

# Infrastrukturen in Zentren und Netzwerken

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Section of Infectious Diseases

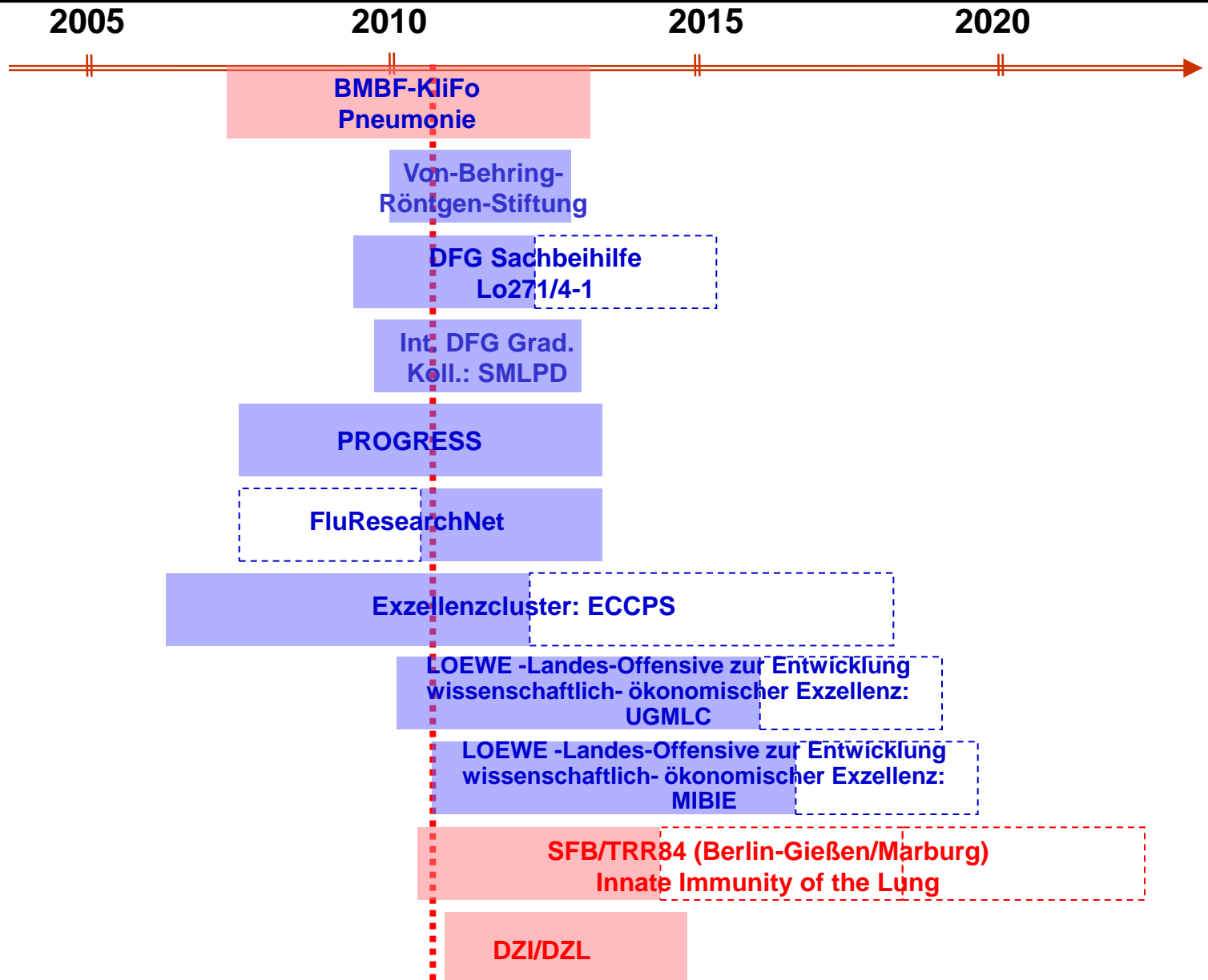
**TMF Workshop 27./28. Juni 2011 in Berlin**

# NGFN (1, 2) und NGFN Nachfolgeprogramme (NGFN<sup>plus</sup> und NGFN<sup>transfer</sup>)

- Infektions- und Entzündungsnetz  
(Koord. T. Chakraborty)
- NGFN1: Giessen Research Center in  
Infectious Diseases (GRID):  
Functional Genomics of Bacterium-  
Host Interaction in Sepsis and Septic  
Organ Failure
- NGFN-2: Signatures-Pathways-Genes  
(SIPAGE)

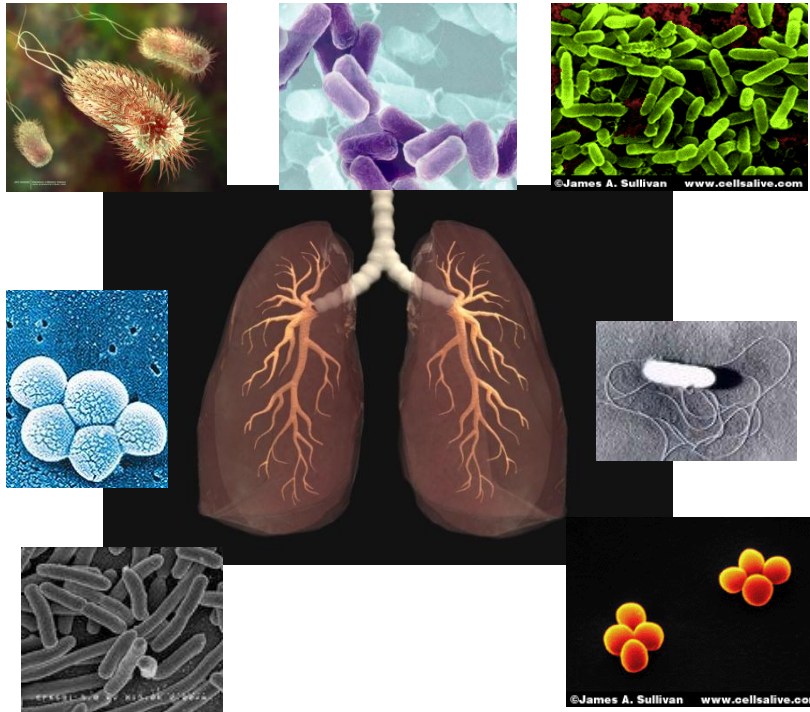


# Nachhaltige Forschungsperspektive

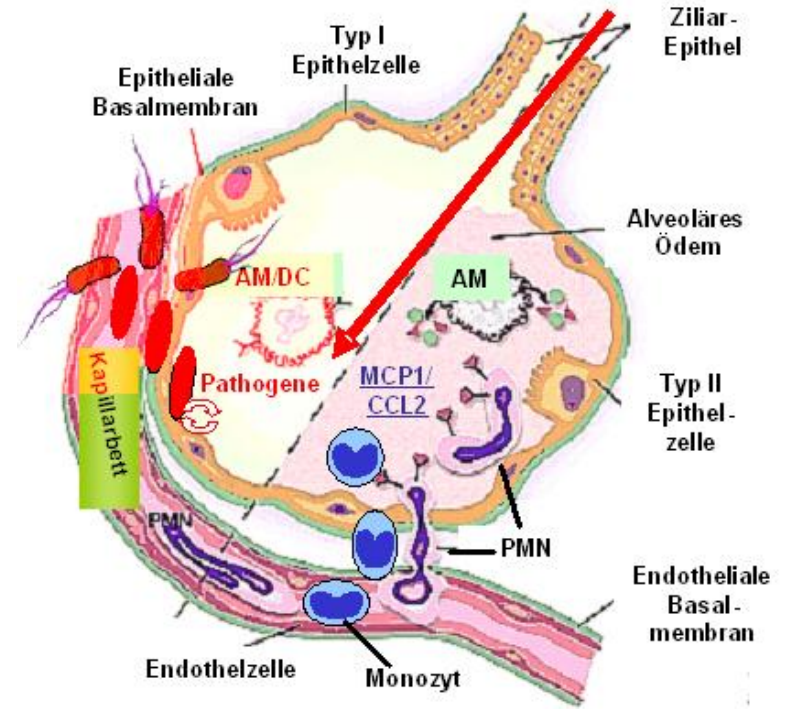


# Pathogenomik der Erreger-Wirt-Interaktion bei entzündlichen Lungenerkrankungen

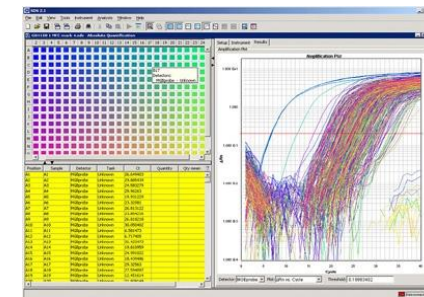
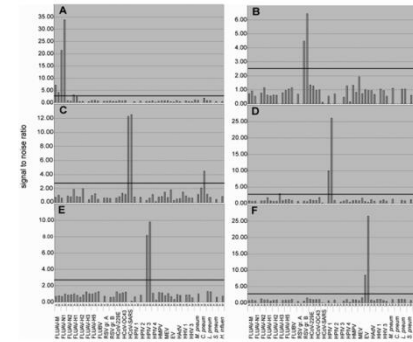
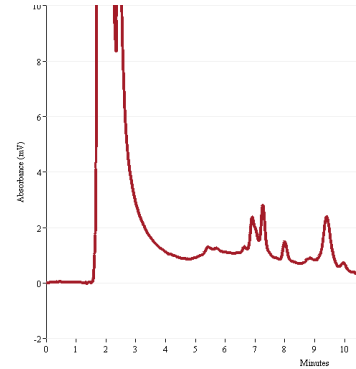
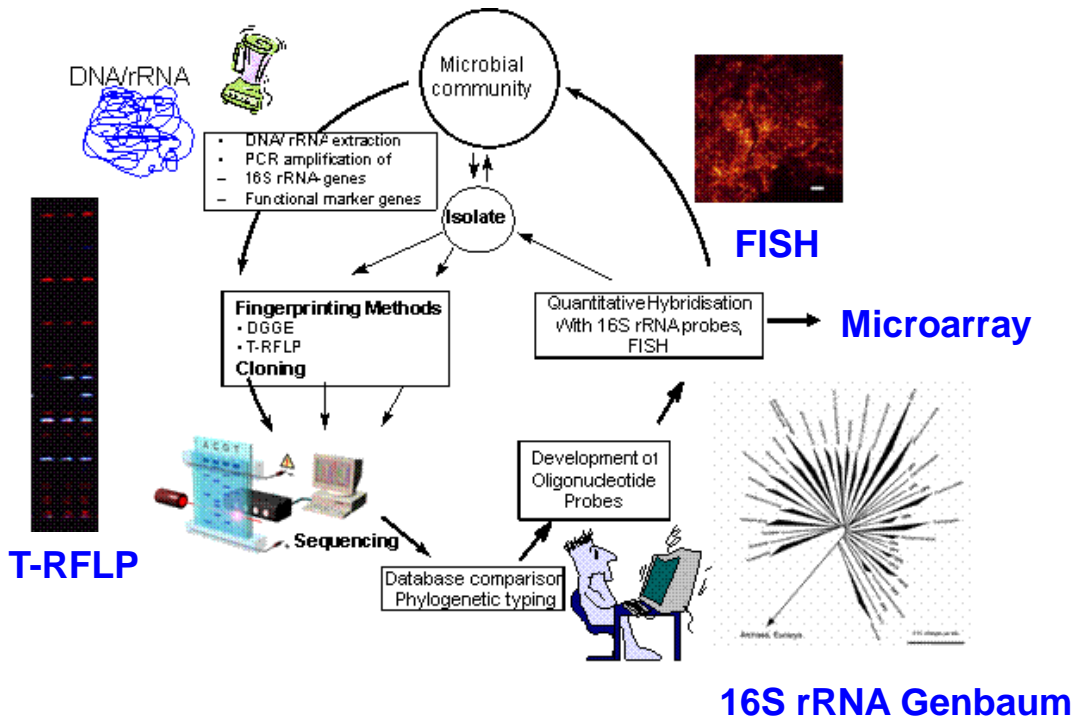
Trinad Chakraborty/Jürgen Lohmeyer



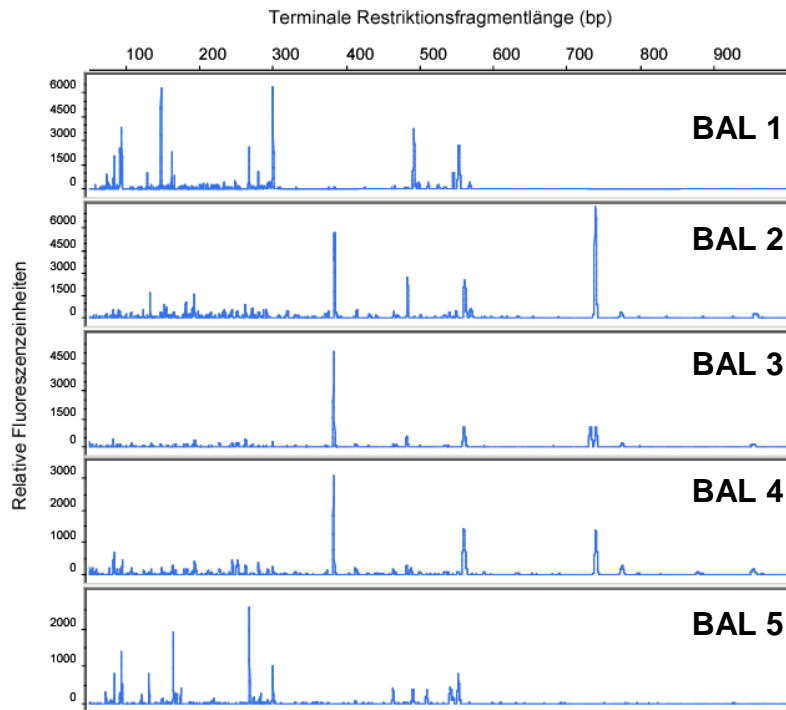
## Bakterien, bakterielle Produkte, Viren



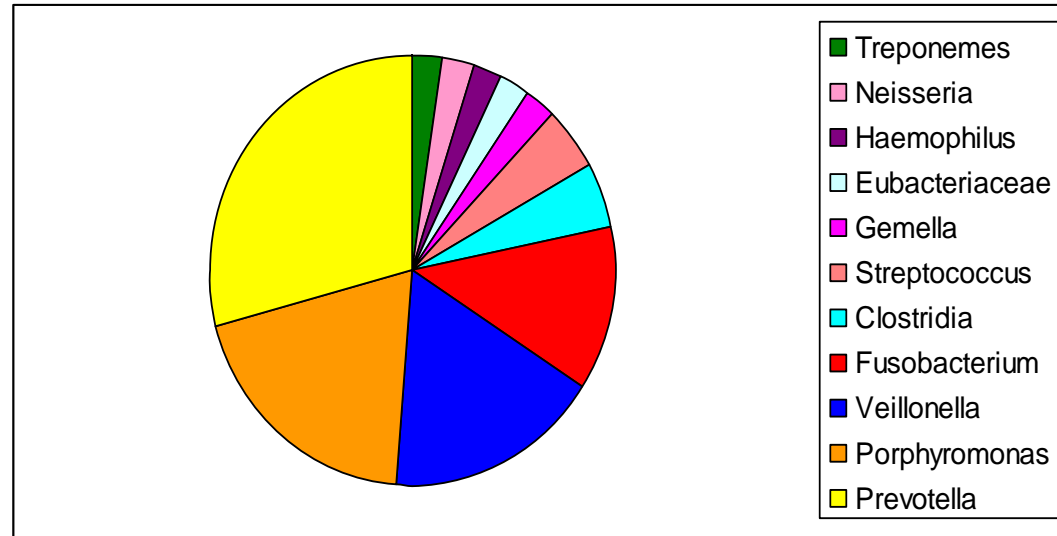
# Metagenomische Untersuchungen auf Mikroorganismen I



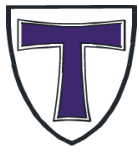
# Metagenomische Untersuchungen auf Mikroorganismen II



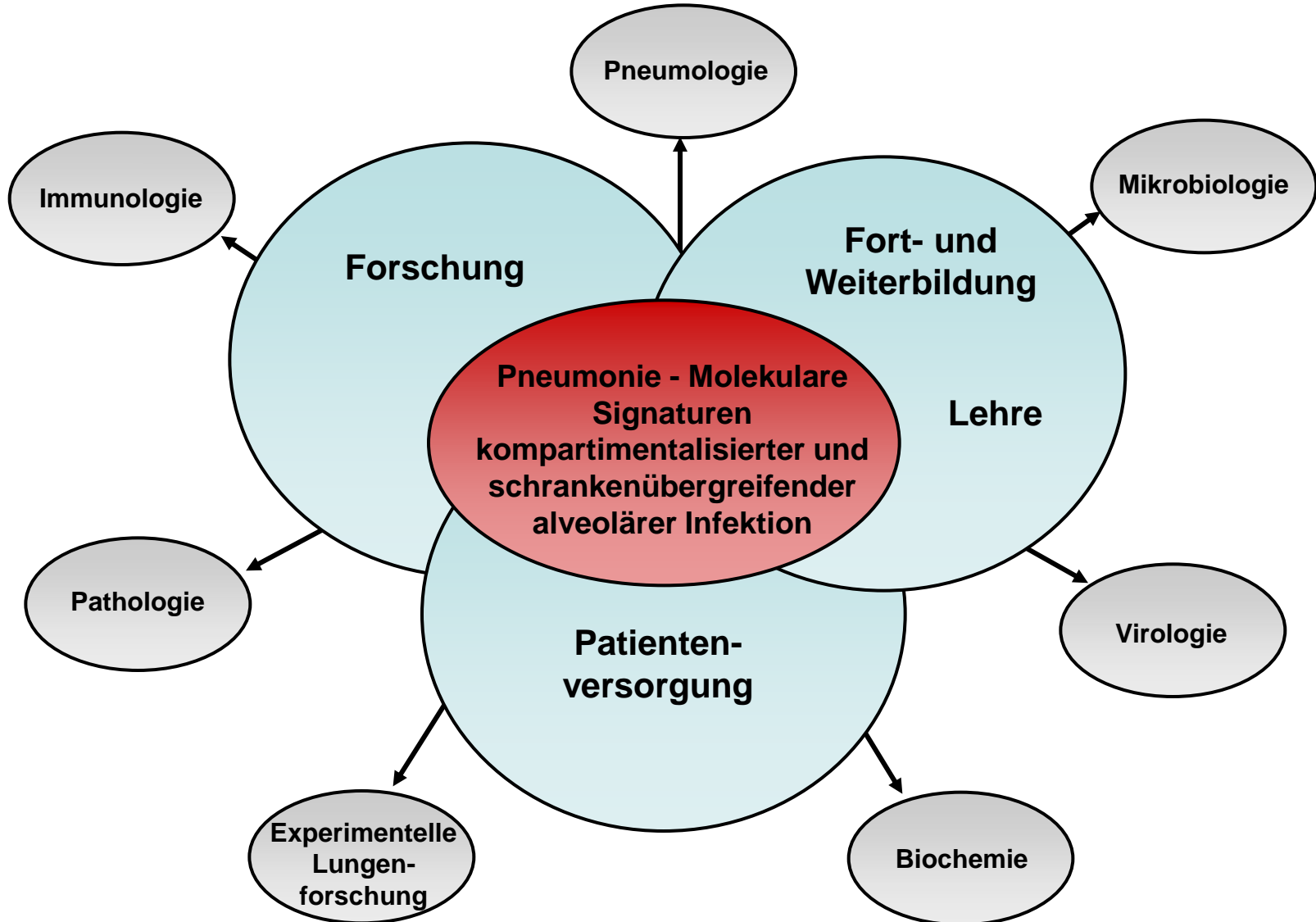
**Terminale Restriktionslängen-  
polymorphismus-Analyse von  
16S rRNA-Genamplifikaten aus  
BAL-Proben von 5 Patienten mit  
COPD.**



**Bals, Vogelmeier; unveröffentlichte Daten**

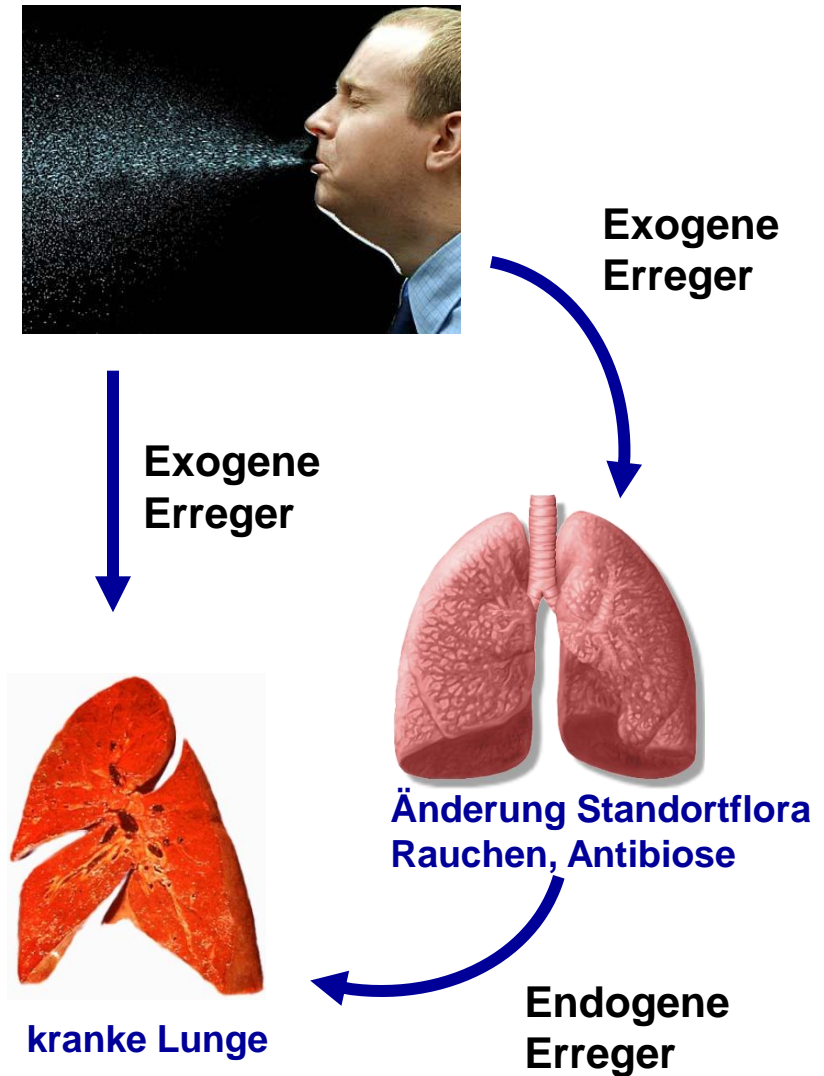


# Klinische Forschergruppe Infektiologie



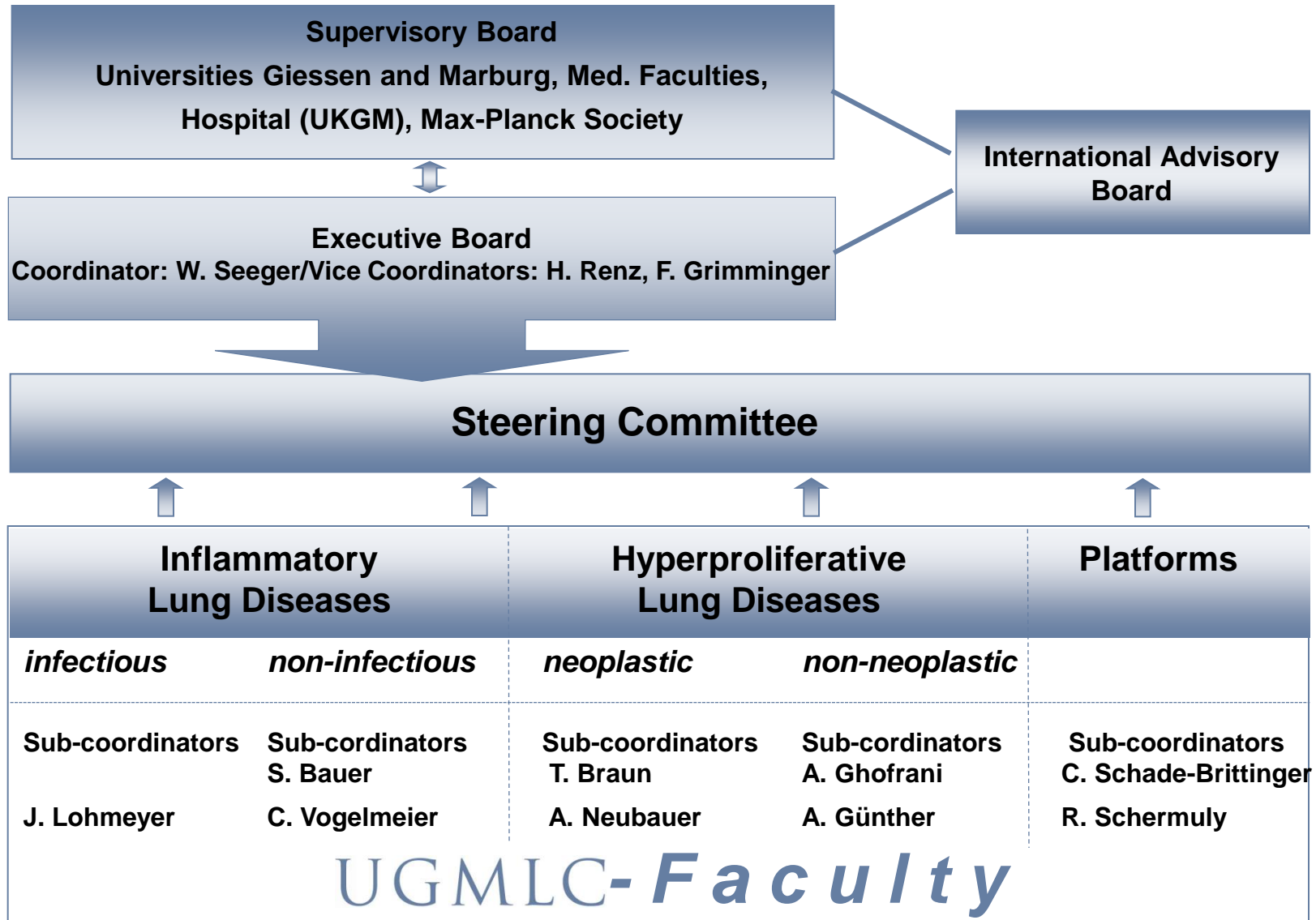
# Standortflora der Lunge und des Respirationstraktes

- Die Standortflora ist notwendig für die Homöostase der Lunge
- Veränderungen in mikrobiellen Gemeinschaften (Mikrobiomen) können zu Erkrankungen (z. B. Morbus Crohn, Colitis ulcerosa, Hauterkrankungen) führen
- Spielt die Standortflora eine Rolle bei entzündlichen und infektiösen Lungenerkrankungen (Pneumonie, Asthma, COPD)?

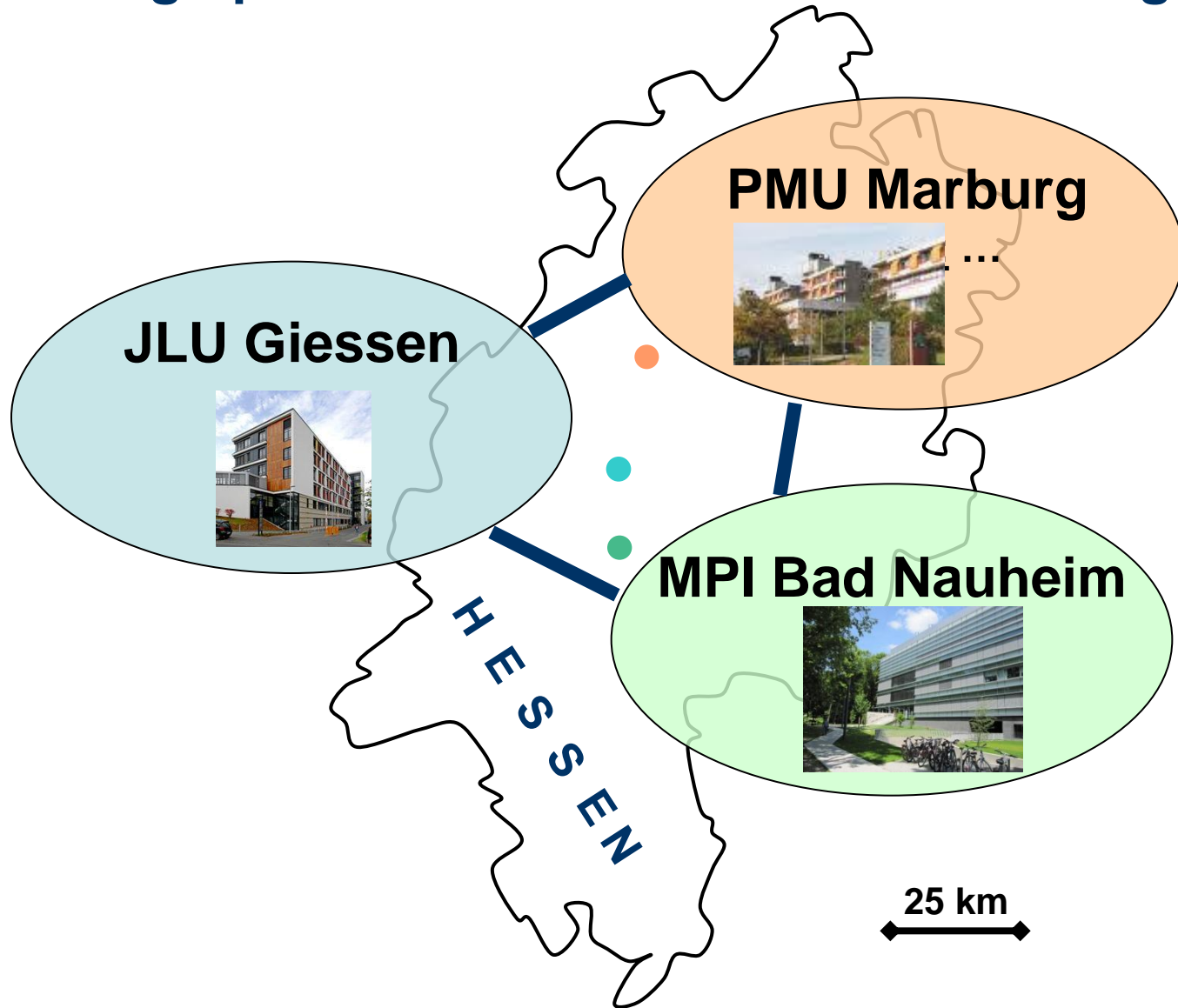




# UGMLC: Universities Giessen & Marburg Lung Center



# Founding upon a Preexistent “Research Triangle”





## Clinical Research GI

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### Internal Medicine

- Pneumology
- Intensive Care

### Medicine

- Oncology
- Infectious Diseases
- Environmental

### Medicine

### Thoracic Surgery

### Microbiology

### Virology

### Immunology

### Specialized Professorships

- Lung Fibrosis
- Pulmonary Vascular  
Research

## Basic Science

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### Max-Planck Institute for Heart and Lung Research (B N)

- Lung Development & Remodeling
- Cardiac Development & Remodeling
- Pharmacology

### Basic Science Institutes

- Biochemistry (GI)
- Anatomy (GI, MR)
- Pharmacology (GI, MR)
- Pharmacy (MR)
- Molecular Biology & Tumor Research  
(IMT, MR)

### Specialized Professorships

- Emphysema, Hypoxia & Lung Aging  
(GI)
- Lung Matrix Remodeling (GI)
- Molecular Oncology of Lung Cancer  
(GI)
- Pulmonary Pharmacotherapy (GI)
- Pulmonary Regeneration (GI)
- Radiobiology (MR)

## Clinical Research MR

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### Internal Medicine

- Pneumology
  - Intensive Care
- ### Medicine
- Oncology

### Pediatrics

### Clinical Chemistry and Molecular Diagnostics

### Microbiology

### Virology

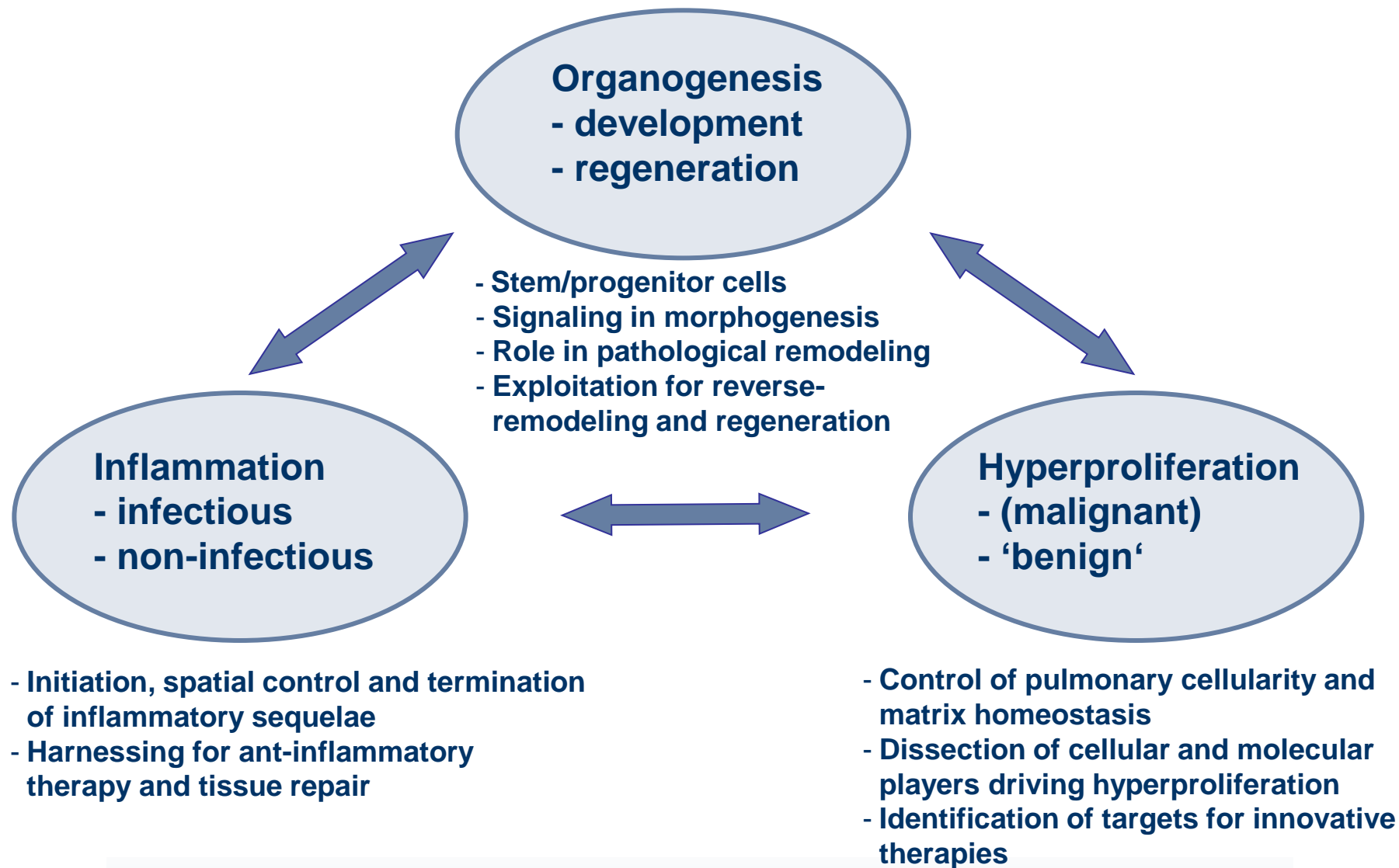
### Immunology

### Medical Biometry and Epidemiology

### Coordinating Centre for Clinical Trials (KKS)

### Specialized Professorship

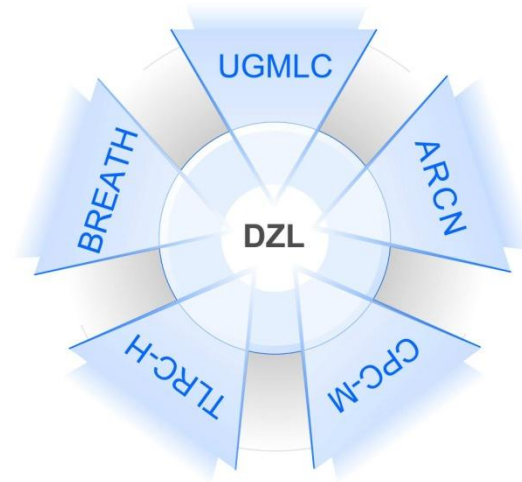
- Bronchopulmonary  
Remodeling



## UGMLC Research Focus

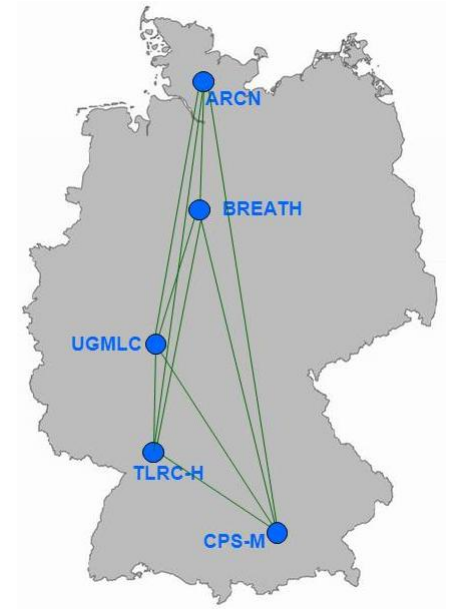
# German Centre for Lung Research

Deutsches Zentrum für Lungenforschung - DZL



# Mission Statement of the DZL

*Translational Research  
to Combat Widespread  
Lung Diseases*



# Platforms of the DZL

- Biobanking
- Imaging
- Clinical Trial Board
- DZL School – Joint Educational Programme
- Exploitation
- Lung Information Service

# Biobanking

- **Implementation of a DZL biobanking portal**
  - Connected to „Technology and Methods Platform for Network Research in Medicine“ (TMF e.V.) and „Biobanking and Biomolecular Resources Research Infrastructure,, (BBMRI) catalogues
  - Comprehensive overview on existing biomaterials, kind and storage location and contact address, consent level, existing ethics votes and phenotyping data
- **Harmonisation of operating procedures and policies**
  - Informed consent, procurement, collection, labelling, registration, processing, storage, tracking, retrieval, transfer, use and destruction
- **Harmonisation of phenotyping tools**
  - Central, non-disease related module plus disease-specific extension modules
  - Link to or integration of radiographic and digitalized pathological data



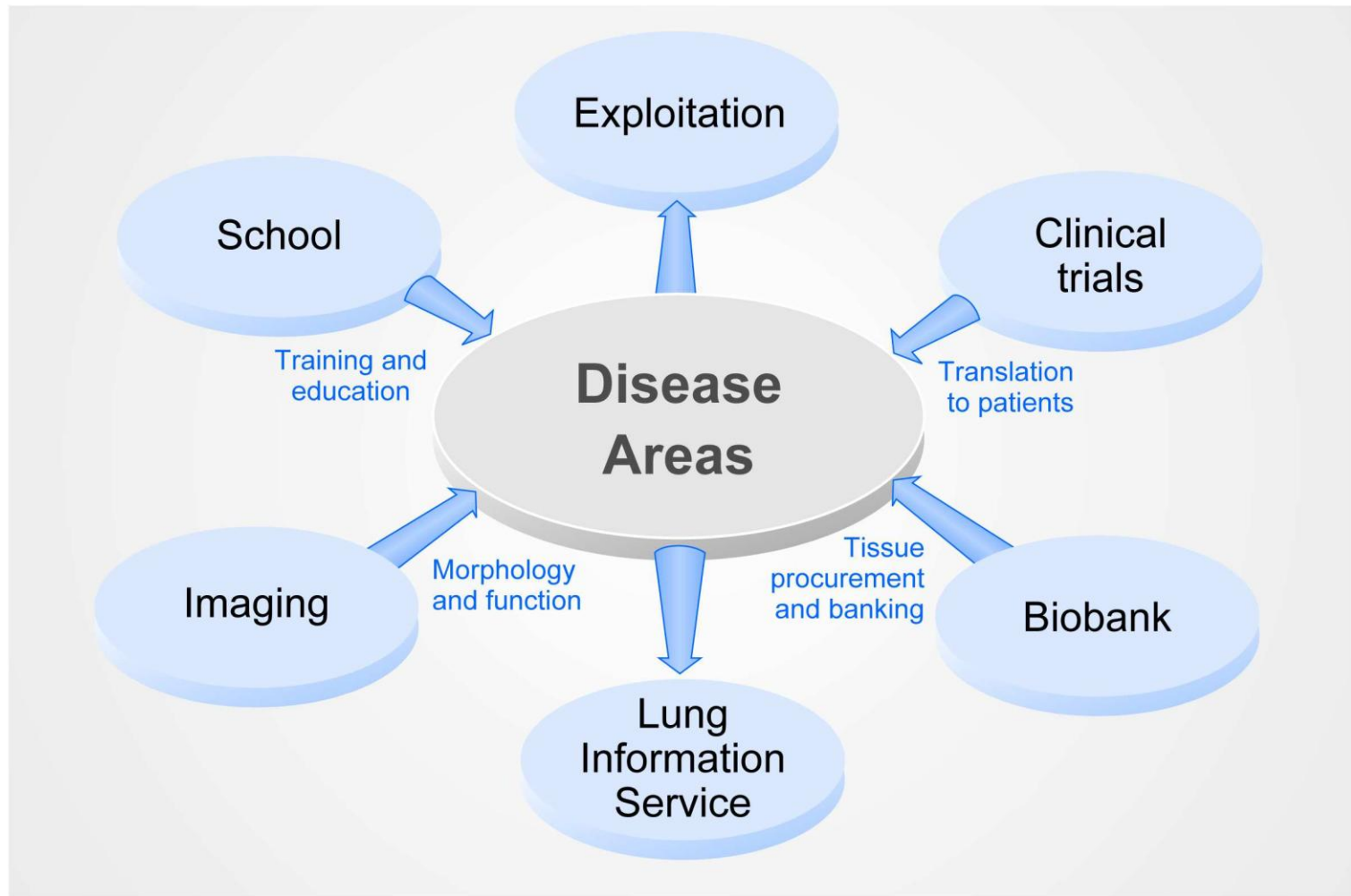
# Imaging: Radiology + Microscopy

- To ensure quality, comparability and translation of results between partner sites as well as preclinical, translational and clinical studies and trials
- Guidance and coordination of projects involving imaging
- Stratification of multiplex, whole range of resolution imaging to serve novel endpoints
- Central administration, standardization, policies and QM
  - Comprehensive ethical and legal framework
  - Implementation of rules for good scientific practice
- Core to share, offer and disseminate imaging technology
- Training in imaging as part of the DZL School

# Clinical Trial Board

- Excellence-based selection process for co-funding of clinical trials starting in 2013
- Investigators submit trial synopsis to the Clinical Trial Board  
Study protocol and rationale, risk-benefit evaluation, statistical analysis plan and power calculation, information on additional funding, advice from competent authorities, IP and feasibility assessment
- Best applications will be presented to the Management Board, which decides on funding
- Innovative Phase I/IIa clinical trials (e.g. GATA-3 specific DNzyme)
- Well characterized subgroups combined with predictive diagnostic markers (e.g. oncology)
- Studies which explore new indications of already authorized or off-patent medicinal products (e.g. sildenafil)

# Interdependencies





Justus-Liebig University  
Giessen



Philipps-University  
Marburg



Univ. of Applied Sciences  
Giessen-Friedberg



Paul-Ehrlich Institute  
Langen

Proposal for the German Centre for Infection Research (DZI)

# HEAL-EMERGE

Hessian Alliance of Excellence in Emerging and Emergency Infections

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President  
University of Applied Sciences  
Giessen-Friedberg

Prof. Dr. Klaus Cichutek  
President  
Paul-Ehrlich Institute  
Langen



Hessian Alliance of Excellence in Emerging and Emergency Infections

Justus-Liebig University Giessen, Philipps-University Marburg, University of Applied Sciences Giessen-Friedberg, Paul-Ehrlich-Institute Langen

Basic Research	Clinical Research	Associated Centres
<p><b>Faculty of Medicine</b>            Biochemistry (GI)            Anatomy and Cell Biology (GI)            Pharmacology (GI, MR)            Immunology (MR)            Neuroanatomy (MR)</p> <p><b>Faculty of Veterinary Medicine</b>            Virology (GI)            Microbiology &amp; Hygiene (GI)            Clinic for Birds, Animals &amp; Reptiles (GI)            Parasitology (GI)            Pathology (GI)</p> <p><b>Faculty of Agriculture &amp; Nutrition &amp; Environmental Management</b>            Biochemistry (GI)            Phytopathology and Appl. Zoology (GI)</p> <p><b>Faculties of Biology &amp; Chemistry</b>            Biochemistry (GI)            Microbiology (MR)            Inorganic &amp; Analyt. Chemistry (GI, MR)</p> <p><b>Fraunhofer Research Group</b>            on Insect Biotechnology (GI)</p> <p><b>Faculty of Pharmacy</b>            Pharmaceutical Technology &amp; Biopharmacy (MR)            Pharmaceutical Chemistry (MR)</p> <p><b>Faculty of Mathematics</b>            Computational Intelligence &amp; Bioinformatics (MR)</p> <p><b>University of Applied Sciences</b>            Institute of Biopharmaceutical Technology            Institute of Biochemical Engineering and Analytics</p> <p><b>Paul-Ehrlich-Institut</b></p>	<p><b>Faculty of Medicine Institutes</b>            Microbiology (GI, MR)            Virology (GI, MR)            Clinical Immunology (GI)            Hygiene (GI, MR)            Clinical Chemistry (MR)</p> <p><b>Clinical Departments</b>            Urology (GI)            Anaesthesiology (GI, MR)            Trauma Surgery (GI)            Ear-Nose-Throat (GI, MR)            Dermatology (MR)            Internal Medicine</p> <ul style="list-style-type: none"> <li>• Infectious Diseases (GI, MR)</li> <li>• Gastroenterology (GI, MR)</li> <li>• Endocrinology (GI, MR)</li> <li>• Paediatrics (GI, MR)</li> <li>• Paediatric Pulmonology and Allergy (GI)</li> <li>• Neuropaediatrics (GI)</li> </ul> <p>School of Dentistry</p> <ul style="list-style-type: none"> <li>• Periodontology (GI)</li> <li>• Paediatric Dentistry (GI)</li> </ul> <p><b>Specialized Professorships</b>            Molecular Vaccinology (GI, MR)            Human Microbial Ecology (GI)            Vaccine Immunology (MR)</p>	<p>LOEWE Centre Synmikro (MR)            MPI for Terrestrial Microbiol. (MR)            LOEWE Centre UGMLC (GI, MR)            LOEWE-MIBIE (GI, MR, FH)            LOEWE-Ambiprobe (GI, FFM)            LOEWE-Insect Biotechnology (GI, FH, FFM, MR)            LOEWE-Tumour &amp; Inflammation (MR, GI)            LOEWE-Bioengineering &amp; Imaging (FH, MR)            LOEWE-Changes in Virus Pathogenicity (MR)            Coordinating Centre for Clinical Trials (KKS, MR)            Coordinating Centre for Pediatric Clinical Trials (KKFP, MR)</p> <p>University Hospital Giessen &amp; Marburg GmbH</p> <p>TransMIT GmbH</p> <p><b>Industrial Partners</b></p> <ul style="list-style-type: none"> <li>• DRG Instruments GmbH (MR)</li> <li>• Intervet International BV</li> <li>• Novartis V&amp;D (MR)</li> </ul>

Fig. 1 – HEAL-EMERGE – Participating institutions



Management Board

DZI

International Scientific Advisory Board

# HEAL-EMERGE

Hessian Alliance of Excellence in Emerging and Emergency Infections

Justus-Liebig University Giessen, Philipps-University Marburg,  
University of Applied Sciences Giessen-Friedberg, Paul-Ehrlich-Institute Langen

**Coordinator: T. Chakraborty, JLU Giessen**

Vice Coordinator: S. Becker, PU Marburg  
Central Management

**Steering Committee (preliminary)**

JLU Giessen: K. Becker; PU Marburg: M. Lohoff; Univ. of Applied Sciences: P. Czermak;  
Paul-Ehrlich-Institute: K. Cichutek; Junior Res. Group: N.N.

**Rapid Detection**

Organizers:  
E. Hüllermeier/H.-J. Thiel

**Vaccines**

Organizers:  
M. Lohoff/J. Ziebuhr

**Novel antiinfectives**

Organizers:  
K. Becker/G. Klebe

**Techn. Platforms**

Organizers:  
B. Spengler/R. König

**Scientific Faculty**



Fig. 1 - Map of Germany with DZIF partner sites and institutions

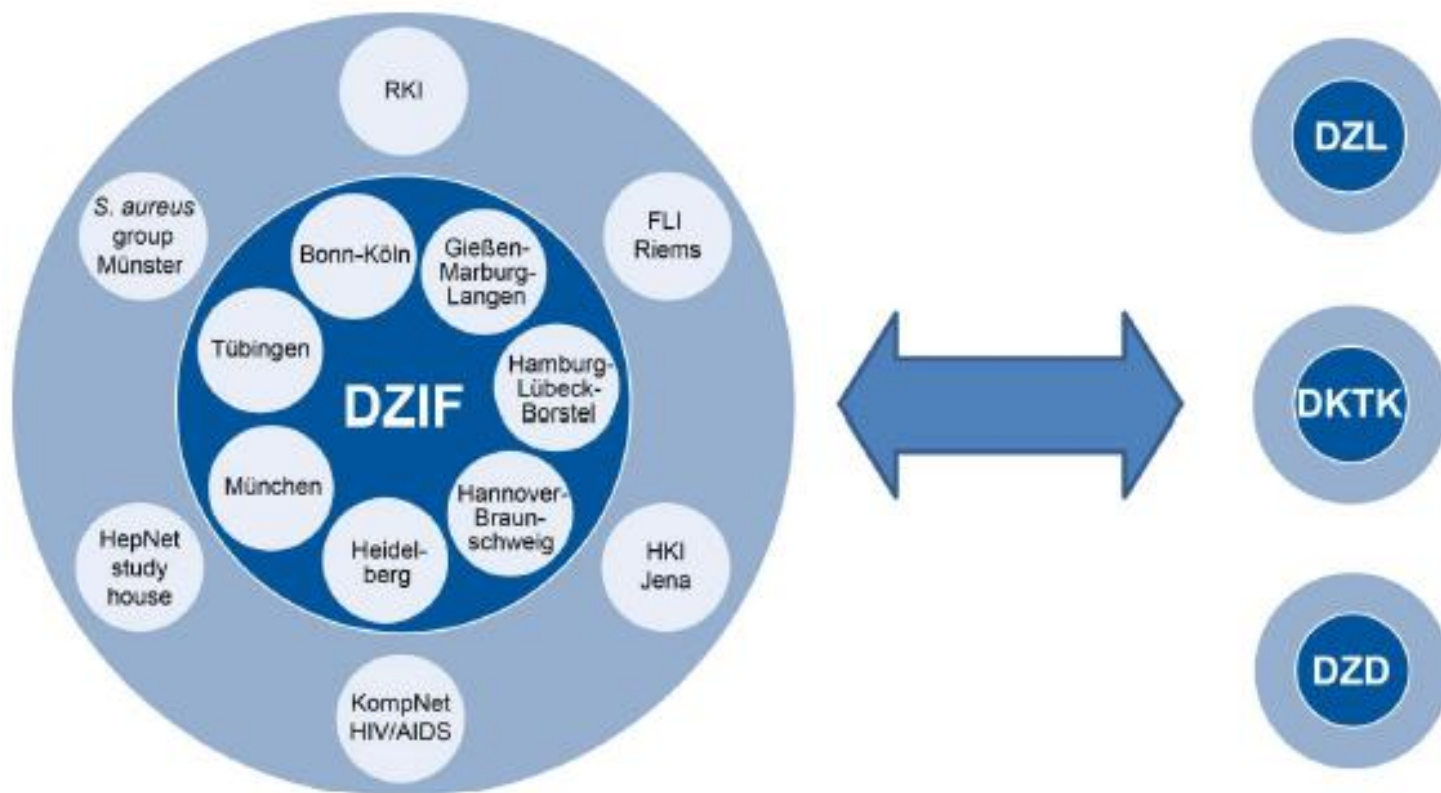


Fig.2 - Inner core of DZIF, associated institutions and collaborating German Research Centres



# DZIF

Deutsches Zentrum für Infektionsforschung

Infectious disease  
research areas

1. Hepatitis	2. Staphylo- coccal infections	3. Bacterial infections of the gastro- intestinal tract	4. Infections of the immuno- compro- mised host	5. HIV/AIDS	6. Malaria	7. Tubercu- losis	8. Emerging infections	9. Infections caused by resistant Gram- negative bacteria
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Cross sectional  
research areas

10. Immune control and immunisation

11. Anti-Infectives

Infrastructure

12.  
Scientific infrastructure

13.  
Clinical infrastructure

14.  
Education and training

# DZL: Added Value through Integrated Approach

- **Common Mission Statement**

*Translational research to combat widespread lung diseases*

- **Complementary Disease Focus**

Airway - Lung Parenchyma - Vasculature

Paediatric - Adult

- **Complementary Expertise**

Basic Science - Disease-orientated - Patient-orientated – Epidemiological Research

- **Complementary Institutional Background**

Helmholtz - Max Planck - Leibniz – Fraunhofer - University Hospitals – Pneumology Centres

- **Bundling of Resources**

Knowledge - Technologies - Biobanks - Patient cohorts

- **Synergies in Technologies**

Molecular Tools - Animal Models - Imaging & Biobank - Clinical Trials & Epidemiology

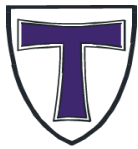
- **Synergies in Budgetary Focus**

Investment in shared technologies - Coherent development strategy

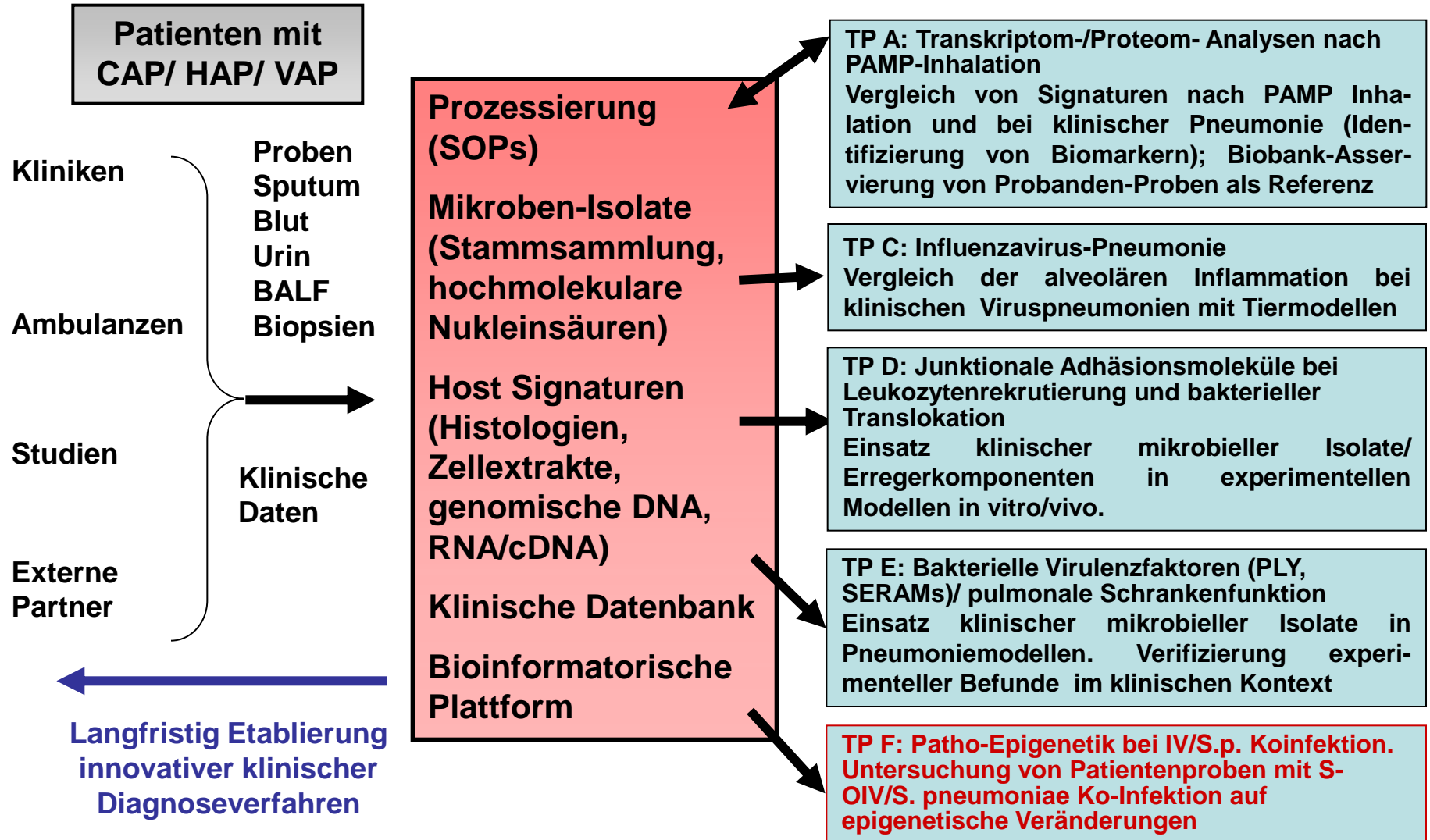
- **Incentives for Cooperation**

Largely cooperative disease programmes - Clinical trial funds – Exchange programmes





# TP Z – Zentrale Biobank für Pneumonien



# Goals

**Access to sufficient numbers of high quality samples and associated high quality data has already become the most obstructive bottleneck of medical research**

**The establishment of integrated nationwide research centers such as DZI/DZL might be one of the few possibilities to efficiently advance harmonization of existing biobanks**

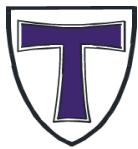
**The establishment of the intended and internationally leading biobank platform is seen as one of the major structural outcomes of DZI/DZL**

**Implementation of a DZL-internet portal with connection to BBMRI catalogues and the German Biobankregister**

**Development of SOPs and policies**

**Harmonisation of phenotyping tools finally on an integrated IT infrastructure**

**Include a biobank for material from preclinical models**



**Infektiologie/  
Immunologie**



**Infektiologie/  
Immunologie**







**Biomedizinisches Zentrum Seltersberg  
(BFS)**



# Zusammenfassung

- Lokal sind an vielen Standorten e-Infrastrukturen etabliert, die lokal gepflegt und fortentwickelt werden müssen (Biobanken, Patientenkohorten, KKS etc.)
- Für die Vernetzung in den Deutschen Zentren der Gesundheitsforschung ist eine Harmonisierung dieser Infrastrukturen über eine zentrale IT-Plattform erforderlich