

13th International **PODOCYTE** Conference *Manchester & online*

Pre-meeting 27th July
Main meeting 28-30th July
Patient-focused meeting 31st July



MANCHESTER
1824

The University of Manchester

Pre-meeting outline (Tue 8.45am-4pm):

08:45-09:05 **Introduction: Rachel Lennon & Thomas Benzing**

Rachel in person, Thomas to zoom in from Germany or in person, mentioning of slack network and online PodoArt exhibition, live

Session I Models to investigate podocyte biology

09:05-09:35 **Melissa Little:** The future of kidney organoid modeling

live, 20 min + 10 min Q

pre-meeting team hosts: Richard, Pinyuan, Franzi

09:35-10:55 **4x selected talks (15 min pre-recorded talk + 5 min Q live)**

09:35-09:55 Pinyuan Tian: "Investigating basement membrane assembly in human kidney organoids"

09:55-10:15 Natasha De Zoysa: "Can podocyte number and density predict the response to therapy in patients with primary FSGS?"

10:15-10:35 Shuhan Jiang: "Syncytiotrophoblast extracellular vesicles can be internalized by human podocytes and influence their physiological functions"

10:35-10:55 Michael Donnan: "The role of VEGFR3 Signaling in Glomerular Capillary Loop Development"

pre-meeting team hosts: Richard, Pinyuan, Franzi

11:00-12:00 round table I: What is left there to discover? (5 experts): *Melissa Little PhD, Richard Coward MD, Andreas Beyer PhD, Thomas Benzing MD, Corinne Antignac MD*

pre-meeting team hosts: Franzi, Richard, Maryline, Pinyuan, Sybille, Linus

12:00-12:30 Lunch break

Session II Podocyt-omics: big data, big discoveries?

12:30-13:00 Andreas Beyer: System biology: analysis of large-scale omics datasets

20 minutes + 10 minutes Q, **live**

pre-meeting team hosts: Sybille, Linus, Maryline

13:00-14:20 4x selected talks (15 min pre-recorded talk + 5 min Q live)

13:00-13:20 Sybille Koehler: "Drosophila Filamin exhibits a mechano-protective role during nephrocyte injury via hypertrophy"

13:20-13:40 Ronen Schneider: "DAAM2 variants cause nephrotic syndrome via actin dysregulation"

13:40-14:00 Milena Kotewicz: "Urolithin A is a potent regulator of podocyte function"

14:00-14:20 Franziska Lausecker: "Identification of new force regulators in the kidney glomerulus"

pre-meeting team hosts: Sybille, Linus, Maryline

14:30- 15:30 round table 2: How to be successful Podocyte Researcher: example career pathways: (5 experts): *Ron Korstanje PhD, Jeff Miner PhD, Christoph Schell MD, Rachel Lennon MD, Agnes Fogo MD*

pre-meeting team hosts: Franzi, Richard, Maryline, Pinyuan, Sybille, Linus

15:30-16:00 Conclusion and presentation prize: Relevance to patient's health, play video from Alport day in Mentioning of slack network, prize for best talk, prize for best PodoArt

hosts: Rachel, Patrick? And pre-meeting team: Franzi, Richard, Maryline, Pinyuan, Sybille, Linus

13th International
PODOCYTE
Conference
Manchester & online

Pre-meeting 27th July
Main meeting 28-30th July
Patient-focused meeting 31st July



Time Zone: British Summer Time (BST)

Day 1: Wednesday 28th July

8.45-9.00 – Meeting welcome and introduction

Graham Lord Vice President and Dean of the Faculty of Biology, Medicine and Health, University of Manchester.

Rachel Lennon, Chair of the Local Organising Committee.

9.00-9.30: *Keynote Lecture 1: RNA sequencing and the kidney cell atlas*

- **Menna Clatworthy** Professor of Translational Immunology, University of Cambridge, UK.
- **Chair: Peter Mathieson** Principal and Vice Chancellor of University of Edinburgh.

9.30-11.00 Session 1.1 Podocyte cell-cell and cell-matrix signalling. Chair Rachel Lennon.

9.30 *Regulation of nephrinectin via miRs in membranous nephropathy*

Mario Schiffer Professor of Nephrology and Hypertension, University Hospital, Erlangen, Germany.

9.45 *Nephrin signalling to focal adhesions*

Britta George Senior Physician and Research Assistant University Hospital Münster, Germany.

10.00 *The role of adhesion receptors for matrix and glomerular crosstalk (TBC)*

Christoph Schell Department of Pathology, Institute for Clinical Pathology University Hospital Freiburg, Germany.

10.15 *The molecular pathogenesis of proteinuria*

Thomas Benzing Professor of Medicine and Chairman of the Department II of Internal Medicine at the University of Cologne.

Selected abstracts

10.30 *HGF-induced activation of Nephrin and Neph1 serves as a novel mechanism for recovery of podocytes from injury*

Ashish Solanki, Medical University of South Carolina.

10.35 *Recessive mutations in SEMA3G as a potential novel cause of nephrotic syndrome*

Florian Buerger, Department of Pediatrics, Boston Children's Hospital, Harvard Medical School.

10.40-11.00 Panel discussion

Break/Poster/Exhibition 11.00-11.30

11.30-13.00 Session 1.2 Genetics from diagnosis to Therapy. Chair Rachel Lennon.

11.30 *The genetic architecture of nephrotic syndrome from rare to common variants*

Matthew Sampson Associate Professor of Paediatrics, Harvard Medical School MA, USA.

11.45 *New insights into Galloway-Mowat Syndrome (TBC)*

Corinne Antignac Professor of Genetics, Laboratory of Hereditary Kidney Diseases, Imagine Institute, INSERM, UMR 1163, Université de Paris, France.

12.00 *What large-scale genetic cohort studies have taught us about glomerular diseases*

Daniel Gale - St Peter's Professor of Nephrology, UCL Centre for Nephrology, London UK.

12.15 *How is monogenic gene discovery enabling novel therapy for FSGS/SRNS?*

Friedhelm Hildebrandt - Professor of Paediatrics, Chief Division of Nephrology, Harvard Medical School, MA, USA.

Selected abstracts

12.30 *Crumbs2: a novel key component of the slit diaphragm*

Annika Möller-Kerutt, Internal Medicine D, Department of Molecular Nephrology, University Hospital of Muenster, Germany.

12.35 *Whole exome sequencing reveals a monogenic cause of disease in 26% of 335 families with steroid-resistant nephrotic syndrome*

Konstantin Deutsch, Boston Children's Hospital, Boston, USA.

12.40-13.00 Panel discussion

Break/Poster/Exhibition 13.00-14.00

14.00-15.30 Session 2.1 Understanding Basement Membranes. Chair: Dean Wallace.

14.00 *Linking adjacent basement membrane insights from C. elegans*

David Sherwood Jerry G. and Patricia Crawford Hubbard Professor & Associate Chair of Biology, Department of Biology, Duke University, Durham, USA.

14.15 *The role of nephronectin (TBC)*

Denise Marciano Associate Professor Carolyn R. Bacon Professorship in Medical Sciences and Education, UT Southwestern Medical Center Dallas, Texas, USA.

14.30 *Basement membrane defects in transplant glomerulopathy*

Hani Suleiman: Assistant Professor of Medicine, Division of Nephrology, Washington University School of Medicine in St Louis, USA.

14.45 *Can we repair the GBM?*

Jeffrey Miner Eduardo and Judith Slatopolsky Professor of Medicine in Nephrology and Professor of Cell Biology and Physiology, Washington University School of Medicine in St Louis, USA.

Selected abstracts

15.00 ***First identified GBM modulator (P3H2) causes thin basement membrane nephropathy***
Hande Aypek, Department of Medicine, University Medical Center Hamburg-Eppendorf, UK.

15.05 ***Applying proteomics to investigate basement membrane assembly in human kidney organoids***
Mychel Morais, Wellcome Centre for Cell-Matrix Research, University of Manchester, UK.

15.10-15.30 **Panel discussion**

Break/Poster/Exhibition 15.30-16.00

16.00-17.30 Session 2.2 Podocyte pathology. Chair Dr Dean Wallace

16.00 ***Recessive, gain-of-function toxicity in APOL1 BAC transgenic mice***
Martin Pollak - Chief Division of Nephrology, Beth Israel Deaconess Medical Center, Professor of Medicine, Harvard Medical School, MA, USA.

16.15 ***Searching for treasure in Big Data***
Agnes Fogo Professor of Pathology, Microbiology and Immunology, Vanderbilt University Medical Center, Nashville, USA.

16.30 ***Genetic and Pathologic Biomarkers in Glomerular Diseases***
Moumita Barua Staff Nephrologist and Clinician Scientist, University Health Network, Assistant Professor, University of Toronto, Canada.

16.45 ***Podocyte Aging - why we should care?***
Stuart Shankland Division of Nephrology Head, Belding H Scribner Endowed Chair of Medicine, University of Washington Medical Centre, Seattle, USA.

Selected abstracts

17.00 ***FRET-based visualization of compartmentalized cGMP signalling in podocyte***
Nelli Rutkowski, Department II of Internal Medicine and Center for Molecular Medicine Cologne, University of Cologne, Faculty of Medicine and University Hospital Cologne, Germany.

17.05 ***Deep Learning-based Automated Multi-parameter Analysis of Podocyte Substructure Reveals Differential Patterns of Effacement across Diagnoses***
David Unnersjö-Jess, University Hospital of Cologne, Germany.

17.10-17.30 **Panel discussion**

Close of Day 1

Official Welcome: Josh Tarnoff (NephCure), Rachel Lennon (Chair, Local Organising Committee) & Lemn Sissay, Chancellor of the University of Manchester.

Day 2: Thursday 29th July

9.00-9.30: *Keynote Lecture 2: A systems approach to adhesion signalling*

- **Speaker: Professor Martin Humphries** - Professor of Biochemistry, Division of Cell matrix Biology and Regenerative Medicine, University of Manchester, UK.
- **Chair: Professor Paul Brenchley** - Honorary Professor, Division of cardiovascular Sciences, Lydia Becker Institute of Immunology and Inflammation, University of Manchester, UK.

9.30-11.00 Session 3.1 Glomerular Crosstalk. Chair Dr Durga Kanigcherla.

9.30 *Podocytes under stress – aspects on the actin cytoskeleton, cell contacts and matrix*

Nicole Endlich Professor and Manager, Institute for Anatomy and Cell Biology University Medicine Greifswald, Germany.

9.45 *The role of parietal epithelial cells in FSGS*

Marcus Moeller Professor, Department of Nephrology and Immunology, RWTH University Hospital Aachen University, Germany

10.00 *Signals to the endothelium*

Becky Foster Senior Lecturer in Clinical Sciences, University of Bristol, UK.

10.15 *Pathogenesis of extracapillary lesions*

Pierre-Louis Tharaux - Inserm Research Professor and Team Leader, (PARCC) Paris Cardiovascular research centre. Lecturer (HEGP) Hopital Europeen Georges Pompidou, Paris, France.

Selected abstracts

10.30 *Complementary Nck1 and Nck2 signaling in podocytes controls alpha actinin-4-mediated actin organization, adhesion and basement membrane composition*

Claire Martin, Lunenfeld-Tanenbaum Research Institute, Sinai Health System, Toronto, Canada.

10.35 *Renal progenitor-derived extracellular vesicles ameliorate podocyte function in a human in vitro model of glomerular permeability*

Lola Buono, Molecular Biotechnology Center, Turin, Italy.

10.40-11.00 Panel discussion

Break/Posters/Exhibition 11-11.30

11.30-13.00 Session 3.2: Immune mediated glomerular disease. Chair: Dr Durga Kanigcherla.

11.30 *New antigens and the podocyte in membranous nephropathy*

Pierre Ronco, Emeritus Professor of Nephrology, INSERM UMRS 1155 & Sorbonne Université, Hôpital Tenon, Paris, France.

11.45 *Therapeutic Targets in IgAN*

Jonathan Barratt - Mayer Professor of Renal Medicine, Mayer IgA Nephropathy Laboratories, Consultant Nephrologist, Leicester General Hospital, UK.

12.00 *Complement and podocyte injury in glomerular diseases*

Marina Norris PhD, Head, Laboratory of Immunology and Genetics of Rare Diseases, Istituto di Ricerche Farmacologiche Mario Negri-IRCCS, Ranica, Bergamo, Italy.

12.15 *Glomerular injury in ANCA-associated vasculitis*

Silke Brix - Consultant Nephrologist, Honorary Lecturer, University of Manchester. UK.

Selected abstracts

12.30 *Mineralocorticoid receptor drives parietal epithelial cell activation and glomerular injury during extracapillary diseases*

Pierre-Louis Tharaux, Inserm, Paris, France.

12.35 *Defining Cluster Specificity of TNF Activation in Patients With Minimal Change Disease and Focal Segmental Glomerulosclerosis*

Fadhl Alakwaa, University of Michigan, Ann Arbor, USA.

12.40-13.00 Panel discussion

Break/Posters/Exhibition 13-1400

14.00-15.30 Session 4.1: Experimental models. Chair: *Dr Elena Torban Associate Professor, Department of Medicine, Centre for Translational Biology, McGill University, Montreal, Canada.*

14.00 *Les souris and a podocyte potpourri*

Susan Quaggin Charles H Mayo Professor of Medicine, Director Feinberg Cardiovascular and Renal research Institute. Chief of Nephrology and Hypertension Northwestern Feinberg School of Medicine, Chicago, USA.

14.15 *Focus on myosin: analysing MYO1E mutations with microscopy across scales*

Mira Krendel Associate Professor of Cell and Developmental Biology, SUNY Upstate Medical University, USA.

14.30 *The impact of genetic background on Alport syndrome in mice*

Ron Korstanje - Associate Professor, The Jackson Laboratory, Bar Harbor, ME, USA.

14.45 *C. elegans as a platform to discover new regulators and functions for the FSGS-associated formin INF2*

Daniel Shaye, - Assistant Professor, Department of Physiology and Biophysics, College of Medicine, University of Illinois, Chicago, USA.

15.00 *APOL1 nephropathy in kidney organoids*

Benjamin Freedman – Associate Professor, Division of Nephrology, Kidney research institute and Institute for Stem Cell and Regenerative Medicine, University of Washington, USA.

Selected abstracts

15.15 *A novel Nano-luciferase transgenic reporter to measure proteinuria in zebrafish*

Richard Naylor, Wellcome Centre for Cell-Matrix Research, University of Manchester, UK.

15.20 ***Novel podocin mutants mistrafficking in kidney organoid models of congenital nephrotic syndrome***

Aude Dorison, Murdoch Children's Research Institute, Melbourne, Australia.

15.25-15.45 **Panel discussion**

Break/Posters/Exhibit 1545-1600

16.00-17.30 Session 4.2. Drug Development. Chair: Silke Brix. Sponsored by Traverre.

16.00 **Title: *The challenges of drug development for kidney disease***

Andrey Shaw Staff Scientist Immunology-Oncology, Genentech, San Francisco, USA.

16.15 ***Drug development – a regulatory perspective***

Aliza Thompson - Deputy Director of the Division of Cardiovascular and Renal Products, Center for drug evaluation and research at the FDA, USA.

16.30 ***Mechanisms of response to therapy in diabetic kidney disease***

Matthew D. Breyer - Distinguished Scientist, Janssen Research and Development LLC, Boston, MA USA.

16.45 ***Transplanted human organoids empower PK/PD assessment of drug candidate for the clinic***

Peter Mundel Co-founder and Executive Scientific Advisor, Goldfinch Bio, Boston, USA.

Selected abstracts

17.00 ***Novel Keap-Nrf2 protein-protein interaction inhibitor UBE-1099 ameliorates glomerulosclerosis in Alport syndrome mouse model***

Shota Kaseda, Department of Molecular Medicine, Kumamoto, Japan.

17.05 ***Selective Modulation of Nuclear Receptor PPAR γ by a Partial Agonist with Reduced Adipogenic Potential Ameliorates Experimental Nephrotic Syndrome***

Shipra Agrawal, Abigail Wexner Research Institute at Nationwide Children's Hospital, Columbus, USA.

17.10-17.30 **Panel discussion**

Close of Day 2

Day 3: Friday 30th July

9.00-9.30 Keynote Lecture 3: Human kidney organoids in perspective. Sponsored by Nipoka.

- **Melissa Little** Program Leader of Stem Cells Australia and Professor, Faculty of Medicine, Dentistry and Health Sciences, University of Melbourne, Australia.
- **Chair:** Rachel Lennon, Professor of Nephrology and Paediatric Nephrologist, University of Manchester and Royal Manchester Children's Hospital, UK.

9.30-11.00 Session 5.1: Podocytes in multi-system regulation and disease. Chair: Silke Brix.

9.30 *Beyond podocytes: How kidneys regulate muscle metabolism*

Tobias Huber Professor of Medicine, Chair of the Center of Internal Medicine, Director of the III. Department of Medicine, University Medical Center Hamburg-Eppendorf, Germany

9.45 *The podocyte in haemolytic uraemic syndrome*

Richard Coward - Professor of Renal Medicine, School of Clinical Sciences, University of Bristol, UK.

10.00 *Novel insights into Fabry podocytopathy*

Fabian Braun III. Department of Medicine, University Medical Center Hamburg-Eppendorf, Germany

10.15 *A novel detrimental cellular crosstalk in aging glomeruli*

Fabiola Terzi Professor and Director of the Research Institut Necker Enfants Malades, Paris, France.

Selected abstracts

10.30 *The role of podocytes in blood pressure regulation: a multi-omic causality analysis*

James Eales, University of Manchester, UK.

10.35 *Altered Rab-Rabphilin system in injured human podocytes stressed by glucose overload and angiotensin II*

Olga Martinez-Arroyo, Cardiometabolic and Renal Risk Research Group, Biomedical Research Institute Clinic Hospital – INCLIVA, Valencia.

10.40-11.00 Panel discussion

Break/Posters/Exhibition 11-11.30

11.30-13.00 Session 5.2 Next generation phenotyping. Chair: Durga Kanigcherla.

11.30 *Metabolome-proteome crosstalk in glomerular disease*

Markus Rinschen - III. Department of Medicine, University Medical Center Hamburg-Eppendorf, Germany and Department of Biomedicine, Aarhus University, Denmark.

11.45 *Mitochondrial reprogramming of podocyte metabolism.*

Paul Brinkotter – Professor and group leader, Center for Molecular Medicine, Cologne , Germany.

12.00 *Mapping human fibrotic disease*

Rafael Kramman: Professor of Medicine, Director of Institute of Experimental Medicine and Systems biology RWTH, Aachen, Germany.

12.15 *NURTuRE - integrating big datasets from a nephrotic syndrome cohort to discover phenotypic signatures*

Moin Saleem - Professor of Paediatric Renal Medicine, School of Clinical Sciences, University of Bristol, UK.

Selected abstracts

12.30 *Identification of an altered matrix signature in kidney ageing and disease*

Michael Randles, University of Chester, UK.

12.35 *Podocyte-omics; sexually dimorphic biology and responses to mTOR inhibition*

Ola Al Diab, Medical Clinic for Nephrology and Internal Intensive Care Medicine, Virchow Clinic Campus, Berlin, Germany.

12.40-13.00 Panel discussion.

Break/Poster/Exhibitions 13-14.00

**14.00-15.30 Session 6.1 Identifying new disease pathways. Chair Dean Wallace.
Sponsored by AstraZeneca.**

14.00 *Defining causal gene, cell types and mechanism for kidney disease using multi-omics datasets*

Katalin Susztak Professor of Medicine, Perelman School of Medicine, University of Pennsylvania, USA.

14.15 *Epigenetics in metabolic memory and diabetic kidney disease*

Rama Natarajan Professor and Chair, Department of Diabetes Complications & Metabolism, City of Hope, California, USA.

14.30 *The glomerular proteome in antibody mediated rejection*

Ana Konvalinka Assistant Professor at the University of Toronto, Transplant nephrologist and Clinician Scientist at Toronto General Hospital, Canada.

14.45 *SuPAR and COVID and podocyte injury (TBC)*

Jochen Reiser - Ralph C Brown Professor of Medicine, Rush University Medical Center, Chicago, USA.

Selected abstracts

15.00 *TrkC is necessary for glomerular integrity and involved in Igf1R signaling.*

Carolyn Lepa, Medical Clinic and Polyclinic D, University Hospital Münster, Germany.

15.05 *Plin5* deficiency in podocyte negatively affects the communication between lipid droplets and mitochondria in Alport Syndrome.

Jin-Ju Kim, University of Miami, USA.

15.10-15.30 Panel discussion.

Break/Poster/Exhibition 15.30-16.00

16.00-17.30 Session 6.2 The new therapy horizon. Chair: Rachel Lennon.

Sponsored by Goldfinch Bio

16.00 *Targeting the fat podocyte with small molecules*

Alessia Fornoni Professor of Medicine and Molecular and Cellular Pharmacology the University of Miami Miller School of Medicine, USA.

16.15 *LDL-A liposorber therapy in nephrotic syndrome*

Joshua J Zaritsky Chief Pediatric Nephrology, St Chris Hospital for Children, Philadelphia PA, USA.

16.30 *Molecularly-targeted therapies for kidney disease*

Anna Greka Director, Glom-NExT Center for Glomerular Kidney Disease and Novel Experimental Therapeutics, Associate Professor, Harvard Medical School, USA.

16.45 *Precision medicine trials in FSGS*

Matthias Kretzler - Warner-Lambert/Parke-Davis Professor of Internal Medicine/Nephrology, Computational Medicine and Bioinformatics, Taubman Center, Ann Arbor, USA.

Selected abstracts

17.00 *Paracrine regulation of podocyte Nephronectin via miR containing exosomes*

Nina Sopel, Friedrich-Alexander-Universität Erlangen-Nürnberg, Erlangen, Germany.

17.05 *DGAT2 inhibition in kidney organoids and podocytes to reduce cytotoxicity of APOL1 kidney risk variants*

Justin Chun, University of Calgary, Canada.

17.10-17.30 Panel discussion.

Meeting close and Prizes 1730