InfectoGnostics
Research Campus Jena

Breaking New Ground in Infection Diagnostics

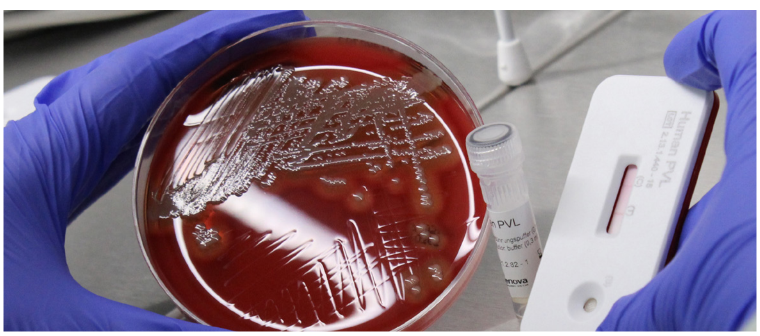
The Mission
Partners at the InfectoGnostics Research Campus Jena develop solutions for the point-of-care diagnosis of infections caused by bacteria, viruses and fungi. Antimicrobial resistances play a special role here. Additional fields of application include immune status determination or wastewater monitoring for outbreak prediction.

The Campus
- a public-private partnership that brings together research institutes, clinics and industry on an equal footing
- co-financing by the partners and proportional project funding since 2014 by the Federal Ministry of Research, Technology and Space, additionally funded by the Free State of Thuringia / the European Union

Everything under One Roof
InfectoGnostics has a total of 1,000 square metres of laboratory and office space at its disposal in the Centre for Applied Research and the neighbouring Institute for Physical Chemistry at the University of Jena with state-of-the-art equipment.

Best Conditions for Translational Research
- Sharing of research infrastructure (e.g. photonic instruments, BSL-2 laboratories, Integrated Biobank Jena)
- Clinical expertise flows directly into technology development
- Pipeline concept for a closed value chain
- Validation of technologies with clinical partners
- Mentoring on intellectual property rights (IP) and market entry

Cross-Disciplinary Fight against Infections
The solutions developed by InfectoGnostics researchers are used in fields of human and veterinary medicine. These technologies also take into account host response, serology and vaccination status as important aspects of diagnostics and therapy of infectious diseases.



Translational Research Concept
InfectoGnostics closes the gap between research and application and overcomes hurdles in the realisation of new diagnostics through early coordination and clearly defined transfer points within the public-private partnership.

Partners from Science, Industry & Medicine
More than 30 partners from the fields of science, medicine and industry (mainly SMEs) are developing marketable solutions for the fast and cost-effective analysis of infections at the point of need.

Open Platform Concept for Rapid Translation into Point-of-Care Products
InfectoGnostics partners are using modular and open diagnostic platforms in the research campus to synergize different technology approaches with complementary strengths. These platforms can thus be continuously improved and adapted to new areas of application. This allows for a faster development into marketable solutions for cost-effective on-site diagnostics. In addition, bioinformatics methods such as machine learning are used to optimise pre- and postanalytics, for example in the context of sequencing.

Photonic Technologies, Biomolecular Assays and Sequencing for Better Diagnostics
With biomolecular assays, modern sequencing technology and photonic detection methods such as Raman spectroscopy, possibilities for the efficient determination of antibiotic resistance are drastically improved. Doctors are thus provided with a secure basis for decision-making in order to carry out effective antibiotic therapies in the shortest possible time and to stop the spread of resistant pathogens.

RESEARCH CAMPUS
Public-Private Partnership for Innovation

With funding from the:
Federal Ministry of Research, Technology and Space
Freistaat Thüringen
Ministerium für Wirtschaft, Landwirtschaft und Ländlichen Raum

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InfectoGnostics Lead Projects (2025-2030)

AutOoC

Automated Organ-on-Chip platform for infection research

InfectoGnostics partners in this project develop an automated Organ-on-Chip (OoC) platform to model bacterial lung infections and test antibiotic and nanoparticle-based therapies. Automated liquid handling enables standardized high-throughput generation of OoC models. By replicating human tissue structures, the system allows more predictive assessment of drug efficacy and accelerates the identification of effective treatments for persistent infections such as *Staphylococcus aureus*.

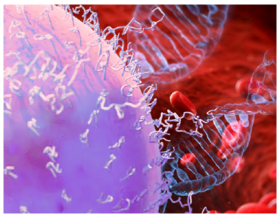
Analytik Jena GmbH + Co.KG | SmartDyeLivery GmbH | Dynamic42 GmbH | Jena University Hospital

CDI-NORO-POC

Molecular point-of-care diagnostics for *Clostridioides difficile* and noroviruses

This project develops a rapid molecular test for detecting *Clostridioides difficile* and noroviruses in nursing homes. The LAMP-based assay allows care staff to perform on-site testing, ensuring faster hygiene and containment measures. Using the portable eazyPlus device, stool samples are analyzed directly without lab processing. After laboratory validation, a field study will assess usability and accuracy for long-term implementation in healthcare settings.

Jena University Hospital | AmplexDiagnostics GmbH | City of Jena Health Department



NEXD

Nanoreactor-bead extraction of cfDNA for hypothesis-free pathogen diagnostics

NEXD explores the diagnostic use of cell-free DNA (cfDNA) in hard-to-diagnose infections such as infective endocarditis and invasive pulmonary aspergillosis. Using nanoreactor beads from BLINK AG, nucleic acids are extracted from large sample volumes and detected via digital multiplex PCR. The method enables bias-free sequencing and microbiome analysis from plasma, urine and swabs. AI-supported software simplifies data interpretation and reduces costs, enabling faster, hypothesis-free pathogen detection.

BLINK AG | Leibniz-IPHT | nanozoo GmbH | Jena University Hospital

PERFEKT

Fully automated multi-parameter analyzer for decentralized infection diagnostics

PERFEKT develops a compact, cost-efficient analysis system for decentralized infection diagnostics. The device performs all test steps automatically, from prepared sample to result, and can be used in labs or directly on-site. Assays target *Chlamydia*, *Staphylococcus aureus/MRSA*, and *Legionella* for infection detection, typing, and resistance analysis. Combining DNA and protein-based tests, the system supports surveillance, outbreak prevention and advances InfectoGnostics technologies toward practical application.

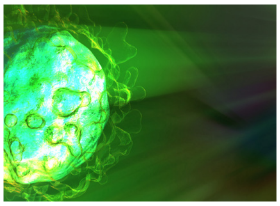
fzmb GmbH | Leibniz-IPHT

QEID-POC

Quantitative inflammation and infection diagnostics at the point of care

In this project, a rapid point-of-care system for distinguishing bacterial from viral infections is being developed. The platform quantifies inflammation markers to guide therapy decisions and reduce unnecessary antibiotic use. Integrating molecular and immunological detection methods, it delivers reliable results outside centralized labs, enabling faster patient management and supporting antimicrobial stewardship.

VELLAP Diagnostics GmbH | Senova GmbH | biotechrabbit GmbH | Friedrich Schiller University Jena



RamanProImmun

Spectroscopic platform for blood infection diagnostics

RamanProImmun develops a Raman spectroscopy-based platform to assess immune responses in blood infections. By analyzing T-cell reactions to pathogens, it identifies spectral fingerprints that reveal immune status. A portable device with automated cell detection and miniature optics enables high-throughput screening, supporting personalized therapies and improved infection diagnostics.

Leibniz-IPHT | Jena University Hospital | Grintech GmbH | Biophotonics Diagnostics GmbH

TransDiag

Structured transfer support for diagnostic innovations

TransDiag supports all InfectoGnostics projects in developing and transferring diagnostic technologies into medical care. It ensures that clinical needs, user requirements and healthcare structures are considered early in development. The project provides needs analyses, networking, study planning and regulatory advice. In its final phase, TransDiag will establish a consulting agency for diagnostics transfer between research and healthcare.

Jena University Hospital, Institute of General Practice and Family Medicine | Research Practice Network