# Nils David Mertens, M.D.

**3 Webster Ave, 02141 Cambridge, MA**
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**Born in San Francisco, USA**
**Citizenship: German/USA**

## CLINICAL EXPERIENCE

**Combined Resident Physician** (06/2023-present) Pediatrics-Medical Genetics in the Boston Combined Residency Program (BCRP) at Boston Children's Hospital and Boston Medical Center

**Physician** (01/2021-04/2021) National COVID-19 Vaccination Centers governed by the Kassenärztliche Vereinigung Westfalen Lippe and Niedersachsen

## RESEARCH EXPERIENCE

**Research Fellow** (11/2021-06/2023), Division of Nephrology at Boston Children's Hospital, Harvard Medical School, Boston, USA; Mentor: Friedhelm Hildebrandt, M.D.

*Studying the genetic basis for human monogenic kidney diseases and developing gene replacement therapy for congenital nephrotic syndrome Finnish type (CNF)*

- Whole-Exome-Sequencing and Homozygosity Mapping evaluation of a worldwide cohort of 1,265 families with Congenital Anomalies of the Kidneys and Urinary Tract (CAKUT) to find novel monogenic causes of CAKUT
- Development of an AAV-driven gene replacement approach for treating *Nphs1*-deficient mice as a model for human CNF

**Student in Doctorate** (02/2016-08/2018), Institute for Molecular Nephrology, WWU Muenster, Germany; Mentors: Univ.-Prof. Dr. med. Hermann Pavenstaedt and PD Dr. med. Britta George

*This project sought to identify genes related to endocytosis that are crucial for the renal podocyte's function using Drosophila nephrocytes as a model system*

- *Rab5* and *Rab11* are promising candidate genes for monogenic nephrotic syndrome
- A unique pathogenic mechanism leads to the disease phenotype of nephrotic syndrome observed in *Rab7*-knockout mice

## EDUCATION

**Abitur** (2013), final grade 1.0, Couven-Gymnasium Aachen, Germany

**M.D.** (11/2020), Nephrology, *Magna cum laude*, Westfaelische Wilhelms-University (WWU) School of Medicine, Muenster, Germany

**German State Exam** (11/2020), Medicine, WWU School of Medicine, Muenster, Germany

**USMLE Steps 1, 2CK, 3**: All Pass on 1st Attempt

## SCHOLARSHIPS and AWARDS

**Travel Grant** to the Annual Conference of the American Society of Nephrology (2024)

**Fred Lovejoy Housestaff Research and Education Fund** (05/2024-present) awarded by the FHL Housestaff Research and Education Award Committee at Boston Children's Hospital; PI: Friedhelm Hildebrandt, M.D.

*Identification of novel candidate genes and disease mechanisms that cause monogenic congenital anomalies of the kidneys and urinary tract (CAKUT)*

**NIH T32 career development grant** (06/2022-06/2023) awarded by the Division of Nephrology at Boston Children's Hospital; PI: Friedhelm Hildebrandt, M.D.; Advisor: Carlos R. Estrada Jr, M.D. M.B.A.

*Identification of novel candidate genes and disease mechanisms that cause monogenic congenital anomalies of the kidneys and urinary tract (CAKUT)*

**3. Place Young Generation Award**, Westphalian Tennis Foundation (WTV), Germany (04/2021)

**Social Project Award**, Medical Faculty University of Muenster, Germany (11/2020)

**Travel Grant** to the Annual Conference of the German Society of Nephrology (2016)

**Research Scholarship** provided by the Medizinerkolleg (MedK), Medical Faculty, Muenster (02/2016-01/2017)

## ADDITIONAL COURSEWORK

**Origins of Renal Physiology** (08/2022), MDI Biological Laboratory, Director: Mark Zeidel, M.D.

*One week laboratory course on glomerular filtration rate, proximal tubule function, salt balance and secretion, distal nephron sodium transport, water homeostasis, and calcium oxalate stones*

**Introduction to 'Omics Research** (01/2022-06/2022), Harvard Catalyst Online Course

*Scope, analysis, and challenges of 'omics research*

## VOLUNTEER EXPERIENCE

**Tennis Outreach Project "Adler Asse"** (02/2017 – 10/2021): Tennis Club Preussen Muenster

*Co-founder of an initiative, providing free tennis lessons to groups of children and adolescents from low-resource and refugee backgrounds for three years during the COVID-19 pandemic with a special focus on girls.*

## CURRENT LICENSURES

**BORIM Limited Physician License** (06/2023-present)

**ECFMG certificate** (01/2022-01/2024)

**German Medical License** (Approbation) (01/2021-present)

## PEER-REVIEWED PUBLICATIONS

### Research Investigations (7)

Ming A, Clemens V, Lorek E, Wall J, Alhajjar A, Galazky I, Baum AK, Li Y, Li M, Stober S, **Mertens ND**, Mertens PR. Game-Based Assessment of Peripheral Neuropathy Combining Sensor-Equipped Insoles, Video Games, and AI: Proof-of-Concept Study. *J Med Internet Res*. 2024 Oct;26:e52323

*Lemberg K, ***Mertens ND**, *Yousef K, Schneider R, Merz LM, Mansour B, Salmanullah D, Kolvenbach CM, Saida K, Yu S, Hölzel S, Steinsapir A, Goncalves KA, Nicolas Frank C, Franken GAC, Shril S, Buerger F, Hildebrandt F. Quantifiable and reproducible phenotypic assessment of a constitutive knockout mouse model for congenital nephrotic syndrome of the Finnish type. Sci Rep. 2024 Jul;14(1):15916

Schneider R, Mansour B, Kolvenbach CM, Buerger F, Salmanullah D, Lemberg K, Merz LM, **Mertens ND**, Saida K, Yousef K, Franken GAC, Bao A, Yu S, Hölzel S, Nicolas-Frank C, Steinsapir A, Goncalves KA, Shril S, Hildebrandt F. Phenotypic quantification of Nphs1-deficient mice. *J Nephrol*. 2024 Jul;37(6):1723

Buerger F, Merz LM, Saida K, Yu S, Salmanullah D, Lemberg K, **Mertens ND**, Mansour B, Kolvenbach CM, Yousef K, Braun A, Franken GAC, Endlich N, Schneider R, Shril S, Hildebrandt F. Quantitative phenotyping of *Nphs1* knockout mice as a prerequisite for gene replacement studies. *Am J Physiol Renal Physiol*. 2024 May;326(5):F780-F791

Pantel D, **Mertens ND**, Schneider R, Hölzel S, Kari JA, Desoky SE, Shalaby MA, Lim TY, Sanna-Cherchi S, Shril S, Hildebrandt F. Copy number variation analysis in 138 families with steroid-resistant nephrotic syndrome identifies causal homozygous deletions in PLCE1 and NPHS2 in two families. *Pediatr Nephrol*. 2024 Feb;39(2):455-461

Vöing K, Michgehl U, **Mertens ND**, Picciotto C, Maywald ML, Goretzko J, Waimann S, Gilhaus K, Rogg M, Schell C, Klingauf J, Tsytsyura Y, Hansen U, van Marck V, Edinger AL, Vollenbröker B, Rescher U, Braun DA, George B, Weide T, Pavenstädt H. Disruption of the Rab7-Dependent Final Common Pathway of Endosomal and Autophagic Processing Results in a Severe Podocytopathy. *J Am Soc Nephrol*. 2023 Jul 1;34(7):1191-1206

Kolvenbach CM, Zheng B, Merz LM, **Mertens ND**, Mansour B, Wang C, Seltzsam S, Schneider S, Schierbaum L, Pantel D, Chen J, van der Ven AT, Bello JO, Shril S, Hildebrandt F. A homozygous truncating ETV4 variant in a Nigerian family with congenital anomalies of the kidney and urinary tract. *Am J Med Genet A*. 2023 May;191(5):1355-1359

### Abstracts, Poster Presentations and Exhibits presented at Professional Meetings (4):

**Nils D. Mertens**, Kaniyuki Kano, Gijs A.C. Franken, Sherif El Desoky, Jameela A Kari, Hee Gyung Kang, Sultan Cingöz, Shirlee Shril, Junken Aoki, and Friedhelm Hildebrandt. A biallelic variant in

ENPP6 affects enzymatic function in vitro and alters choline metabolism in humans. *American Society of Nephrology Annual Meeting*. 2024

**Nils D. Mertens**, Kaniyuki Kano, Lea M. Merz, Sherif El Desoky, Jameela A Kari, Hee Gyung Kang, Sultan Cingöz, Shirlee Shril, Junken Aoki, and Friedhelm Hildebrandt. ENPP6 is a potential novel candidate gene for monogenic Congenital Anomalies of the Kidneys and Urinary Tract. *International Society of Nephrology World Congress*. 2023

Camille Nicolas Frank, Florian Buerger, **Nils D. Mertens (presenter)**, Shirlee Shril, Friedhelm Hildebrandt. Assessing the allelic spectrum and pathogenicity of novel variants in NPHS2 in 238 individuals with steroid-resistant nephrotic syndrome. *American Society of Nephrology Annual Conference*. 2022

Katharina Lemberg*, Kirollos Yousef*, **Nils D. Mertens***, Florian Buerger, Lea Maria Merz, Ronen Schneider, Bshara Mansour, Caroline Kolvenbach, Ken Saida, Camille N. Frank, Shirlee Shril and Friedhelm Hildebrandt. Quantifiable phenotyping of an existing Nphs1 knockout mouse model. *American Society of Nephrology Annual Conference*. 2022

# BOSTON COMBINED RESIDENCY PROGRAM IN PEDIATRICS

June 11, 2024

Subject: Nils Mertens - Residency Verification

To Whom It May Concern:

This letter is to verify that Nils Mertens is a resident at Boston Children's Hospital and Boston Medical Center in the Boston Combined Residency Program in Pediatrics – Pediatrics - Medical Genetics program, beginning on June 24, 2023. This is a 4-year residency program, with an expected completion date of June 30, 2027.

He is a resident in good standing and will be entering his second year on July 1, 2024.

If you require any further information, please do not hesitate to email me at Elayne.fournier@childrens.harvard.edu.

Sincerely,

*Elayne Fournier*

Elayne Fournier
Manager
Department of Pediatrics
Boston Children's Hospital