

PD Dr. Ujwal Mukund MAHAJAN

Associate Professor | Department of Pharmacology and Toxicology | NIPER, Mohali
Visiting Scientist | Department of Medicine II | LMU, Munich, Germany



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Sector 67, Mohali, Punjab, India

Dedicated research scientist with a robust academic and professional background, specializing in project management, data analysis, and research tool development for enhanced understanding of carcinogenesis. Committed to continuous professional growth and excellence.

AREA OF INTEREST

- Identification of Diagnostic/Prognostic markers
- Application of systems pharmacology to elucidate opportunities for drug repurposing
- Advancing aptamer-aided targeted therapeutics
- Exploring metabolic vulnerabilities in pancreatic disorders
- Development of therapeutic strategies for pancreatic fibro-inflammatory diseases

COMPETENCE

Drug Development	Preclinical Expertise, Biomarkers analytics and development , Clinical validation
Multiomics	WGS, Transcriptome, Proteome, Metabolome, scRNAseq
Precision Medicine	Tumor subtyping, diagnostic, prognostics and predictive signatures
Digital Pathology	multiplex-IHC, QuPath, CellProfiler, Fiji, spatiotemporal profiling
Programming Languages	R, Python, docker-compose, Git
Scripting	bash, zsh, powershell
Biostatistics and Machine Learning	Supervised and unsupervised machine learning , Dimensionality reduction

PROFESSIONAL EXPERIENCE

To Date April 2025	Associate Professor, DEPARTMENT OF PHARMACOLOGY AND TOXICOLOGY, NIPER, Mohali <ul style="list-style-type: none">➤ Pancreatology and system pharmacology➤ Targeted drug delivery approaches eg. aptamers-aided targeted delivery➤ Diagnostic and prognostic biomarkers <p>System Pharmacology Precision Medicine Drug repurposing</p>
To Date April 2025	Visiting Scientist, DEPARTMENT OF MEDICINE II, LMU Hospital, Munich, Germany <ul style="list-style-type: none">➤ Translational and exploratory biomarker strategies for patient stratification.➤ Aptamers aided macrophages reprogramming➤ Identification, characterization and validation of CAFs subtypes➤ Understanding biological role of sphingolipids metabolism in pancreatic cancer <p>Precision Medicine Tumor-stroma crosstalk Sphingolipids metabolism</p>
April 2025 March 2022	Group Leader, DEPARTMENT OF MEDICINE II, LMU Hospital, Munich, Germany <ul style="list-style-type: none">➤ Lead Bioinformatician for METAPAC and Oversee translational and exploratory biomarker strategies for patient stratification.➤ Heading a group working on targeted drug delivery approaches in pancreatic cancer➤ Development of multi-omics driven differential diagnostic, prognostic and treatment response (predictive) signatures <p>Diagnostic and prognostic biomarkers Machine Learning</p>
March 2022 October 2016	Junior Group Leader and Co-supervisor, DEPARTMENT OF MEDICINE II, LMU Hospital, Munich, Germany <ul style="list-style-type: none">➤ Identification, characterization and validation of CAFs subtypes using sc-RNAseq and multiplex IHC➤ Building pipeline for multiplex IHC analysis including immune cytometry and spatial distribution analysis➤ Identification of new diagnostic and prognostic marker for PDAC, Machine learning aided feature selection, model calibration and performance analytics➤ Generation of CRISPR/Cas9 knockout and over expression systems➤ Synthesis, <i>in-vitro</i> and <i>in-vivo</i> characterization of novel cancer cell specific targeted delivery systems <p>Targeted CRISPRs delivery CAFs subtyping multiplex IHC</p>

- October 2016 | Post-doctorate Fellow, DEPARTMENT OF MEDICINE A, UNIVERSITY MEDICINE GREIFSWALD, Greifswald, Germany
- June 2015 | ▶ Synthesis, in vitro and in vivo characterization of novel cancer cell specific targeted delivery systems based on iron oxide nanoparticles (SPIONs)
SPIONs targeted delivery
- June 2011 | Executive - Regulatory Affairs (Biologics), BIOCON LTD., Bangalore, India
- June 2010 | ▶ Synthesis, in vitro and in vivo characterization of novel cancer cell specific targeted delivery systems based on iron oxide nanoparticles (SPIONs)
Regulatory affairs

EDUCATION

- 2022 | **Habilitation (Experimental medicine)**, LMU Klinikum, Munich, Germany
venia legendi
- 2015 | **Ph.D. (Theoretical medicine)**, University of Medicine Greifswald, Greifswald, Germany
summa cum laude
- 2010 | **M.S. (Pharmacology and Toxicology)**, NIPER - S.A.S. Nagar, Mohali, India
summa cum laude
- 2008 | **Bachelor of Pharmacy**, College of Pharmacy, Nashik, University of Pune, Pune, India
First Class

FELLOWSHIPS AND AWARDS

- 2016 | German Society for Gastroenterology, Digestive and Metabolic Diseases (DGVS) 2016 | Awarded with **Ismar Boas-Preis** for best dissertation of year 2016
- 2016 | European Pancreatic Club (EPC) 2016, Liverpool, UK | Best poster presentation prize
- 2014 | Deutsche Pancreas Club (DPC) 2014, Mannheim, Germany | Best poster presentation prize
- 2013 | United European Gastroenterology (UEG-Week), 2013, Berlin | Best Oral presentation prize
- 2008-2010 | Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers, Govt. of India | Research fellowship (All India Rank: 34 (GATE), 40 (NIPER))

COLLABORATIONS

- since 2014 | Prof. Dr. Julia Mayerle, Department of Medicine II, LMU Klinikum, Munich, Germany
Targeted drug delivery approaches, diagnostic and prognostic biomarkers, precision medicine, Sphingolipids metabolism
- since 2014 | Prof. Dr. Markus M. Lerch, Department of Medicine II, LMU Klinikum, Munich, Germany
Diagnostic and prognostic biomarkers, precision medicine
- since 2014 | Dr. Matthias Sendler, Department of Medicine A, University of Medicine, Greifswald, Germany
Fibrosis and pancreatitis
- since 2014 | Dr. Georg Beyer, Department of Medicine II, LMU Klinikum, Munich, Germany
Fibrosis, pancreatitis
- since 2014 | Prof. Dr. Mihaela Delcea, ZIK-HIKE, University of Medicine, Greifswald, Germany
Targeted drug delivery
- since 2016 | Prof. Dr. Kirsten Lauber, Department of Radiation Oncology, LMU Klinikum, Munich, Germany
Targeted drug delivery
- since 2017 | Dr. Ivonne Regel, Department of Medicine II, LMU Klinikum, Munich, Germany
Epigenetics and pancreatic cancer
- since 2018 | Prof. Dr. Kairabaan Hodivala-Dilke, Bart Cancer Centre, London, UK
Targeted drug delivery
- since 2019 | Prof. Dr. Roland Rad, TranslaTUM, TU Munich, Munich, Germany
Targeted drug delivery
- since 2019 | Prof. Dr. Bernhard Küster, Chair of Bioanalytics, TUM School of Life Sciences, TU Munich, Munich, Germany
Role of Sphingolipids in PDAC



INSTITUTIONAL RESPONSIBILITIES

- since 2015 **Supervision:** 5 master student, and 10 Ph.D. student in biology, biotechnology, and theoretical medicine
- since 2016 **Institutional Responsibilities:** Co-organizer of the Internal weekly seminars and methodology seminars, Department of Medicine II, LMU Klinikum, Munich, Germany
- since 2014 **Peer-Review for original articles:** Reviewing activities in Gut, Gastroenterology, Pancreas, Pancreatology, eBiomedicine, PLoS one, Clinical Cancer Research, and British Journal of Cancer, Scientific Reports, Cancer Letters, BMC cancer
- since 2020 **Peer-Review for research grants:** Invited to peer-review international grants, such as Worldwide Cancer Research, UK, German Cancer aid, Germany
- since 2024 **Editorial Board:** Editorial Board Member of Cancer Letters



PUBLICATIONS

Journal Articles

1. Mahajan, U. M., Gupta, C., Wagh, P. R., Karpe, P. A. & Tikoo, K. Alteration in Inflammatory/Apoptotic Pathway and Histone Modifications by Nordihydroguaiaretic Acid Prevents Acute Pancreatitis in Swiss Albino Mice. *Apoptosis: An International Journal on Programmed Cell Death* **16**, 1138–1149. ISSN: 1573-675X (2011).
2. Patino, T., Mahajan, U., Palankar, R., *et al.* Multifunctional Gold Nanorods for Selective Plasmonic Photothermal Therapy in Pancreatic Cancer Cells Using Ultra-Short Pulse near-Infrared Laser Irradiation. *Nanoscale* **7**, 5328–5337. ISSN: 2040-3372 (2015).
3. Sendler, M., Beyer, G., Mahajan, U. M., *et al.* Complement Component 5 Mediates Development of Fibrosis, via Activation of Stellate Cells, in 2 Mouse Models of Chronic Pancreatitis. *Gastroenterology* **149**, 765–776.e10. ISSN: 1528-0012 (2015).
4. Lerch, M. M., Mayerle, J., Mahajan, U., *et al.* Development of Pancreatic Cancer: Targets for Early Detection and Treatment. *Digestive Diseases (Basel, Switzerland)* **34**, 525–531. ISSN: 1421-9875 (2016).
5. Mahajan, U. M., Teller, S., Sendler, M., *et al.* Tumour-Specific Delivery of siRNA-coupled Superparamagnetic Iron Oxide Nanoparticles, Targeted against PLK1, Stops Progression of Pancreatic Cancer. *Gut* **65**, 1838–1849. ISSN: 1468-3288 (2016).
6. Malla, S. R., Kärrman Mårdh, C., Günther, A., *et al.* Effect of Oral Administration of AZD8309, a CXCR2 Antagonist, on the Severity of Experimental Pancreatitis. *Pancreatology: official journal of the International Association of Pancreatology (IAP) ... [et al.]* **16**, 761–769. ISSN: 1424-3911 (2016).
7. Beyer, G., Mahajan, U. M., Budde, C., *et al.* Development and Validation of a Chronic Pancreatitis Prognosis Score in 2 Independent Cohorts. *Gastroenterology* **153**, 1544–1554.e2. ISSN: 1528-0012 (2017).
8. Beyer, G., Mahajan, U. M., Lerch, M. M. & Mayerle, J. Reply. *Gastroenterology* **154**, 1853–1854. ISSN: 1528-0012 (2018).
9. Mahajan, U. M., Langhoff, E., Goni, E., *et al.* Immune Cell and Stromal Signature Associated With Progression-Free Survival of Patients With Resected Pancreatic Ductal Adenocarcinoma. *Gastroenterology* **155**, 1625–1639.e2. ISSN: 1528-0012 (2018).
10. Mayerle, J., Kalthoff, H., Reszka, R., *et al.* Metabolic Biomarker Signature to Differentiate Pancreatic Ductal Adenocarcinoma from Chronic Pancreatitis. *Gut* **67**, 128–137. ISSN: 1468-3288 (2018).
11. Sendler, M., Weiss, F.-U., Golchert, J., *et al.* Cathepsin B-Mediated Activation of Trypsinogen in Endocytosing Macrophages Increases Severity of Pancreatitis in Mice. *Gastroenterology* **154**, 704–718.e10. ISSN: 1528-0012 (2018).
12. Simon, O., Beyer, G., Mahajan, U. M. & Mayerle, J. [Pancreatic Cancer in the Year 2018 - Room for Precision Medicine?] *Deutsche Medizinische Wochenschrift (1946)* **143**, 1109–1112. ISSN: 1439-4413 (2018).
13. Benitz, S., Straub, T., Mahajan, U. M., *et al.* Ring1b-Dependent Epigenetic Remodelling Is an Essential Prerequisite for Pancreatic Carcinogenesis. *Gut* **68**, 2007–2018. ISSN: 1468-3288 (2019).
14. Zhang, J., Schewe, J., Li, H., *et al.* The effects of hepatic steatosis on thromboxane A2 induced portal hypertension. *Gastroenterologia Y Hepatologia* **42**, 534–541. ISSN: 0210-5705 (2019).
15. Buchholz, I., Nagel, F., Klein, A., *et al.* The Impact of Physiological Stress Conditions on Protein Structure and Trypsin Inhibition of Serine Protease Inhibitor Kazal Type 1 (SPINK1) and Its N34S Variant. *Biochimica Et Biophysica Acta. Proteins and Proteomics* **1868**, 140281. ISSN: 1878-1454 (2020).
16. Li, Q., Maier, S. H., Li, P., *et al.* Aptamers: A Novel Targeted Theranostic Platform for Pancreatic Ductal Adenocarcinoma. *Radiation Oncology (London, England)* **15**, 189. ISSN: 1748-717X (2020).
17. Mahajan, U. M., Goni, E., Langhoff, E., *et al.* Cathepsin D Expression and Gemcitabine Resistance in Pancreatic Cancer. *JNCI cancer spectrum* **4**, pkz060. ISSN: 2515-5091 (2020).

18. Malla, S. R., Krueger, B., Wartmann, T., *et al.* Early Trypsin Activation Develops Independently of Autophagy in Caerulein-Induced Pancreatitis in Mice. *Cellular and molecular life sciences: CMLS* **77**, 1811–1825. ISSN: 1420-9071 (2020).
20. Regel, I., Eichenmüller, M., Mahajan, U. M., *et al.* Downregulation of SFRP1 Is a Protumorigenic Event in Hepatoblastoma and Correlates with Beta-Catenin Mutations. *Journal of Cancer Research and Clinical Oncology* **146**, 1153–1167. ISSN: 1432-1335 (2020).
21. Regel, I., Mayerle, J. & Mahajan, U. M. Current Strategies and Future Perspectives for Precision Medicine in Pancreatic Cancer. *Cancers* **12**, 1024. ISSN: 2072-6694 (2020).
22. Sendler, M., van den Brandt, C., Glaubitz, J., *et al.* NLRP3 Inflammasome Regulates Development of Systemic Inflammatory Response and Compensatory Anti-Inflammatory Response Syndromes in Mice With Acute Pancreatitis. *Gastroenterology* **158**, 253–269.e14. ISSN: 1528-0012 (2020).
23. Adam, M. G., Beyer, G., Christiansen, N., *et al.* Identification and Validation of a Multivariable Prediction Model Based on Blood Plasma and Serum Metabolomics for the Distinction of Chronic Pancreatitis Subjects from Non-Pancreas Disease Control Subjects. *Gut* **70**, 2150–2158. ISSN: 1468-3288 (2021).
24. Allawadhi, P., Beyer, G., Mahajan, U. M. & Mayerle, J. Novel Insights Into Macrophage Diversity During the Course of Pancreatitis. *Gastroenterology* **161**, 1802–1805. ISSN: 1528-0012 (2021).
26. Mahajan, U. M., Li, Q., Alnatsha, A., *et al.* Tumor-Specific Delivery of 5-Fluorouracil-Incorporated Epidermal Growth Factor Receptor-Targeted Aptamers as an Efficient Treatment in Pancreatic Ductal Adenocarcinoma Models. *Gastroenterology* **161**, 996–1010.e1. ISSN: 1528-0012 (2021).
27. Mahajan, U. M., Alnatsha, A., Li, Q., *et al.* Plasma Metabolome Profiling Identifies Metabolic Subtypes of Pancreatic Ductal Adenocarcinoma. *Cells* **10**, 1821. ISSN: 2073-4409 (2021).
28. Reiter, F. P., Obermeier, W., Jung, J., *et al.* Prevalence, Resistance Rates, and Risk Factors of Pathogens in Routine Bile Cultures Obtained during Endoscopic Retrograde Cholangiography. *Digestive Diseases (Basel, Switzerland)* **39**, 42–51. ISSN: 1421-9875 (2021).
29. Trapp, S., Aghdassi, A. A., Glaubitz, J., *et al.* Pancreatitis Severity in Mice with Impaired CFTR Function but Pancreatic Sufficiency Is Mediated via Ductal and Inflammatory Cells-Not Acinar Cells. *Journal of Cellular and Molecular Medicine* **25**, 4658–4670. ISSN: 1582-4934 (2021).
30. Zorniak, M., Sirtl, S., Mahajan, U. M., *et al.* Influence of COVID-19 Pandemic on Endoscopic Procedures in Two European Large-Capacity Endoscopy Units: "Keep Calm, Keep Safe and Scope On?" *Digestive Diseases (Basel, Switzerland)* **39**, 540–548. ISSN: 1421-9875 (2021).
31. Ben Khaled, N., Hammer, K., Ye, L., *et al.* TRAIL Receptor Targeting Agents Potentiate PARP Inhibitor Efficacy in Pancreatic Cancer Independently of BRCA2 Mutation Status. *Cancers* **14**, 5240. ISSN: 2072-6694 (2022).
32. Goni, E., Regel, I., Mahajan, U. M., *et al.* HLA-DRB1*16 and -DQB1*05 Alleles Are Strongly Associated with Autoimmune Pancreatitis in a Cohort of Hundred Patients. *Pancreatology: official journal of the International Association of Pancreatology (IAP) ... [et al.]* **22**, 466–471. ISSN: 1424-3911 (2022).
33. Goni, E., Tammer, I., Schütte, K., *et al.* The Influence of Gastric Atrophy on Helicobacter Pylori Antibiotics Resistance in Therapy-Naïve Patients. *Frontiers in Microbiology* **13**, 938676. ISSN: 1664-302X (2022).
34. Jakob, C. E. M., Mahajan, U. M., Oswald, M., *et al.* Prediction of COVID-19 Deterioration in High-Risk Patients at Diagnosis: An Early Warning Score for Advanced COVID-19 Developed by Machine Learning. *Infection* **50**, 359–370. ISSN: 1439-0973 (2022).
35. Mahajan, U. M., Oehrle, B., Sirtl, S., *et al.* Independent Validation and Assay Standardization of Improved Metabolic Biomarker Signature to Differentiate Pancreatic Ductal Adenocarcinoma From Chronic Pancreatitis. *Gastroenterology* **163**, 1407–1422. ISSN: 1528-0012 (2022).
36. Orben, F., Lankes, K., Schneeweis, C., *et al.* Epigenetic Drug Screening Defines a PRMT5 Inhibitor-Sensitive Pancreatic Cancer Subtype. *JCI insight* **7**, e151353. ISSN: 2379-3708 (2022).
37. Sirtl, S., Mahajan, U. M., Auernhammer, C. J., *et al.* Impact of Tumor Size and Location on Endoscopic Ultrasound-Guided Sampling of Pancreatic Neuroendocrine Tumors: A Recursive Partitioning Analysis. *Pancreatology: official journal of the International Association of Pancreatology (IAP) ... [et al.]* **22**, 644–650. ISSN: 1424-3911 (2022).
39. Mahajan, U. M., Erber, J., Shamsrizi, P., *et al.* Validation of the SACOV-19 Score for Identifying Patients at Risk of Complicated or More Severe COVID-19: A Prospective Study. *Infection* **51**, 1669–1678. ISSN: 1439-0973 (2023).
40. Sirtl, S., Żorniak, M., Hohmann, E., *et al.* Machine Learning-Based Decision Tool for Selecting Patients with Idiopathic Acute Pancreatitis for Endosonography to Exclude a Biliary Aetiology. *World Journal of Gastroenterology* **29**, 5138–5153. ISSN: 2219-2840 (2023).

41. Vielhauer, J., Benesch, C., Pernpruner, A., *et al.* How to Exclude Pulmonary Embolism in Patients Hospitalized with COVID-19: A Comparison of Predictive Scores. *Thrombosis Journal* **21**, 51. ISSN: 1477-9560 (2023).
42. Żorniak, M., Sirtl, S., Beyer, G., *et al.* Consensus Definition of Sludge and Microlithiasis as a Possible Cause of Pancreatitis. *Gut* **72**, 1919–1926. ISSN: 1468-3288 (2023).
43. Benitz, S., Steep, A., Nasser, M. M., *et al.* ROR2 Regulates Cellular Plasticity in Pancreatic Neoplasia and Adenocarcinoma. *Cancer Discovery* **14**, 2162–2182. ISSN: 2159-8290 (2024).
44. Sirtl, S., Bretthauer, K., Ahmad, M., *et al.* Severity of Gallstone-, Sludge-, or Microlithiasis-Induced Pancreatitis-All of the Same? *Pancreas* **53**, e633–e640. ISSN: 1536-4828 (2024).
45. Sirtl, S., Hohmann, E., Ahmad, M., *et al.* Severity and Outcome of a First Episode of Idiopathic Acute Pancreatitis Is Not More Severe than Pancreatitis of Other Etiologies. *Pancreatology: official journal of the International Association of Pancreatology (IAP) ... [et al.]* **24**, 840–846. ISSN: 1424-3911 (2024).
46. Vielhauer, J., Mahajan, U. M., Adorjan, K., *et al.* Electronic Data Capture in Resource-Limited Settings Using the Lightweight Clinical Data Acquisition and Recording System. *Scientific Reports* **14**, 19056. ISSN: 2045-2322 (2024).
47. Ye, L., Ziesch, A., Schneider, J. S., *et al.* The Inhibition of YAP Signaling Prevents Chronic Biliary Fibrosis in the *Abcb4*^{-/-} Model by Modulation of Hepatic Stellate Cell and Bile Duct Epithelium Cell Pathophysiology. *Aging and Disease* **15**, 338–356. ISSN: 2152-5250 (2024).
48. Zhou, Q., Pichlmeier, S., Denz, A. M., *et al.* Altered Histone Acetylation Patterns in Pancreatic Cancer Cell Lines Induce Subtype-specific Transcriptomic and Phenotypical Changes. *International Journal of Oncology* **64**, 26. ISSN: 1791-2423 (2024).
49. Mahajan, U. M., Oehrlé, B., Goni, E., *et al.* Validation of Two Plasma Multi-Metabolite Signatures for Patients at Risk of or with Suspected Pancreatic Ductal Adenocarcinoma (METAPAC): A Prospective, Multicentre, Investigator-Masked, Enrichment Design, Phase 4 Diagnostic Study. *The Lancet Gastroenterology & Hepatology* (2025 Accepted).

Books and Chapters

19. *Translational Pancreatic Cancer Research: From Understanding of Mechanisms to Novel Clinical Trials* (eds Michalski, C. W., Rosendahl, J., Michl, P. & Kleeff, J.) ISBN: 978-3-030-49475-9 978-3-030-49476-6. (2021) (Springer International Publishing, Cham, 2020).
38. *The Pancreas: An Integrated Textbook of Basic Science, Medicine, and Surgery* Fourth edition (eds Beger, H. G., Büchler, M. W., Hruban, R. H., *et al.*) ISBN: 978-1-119-87597-0 (Wiley Blackwell, Hoboken (New Jersey), 2023).

Patents & Applications

25. Mahajan, U. M., Lerch, M. M. & Mayerle, J. *pat.* 63234702 (2021).
50. Mayerle, J., Lerch, M. M. & Mahajan, U. M. *pat.* 25155667.6 (2025).

CONFERENCES

German Pancreas Club (DPC)	2011, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2021, 2022, 2023, 2024, 2025
European Pancreas Club (EPC)	2013, 2014, 2015, 2016, 2017, 2018, 2019, 2021, 2012, 2023, 2024
American Pancreatic Association (APA)	2014, 2016, 2020
United European Gastroenterology (UEG)	2014, 2024
Indian Pancreas Club (IPC)	2024
Indian Pharmacology Society (IPS)	2024

Invited talk
Poster presentation
Paper presentation