD) using contrast agents:** Precise diagnosis of the cardiovascular anatomy in patients with CHD is of major importance. Echocardiography is limited by acoustic windows and x-ray angiography is x-ray dependent and invasive. I pioneered the use of MRI contrast agents in these patients to diagnose non-invasively venous and arterial anomalies (JACC. 2002;39:335-341; Circ. 2002;10:473-478). This method proved to be very robust with a high sensitivity and specificity. MRI contrast agents are now commonly used in all Paediatric Cardiac MRI centres and contribute to a significant reduction in invasive x-ray angiography. Currently I continue this research using novel contrast agents (Radiology. 2012; 23(2):547-54) in combination with latest sequence and multichannel coil technology (G1).

**3) Magnetic Resonance Coronary Angiography (MRCA):** Using MRI for assessing coronary arteries in patients after Kawasaki disease has been pioneered in my previous research (Circ. 2002;105:908-911). Over the past years, I have further evaluated the MRI technology (JCMR. 2007; 9(1):49-5), significantly improved the imaging and implemented vessel wall imaging for these patients (Ped Rad. 2007; 37(7):-73). This programme is now continued by further improving coronary artery lumen, vessel wall and thrombus imaging with new sequence design, novel contrast agents and novel multichannel coil technology. The clinical application of these technologies is now evaluated in patients after heart transplantation in collaboration with Great Ormond Street and Papworth Hospital. This research is linked with the theme of vessel wall inflammation and atherosclerosis and allows translation of latest MRI vessel wall imaging technology into clinical practice. Pilot studies have been finished in cooperation with Prof. Tim Spector and Prof. Ph. Chowienczyk, KCL, to study the cardiovascular system including plaque burden and hypertension on identical twins from the TwinsUK cohort.

#### **4) Virtual and real reproductions of heart specimens/ virtual surgery**

I have pioneered the development of rapid prototyping of heart specimens for teaching and clinical use (JCAT. 2007; 31(3):444-448). This includes the production of virtual and real models of CHD (Clinical Research in Cardiology, 2007; 9(3):17-185) as well as new methods of interaction with virtual models using haptic devices for preoperative planning (virtual surgery; Pediatric Radiology. 2008;38(12):1314-22). This is linked with the *Simulation and Interactive Learning (SAIL) Centre* curriculum of KCL for undergraduate and postgraduate teaching, where these technologies will be implemented (G5).

#### **5) Patient-specific Cardiovascular Modelling and Simulation: Heart Failure (WP 7, EU Heart Grant 224495)**

I was the clinical leader for WP 7 in this international, multicentre and interdisciplinary EU founded project. After obtaining ethical approval first datasets including MRI, cardiac catheterization and echocardiographic data were acquired in CHD patients with a failing systemic right ventricle including patients with Hypoplastic Left Heart Syndrome (HLHS). Software development for modelling has been successful and is currently applied to these datasets. First studies are completed and are published (Ann Thorac Surg. 2012 Nov;94(5):152-9; J. 2013;1:51-570).

#### **) The Use of Multidetector Computed Tomography (MDCT) in Patients with Acquired and Congenital Heart Disease**

Based on my previous research (Pediatr Radiol. 2003;3:502-509; Vasc Med. 2005;10:235-23), I started a clinical service for Multidetector Computed Tomography (MDCT) in children and adults with acquired and congenital heart disease together with my colleagues from the Radiology department and the adult cardiac service. As MDCT technology further improves (better image resolution with reduced motion artefacts due to faster scan times combined with further reduction of radiation) and the number of our



patients with MRI non-compatible devices further increases (e.g. pace makers, stents etc.), the need for this service is increasing dramatically. I have been trained with my colleagues in cardiac CT (Comprehensive Cardio CT-Training Part A (13 – 17/02/2011) and B (09 – 12/05/2011), Munich, Germany) and a new MDCT scanner has been purchased at St. Thomas' Hospital (Billiance iCT 25, Philips Healthcare).

### **7) Interventional Cardiac MRI, MRI Hybrid laboratories (XMR) and MRI compatible catheter material.**

My current institution has pioneered the use of interventional cardiac MRI in patients with acquired and congenital heart disease using XMR systems. It is the leading institution to implement novel interventional cardiac MRI technology in clinical practice (translational medicine) including own hardware and software developments. As the lead of the congenital cardiac MRI service at the GSTT NHS Foundation Trust I am heavily involved in the application and development of these techniques and their applications in children and adults with acquired and congenital heart disease. This includes also the implementation of MRI guided ablation procedures in the electrophysiology laboratory.

### **Training of students:**

#### *Previous PhD students:*

Sabrina Germann, University of Tuebingen, GE, MD thesis finished 2009  
Dr. Mohammed Tarique Hussain, King's College London, UK, thesis completed 2013  
Dr. Hannah Bellsham-Revell, King's College London, UK, thesis completed 2014  
Dr. Nathalie Dedieu (first supervisor), thesis completed 2018

#### *Current PhD student:*

Dr. Miguel Silva Nodgueira Vieira, M.D. (since 05/2014 second supervisor)

#### *Post Docs/MRI trainees:*

Dr. Tarinee Tangcharoen, MD, Bangkok, Thailand (2007/2009)  
Dr. Arul Narayanan, MD, Bangalore, India (2011)  
Dr. Dirk Lossnitzer, MD, Heidelberg, Germany (2010/2011)  
Dr. Aimin Sun, MD, China (12/2012 – 11/2013)  
Dr. Andreia Francisco, MD, Portugal (10/2013 – 12/2013)  
Dr. Miguel Silva Nodgueira Vieira, MD, Portugal (since 05/2014)  
Dr. Kuberan Pushparajah, currently attending physician (Guy's & St Thomas' Hospital, London)  
Dr. James Wong, currently Fellow in Pediatric Cardiology (Royal Brompton Hospital, London)  
Dr. Barbara Burkhardt, Fellow in Pediatric Cardiac MRI; UT Southwestern Medical Center Dallas (10/2016 – 09/2017)