



OTTO VON GUERICKE
UNIVERSITÄT
MAGDEBURG

MED

MEDIZINISCHE
FAKULTÄT

Forschungsbericht 2025

Innovation Laboratory for Image Guided Therapy

INNOVATION LABORATORY FOR IMAGE GUIDED THERAPY

Leipziger Str. 44
39120 Magdeburg

1. LEITUNG

Dr. Axel Boese
Prof. Dr. Michael Friebe

2. FORSCHUNGSPROFIL

Upcoming challenges in healthcare delivery and regional/global unmet clinical needs require new concepts for related purpose-driven research and development to ensure a quick translation back to clinical use.

With the HealthTEC Innovation lab (INNOLAB:IGT) we have established an interdisciplinary development environment with close ties to several clinical users, international partners (Australia, India, Portugal, Italy, Spain, UK, Switzerland, Turkey, USA, Chile), and translation networks.

Our primary focus is on workflow-, and device- innovation for image-guided and minimally invasive therapies, as well as on novel health monitoring approaches.

We are able to IDENTIFY Unmet Clinical Needs, define problem statements and provide IDEAS/INVENTIONS, can validate the prototypes, and have shown to be able to work with partners on IMPLEMENTATION and TRANSLATION. With that approach, we have generated over 40 patents, identified more than 100 needs and created just as many prototypes in the last 5 years.

For that, we provide a fully equipped clinical development environment (diagnostic and minimally invasive therapy systems, robots, 3D printers, electronics / mechanical lab, comprehensive machine learning expertise) and empathetic and knowledgeable development staff.

Engineering students (biomedical, electrical, computer science, and mechanical) and clinical students learn to work in a focused and interdisciplinary innovation environment from identification all the way to a potential technology transfer with the clinical user and at the same time stimulate start-up activities in this area.

We also know the regulatory environment and the economic realities of bringing innovation to the clinical markets.

3. SERVICEANGEBOT

The INKA Innovation Lab supports innovators in the realization of their ideas.

We provide application-driven research close to medical needs. Our strengths are ideation, innovation, prototyping and testing of new solutions and products with medical professionals involved. With our interdisciplinary and international team, we operate a fully equipped clinical development environment including diagnostic and minimally invasive therapy systems, robots, 3D printers, phantoms / electronics / mechanical lab, engineering, machine learning and data processing expertise and empathetic and knowledgeable development staff. We can show expertise in regulatory affairs and the economic realities supporting you to bring innovation to the clinical markets. We look forward to working with you! Please check: www.inka-md.de or contact inka@ovgu.de

4. METHODIK

We work based on an adapted Stanford Biodesign approach to **Identify** clinical needs, **Ideate** solutions and **Implement** these solutions for transfer to the market.

5. VERÖFFENTLICHUNGEN

BEGUTACHTETE ZEITSCHRIFTENAUFsätze

Fiederer, Carolina; Chand, Tara; Martens, Louise; Ristow, Inka; Durner, Verena; Abler, Birgit; Walter, Martin; Graf, Heiko

Resting-state functional connectivity within the reward system mediates subcortical integration during erotic stimulus processing

The world journal of biological psychiatry - Abingdon : Taylor & Francis Group, Bd. 26 (2025), Heft 6, S. 244-253

[Imp.fact.: 3.8]

Friebe, Michael; Serwatka, Witold; Steeg, Katharina; Krombach, Gabriele Anja; Oran, Hamza; Özdil, Oğuzhan Berke; Heryan, Katarzyna; Boese, Axel; Illanes, Alfredo; Rzepka, Dominik

Initial findings creating a temperature prediction model using vibroacoustic signals originating from tissue needle interactions

Scientific reports - [London]: Springer Nature, Bd. 15 (2025), Artikel 7393, insges. 11 S.

[Imp.fact.: 3.9]

Laubach, Markus; Cheers, Giles Michael; Frankenbach-Désor, Tina; Weimer, Lucas Philipp; Baumgartner, Heiko; Böcker, Wolfgang; Burgkart, Rainer; Cidonio, Gianluca; D'Este, Matteo; Dirnagl, Ulrich; Drude, Natascha Ingrid; Eschweiler, Jörg; Friebe, Michael; Ganse, Bergita; Hartmann, Hanna; Hildebrand, Frank; Hoog Antink, Christoph; Kim, MinJoo; Kneser, Ulrich; Łojkowski, Witold; Marmitt, Gerd; Mayer-Wagner, Susanne; Praster, Maximilian; Reimers, Nils Fabian; Schenke-Layland, Katja; Schulz, Arndt-Peter; Spicher, Nicolai; Stoppe, Christian; Tölch, Ulf; Griensven, van Martijn; Wehrle, Esther; Weschke, Sarah; Holzapfel, Boris Michael; Hutmacher, Dietmar Werner

Clinical translation of 3D-printed patient-specific bone implants - a consensus statement

International journal of surgery - [Alphen aan den Rijn, Niederlande]: Wolters Kluwer, Bd. 111 (2025), Heft 11, S. 7497-7506

[Imp.fact.: 10.1]

Pickert, Paul; Giers, Anja; Lux, Anke; Papaioannou, Vassiliki-Anna; Esmaeili, Nazila; Hagenah, Jannis; Illanes, Alfredo; Boese, Axel; Arens, Christoph; Davaris, Nikolaos

Perpendicular vascular changes in NBI-CE of laryngeal lesions - diagnostic accuracy, reproducibility, and common pitfalls

Diagnostics - Basel : MDPI, Bd. 15 (2025), Heft 23, Artikel 3051, insges. 17 S.

[Imp.fact.: 3.3]

Pöschke, Patrik; Boese, Axel; Seitz, Katharina; Amann, Niklas; Eckstein, Sophie; Schulmeyer, Carla; Hack, Carolin Christine; Heindl, Felix; Hübner, Hanna; Füller, Andreas; Fasching, Peter Andreas; Emons, Julius

Evaluation and feasibility of diagnostic heatflow imaging in patients with palpable breast lesions - a pilot study

Archives of gynecology and obstetrics - Berlin : Springer, Bd. 312 (2025), Heft 4, S. 1107-1115

[Imp.fact.: 2.5]

Schwab, Roland; Zschenderlein, Nike; Boese, Axel; Klebingat, Stefan; Behme, Daniel

Feasibility of using angioscopy to visualize the internal vessel wall of the internal carotid artery

Clinical neuroradiology - München : Urban & Vogel . - 2025, insges. 9 S. ;

[Online ahead of print]

[Imp.fact.: 2.6]

Steeg, Katharina; Krombach, Gabriele Anja; Friebe, Michael

A review of needle navigation technologies in minimally invasive cardiovascular surgeries - toward a more effective and easy-to-apply process

Diagnostics - Basel : MDPI, Bd. 15 (2025), Heft 2, Artikel 197, insges. 17 S.

[Imp.fact.: 3.3]

Steeg, Katharina; Serwatka, Witold; Rzepka, Dominik; Oran, Hamza; Özdil, Oğuzhan B.; Heryan, Katarzyna; Krombach, Gabriele Anja; Friebe, Michael

Vibroacoustic signatures - proof of concept for simple material characterization during needle interventions

International journal of computer assisted radiology and surgery - Berlin : Springer, Bd. 20 (2025), Heft 9, S. 1807-1815

[Imp.fact.: 2.3]

Urrutia, Robin; Espejo, Diego; Guerra, Montserrat; Vio, Karin; Sühn, Thomas; Esmaeili, Nazila; Boese, Axel; Fuentealba, Patricio; Illanes, Alfredo; Hansen, Christian; Poblete, Victor

Exploring deep clustering methods in vibro-acoustic sensing for enhancing biological tissue characterization

IEEE access / Institute of Electrical and Electronics Engineers - New York, NY : IEEE, Bd. 13 (2025), S. 80395-80406

[Imp.fact.: 3.6]

NICHT BEGUTACHTETE ZEITSCHRIFTENAUFsätze

Boese, Axel; Oppermann, Birgit

Medizinprodukte so planen, dass nur kontaminierte Teile Abfall sind

Medizin & Technik - Leinfelden-Echterdingen : Konradin Verl. Robert Kohlhammer . - 2025, insges. 7 S.