Curriculum vitae
Thomas Benzing

Professor of Medicine
Chairman Department II of Internal Medicine
Director Center for Molecular Medicine Cologne
Vice Dean, Faculty of Medicine
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Biosketch

Thomas Benzing is a distinguished figure in the field of medicine, currently holding the position of Professor at the University of Cologne, Germany, where he also serves as the Chairman of the Department II of Internal Medicine. Furthermore, he is the Director of the Center for Molecular Medicine Cologne at the University of Cologne and holds the role of Vice Dean of Finance at the Medical Faculty.

Dr. Benzing's research is primarily centered on investigating the underlying causes of genetic kidney diseases, with a particular focus on podocyte disorders. His work delves into signal transduction and protein interactions within this context. Notably, Dr. Benzing is recognized for pioneering the concept of signaling at the slit diaphragm of podocytes and recently played a crucial role in developing the first experimentally validated model of glomerular ultrafiltration.
In recognition of his outstanding contributions to the field, Dr. Benzing has received numerous prestigious awards and honors, including the esteemed Ernst Jung Prize in Medicine, the Young Investigator Award from the American Society of Nephrology, and the Volhard Prize from the German Society of Nephrology. Additionally, he is an elected member of the German National Academy of Sciences and boasts a prolific publication record, with over 250 highly cited papers in the realm of molecular kidney research to his name.

Education

1985	High School, Grade point average: 1.0 (with highest distinction)
1985-1987	Civilian Service
1987-1994	Medical School, University of Freiburg
1994	MD thesis with distinction, Thesis title: Regulation of endothelial autacoid synthesis, Department of Physiology, University of Freiburg (Laboratory of Rudi Busse)

Research Career

1995-1996	Internship and Residency in Medicine, University Hospital Freiburg
1996-1998	Postdoctoral Fellow, Institute for Cardiovascular Physiology, University Hospital Frankfurt
1998-2000	Research Fellow in Nephrology, BIDMC/Harvard Medical School, Boston, Fellow of the German Research Foundation (Laboratory of Gerd Walz)
2000-2002	Research Group Leader, University Hospital Freiburg

2002	Venia Legendi for Internal Medicine, Instructor in Medicine (Assistant Professor in Medicine)
2003	Attending Physician, Department of Medicine, University of Freiburg
2003-2005	Heisenberg Fellow of the German Research Foundation (Associate Professor)
2005-2007	Board Member Center for Systems Biology, University of Freiburg
2006-2007	Full Professor (W3), University Hospital Freiburg. Vice-Chief Renal Division, University Hospital Freiburg
2007 - cont.	Full Professor of Medicine (W3), Chairman Department II of Internal Medicine, University of Cologne (UoC)
2007- cont.	Co-Coordinator of the Cologne Excellence Cluster on Cellular Stress Responses in Aging-Associated Diseases (CECAD), UoC
2010 - cont.	Acting Director of the Center for Molecular Medicine Cologne, UoC
2011 - 2015	Coordinator of Systems Biology of Ageing Cologne (Sybacol), UoC
2012 - 2021	Board Member, Scientific Committee of Humboldt Foundation
2015 - cont.	Vice Dean for Finances, Faculty of Medicine
2017 - cont.	Speaker of the Clinical Research Unit KFO 329 of the DFG
2017 - cont.	Deputy Chair of the Excellence Cluster CECAD
2019 - cont.	President of the German Academic Nephrology UNI-DGfN, Council Member of the German Society of Nephrology
2020 - cont.	Study section of the German Research Foundation DFG, “Fachkollegiat”

Medical Licensure and Board Certification

1995	German Medical License
2002	Board Certification in Internal Medicine, Germany
2003	Board Certification in Nephrology, Germany
2005	Hypertension Specialist, Deutsche Hochdruckliga
2014	Human genetic counseling, Germany

Awards and Honors (selection)

1985	Laufenburg Award as top graduating student of the state
2003	Heisenberg Fellowship of the German Research Foundation (DFG)
2004	**Adalbert Buding Research Award, German Society of Hypertension**
2005	**Honorary Fellow of the American Society of Nephrology (FASN)**
2005	**Franz-Volhard-Award, German Society of Nephrology**
2005	Advisory activity for the NIDDK and NIH, USA
2006	**Young Investigator Award of the American Society of Nephrology**
2008	**Honorary Member of the Ludwig Heilmeyer Society**
2008	**Ernst Jung-Award for Medicine, Ernst-Jung Society Hamburg**

2010-	President, Scientific Advisory Board of the KfH Foundation on Prevention of Renal Disease
2010	**Elected Member German Academy of Sciences Leopoldina**
2010-	Scientific Committee of the International Podocyte Meetings
2013	Congress President of 29th Klenk Symposium for Molecular Medicine on Systems Approaches in Translational Medicine
2014	Congress President of the 10th International Podocyte Meeting
2015	Congress President of the Annual Meeting of the German Society of Nephrology
2015	**Elected Member American Society of Clinical Investigation**
2018	**Elected Member of the American Clinical and Climatological Association (ACCA)**
2018	Elected Mentor Academicus Scholarium Internationalum of the Association of International Medical Students
2020	**Elected Member, Academy of Sciences and Arts, North Rhine-Westphalia**
2021	Elected Chair, Conference of the National Academy of Sciences Leopoldina and the Center for Molecular Medicine Cologne on “Progress in Molecular Medicine”, Cologne, Germany
2022	Coorganizer of the EMBO Cilia 2022 International Meeting in Cologne
2025	Elected Cochair, 15th International Podocyte Meeting, Hamburg, Germany

Professional Societies, Memberships

American Society of Nephrology
German Society of Nephrology
European Society of Nephrology ERA/EDTA
International Society of Nephrology
Deutsche Hochdruckliga
Deutsche Gesellschaft für Innere Medizin

Scientific Journals and Editorial Boards

Editorial board member Journal of the American Society of Nephrology, Kidney International, Nephrology Dialysis Transplantation, American Journal of Physiology Cell Physiology, Science Signaling, Nature Reviews in Nephrology

Reviewer for Cell, Science, Nature, Nature Genetics, Nature Medicine, New England Journal of Medicine, Lancet, JAMA, Journal of Biological Chemistry, Journal of the American Society of Nephrology, Kidney International, Nephrology Dialysis Transplantation, American Journal of Physiology, Science Signaling, Nature Reviews in Nephrology, Journal for Clinical Investigation …

Patent

United States Patent No. 19240.556US2, Inventor: Marty Chalfie (Nobel prize in Chemistry 2008) and Thomas Benzing. Invention: Methods for identifying compounds that modulate PHB domain protein activity and compositions thereof.

Publications (Selection)

Rutkowski, N., Görlitz, F., Wiesner, E., Binz-Lotter, J., Feil, D., Feil, R., **Benzing, T.**, Hackl, M. (2024) Real-time imaging of cGMP signaling shows pronounced differences between glomerular endothelial cells and podocytes. **Sci Rep** *14*, 26099.
DOI: 10.1124/jpet.122.001423

Verleysdonk, J., Nötzel, N., Becker, I., Pickert, L., **Benzing, T.**, Pfister, R., Polidori, MC., Meyer, A.M. (2024) Profiles of geriatric syndromes and resources in older patients with atrial fibrillation. J Clin Med 13, 4009. DOI: 10.3390/jcm13144009

Ferring, A., Mück, L., Stegemann, J., Wiebe, L., Becker, I., **Benzing, T.**, Meyer, A.M., Polidori, MC. (2024) Prognostic features of sarcopenia in older hospitalized patients: A 6-month follow-up study. J Clin Med 13, 3116. DOI: 10.3390/jcm13113116

Wiesner, E., Binz-Lotter, J., Hackl, A., Unnersjö-Jess, D., Rutkowski, N., **Benzing, T.**, Hackl, M. (2024) Correlative multiphoton-STED microscopy of podocyte calcium levels and slit diaphragm ultrastructure in the renal glomerulus. Sci Rep 14, 13019. DOI: 10.1038/s41598-024-63507-9

Czogalla, J., Schliffke, S., Lu, S., Schwerk, M., Petereit, H., Zhang, T., Liu, S., Dumoulin, B., Gies, S., Wu, G., Hänzelmann, S., Bode, M., Grahammer, F., Gödel, M., Voigtländer, M., Butt, L., Bokemeyer, C., Bergmann, C., **Benzing, T.**, Wiech, T., Puelles, V.G., Huber, T.B. (2024) Ibrutinib-associated focal segmental glomerulosclerosis and the impact of podocin mutations in chronic lymphocytic leukemia. Kidney Int 105, 877-881. DOI: 10.1016/j.kint.2024.02.001

Schömig, T., Diefenhardt, P., Plagmann, I., Trinsch, B., Trinsch, B., Merz, T., Crispatzu, G., Unnersjö-Jess, D., Nies, J., Pütz, D., Sierra Gonzalez, C., Schermer, B., **Benzing, T.**, Brinkkötter, P.T., Brähler, S. (2024) The podocytes' inflammatory responses in experimental GN are independent of canonical MYD88-dependent toll-like receptor signaling. Sci Rep 14, 2292. DOI: 10.1038/s41598-024-52565-8

Butt, L., Unnersjö-Jess, D., Reilly, D., Hahnfeldt, R., Rinschen, M.M., Bozek, K., Schermer, B., **Benzing, T.**, Höhne, M. (2023) In vivo characterization of a podocyte-expressed short podocin isoform. BMC Nephrol 24, 378. DOI: 10.1186/s12882-023-03420-x

Cukoski, S., Lindemann, C.H., Arjune, S., Todorova, P., Brecht, T., Kühn, A., Oehm, S., Strubl, S., Becker, I., Kämmerer, U., Torres, J.A., Meyer, F., Schömig, T., Hokamp, N.G., Siedek, F., Gottschalk, I., **Benzing, T.**, Schmidt, J., Antczak, P., Weimbs, T., Grundmann, F., Müller, R.U. (2023) Feasibility and impact of ketogenic dietary interventions in polycystic kidney disease: KETO-ADPKD-a randomized controlled trial. Cell Rep Med 4, 101283. DOI: 10.1016/j.xcrm.2023.101283

Llamas, E., Koyuncu, S., Lee,. H.J., Wehrmann, M., Gutierrez-Garcia, R., Dunken, N., Charura, N., Torres-Montilla, S., Schlimgen, E., Mandel, A.M., Theile, E.B., Grossbach, J., Wagle, P., Lackmann, J.W., Schermer, B., **Benzing, T.**, Beyer, A., Pulido, P., Rodriguez-Concepcion, M., Zuccaro, A., Vilchez, D. (2023) In planta expression of human polyQ-expanded huntingtin fragment reveals mechanisms to prevent disease-related protein aggregation. Nat Aging 3, 1345-1357. DOI: 10.1038/s43587-023-00502-1

Unnersjö-Jess D., Ramdedovic A., Butt L., Plagmann I., Höhne M., Hackl A., Brismar H., Blom H., Schermer B., and **Benzing T**. (2023) Advanced optical imaging reveals preferred spatial orientation of podocyte processes along the axis of glomerular capillaries. Kidney Int,

S0085-2538(23)00673–7. DOI: 10.1016/j.kint.2023.08.024

Unnersjö-Jess D., Butt L., Höhne M., Sergei G., Fatehi A., Witasp A., Wernerson A., Patrakka J., Hoyer P.F., Blom H., Schermer B., Bozek K., and **Benzing T.** (2023) Deep learning-based segmentation and quantification of podocyte foot process morphology suggests differential patterns of foot process effacement across kidney pathologies. Kidney Int 103, 1120–1130. DOI: 10.1016/j.kint.2023.03.013

Butt, L., Unnersjö-Jess, D., Höhne, M., Hahnfeldt, R., Reilly, D., Rinschen, M.M., Plagmann, I., Diefenhardt, P., Brähler, S., Brinkkötter, P.T., Brismar, H., Blom, H., Schermer, B., **Benzing, T.** (2022) Super-resolution imaging of the filtration barrier suggests a role for Podocin R229Q in genetic predisposition to glomerular disease. **J Am Soc Nephrol** *33*, 138-154, DOI: 10.1681/ASN.2020060858

Butt, L., Unnersjö-Jess, D., Höhne, M., Schermer, B., Edwards, A., **Benzing, T.** (2021) A mathematical estimation of the physical forces driving podocyte detachment. **Kidney Int** *100*, 1054-1062, DOI: 10.1016/j.kint.2021.06.040

Benzing, T., Salant, D. (2021) Insights into Glomerular Filtration and Albuminuria. **N Engl J Med** *384*, 1437-1446, DOI: 10.1056/NEJMra1808786

Butt, L., Unnersjö-Jess, D, Höhne, M, Edwards, A, Binz-Lotter, J, Reilly, D, Hahnfeldt, R, Ziegler, V, …, Brismar, H, Blom, H, Schermer, B, **Benzing, T**. (2020) A molecular mechanism explaining albuminuria in kidney disease. **Nature Metab**, 2, 461-474, DOI: 10.1038/s42255-020-0204-y

Rinschen, M.M., Gödel, M., Grahammer, F., Zschiedrich, S., Helmstädter, M., Kretz, O., Zarei, M., Braun, D.A., Dittrich, S., Pahmeyer, C., Schroder, P., ..., **Benzing, T**.*, Huber, T.B.* (2018) A multilayered quantitative in vivo expression atlas of the podocyte unravels kidney disease candidate genes. **Cell Rep** 23, 2495-3508, DOI: 10.1016/j.celrep.2018.04.059

Rinschen, M.M., Grahammer, F., Hoppe, A.K., Kohli, P., Hagmann, H., Kretz, O., Bertsch, S., Hoehne, M., Göbel, H., Bartram, M.P., Gandhirajan, R.K., Krüger, M., Brinkkötter, P.T., Huber, T.B., Kann, M., Wickström, S.A., **Benzing, T. *,** Schermer, B. * (2017) YAP-mediated mechanotransduction determines the podocyte's response to damage. **Science Signal** 10, pii: eaaf8165, DOI: 10.1126/scisignal.aaf8165

Rinschen, M.M., Wu, X., König, T., Pisitkun, T., Hagmann, H., Pahmeyer, C., Lamkemeyer, T., Kohli, P., Schnell, N., Schermer, B., Dryer, S., Brooks, B.R., Beltrao, P., Krueger, M., Brinkkoetter, P.T., **Benzing, T**. (2014) Phosphoproteomic analysis reveals regulatory mechanisms at the kidney filtration barrier. **J Am Soc Nephrol** 25, 1509-1522, DOI: 10.1681/ASN.2013070760

Hackl, M., Burford, J.L., Villanueva, K., Lam, L., Susztak, K., Schermer, B., **Benzing, T.,** Peti-Peterdi, J. (2013) Tracking the fate of glomerular epithelial cells in vivo using serial multiphoton imaging in new mouse models with fluorescent lineage tags. **Nature Med** 19, 1661-6, DOI: 10.1038/nm.3405