

PhD Program “Regenerative Sciences”

Times (unless otherwise stated and indicated in **bold**):

Tutorials: **Thursdays, 3:00 – 4:00 pm**

Seminars: **Thursdays, 4:15 – 5:45 pm**

Locations:

Semester 1 & 2 MHH, building J04, level 01, HBRS seminar room 1140

Semester 3 & 4 MHH, building J11, Hans-Borst-Zentrum (HBZ), level S0, seminar room 6040

Other Locations*:

NIFE*:

Niedersächsisches Zentrum für Biomedizintechnik, Implantatforschung und Entwicklung - NIFE
(Lower Saxony Centre for Biomedical Engineering, Implant Research and Development)
Stadtfelddamm 34
30625 Hannover

Feodor-Lynen Str. 21*:

Dr. Sarah Strauß
Ambystoma Mexicanum Bioregeneration Center & Spider Silk Laboratory
Feodor-Lynen Str. 21, 30625 Hannover
Building M05 level S0 seminar room 0110

Dr. Stephan Klöß
ATMP-GMP-DU
Building 05, level 4
Feodor-Lynen-Straße 21, 30625 Hannover
Seminar: Building 05, level 3
Tutorial: Building 05, level 1

Hannover Unified Biobank (HUB)

Inga Bernemann
Building M23 (CRC)
Feodor-Lynen-Str.15, 30625 Hannover

1 st semester				
Introductory lecture - Welcoming speech - The curriculum of RegSci & HBRS - Principles of regenerative sciences and the REBIRTH approach	seminar	Tuesday, 04.10.2022	10:00 – 11:30, lecture hall N, J1	Ulrich Martin, Gaby Froriep
Principles of growth factor signaling 1 - Paracrine and juxtacrine signaling - Signaling pathways involved in the regulation of growth	seminar	13.10.2022	4:15 – 5:45 pm	Rainer Niedenthal
	tutorial	20.10.2022	3:00 – 4:00 pm	
Principles of growth factor signaling 2 - Cytokines, hormones, and their receptors	seminar	27.10.2022	3:00 – 4:00 pm	Michael Morgan
Basic mechanisms of inflammation 1 - Innate and adaptive immunity and differentiation	seminar	27.10.2022	4:15 – 5:45 pm	Siegfried Weiß
	tutorial	03.11.2022	3:00 – 4:00 pm	
Principles of growth factor signaling 2 - Cytokines, hormones, and their receptors	tutorial	03.11.2022	4:15 – 5:45 pm	Michael Morgan
Good Scientific Practice Part 1: Introduction and Data Management (MANDATORY!)	seminar	Tuesday, 08.11.2022	3:00 - 4:30 pm, lecture hall A, J2	Beate Schwinzer
Good Scientific Practice Part 2: Scientific misconduct and plagiarism (MANDATORY!)	seminar	Wednesday, 09.11.2022	2:00 - 3:30 pm, lecture hall A, J2	Beate Schwinzer
Good Scientific Practice Part 3: Ethics & Statistics (MANDATORY!)	seminar	Thursday, 10.11.2022	2:00 - 3:30 pm, lecture hall A, J2	Olga Halle, Stephan Halle
Principles of developmental biology and organogenesis 1 - Commitment, differentiation, apoptosis, patterning - Morphogenetic gradients and cell-cell communication - Genetic and epigenetic mechanisms	seminar	10.11.2022	3:45 – 5:15 pm	Andreas Kispert
	tutorial	17.11.2022	3:00 – 4:00 pm	
Principles of developmental biology and organogenesis 2 - Model systems in developmental Biology - Embryogenesis and fetal development	seminar	17.11.2022	4:15 – 5:45 pm	Andreas Kispert
	tutorial	24.11.2022	3:00 – 4:00 pm	
Principles of chromosomal instability	seminar	24.11.2022	4:15 – 5:45 pm	Gudrun Göhring
Principles of stem cell biology 1 - Embryonic derivation of stem cells - Culture methods	seminar & tutorial	01.12.2022	3:00 – 4:30 pm	Thomas Müller
			4:45 – 5:45 pm	
Principles of chromosomal instability	tutorial	08.12.2022	3:00 – 4:00 pm	Gudrun Göhring
Principles of stem cell biology 2 - Tumor stem cells and mechanisms of transformation - Principles of cell cycle regulation	seminar	08.12.2022	4:15 – 5:45 pm	Amar Deep Sharma
	tutorial	15.12.2022	3:00 – 4:00 pm	

Principles of cell engineering 1 - MicroRNAs (miRNA) and downstream targets - Technical approaches - Use of miRNA target identification software - Design of miRNA - Luciferase-gene reporter assays (tutorial)	seminar	15.12.2022	4:15 – 5:45 pm	Jan Fiedler
	tutorial	05.01.2023	3:00 – 4:00 pm	
Cellular senescence, tumor suppression and organismal aging	seminar	05.01.2023	4:15 – 5:45 pm	Anette Melk
	tutorial	12.01.2023	3:00 – 4:00 pm	
Principles of cell engineering 2 - Transient DNA delivery - Episomal maintenance - Stable DNA delivery - Homologous recombination - Site-specific DNA modification	seminar	12.01.2023	4:15 – 5:45 pm	Axel Schambach
	tutorial	19.01.2023	3:00 – 4:00 pm	
Basic mechanisms of inflammation 2 - Infection & cancer	seminar	19.01.2023	4:15 – 5:45 pm	Ulrich Lehmann
	tutorial	26.01.2023	3:00 – 4:00 pm	
Synthetic biology and options for regeneration	seminar	26.01.2023	4:15 – 5:45 pm	Dagmar Wirth
	tutorial	02.02.2023	3:00 – 4:00 pm	
Principles of cell engineering 3 - Cell expansion Bioreactors	seminar	02.02.2023	4:15 – 5:45 pm	Robert Zweigerdt
	tutorial	09.02.2023	3:00 – 4:00 pm	

2 nd semester				
Principles of materials sciences for regenerative medicine 2* Introduction to biomaterials - Ceramic materials (seminar) - Chemistry (tutorial)	seminar & tutorial	13.04.2023	3:00 – 4:30 pm NIFE*	Peter Behrens, Nina Ehlert
			4:45 – 5:45 pm NIFE*	
Principles of materials sciences for regenerative medicine 3* - Polymeric and metallic materials (seminar) - Cell-biomaterial interactions (seminar) - Scaffold technologies (tutorial)	seminar	20.04.2023	4:15 – 6:15 pm NIFE*	Birgit Glasmacher
	tutorial	27.04.2023	3:00 – 4:00 pm NIFE*	Sara Leal Marin
Laser technology in medicine - Imaging - Basics of microscopy - Contrast mechanisms - Modern approaches in imaging - Superresolution microscopy	seminar & tutorial	04.05.2023	3:00 – 4:30 pm NIFE*	Alexander Heisterkamp
			4:45 – 5:45 pm NIFE*	
Principles of growth factor engineering - Engineering growth factors and their receptors for regenerative medicine	seminar	11.05.2023	4:15 – 5:45 pm	Michael Morgan
	tutorial	25.05.2023	3:00 – 4:00 pm	
Animal models of human disease 1 - Murine models of human disease	seminar	25.05.2023	4:15 – 5:45 pm	Andreas Kispert
	tutorial	01.06.2023	3:00 – 4:00 pm	
Animal models of human disease 2 - Primate models - Humanized mouse models	seminar	01.06.2023	4:15 – 5:45 pm	Thomas Moritz
	tutorial	08.06.2023	3.00 – 4:00 pm	
Large animal models in biomedical research - Transgenic pigs - Xenotransplantation - Donor animal engineering	seminar	08.06.2023	4:15 – 5:45 pm	Heiner Niemann
	tutorial	15.06.2023	3:00 – 4:00 pm	
Principles of organ transplantation 1 - Heart, lung, and vessels	seminar & tutorial	22.06.2023	3:00 – 4:30 pm	Jawad Salman
			4:45 – 5:45 pm	
Cardiovascular tissue engineering: Principles	seminar	29.06.2023	4:15 – 5:45 pm	Birgit Andree
	tutorial	06.07.2023	3:00 – 4:00 pm	
Principles of organ transplantation 2 - Liver, pancreas, and β -cells	seminar	06.07.2023	4:15 – 5:45 pm	Michael Ott
	tutorial	13.07.2023	3:00 – 4:00 pm	
Stem cell based organ regeneration - Heart and β -cells - Clinical translation	seminar	13.07.2023	4:15 – 5:45 pm	Robert Zweigerdt
	tutorial	20.07.2023	3:00 – 4:00 pm	

* Literature for „Principles of materials sciences for regenerative medicine“, part 2, and 3: Biomaterials Science (Third Edition), BD Ratner, AS Hoffman, FJ Schoen, JE Lemons (eds.) Elsevier, Amsterdam 2013; available online, MHH library

3 rd semester				
Regenerative approaches: Blood and immunity 1 - Thymus and T-cell development - B-cell development - Flow cytometry	seminar	06.10.2022	4:15 – 5:45 pm	Siegfried Weiß
	tutorial	13.10.2022	3:00 – 4:00 pm	Christine Falk
Regenerative approaches: Blood and immunity 2 - Embryonic stem cell derived haematopoiesis	seminar & tutorial	20.10.2022	3:00 – 4:30 pm	Nico Lachmann
			4:45 – 5:45 pm	
Large animal models in biomedical research (postponed from semester 2) - Transgenic pigs - Xenotransplantation - Donor animal engineering	seminar	27.10.2022	4:15 – 5:45 pm	Heiner Niemann
	tutorial	03.11.2022	3:00 – 4:00 pm	
Regenerative approaches: Blood and immunity 3 - Principles of hematopoietic stem cell transplantation and lymphocyte infusions HLA system and HLA compatibility (tutorial)	seminar	03.11.2022	4:15 – 5:45 pm	Matthias Eder
	tutorial	10.11.2022	3:00 – 4:00 pm	Constanca Figueiredo
Regenerative approaches: Blood and immunity 4 - Genetic disorders of hematopoiesis, Leukemia, and leukemogenic stem cells	seminar	10.11.2022	4:15 – 5:45 pm	Axel Schambach
	tutorial	17.11.2022	3:00 – 4:00 pm	
Regenerative approaches: Liver 1 - Physiology and pathophysiological changes of the liver Liver cell therapy, basics in translation	seminar	24.11.2022	4:15 – 5:45 pm	Michael Ott
	tutorial	01.12.2022	3:00 – 4:00 pm	
Regenerative approaches: Liver 2 - Liver regeneration and stem cells Stem cell-derived hepatocytes	seminar	01.12.2022	4:15 – 5:45 pm	Tobias Cantz
	tutorial	08.12.2022	3:00 – 4:00 pm	Tobias Cantz, Reto Eggenschwiler
Regenerative approaches: Liver 3 - Liver tissue engineering - Artificial liver / extracorporeal devices	seminar	08.12.2022	4:15 – 5:45 pm	Tobias Cantz
	tutorial	15.12.2022	3:00 – 4:00 pm	Tobias Cantz, Reto Eggenschwiler
Non-coding RNAs in cardiovascular disease - Regeneration and therapeutic approaches	seminar	05.01.2023	4:15 – 5:45 pm	Christian Bär
	tutorial	12.01.2023	3:00 – 4:00 pm	Shambhabi Chatterjee
Immunotoxicity & immunomonitoring	seminar	12.01.2023	4:15 – 5:45 pm	Christine Falk
	tutorial	19.01.2023	3:00 – 4:00 pm	
Genotoxicity & monitoring	seminar & tutorial	26.01.2023	3:00 – 4:30 pm	Michael Rothe
			4:45 – 5:45 pm	
Animal experiments - Introduction to animal experiments - Presentation of the animal house	seminar & tutorial	02.02.2023	3:00 – 4:30 pm	André Bleich
			4:45 – 5:45 pm	

Measuring through the microscope - Quantitative structural assessment of organs, tissues and cells - Pitfalls of microscopic morphometry and basic concepts of design-based stereology (seminar) - Applications of stereology to the heart and the lung (tutorial)	seminar & tutorial	09.02.2023	3:00 – 4:30 pm	Christian Mühlfeld
			4:45 – 5:45 pm	
Molecular Imaging of Regenerative Medicine - Molecular Imaging (seminar) - Tour of the Department of Nuclear Medicine (tutorial)	seminar & tutorial	16.02.2023	3:00 – 4:30 pm	James Thackeray
			4:55 – 5:45 pm	
Cell sorting - Method based seminar - Visit to MHH sorter lab → instrumentation (tutorial)	seminar & tutorial	23.02.2023	3:00 – 4:30 pm	Matthias Ballmaier
			4:45 – 5:45 pm	
Design of clinical trials & regulation	seminar	02.03.2023	4:15 – 5:45 pm	Heiko von der Leyen
AAV capsid engineering for in vivo gene therapy	seminar & tutorial	09.03.2023	3:00 – 4:30 pm	Hildegard Büning
			4:45 – 5:45 pm	
Patent protection of academic inventions	seminar	16.03.2023	4:15 – 5:45 pm	Torben Söker, Ascenion GmbH
	tutorial	23.03.2023	3:00 – 4:00 pm	

4 th semester				
Regenerative approaches: Heart and vessels 1 - Basics in Cardiology - Protein therapeutics for cardiovascular repair (tutorial)	seminar	Tuesday, 18.4.2023	4:15 – 5:45 pm	Kai Wollert
	tutorial	20.04.2023	3:00 – 4:00 pm	Marc Reboll
Regenerative Approaches: Heart and vessels 2 - Pathogenesis and regeneration of the heart in response to cancer und anti-cancer treatment - Echocardiography (tutorial)	seminar	20.04.2023	4:15 – 5:45 pm	Melanie Ricke-Hoch
	tutorial	27.04.2023	3:00 – 4:00 pm	Maren Heimerl
Regenerative approaches: Heart and vessels 3 - Angiogenesis and arteriogenesis in development and disease	seminar	27.04.2023	4:15 – 5:45 pm	Florian Limbourg
	tutorial	04.05.2023	3:00 – 4:00 pm	
Regenerative approaches: Heart and vessels 4 - Cardiac differentiation of pluripotent stem cells & myocardial TE	seminar	04.05.2023	4:15 – 5:45 pm	Ina Gruh
	tutorial	11.05.2023	3:00 – 4:00 pm	
Regenerative approaches: Lung 1	seminar	11.05.2023	4:15 – 5:45 pm	Ruth Olmer
	tutorial	25.05.2023	3:00 – 4:00 pm	
Regenerative approaches: Lung 2	seminar	25.05.2023	4:15 – 5:45 pm	
	tutorial	01.06.2023	3:00 – 4:00 pm	
Possibilities and limits of adult mesenchymal stem cells within the context of Tissue Engineering	seminar	01.06.2023	4:15 – 5:45 pm NIFE*	Cornelia Blume, Sebastian Heene
	tutorial	08.06.2023	3:00 – 4:00 pm NIFE*	
The Axolotl – an Amphibian Model Organism of Regeneration	seminar & tutorial	15.06.2023	3:00 – 4:30 pm Feodor-Lynen-Str. 21*	Sarah Strauß
			4:45 – 5:45 pm Feodor-Lynen-Str. 21*	
Regenerative Approaches: Nerve - Degeneration and regeneration in the central and peripheral nervous system - Animal models of acute and chronic neurotoxicity - Cell therapy in the nervous system: neuronal and non-neuronal cells - Application modes - Clinical trials	seminar	22.06.2023	4:15 – 5:45 pm	Nadine Thau-Habermann
	tutorial	29.06.2023	3:00 – 4:00 pm	Thomas Gschwendtberger
Good Manufacturing Practice (GMP), Advanced Therapy Medicinal Products (ATMP)	seminar & tutorial	06.07.2023	3:00 – 4:30 pm Feodor-Lynen-Str. 21*	Stephan Klöß
			4:45 – 5:45 pm Feodor-Lynen-Str. 21*	
Quality Management - QM	seminar & tutorial	13.07.2023	3:00 – 4:30 pm	Inga Bernemann
			4:45 – 5:45 pm HUB*	

Additional offers:

Limited number of participants. **Registration required!**

Meet The Expert

From bedside to the lab-side: friends and foes of industrial high throughput qPCR molecular diagnostics	Thomas Müller, Molecular Biology, Synlab Medical Care Unit Weiden	HBZ	FRIDAY, 02.12.2022	10:30 – 12:00 am
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Method-based Seminars

Synthesis of ultrapure nanoparticles using laser ablation	Oleksandr Gryshkov, IQO, LUH	NIFE*	TUESDAY, 15.11.2022	4:00 – 5:30 pm
Methods for transcript expression and splicing analysis	Dhanya Ramachandran, Molecular Gynecology	HBZ	TUESDAY 22.11.2022	4.00 – 5:30 pm
Isolation and analysis methods for extracellular vesicles	Anton Selich, Exp. Hematology	HBZ	TUESDAY, 10.01.2023	03:00 – 05:00 pm
Telomeres & Telomerase: from measurement to manipulation of longevity	Shambhabi Chatterjee, IMTTS, MHH	HBZ	TUESDAY, 17.01.2023	4:00 – 6:00 pm
Laser based methods for imaging and manipulation of cells and tissue	Stefan Kalies, IQO, LUH	NIFE*	TUESDAY, 09.05.2023	03:00 – 05:00 pm

Locations:

HBZ:

Hans-Borst-Zentrum (HBZ), MHH, building J11, level S0, seminar room 6040

NIFE*:

Niedersächsisches Zentrum für Biomedizintechnik, Implantatforschung und Entwicklung - NIFE
(Lower Saxony Centre for Biomedical Engineering, Implant Research and Development)

Stadtfelddamm 34
30625 Hannover