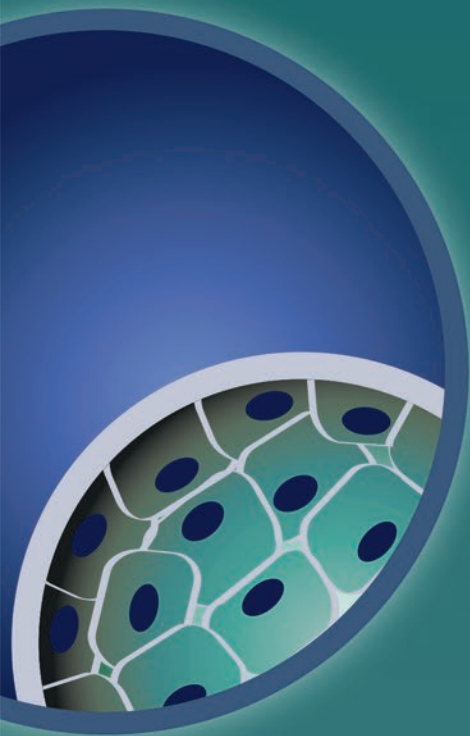




rebirth

Cluster of Excellence

From Regenerative
Biology
to Reconstructive
Therapy

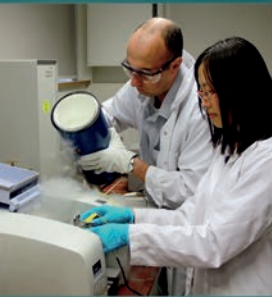


MHH

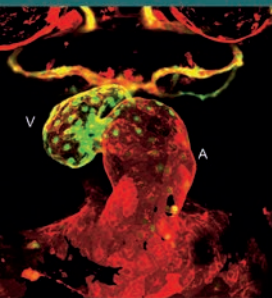
Hannover Medical School

Excellence in Regenerative Medicine

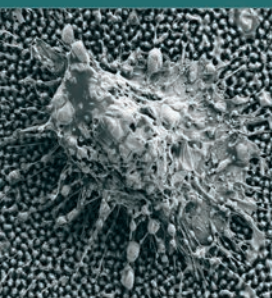
Structure



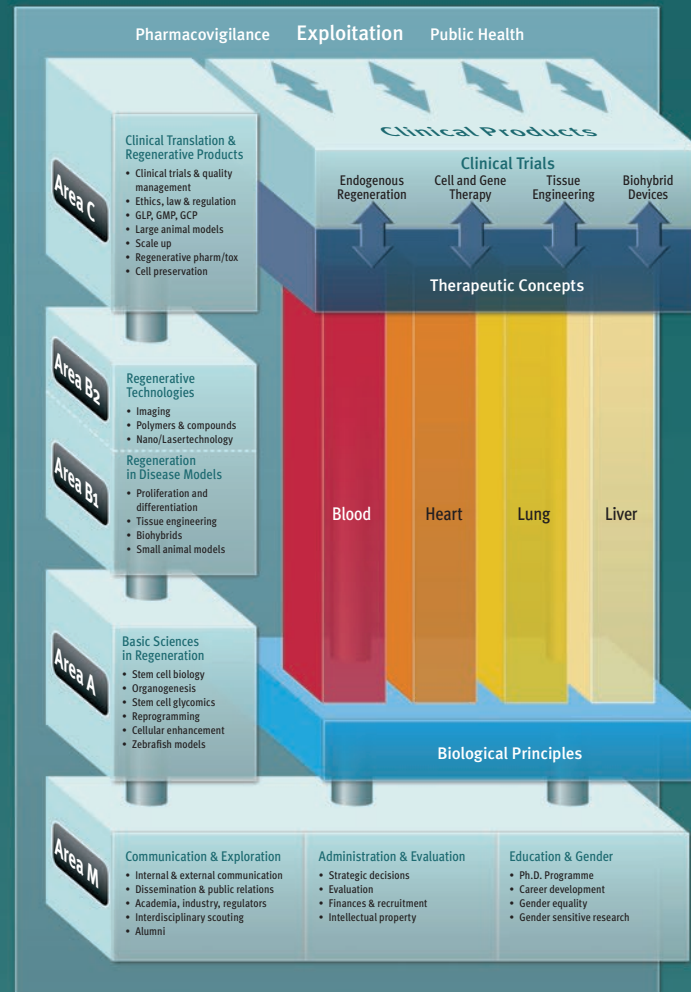
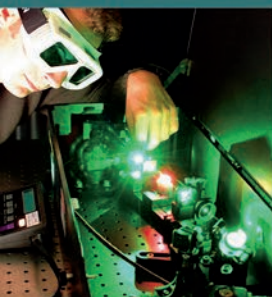
The REBIRTH Cluster of Excellence (From Regenerative Biology to Reconstructive Therapy) is an internationally renowned institution for regenerative medicine. In 60 different work groups, some 250 researchers are developing therapeutic strategies for the heart, lungs, liver and blood through interdisciplinary collaboration between the various scientific disciplines integrated within REBIRTH.



Drawing on the knowledge gained from fundamental research conducted within REBIRTH and its translation into experimental medicine, new approaches and technologies are to be developed for medical use. These will be applied in everyday clinical routine for the benefit of patients. By identifying relevant mechanisms involved in regenerative processes, we will be increasingly able to influence undesired processes in the human body and develop regenerative therapies – thus helping the body to regenerate itself. Translational studies will pave the way for clinical application.



REBIRTH has received funding since 2006 under the German Excellence Initiative of the federal and state governments. REBIRTH's funding is being continued till October 2017, with substantial resources provided.





Area A Basic Sciences of Regeneration

This Area is dedicated to basic research focusing on stem cell biology and molecular reprogramming as well as organogenesis. The researchers use a broad experimental repertoire to elucidate molecular mechanisms relevant to the endeavours of regenerative medicine. Area A is divided into two Collaborative Research Units:

Area A	Basic sciences of Regeneration
CRU 1	Stem Cell Biology and Molecular Programming
CRU 2	Organogenesis



Microscopy analyses of human iPS cells. The pluripotency-associated surface marker Tra1-60 is stained in green, with the cells' nuclei counterstained with DAPI (blue).

Area B1 Regeneration in Disease Models

This Area aims to develop new regenerative therapies with cell therapies, tissue engineering and biohybrid devices for diseases of all four organ systems. Novel findings in stem cell biology and strong interaction with researchers from Area A facilitate new strategies for cellular therapies including induced pluripotent stem cells (iPSCs) and embryonic stem cells (ESCs). All Units follow a translational and interdisciplinary approach to developing new regenerative therapies. They are organized into four Collaborative Research Units:

Area B1	Regeneration in Disease Models
CRU 3	Liver Regeneration
CRU 4	Pulmonary and Vascular Regeneration
CRU 5	Myocardial Remodelling and Cardiovascular Regeneration
CRU 6	Blood and Immune Regeneration

Area B2 Regenerative Technologies

This Area will provide new materials, production technologies and bioanalytical techniques for tissue engineering and stem cell technology, as well as an imaging platform to visualize the structure and function of regenerative processes. Area B2 is divided into two Collaborative Research Units:

Area B2	Regenerative Technologies
CRU 7	Regenerative Materials and Laser Engineering
CRU 8	Imaging Platform

Area C Clinical Translation and Regenerative Products

Area C provides the necessary infrastructure for translation of novel products or therapies derived from basic research by REBIRTH scientists into clinical settings. Groups in Area C have a dense established network of collaborations, both within the Cluster and with external institutions. Area C is divided into two Collaborative Research Units:

Area C	Clinical Translation and Regenerative Products
CRU 9	Regenerative Pathology and Pharmacotoxicology
CRU 10	Regenerative Products, Clinical Trials, Ethical and Legal Dimensions

Area M Management

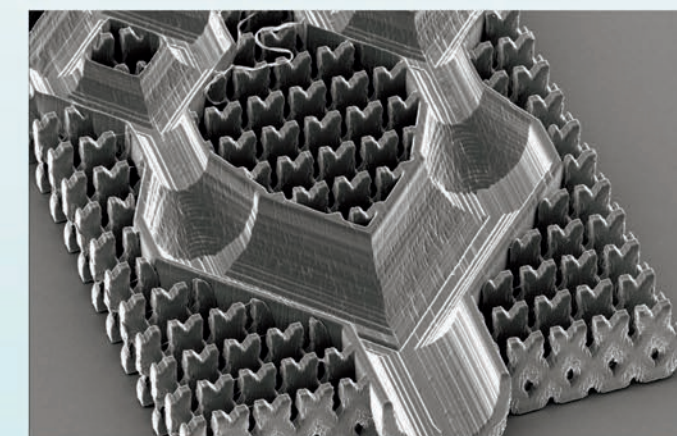
The coordination of the REBIRTH Cluster of Excellence, with its nearly 60 work groups, calls for a wide range of management expertise. The administration Area M consists of the three sections 'Administration and Evaluation', 'Exploration and Communication', and 'Education and Gender (Human Resources)'. To promote human resources, we have established the International Ph.D. Programme in Regenerative Sciences (REGSCI).



Hans Borst Centre

Objectives:

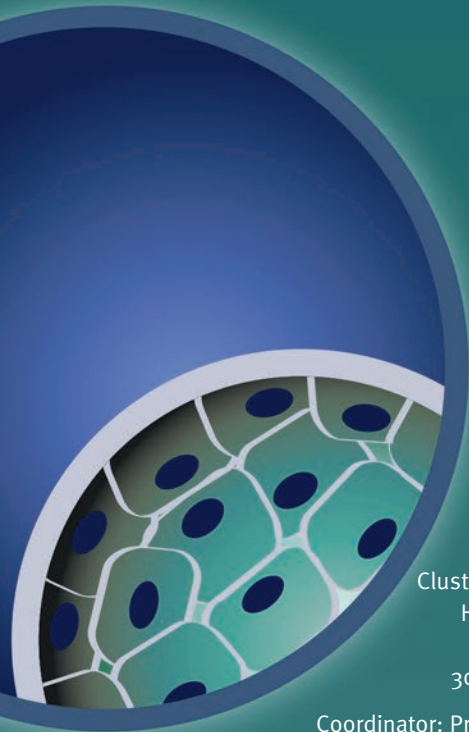
- to address major challenges to human health concerning heart, lung, liver and blood disorders
- to explore and develop new therapeutic concepts beyond contemporary approaches
- to overcome conventional boundaries in medicine by unravelling the dynamics involved in disease entities
- to translate mechanisms of organogenesis, endogenous repair, and stem cell biology into potential clinical application
- to interconnect clinicians and biomedical researchers with physicochemical scientists and engineers
- to integrate clinical expertise, academic research, and industrial developments
- to further develop our scientific and research translation infrastructure
- to train young people and to attract excellent new faculty



Fabrication of vascular scaffold via 2PP technique.

Partner

- Hannover Medical School (MHH)
- Leibniz Universität Hannover (LUH)
- Laser Zentrum Hannover e.V. (LZH)
- University of Veterinary Medicine Hannover, Foundation (TiHo)
- Helmholtz Centre for Infection Research, Braunschweig (HZI)
- Max Planck Institute for Molecular Biomedicine, Münster (MPI)
- Institute of Farm Animal Genetics Mariensee, Friedrich-Loeffler-Institute (FLI)
- Fraunhofer Institute of Toxicology and Experimental Medicine, Hannover (ITEM)



Contact

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