

CURRIULUM VITAE



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Education and professional experience:

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| 06/2015- | Director Laboratory of Translational Cardiovascular and Kidney Research (www.kramannlab.com) and Associate Nephrologist, Division of Nephrology and Clinical Immunology, RWTH Aachen University, Aachen Germany |
| 01/2012-06/2015 | Postdoctoral Research Fellow Brigham and Women's Hospital, Research Fellow Harvard Medical School, Renal Division, Harvard Medical School, Boston, MA, USA (Laboratory of Benjamin Humphreys, MD, PhD) |
| 09+12/2011 | Good clinical practice (GCP) training and Principal investigator license for clinical trials (Central GmbH, Tübingen, Germany) |
| 01/2008-12/2011 | Residency and Renal Fellowship, Division of Nephrology, University Hospital RWTH Aachen, Germany |
| 12/2007 | Medical State Examination and License to Practice Medicine (Grade 1.0, top 1%) |
| 2005-2008 | MD-Thesis „Two-dimensional strain echocardiography to analyse regional left-ventricular function before and after aortic valve replacement in different aortic valve pathologies“ Division of Cardiology, RWTH Aachen University. Graded: <i>magna cum laude</i> June 2008 (Prof. R. Hoffmann) |

08/2004-04/2006	Student Research Assistant Institute of Pathology, RWTH Aachen University, Germany
07-09/2002	Student Assistant, Grünenthal Pharmaceuticals, Aachen, Germany
2001-2007	Medical School, RWTH Aachen University, Germany

Awards and Honours:

10/2015	Bernd Tersteegen Award of the Verband Deutsche Nierenzentren (German Dialysis Association DNeV; 8000€)
09/2015	Carl Ludwig Award of the German Society of Nephrology (DGFN), DGFN meeting Berlin, Germany (2500€)
12/2014	Fellow of the American Society of Nephrology (FASN) for Contribution to the Society and Excellence in Research
09/2014	Nils Alwall Award for Clinical Research of the German Society of Nephrology (DGFN), DGFN meeting Berlin, Germany (3000€)
05/2014	Stanley Shaldon Award for Young Investigators (Young Investigator Award), European Renal Association, European Dialysis and Transplant Association (ERA-EDTA) meeting Amsterdam, The Netherlands (10 000€)
05/2013	Winner of the inaugural Harvard Innovation Lab's Deans Health and Life Sciences Challenge "MatriTarg Laboratories: Targeting resident multipotent stem cells to develop new treatments for solid organ fibrotic disease" Boston, MA, (\$45 000)
03/2013	Winner of the Harvard Stem Cell Institute Imaging Contest , Boston, MA, (\$900)
09/2011	German Society of Nephrology Award for Young Investigators , Berlin, Germany, (25 000€)
09/2011	Best Abstract Award , European Renal Association - European Dialysis and Transplant Association (ERA-EDTA) meeting, Prague, Czech Republic (1000€)

Grants:

2016-2021	European Research Council (ERC) Starting Grant: Targeting perivascular myofibroblast progenitors to treat cardiac fibrosis and heart failure in chronic kidney disease (CureCKDHeart): 1,488,800€
2016-2021	Return to Northrhine Westfalia (NRW): Targeting perivascular myofibroblast progenitors to treat fibrotic disease (FibroCure) 1,250,000€
2015-2018	German Research Foundation (DFG): Understanding the role of adult perivascular progenitors in vascular homeostasis, sclerosis and calcification in chronic kidney disease: 470,000€
2015-2017	START Grant RWTH Aachen University: Pericyte progenitors in capillary rarefaction after acute kidney injury: 50,000€
2013-2014	Research Fellowship; German Research Foundation (DFG) January 2012-December 2014: Pericytes, mesenchymal stem cells and vascular calcification in

chronic kidney disease (CKD). – Is hedgehog signalling the missing link between endothelial injury and vascular sclerosis? (100,000 €)

- 2011-2012 Clinical Fellow Grant (Rotationsstelle) RWTH Aachen University April 2011-January 2012: “Influence of uremia on mesenchymal stem cell and their interaction with endothelial cells.” (152 000 €)
- 2009-2012 START Grant RWTH Aachen University October 2009 – October 2012: “Influence of uremia on mesenchymal stem cells, implication for patients with chronic kidney disease.” (approx. 104 000 €)
- 11/2011 Travel Grant, GlaxoSmithKline Foundation, American Society of Nephrology, Renal Week 2011, Philadelphia (900€)
- 09/2011 Travel Grant, German Society of Nephrology Annual Meeting September 2011, Berlin, Germany (200€)
- 06/2010 Travel Grant, 8th ISSCR meeting, San Francisco, June 16-19, 2010, German Academic Exchange Service (1800€)

Member:

- 2015- German Society of Nephrology
- 2012- Board Member of the Young Nephrologists Platform (YNP) of the European Renal Association (ERA-EDTA)
- 2012- European Renal Association European Dialysis and Transplantation Association (ERA-EDTA)
- 2012- CKD-MBD working group of the European Renal Association (ERA-EDTA)
- 2011- American Society of Nephrology (ASN)
- 2011 International Society of Nephrology (ISN)
- 2008- German Society of Internal Medicine (DGIM)
- 2008- Stem Cell Network North Rhine Westphalia

Ad hoc Reviewer:

- Circulation, Journal of the American Society of Nephrology, Clinical Journal of the American Society of Nephrology, Kidney International, Biomaterials, Heart, American Heart Journal, The Journal of Pathology, American Journal of Pathology, Nephrology Dialysis and Transplantation, BMC Nephrology, Plos One, Histology and Histopathology, Pediatric Nephrology, Molecular Therapy, Cell & Tissue Research, Scientific Reports, Kidney and Blood Pressure Research

Reviewer:

- International Society of Nephrology – Abstracts World Congress of Nephrology (WCN) 2015
- American Society of Nephrology (ASN) Abstracts Renal Week 2014, 2015
- European Renal Association, European Dialysis and Transplant Association (ERA-EDTA) Abstracts 2016

- Dutch Kidney Foundation
- German Research Foundation (DFG)

Patents and Inventions:

- Uses of Gli1 in detecting tissue fibrosis, *PCT/US2015/014796*
- Uses of Gli1, Provisional Patent US 62/011,259
- Invention of Gli1 Progenitor Cell Line from Heart and Kidney Partners Healthcare, Boston, MA USA #ID23147

Founder:

- Co-Founder of MatriTarg Laboratories (Harvard Innovation lab, early stage venture dedicated to develop novel antifibrotic therapeutics) March 2013, Boston, MA, USA

Teaching Activities:

- 2015- Bedside teaching in internal medicine for medical students, RWTH Aachen University Medical School, Aachen, Germany
- 2015- Lectures in Nephrology, RWTH Aachen University Medical School, Aachen, Germany
- 2013-2015 Mentoring Postdocs in the basic science nephrology: Flavia Machado, PhD, Janewit Wongboonsin, MD, Renal Division, Brigham and Women's Hospital, Boston, MA, USA
- 2013-2014 Mentoring undergraduate students during summer internship in stem cell research from SASTRA University (Tamil Nadu, India) Sukanya K Moudgalya Degree Candidate in Biotechnology. Renal Division, Brigham and Women's Hospital, Boston, MA, USA
- 2012-2014 Mentoring undergraduate students in the Harvard Stem Cell Institute (HSCI) Internship program since March 2012 (Mari Tanaka, Degree Candidate in Human Developmental and Regenerative Biology, Harvard College) Renal Division, Brigham and Women's Hospital, Boston, MA, USA
- 2010-2011 Instructing medical students in Intensive Care Medicine April 2010- April 2011, RWTH Aachen University Medical School, Aachen, Germany
- 2009-2014 Mentoring medical students for their thesis in the laboratory since September 2009 (cand. med. Simone Couson, cand. med. Johanna Erpenbeck) RWTH Aachen University, Medical School, Aachen, Germany
- 2008 Instructing medical students in electrocardiogram analysis, July 2008 (AIXTRA clinical skills lab Aachen) RWTH Aachen University, Medical School, Aachen, Germany
- 2008-2011 Instructor in physical examination January 2008 – December 2011 RWTH Aachen University, Medical School, Aachen, Germany

Research Interests:

Basic:

- Functional role of perivascular progenitor cells in vascular sclerosis, calcification and organ fibrosis
- Regulation of cardiac hypertrophy, fibrosis and capillary rarefaction (uremic cardiomyopathy) in chronic and end-stage kidney disease
- Role of pericytes in capillary rarefaction after acute and during chronic kidney injury
- Hedgehog signaling in kidney and myocardial fibrosis
- Effect of uremia on progenitor cells and their niche
- Myofibroblast progenitors in myelofibrosis

Translational:

- Identification of novel biomarkers and drug targets in fibrotic disease
- Development of novel targeted therapeutics in fibrotic disease of heart, kidney, lung, liver and bone marrow (myelofibrosis)
- Identification of new biomarkers for vascular calcification in ESRD
- Development of novel prognostic tools for detection of uremic cardiomyopathy and identification of ESRD patients at risk for sudden cardiac death

Bibliography:

Original Articles:

1. **Kramann R,**[#] Wongboonsin J, Chang-Panesso M, Machado FG, Humphreys BD Gli1 pericyte loss induces capillary rarefaction and proximal tubular injury. *J Am Soc Nephrol* 2016 in press [IF 9.5] **#corresponding author**
2. **Kramann R,**[#] Goettsch C, Wongboonsin J, Iwata H, Schneider RK, Kuppe C, Kaesler N, Chang-Panesso M, Machado FG, Gratwohl S, Madhurima K, Hutcheson JD, Jain S, Aikawa E, Humphreys BD. Adventitial MSC-like cells are progenitors of vascular smooth muscle cells and drive vascular calcification in chronic kidney disease. *Cell Stem Cell* 2016 in press [IF 22.4] **#corresponding author**
3. Brandenburg V, **Kramann R,** Kaesler N, Korbiel J; Schmitz S, Krueger T, Floege J, Ketteler M. Calcific Uremic Arteriopathy (Calciphylaxis): Data from a Large Nation-wide Registry - *Nephrol Dial Transplant* 2016 Jan 29 Epub ahead of print
4. Schneider RK, Schenone M, Ventura Ferreira M, **Kramann R,** Joyce CE, Hartigan C, Beier F, Brümmendorf TH, Germing U, Platzbecker U, Buesche G, Knuechel R, Chen MC, Waters CS, Chen E, Chu LP, Novina C, Lindsley RC, Carr SA, Ebert BL Rps14 haploinsufficiency causes a block in erythroid differentiation mediated by S100A8/S100A9 - *Nature medicine* 2016 Mar;22(3):288-97

5. Goettsch C, Hutcheson JD, Aikawa M, Iwata H, Pham T, Nykjaer A,; Kjolby M, Rogers M, Michel T, Shibasaki M, Hagita S, **Kramann R**, Rader J, Libby P, Singh SA, Aikawa E Sortilin mediates vascular calcification via its recruitment into extracellular vesicles. *J Clin Invest* 2016 Apr 1;126(4):1323-36
6. Ventura Ferreira MS, Bergmann C, Bodensiek I, Peukert K, Abert J, **Kramann R**, Kachel P, Rath B, Rütten S, Knuchel R, Ebert BL, Fischer H, Brümmendorf TH, Schneider RK. An engineered multicomponent bone marrow niche for the recapitulation of hematopoiesis at ectopic transplantation sites. *J Hematol Oncol* 2016 Jan 25;9(1):4
7. Barros X, Dirrichs T, Koos R, Reinartz S, Kaesler N, **Kramann R**, Gladziwa U, Ketteler M, Floege J, Marx N, Torregrosa JV, Keszei A, Brandenburg VM Epicardial adipose tissue in long-term hemodialysis patients: its association with vascular calcification and long-term development. *J Nephrol* 2016, Apr;29(2):241-50
8. **Kramann R**, Fleig SV, Schneider RK, Fabian SL, DiRocco DP, Maarouf M, Wongboonsin J, Ikeda Y, Heckl D, Chang SL, Rennke HG, Waikar SS, Humphreys BD Pharmacological Gli2 Inhibition prevents myofibroblast cell-cycle progression and reduces kidney fibrosis. *J Clin Invest* 2015 Aug 3;125(8):2935-51
9. Maarouf, OH, Aravamudhan A, Rangarajan D, Kusaba T, Zhang V, Welborn J, Gauvin D, Hou X, **Kramann R**, Humphreys BD Paracrine Wnt1 Drives Interstitial Fibrosis without Inflammation by Tubulointerstitial Crosstalk. *J Am Soc Nephrol* 2015 Mar;27(3):781-90
10. **Kramann R**[#], Schneider RK, DiRocco DP, Machado F, Fleig S, Bondzie FP, Henderson JM, Ebert BL, Humphreys BD Perivascular Gli1+ Progenitors Are Key Contributors to Injury-Induced Organ Fibrosis. *Cell Stem Cell* 2015 Jan 8;16(1):51-66 **#corresponding author**
11. Schneider RK, Ademà V, Heckl D, Järås M, Mallo M, Lord AM, Chu LP, McConkey ME, **Kramann R**, Mullally A, Bejar R, Solé F, Ebert BL. Role of Casein Kinase 1A1 in the Biology and Targeted Therapy of del(5q) MDS. *Cancer Cell* 2014 Oct 13;26(4):509-20
12. **Kramann R**[#], Erpenbeck J, Schneider RK, Röhl A, Hein M, Brandenburg V, van Diepen M, Dekker F, Marx N, Floege J, Becker M, Schlieper G. Speckle tracking echocardiography detects uremic cardiomyopathy early and predicts cardiovascular mortality in end-stage renal disease. *J Am Soc Nephrol* 2014; 25(10):2351-65 **#corresponding author**
13. **Kramann R**, Tanaka M, Humphreys BD. Fluorescence Microangiography for Quantitative Assessment of Peritubular Capillary Changes after Acute Kidney Injury. *J Am Soc Nephrol* 2014; 25(9):1924-31 (featured with cover art on September issue 2014)
14. Klinkhammer B*, **Kramann R***, Mallau M, Makowska A, van Roeyen C, Rong Song, Buecher E, Boor P, Kovacova K, Zok S, Denecke B, Stuetgen E, Otten S, Floege J, Kunter U Mesenchymal stem cells from rats with chronic kidney disease exhibit premature senescence and loss of regenerative potential. *Plos One* 2014;9(3):e92115. *both authors contributed equally
15. Kusaba T, Lalli M, **Kramann R**, Kobayashi A, Humphreys BD. Differentiated kidney epithelial cells repair injured proximal tubule. *Proc Natl Acad Sci USA* 2014 Jan;111(4):1527-32
16. **Kramann R**[#], Kunter U, Brandenburg VM, Leisten I, Ehling J, Klinkhammer B, Bovi M, Knüchel R, Floege J and Schneider RK. Osteogenesis of heterotopically transplanted mesenchymal stromal cells in rat models of chronic kidney disease. *J Bone Miner Res* 2013 Dec;28(12):2523-34 **#corresponding author**
17. Brandenburg VM*, **Kramann R***, Koos R, Krüger T, Schurgers L, Mühlenbruch G, Hübner S, Gladziwa U, Drechsler C, Ketteler M. Relationship between Sclerostin and Cardiovascular Calcification in Hemodialysis Patients: A cross-sectional study. *BMC Nephrol* 2013 Oct 10;14:219 * both authors contribute equally

18. Koos R, Brandenburg V, Mahnken AH, Schneider RK, Dohmen G, Marx N, **Kramann R**. Sclerostin as potential novel biomarker for aortic valve calcification: an in vivo and ex vivo study. *J Heart Valve Dis* 2013 May; 22:317-325
19. **Kramann R**[#], Brandenburg V, Ketteler M, Jahnen-Dechent W, Knüchel R, Floege J, Schneider RK. Novel insights into osteogenesis and matrix remodelling associated with calcific uremic arteriopathy *Nephrol Dial Transplant* 2013 Apr;28(4):856-68
#corresponding author
20. **Kramann R**[#], Frank D, Brandenburg VM, Takahama J, Kürger T, Riehl J, Floege J. Prognostic impact of renal arterial resistance index upon renal allograft survival: The time point matters. *Nephrol Dial Transplant* 2012 Oct;27(10):3958-63. **#corresponding author**
21. **Kramann R**, Couson S, Henkel C, Neuss S, Floege J, Knuechel R, Schneider RK. Exposure to uremic serum disrupts the vascular niche in a three-dimensional co-culture system of human mesenchymal stem cells and human umbilical cord endothelial cells. *Nephrol Dial Transplant* 2012 Jul;27(7):2693-702.
22. van de Kamp J, **Kramann R**, Anraths J, Schöler HR, Ko K, Knüchel R, Zenke M, Neuss S, Schneider RK. Epithelial morphogenesis of germline-derived pluripotent stem cells on organotypic skin equivalents in vitro. *Differentiation* 2012 Mar;83(3):138-47.
23. Leisten I*, **Kramann R***, Ventura Ferreira MS, Ziegler P, Wagner W, Neuss S, Knüchel R, Schneider RK. 3D co-culture of hematopoietic stem and progenitor cells and mesenchymal stem cells in collagen scaffolds as a model of the hematopoietic niche. *Biomaterials* 2012 Feb;33(6):1736-47. * Both authors contributed equally
24. Yagmur E, Koch A, Haumann M, **Kramann R**, Trautwein C, Tacke F. Hyaluronan serum concentrations are elevated in critically ill patients and associated with disease severity. *Clin Biochem* 2012 Jan;45(1-2):82-7.
25. **Kramann R**, Couson S, Neuss S, Bornemann J, Bovi M, Kunter U, Floege J, Knuechel R, Schneider RK. Exposure to uremic serum induces a pro-calcific phenotype in human mesenchymal stem cells. *Arterioscler Thromb Vasc Biol* 2011 Sep;31(9):e45-54.
26. Schneider RK, Anraths J, **Kramann R**, Bornemann J, Bovi M, Knüchel R, Neuss S. The role of biomaterials in the direction of mesenchymal stem cell properties and extracellular matrix remodelling in dermal tissue engineering. *Biomaterials* 2010; 31:7948-59 [IF: 8.3]
27. Schneider RK, Püllen A, **Kramann R**, Bornemann J, Knüchel R, Neuss S, Perez-Bouza A. Long-term survival and characterisation of human umbilical cord-derived mesenchymal stem cells on dermal equivalents. *Differentiation* 2010; 79(3):182-93
28. Schneider RK, Püllen A, **Kramann R**, Raupach K, Bornemann J, Knuechel R, Pérez-Bouza A, Neuss S. The osteogenic differentiation of adult bone marrow and perinatal umbilical mesenchymal stem cells and matrix remodelling in three-dimensional collagen scaffolds. *Biomaterials* 2010; 31(3):467-80
29. Becker M, Lenzen A, Ocklenburg C, Stempel K, Kühl H, Neizel M, Katoh M, **Kramann R**, Wildberger J, Kelm M, Hoffmann R. Myocardial deformation imaging based on ultrasonic pixel tracking to identify reversible myocardial dysfunction. *J Am Coll Cardiol* 2008; 51(15):1473-81
30. Becker M, Franke A, Breithardt OA, Ocklenburg C, Kaminski T, **Kramann R**, Knackstedt C, Stellbrink C, Hanrath P, Schauerte P, Hoffmann R. Impact of left ventricular lead position on the efficacy of cardiac resynchronisation therapy: a two-dimensional strain echocardiography study. *Heart* 2007; 93(10):1197-203
31. Becker M, **Kramann R**, Dohmen G, Lückhoff A, Autschbach R, Kelm M, Hoffmann R. Impact of left ventricular loading conditions on myocardial deformation parameters: analysis

of early and late changes of myocardial deformation parameters after aortic valve replacement. *J Am Soc Echocardiogr* 2007; 20(6):681-9

32. Becker M, **Kramann R**, Franke A, Breithardt OA, Heussen N, Knackstedt C, Stellbrink C, Schauerte P, Kelm M, Hoffmann R. Impact of left ventricular lead position in cardiac resynchronization therapy on left ventricular remodelling. A circumferential strain analysis based on 2D echocardiography. *Eur Heart J* 2007; 28(10):1211-20
33. Becker M, Hoffmann R, Kühl HP, Grawe H, Katoh M, **Kramann R**, Bucker A, Hanrath P, Heussen N. Analysis of myocardial deformation based on ultrasonic pixeltracking to determine transmuralitity in chronic myocardial infarction. *Eur Heart J* 2006; 27(21):2560-6
34. Becker M, Bilke E, Kühl H, Katoh M, **Kramann R**, Franke A, Bucker A, Hanrath P, Hoffmann R. Analysis of myocardial deformation based on pixel tracking in two-dimensional echocardiographic images enables quantitative assessment of regional left ventricular function. *Heart* 2006; 92(8):1102-8

Reviews and Editorials (peer reviewed):

1. **Kramann R**. Hedgehog Gli signalling in kidney fibrosis. *Nephrol Dial Transplant* 2016 May 26. Epub ahead of print
2. Kuppe C, **Kramann R**. Role of mesenchymal stem cells in kidney injury and fibrosis. *Curr Opin Nephrol Hypertens* 2016 Jul;25(4):372-7.
3. Brandenburg VM, Evenepoel P, Floege J, Goldsmith D, **Kramann R**, Massy Z, Mazzaferro S, Schurgers LJ, Sinha S, Torregrosa V, Ureña-Torres P, Vervloet M, Cozzolino M; ERA-EDTA Working Group on CKD-MBD and EUCALNET. Lack of evidence does not justify neglect: how can we address unmet medical needs in calciphylaxis? *Nephrol Dial Transplant* 2016 Mar 22. Epub ahead of print
4. **Kramann R**, Kusaba T, Humphreys BD Who regenerates the kidney tubule? *Nephrol Dial Transplant* 2015 Jun;30(6):903-910
5. **Kramann R**, Humphreys BD Kidney Pericytes: Balancing Regeneration and Fibrosis *Sem Nephrol* 2014 Jul;34(4):374-383
6. **Kramann R**, DiRocco DP, Maarouf O, Humphreys BD Matrix-Producing Cells in Chronic Kidney Disease: Origin, Regulation, and Activation. *Current Pathobiol Rep* 2013, Dec;1(4)
7. **Kramann R**, DiRocco DP, Humphreys BD Understanding the origin, activation and regulation of matrix-producing myofibroblasts for treatment of fibrotic disease. *J Pathol* 2013 Nov;231(3):273-89
8. **Kramann R**, Schneider RK. Parathyroid hormone related protein and cell survival regulation in the kidney. *Kidney Int* 2013 May;83(5):777-9
9. **Kramann R**, Floege J, Ketteler M, Marx N, Brandenburg VM. Medical options to fight mortality in end-stage renal disease: a review of the literature. *Nephrol Dial Transplant* 2012 2 Dec;27(12):4298-307
10. Brandenburg VM, **Kramann R**, Specht P, Ketteler M. Calciphylaxis in CKD and beyond. *Nephrol Dial Transplant* 2012 Apr;27(4):1314-8.
11. **Kramann R**, Moeller MJ. The next level of complexity: Post-transcriptional regulation by microRNAs. *Kidney Int* 2011 Oct;80(7):692-3.