Hannover Medical School

Hannover Biomedical Research School

Curriculum

MD / PhD Program “Molecular Medicine”

PhD Programs “Infection Biology” and “DEWIN”: Dynamics of Host-Pathogen Interactions

PhD Program “Regenerative Sciences”

PhD Program “Auditory Sciences”

PhD Program “Epidemiology”

PhD Program BIOMEDAS (Biomedical Data Sciences)

Winter and Summer Semester 2021 / 2022

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Winter and Summer Semester 2021 / 2022

www.mhh.de/hbrs

PhD Curriculum **Hannover Medical School**

Academic Year

Winter Semester 2021 / 2022

Start: October 11th, 2021
(Opening ceremony October, 18th)

End: March 17th, 2022

MD / PhD "Molecular Medicine" intermediate examination: from January 17th to February 25th, 2022 (students organize the date)

PhD "Infection Biology" / "DEWIN" intermediate examination: March 22nd, 2022

PhD "Regenerative Sciences" intermediate examination: by March, 2022

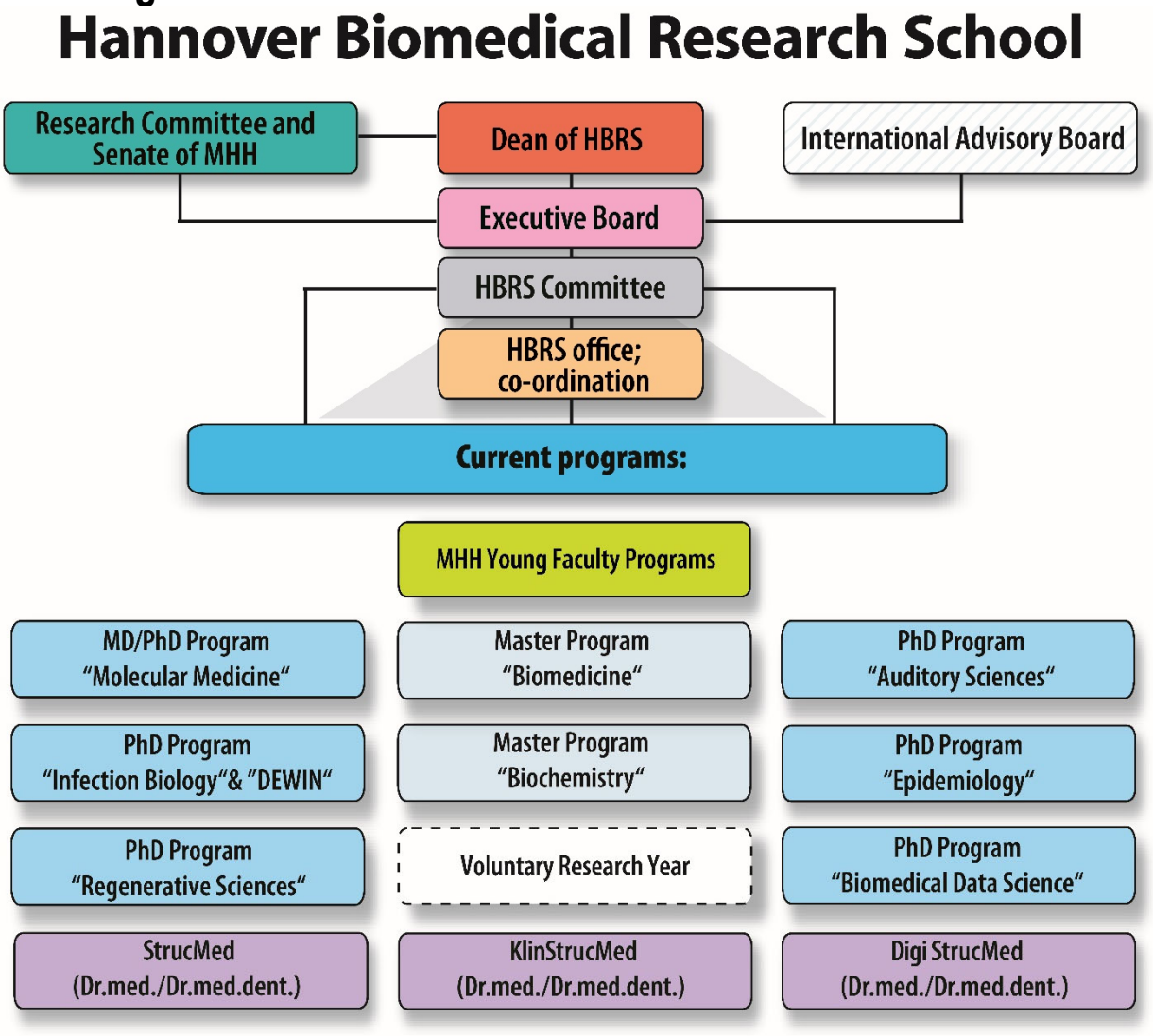
PhD "Epidemiology", PhD "Auditory Sciences" and PhD "BIOMEDAS" intermediate examination: To be decided on an individual basis, depending also on status of PhD thesis

Summer Semester 2022

Start: April 4th, 2022

End: July 22nd, 2022

Organisation of Hannover Biomedical Research School



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Prof. Dr. Dr. Thomas Thum
Tom Pieper
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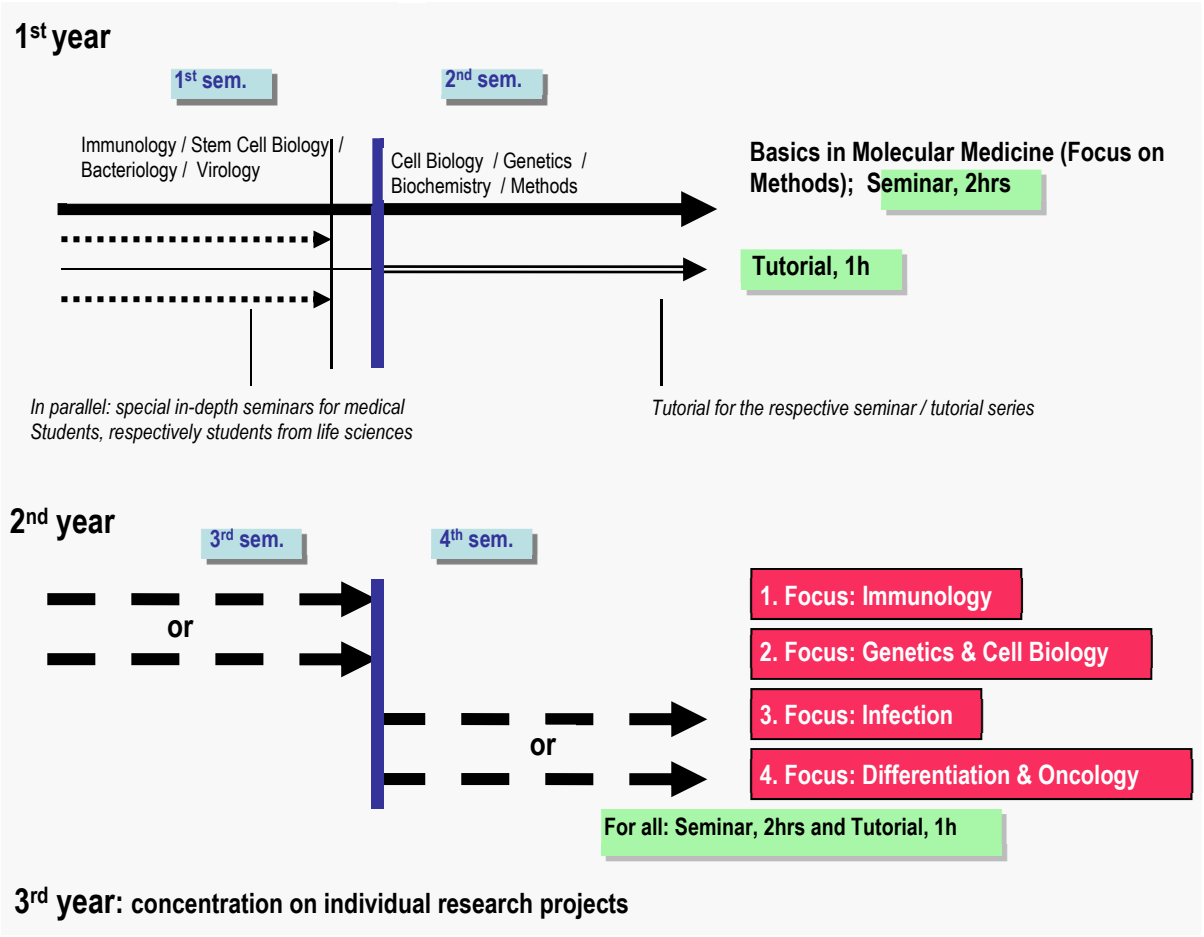
Content:

Curriculum MD/PhD "Molecular Medicine"



Structure of the MD/PhD program „Molecular Medicine"

Year 1	Year 2	Year 3

- Sem. + Lect. in basic sciences Monday (4.30 - 6.00 pm; 6 cp)
- Tutorials Mondays; until Christmas separate tutorials for medical students and life scientists (3.15- 4.15 pm; 2 cp)

- Complex and clinical system; choice between the foci Immunology, Infection, Oncology and Differentiation, Cell Biology / Genetics, Biochemistry Mondays, Seminar and Tutorial (3.00 - 6.00 pm; 8 cp)

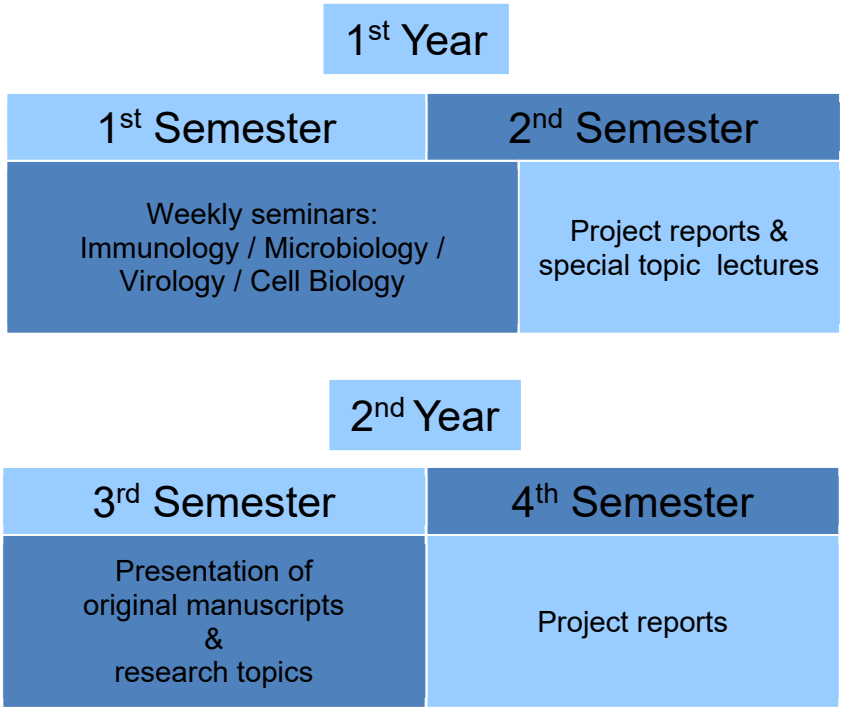
- 3-year PhD project work (125 cp)
- Three presentations in department over three years (10 cp)
- Three presentations of manuscripts at the departments Journal Club over three years (3 cp)
- Public annual presentation / project report (10 cp)
- Talk / presentation at international congress (2 cp)
- Project-orientated seminars / courses; including practicals (80 h, 8 cp)
- Participation in summer schools / interdisciplinary seminars (e. g. soft skills) / congress (60 h, 6 cp)

cp: credit points

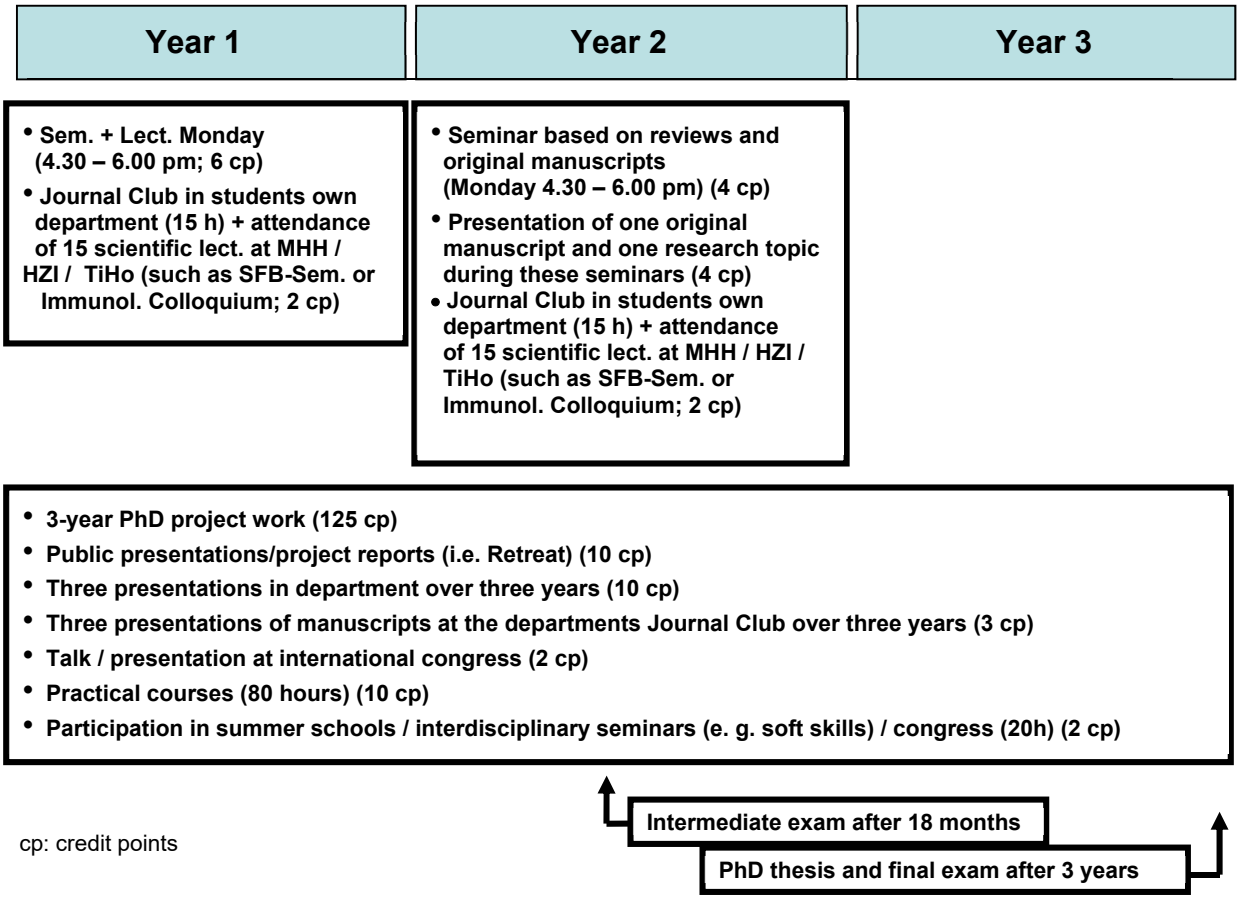
Intermediate exam after 18 months

PhD thesis and final exam after 3 years

Curriculum PhD "Infection Biology" and "DEWIN"

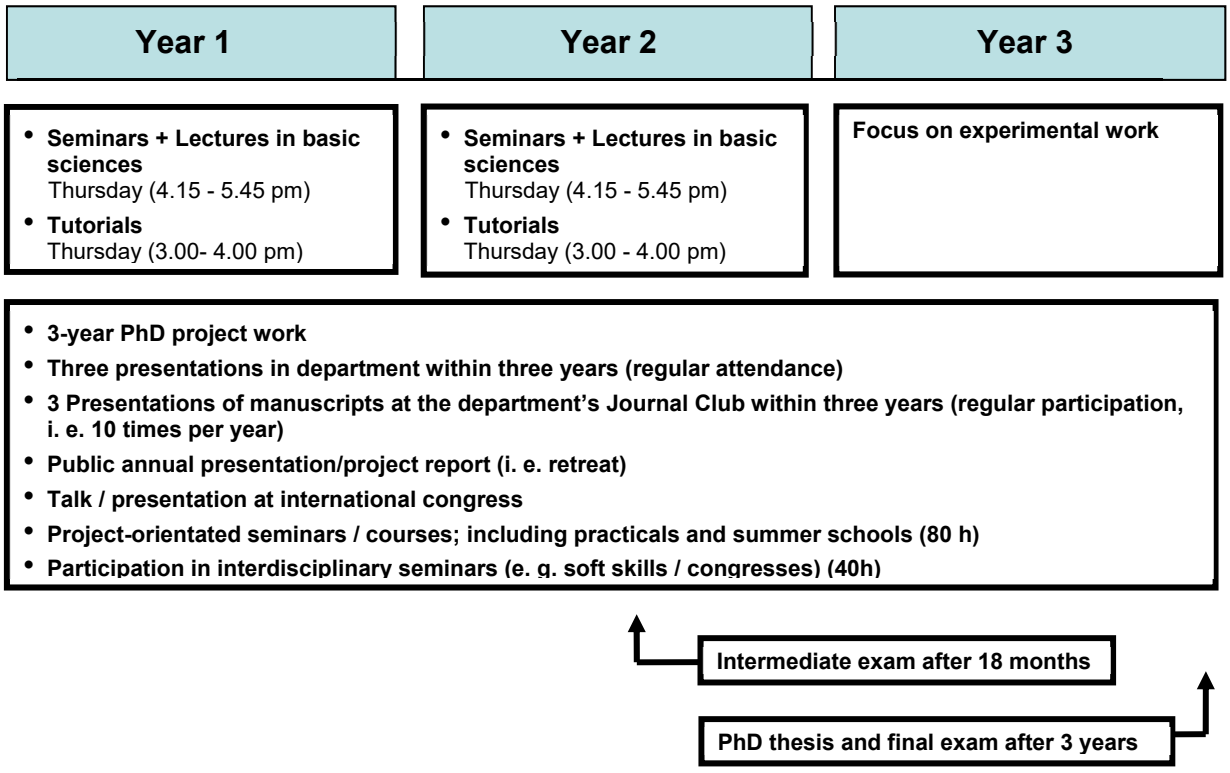


Structure of the PhD Program "Infection Biology" and "DEWIN"



cp: credit points

Structure of the PhD-Program “Regenerative Sciences”

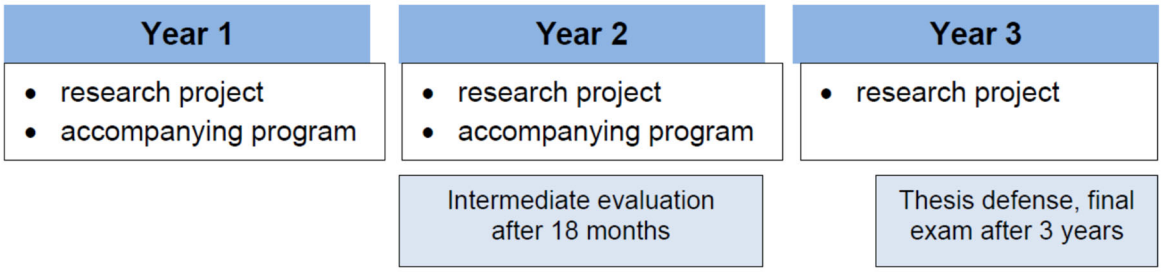


You may replace up to 30 hours of the Thursday seminars and tutorials by the additional offers

”Meet the Investigator” or “Method based seminar”

see page 46

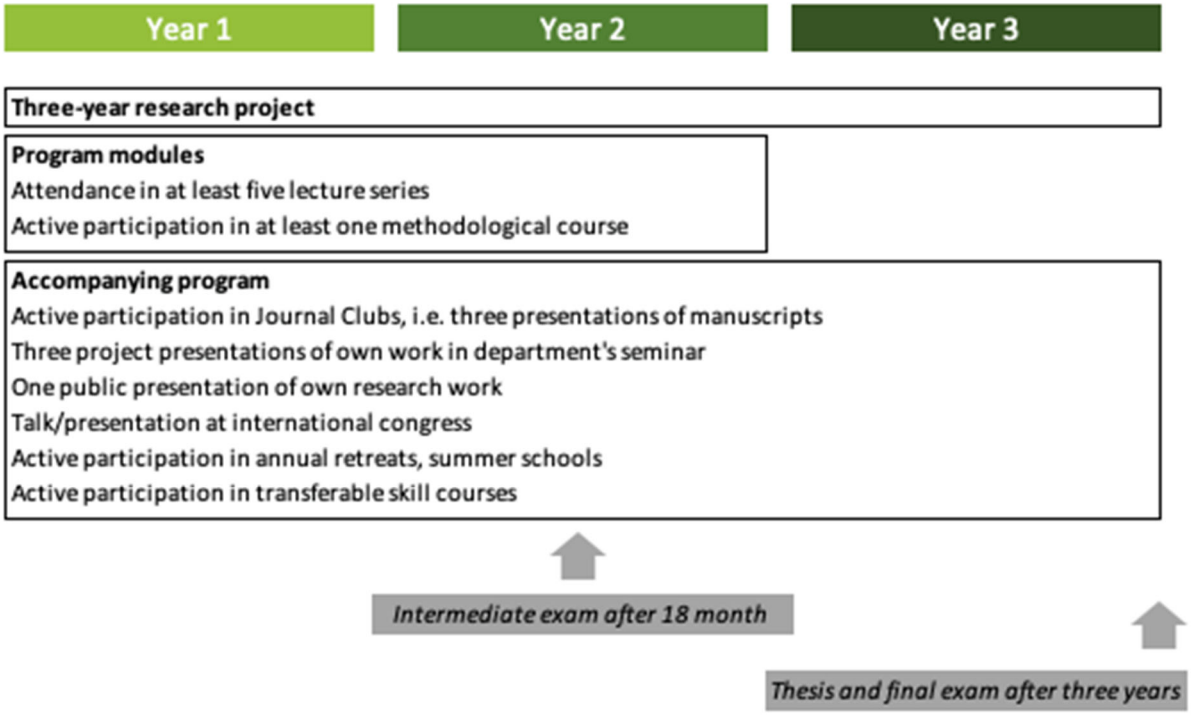
Structure of the PhD-Program "Epidemiology"



- three year research project
- three project presentations over the three year time period
- active participation in Journal Clubs, i. e. presentation of manuscripts or workshop outcomes
- active participation in scientific conferences, i. e. poster or oral presentation
- annual PhD-Retreats
- soft skill courses
- program modules (lectures, field work, and courses)

→ total accompanying program of a minimum of 300 hrs

Structure of the PhD-Program BIOMEDAS ("Biomedical Data Science")



!!Obligatory!!

Good Scientific Practice

For all HBRS PhD and StrucMed students

Introduction, Overview, Basics, Data Management, Ethics

Lecturers: Dr. Beate Schwinzer, Dr. Stephan Halle and Dr. Olga Halle

Tuesday, 19 October 2021

2.00 pm First Seminar: Good Scientific Practice
- 3.30 pm Introduction and Data Management; Beate Schwinzer
Lecture Hall R, building J6

Wednesday, 20 October 2021

2.00 pm Second Seminar: Good Scientific Practice
- 3.30 pm Ethics and Statistics; Dr. Stephan and Dr. Olga Halle
Lecture Hall R, building J6

Thursday, 21 October 2021

2.00 pm Third Seminar: Good Scientific Practice
- 3.30 pm Scientific Misconduct and Plagiarism; Beate Schwinzer
Lecture Hall R, building J6

MD / PhD "Molecular Medicine"

1st Semester

Note: The curriculum of the first year is more orientated towards basics and methods in the different disciplines.

***MD / PhD "Molecular Medicine"*: There are some alternative in-depth seminars / tutorials on Mondays for medical students and students from life sciences until Christmas (see pages 17 / 18) and the respectives tutorials for the seminars.**

Haematopoiesis - Episode I and Team Clock (Focus Immunology I) Lecture hall B	Seminar	Monday, 11.10.2021	4.30 - 6.00 pm	Christine Falk
HBRS Opening: Monday, 18 October 2021, 5.00 pm (building J2, lecture hall A)				
Innate immunity (Focus Immunology II) Lecture hall B	Seminar	Monday, 25.10.2021	4.30 - 6.00 pm	Jennifer Becker
B cells and antibody responses (Focus Immunology III) Lecture hall B	Seminar	Monday, 01.11.2021	4.30 - 6.00 pm	Siegfried Weiß
T cells and T cell responses (Focus Immunology IV) Lecture hall B	Seminar	Monday, 08.11.2021	4.30 - 6.00 pm	Inga Sandrock
Cytotoxic T cell responses (Focus Immunology V) Lecture hall B	Seminar	Monday, 15.11.2021	4.30 - 6.00 pm	Berislav Bosnjak

Now you have the choice between either Oncology *or * Microbiology:

In HBRS Seminar room (Oncology):

Disease modelling and drug discovery with the CRISPR-Cas9 system	Seminar	Monday, 22.11.2021	4.30 - 6.00 pm	Dorit Borchert
Genetic modification with lentiviral vector technologies	Seminar	Monday, 29.11.2021	4.30 - 6.00 pm	Tobias Mätzig
Design and application of shRNA-based methods in biomedical research	Seminar	Monday, 06.12.2021	4.30 6.00 pm	Marc-Jens Kleppa
Induced pluripotent stem cell resources for the treatment of congenital diseases	Seminar	Monday, 13.12.2021	4.30 - 6.00 pm	Nico Lachmann
Gene expression analysis in cancer research	Seminar	Monday, 20.12.2021	4.30 - 6.00 pm	Adrian Schwarzer
Mouse models	Seminar	Monday, 10.01.2022	4.30 - 6.00 pm	Arnold Kloos

In lecture hall B (Microbiology):

Intro and Paradigms in Infection Biology: Toxoplasma (Focus Microbiology I)	Seminar	Monday, 22.11.2021	4.30 - 6.00 pm	Dirk Schlüter
Paradigms of Infection Biology: Streptococci and Staphylococci (Focus Microbiology II)	Seminar	29.11.2021	4.30 - 6.00 pm	Volker Winstel
Paradigms of Infection Biology: Salmonella (Focus Microbiology III)	Seminar	Monday, 06.12.2021	4.30 - 6.00 pm	Guntram Graßl
Paradigms of Infection Biology: Chlamydia and Listeria (Focus Microbiology IV)	Seminar	Monday, 13.12.2021	4.30 - 6.00 pm	Andreas Klos
Paradigms in Infection Biology: Malaria (Focus Microbiology V)	Seminar	Monday, 20.12.2021	4.30 - 6.00 pm	Nishanth Gopala Krishna
Paradigms of Infection Biology: (Focus Microbiology VI) Role of the commensal bacteria for human health	Seminar	Monday, 10.01.2022	4.30 - 6.00 pm	Marius Vital

Location seminar: Lecture hall B, building J2 **Location tutorial: HBRS seminar room 1140, building J4, level 01 (2nd floor)**				
RNA Virus – Emerging Viruses, Transcription + Replication (not Flaviviridae) **(Focus Virology I)**	Seminar	Monday, 17.01.2022	4.30 - 6.00 pm	Jens Bohne
	Tutorial	Monday, 24.01.2022	3.15 - 4.15 pm	Jens Bohne
DNA Virus Transcription + Replication **(Focus Virology II)**	Seminar	Monday, 24.01.2022	4.30 - 6.00 pm	Daniel Depledge
	Tutorial	Monday, 31.01.2022	3.15 - 4.15 pm	Daniel Depledge
Virus assembly, maturation and egress **(not Flaviviridae / Herpesviridae)** **(Focus Virology III)**	Seminar	Monday, 31.01.2022	4.30 - 6.00 pm	Katinka Döhner
	Tutorial	Monday, 07.02.2022	3.15 - 4.15 pm	Katinka Döhner
Taxonomy of Viruses and Viral Diseases **(Focus Virology IV)**	Seminar	Monday, 07.02.2022	4.30 - 6.00 pm	Anke Kraft
	Tutorial	Monday, 14.02.2022	3.15 - 4.15 pm	Anke Kraft
Viral Pathogenesis and Host Defense **(not Flavi / Herpes)** **(Focus Virology V)**	Seminar	Monday, 14.02.2022	4.30 - 6.00 pm	Abel Viejo-Borbolla
	Tutorial	Monday, 21.02.2022	3.15 - 4.15 pm	Abel Viejo-Borbolla
Oncogenic Viruses **(Focus Virology VI)**	Seminar	Monday, 21.02.2022	4.30 - 6.00 pm	Kai Kropp
	Tutorial	Monday, 28.02.2022	3.15 - 4.15 pm	Kai Kropp

*For MD / PhD "Molecular Medicine" medical students only: Some more basics in life sciences

As there are not many medical students this year, we will arrange an individual program for you!
Or you visit the tutorials for life scientists.
Mondays, 3.15 - 4.15 pm

** For PhD students from life sciences only: Some basics in medicine / techniques

For MD / PhD "Molecular Medicine" only: **General introduction, lectures, expectations etc.: answering of all last questions, election of class speaker**	Seminar	Monday, 11.10.2021	3.45 - 4.15 pm	Susanne Kruse
No seminars because of opening ceremony		Monday, 18.10.2021		
Super resolution light microscopy	Seminar	Monday, 25.10.2021	3.15 - 4.15 pm	Rudolf Bauerfeind
Electron Microscopy	Seminar	Monday, 01.11.2021	3.15 - 4.15 pm	Stephanie Groos
No seminar because of Animal Course Lectures		Monday, 08.11.2021		
Molecular Imaging	Seminar	Monday, 15.11.2021	3.15 - 4.15 pm	Annika Heß
Gene Technology and Biosafety	Seminar	Monday, 22.11.2021	3.15 - 4.15 pm	Ruth Knorr
Hannover Unified Biobank	Seminar	Monday, 29.11.2021	3.15 - 4.15 pm	Thomas Illig

Cell sorting	Seminar	Monday, 06.12.2021	3.15 - 4.15 pm	Matthias Ballmaier
Clinical Immunology: Pathogenesis of an autoimmune disease (Lupus erythematosus)	Seminar	Monday, 13.12.2021	3.15 - 4.15 pm	Torsten Witte
Highly Multiplexed Quantitative Tissue Cytometry	Seminar	Monday, 20.12.2021	3.15 - 4.15 pm	Christian Hennig
The Potential of iPSC derived macrophages in human Airway disease - Chances and Challenges in a translational Research Setting	Seminar	Monday, 10.01.2022	3.15 - 4.15 pm	Christine Happle
Immunotherapy and cancer vaccines	Seminar	Monday, 17.01.2022	3.15 - 4.15 pm	Tetyana Yevsa
Location: Hannover Biomedical Research School, HBRS seminar room 1140, building J4, level 01 (2nd floor)				

MD / PhD Molecular Medicine

2nd Semester

***MD / PhD MM*: Please attend all of the seminars and tutorials listed below.**

4.) General Cell Biology				
The structure of the cell's interior (Focus Cell Biology I)	Seminar lecture hall B	Monday, 04.04.2022	4.30 - 6.00 pm	Theresia Stradal
	No Tutorial	04.04.2022		
	Tutorial HBRS seminar room	Monday, 11.04.2022	3.15 - 4.15 pm	Theresia Stradal
Molecular mechanisms of gene regulation	Seminar lecture hall B	Monday, 11.04.2022	4.30 - 6.00 pm	Dagmar Wirth
	Tutorial HBRS seminar room	Monday, 25.04.2022	3.15 - 4.15 pm	Dagmar Wirth
No lectures, public holiday		**Monday, 18.04.22**		
The cell cycle and its implications in diseases (Focus Cell Biology III)	Seminar lecture hall B	Monday, 25.04.2022	4.30 - 6.00 pm	Hansjörg Hauser
	Tutorial	Monday, 02.05.2022	3.15 - 4.15 pm	Hansjörg Hauser
(Now for MD / PhD MM only) All seminars and tutorials in HBRS seminar room				
5.) Biochemistry and Genetics; methods				
Next generation sequencing	**Seminar / tutorial**	Monday, 02.05.2022	4.30 - 6.00 pm	Robert Geffers (HZI)
	No tutorial	Monday, 09.05.2022		
Transcriptomics **(seminar / tutorial in building J3, level 01, room 2020)**	**Seminar**	Monday, 09.05.2022	4.30 - 6.00 pm	Oliver Dittrich-Breiholz
	Tutorial	16.05.2022	3.15 - 4.15 pm	Oliver Dittrich-Breiholz

Strategies to analyse gene function in vivo	Seminar	Monday, 16.05.2022	4.30 - 6.00 pm	Achim Gossler
	Tutorial	23.05.2022	3.15 - 4.15 pm	Achim Gossler
Physical Methods in Biochemistry: Characterization of Protein - Protein Interactions	Seminar	Monday, 23.05.2022	4.30 - 6.00 pm	Ute Curth
	Tutorial	Monday, 30.05.2022	3.15 - 4.15	Ute Curth
Molecular mechanisms of heart failure	**Seminar / Tutorial**	Monday, 30.05.2022	4.30 - 7.00 pm	Arash Haghikia
	No tutorial	Monday, 13.06.2022		
No lectures, public holiday		**Monday, 06.06.22**		
Proteomics (building J6, level S0, (seminar room 75, room no. 4140)	Seminar	Monday, 13.06.2022	4.30 - 6.00 pm	Andreas Pich
Metabolomics	Tutorial	Monday, 20.06.2022	3.15 - 4.15 pm	Heike Bähre
Stem cells	Seminar	Monday, 20.06.2022	4.30 - 6.00 pm	Axel Schambach
	Tutorial	Monday, 04.07.2022	**2.30 - 3.15 pm**	Axel Schambach
Sick Sinus Syndrome in HCN1-deficient Mice	Seminar	Monday, 27.06.2022	4.30 - 6.00 pm	Christian Wahl-Schott
	Tutorial	Monday, 04.07.2022	3.15 - 4.15 pm	Christian Wahl -Schott
Techniques of miRNAs and lncRNAs	**Seminar / Tutorial**	Monday, 04.07.2022	4.30 - 6.30 pm	Jan Fiedler
Location: Hannover Biomedical Research School, HBRS seminar room 1140, building J4, level 01 (2nd floor)				

MD / PhD program "Molecular Medicine"

3rd Semester

Note: The curriculum of the second year is more orientated towards research and applied aspects in the different disciplines. Every student has the choice between two major foci each semester. You may vary in the choice of modules between the two foci. Please, choose the ones most appropriate for you and your project!

1. Focus: Immunology

Location: Hannover Biomedical Research School, building J4, level 01 (2nd floor), seminar room 1031

1. Immune cells and organs				
Mononuclear-phagocyte system: development and the role in homeostasis	Seminar	Monday, 11.10.2021	4.30 - 6.00 pm	Jaba Gamrekelashvili
	Tutorial	Monday, 25.10.2021	3.30 - 4.15 pm	Jaba Gamrekelashvili
Opening Ceremony of HBRS, Monday, 18 October 2021, 5.00 pm				
Inborn errors of immunit-cellular and molecular mechanisms of immunodeficiency and immune dysregulation	Seminar	Monday, 25.10.2021	4.30 - 6.00 pm	Georgios Sogkas
	Tutorial	Monday, 01.11.2021	3.30 - 4.15 pm	Georgios Sogkas
Adjuvants	Seminar	Monday, 01.11.2021	4.30 - 6.00 pm	Annett Ziegler
	Tutorial	Monday, 08.11.2021	3.30 - 4.15 pm	Annett Ziegler

2. Autoimmunity				
Transplantation, Tolerance and Tregs	Seminar	Monday, 08.11.2021	4.30 - 6.00 pm	Ann-Kathrin Knöfel / Fatih Noyan
	Tutorial	Monday, 22.11.2021	3.30 - 4.15 pm	Ann-Kathrin Knöfel
T and B cell differentiation	**Seminar / Tutorial**	Monday, 15.11.2021	3.00 - 6.00 pm	Fritz Melchers (Basel)

Major histocompatibility complex in tolerogenic cell therapies	**Seminar / Tutorial**	Monday, 29.11.2021	**2.30 - 4.15 pm**	Constanza Ferreira de Figueiredo
3. Allergy and Asthma, Immunological diseases				
Neuroimmune interactions in asthma bronchiale	Seminar	Monday, 29.11.2021	4.30 - 6.00 pm	Armin Braun (Fraunhofer Institute)
	Tutorial	Monday, 06.12.2021	3.30 - 4.15 pm	Armin Braun (Fraunhofer Institute)
Immunodermatology	Seminar	Monday, 06.12.2021	4.30 - 6.00 pm	Lennart Rösner
	Tutorial	Monday, 13.12.2021	3.30 - 4.15 pm	Lennart Rösner
Studying allergic airway inflammation: of mice and man	Seminar	Monday, 13.12.2021	4.30 - 6.00 pm	Olga Halle
	Tutorial	Monday, 20.12.2021	3.30 - 4.15 pm	Adan Jirmo
Molecular and cellular mechanisms of inflammatory immune responses	Seminar	Monday, 20.12.2021	4.30 - 6.00 pm	Niko Föger
	Tutorial	Monday, 10.01.2022	3.30 - 4.15 pm	Niko Föger
4. Signalling and therapy				
Protective adaptive immunity to viral infections	Seminar	Monday, 10.01.2022	4.30 - 6.00 pm	Agnes Bonifacius
	Tutorial	Monday, 17.01.2022	3.30 - 4.15 pm	Agnes Bonifacius
Inhibitory receptor-ligand interactions as targets for transplantation tolerance	Seminar	Monday, 17.01.2022	4.30 - 6.00 pm	Reinhard Schwinzer
	Tutorial	Monday, 24.01.2022	3.30 - 4.15 pm	Reinhard Schwinzer
The complement system and its regulation	Seminar	Monday, 24.01.2022	4.30 - 6.00 pm	Andreas Klos
	Tutorial	Monday, 31.01.2022	3.30 - 4.15 pm	Andreas Klos

Viral vectors for gene transfer in vitro and vivo	Seminar	Monday, 31.01.2022	4.30 - 6.00 pm	Renata Stripecke
	Tutorial	Monday, 07.02.2022	3.30 - 4.15 pm	Renata Stripecke
Tumor immunity and oncogenic signalling	Seminar	Monday, 07.02.2022	4.30 - 6.00 pm	Christine Falk
	Tutorial	Monday, 14.02.2022	3.30 - 3.15 pm	Christine Falk
HLA-mediated adverse drug reactions	Seminar	Monday, 14.02.2022	4.30 - 6.00 pm	Gwendolin Simper
	Tutorial	Monday, 21.02.2022	3.30 - 3.15 pm	Gwendolin Simper
Location: Hannover Biomedical Research School, building J4, level 01 (2nd floor), seminar room 1031				

2. Focus: Genetics and Cell Biology

Location: Hannover Biomedical Research School, building J4, level S0 (ground floor), seminar room S 1400 (right to the main entrance)

1. Techniques and diagnostics / therapy, genetics				
Molecular mechanisms of heart failure	Seminar	Monday, 11.10.2021	4.30 - 6.00 pm	Melanie Ricke-Hoch
	Tutorial	Monday, 25.10.2021	3.30 - 4.15 pm	Maren Heimerl
Opening Ceremony, Monday, 18 October 2021, 5.00 pm, lecture hall R				
Interactions between signalling, metabolic pathways and miRNAs in HCC	Seminar	Monday, 25.10.2021	4.30 - 6.00 pm	Asha Balakrishnan
	Tutorial	Monday, 01.11.2021	3.30 - 4.15 pm	Asha Balakrishnan
Embryonic and somatic cloning in mammals	Seminar	Monday, 01.11.2021	4.30 - 6.30 pm	Heiner Niemann
	Tutorial	Monday, 08.11.2021	3.30 - 4.15 pm	Heiner Niemann
RNA Biology in Eukaryotes	Seminar	Monday, 08.11.2021	4.30 - 6.00 pm	Halyna Shcherbata
	Tutorial	Monday, 15.11.2021	3.30 - 4.15 pm	Halyna Shcherbata

2. Signalling				
Fibulin 6 affects TGF signalling in context of cardia remodelling	Seminar	Monday, 15.11.2021	4.30 - 6.00 pm	Christine Herzog
	Tutorial	Monday, 22.11.2021	3.30 - 4.15 pm	Christine Herzog
Neutrophil NETosis and extravasation are influenced by sodium channel Nav1.3	Seminar	Monday, 22.11.2021	4.30 - 6.00 pm	Frank Echtermeyer
	Tutorial	Monday, 29.11.2021	3.30 - 4.15 pm	Frank Echtermeyer
Molecular mechanisms of vascular aging in health and disease	Seminar	Monday, 29.11.2021	4.30 - 6.00 pm	Yulia Kiyan
	Tutorial	Monday, 06.12.2021	3.30 - 4.15 pm	Yulia Kiyan
Small GTPases as targets of bacterial toxins	Seminar	Monday, 06.12.2021	4.30 - 6.00 pm	Harald Genth
	Tutorial	Monday, 13.12.2021	3.30 - 4.15 pm	Harald Genth
3. Cell Biology and disease				
Molecular mechanisms in cardiorenal syndrome	Seminar	Monday, 20.12.2021	4.30 - 6.00 pm	Maren Leifheit-Nestler
	Tutorial	Monday, 10.01.2022	3.30 - 4.15 pm	Maren Leifheit-Nestler
Stem cells in renal injury	**Seminar / Tutorial**	Monday, 10.01.2022	4.30 - 6.30 pm	Roland Schmitt
Glycosylation and diseases	**Seminar / Tutorial**	Monday, 17.01.2022	**2.45 – 4.15 pm**	Hans Bakker
Membrane domains	Seminar	Monday, 17.01.2022	4.30 - 6.00 pm	Robert Lindner
	Tutorial	Monday, 24.01.2022	3.30 - 4.15 pm	Robert Lindner

Micro RNAs from disease mechanisms to therapeutic approaches	Seminar	Monday, 24.01.2022	4.30 - 6.00 pm	Thomas Thum
	Tutorial	Monday, 31.01.2022	3.30 - 4.15 pm	Jan Fiedler
New gene discovery in rare diseases and studying their biological role	Seminar	Monday, 31.01.2022	4.30 - 6.00 pm	Ekaterina Legchenko
	Tutorial	Monday, 07.02.2022	3.30 - 4.15 pm	Ekaterina Legchenko
Liver fibrogenesis - basic mechanisms and clinical implications	Seminar	Monday, 07.02.2022	4.30 - 6.00 pm	Ingmar Mederacke
	Tutorial	Monday, 14.02.2022	3.30 - 4.15 pm	Ingmar Mederacke
How molecular motors work	Seminar	Monday, 14.02.2022	4.30 - 6.30 pm	Dietmar Manstein
	Tutorial	Monday, 21.02.2022	3.30 - 4.15 pm	Dietmar Manstein
Location: Hannover Biomedical Research School, building J4, level S0 (ground floor), seminar room S 1400 (right to the main entrance)				

MD / PhD program "Molecular Medicine"

4th Semester

3. Focus: Infection and Immunity

This focus is not offered this year.

4. Focus: Differentiation and Oncology

Location: Hannover Biomedical Research School, building J4, level 01 (2nd floor), seminar room 1031

1. Development and cancer				
Liquid biopsies and biomarkers	Seminar	Monday, 04.04.2022	4.30 - 6.00 pm	Anja Thorenz
	Tutorial	Monday, 11.04.2022	3.30 - 4.15 pm	Anja Thorenz
Liver organogenesis and hepatic stem cell	Seminar	Monday, 11.04.2022	4.30 - 6.00 pm	Michael Ott
	Tutorial	Monday, 25.04.2022	3.30 - 4.15 pm	Michael Ott
No lectures, public holiday		**Monday, 18.04.22**		
Epigenetics in cancer	Seminar	Monday, 25.04.2022	4.30 - 6.00 pm	Ulrich Lehmann-Mühlenhoff
	Tutorial	Monday, 02.05.2022	3.30 - 4.15 pm	Ulrich Lehmann-Mühlenhoff
2. Stem cells and cancer				
Onco-Immunology: Translational research at the interface between immunology and oncology	Seminar	Monday, 02.05.2022	4.30 - 6.00 pm	Friedrich Feuerhake
	Tutorial	Monday, 09.05.2022	3.30 - 4.15 pm	Friedrich Feuerhake
TBA	**Seminar / Tutorial**	Monday, 09.05.2022	4.30 - 6.30 pm	Hildegard Büning

Adoptive T cell therapies in hematopoietic stem cell transplantation	Seminar	Monday, 16.05.2022	4.30 - 6.00 pm	Martin Sauer
	Tutorial	Monday, 23.05.2022	3.30 - 4.15 pm	Martin Sauer
PH-regulation in cancer cell motility	Seminar	Monday, 23.05.2022	4.30 - 6.00 pm	Christian Stock
	Tutorial	Monday, 30.05.2022	3.30 - 4.15 pm	Christian Stock
3. Signalling (and cancer)				
Oncogenes and myeloproliferation	Seminar	Monday, 30.05.2022	4.30 - 6.00 pm	Matthias Eder
	Tutorial	Monday, 13.06.2022	3.30 - 4.15 pm	Matthias Eder
No lectures, public holidays		**Monday, 06.06.22**		
T-box genes in development and disease	Seminar	Monday, 13.06.2022	4.30 - 6.00 pm	Andreas Kispert
	Tutorial	Monday, 20.06.2022	3.30 - 4.15 pm	Andreas Kispert
TBA	Seminar	Monday, 20.06.2022	4.30 - 6.00 pm	Anna Saborowski
	Tutorial	Monday, 27.06.2022	3.15 - 4.15 pm	Anna Saborowski
Molecular basis of leukemogenesis	Seminar	Monday, 27.06.2022	4.30 - 6.00 pm	Adrian Schwarzer
	Tutorial	Monday, 04.07.2022	3.15 - 4.15 pm	Adrian Schwarzer
Location: Hannover Biomedical Research School, building J4, level 01 (2nd floor), seminar room 1031				

1st Semester

Tutorials: Mondays, 15:15-16:15 hrs **Seminars:** Mondays, 16:30-18:00 hrs

Location: Room 1140, Building J4, level1 **Location:** Lecture Hall B, Building J2

DATE	TYPE	FOCUS	LECTURER	SUBJECT
11.10.2021	Seminar	Immunology I	Falk	Haematopoiesis - Episode 1 and Team Clock
18.10.2021	HBRS Opening: 17:00 - 19:00 hrs (Building J2, Lecture Hall A)			
25.10.2021	Seminar	Immunology II	Becker	Innate Immunity
01.11.2021	Seminar	Immunology III	Weiß	B cells and antibody responses
08.11.2021	Seminar	Immunology IV	Sandrock	T cells and T cell responses
15.11.2021	Seminar	Immunology V	Bosnjak	Cytotoxic T cell responses
22.11.2021	Seminar	Microbiology I	Schlüter	Intro and Toxoplasma
29.11.2021	Seminar	Microbiology II	Winstel	Streptococci and Staphylococci
06.12.2021	Seminar	Microbiology III	Graßl	Salmonella

DATE	TYPE	FOCUS	LECTURER	SUBJECT
13.12.2021	Seminar	Microbiology IV	Klos	Chlamydia and Listeria
20.12.2021	Seminar	Microbiology V	Gopala Krishna	Malaria
10.01.2022	Seminar	Microbiology VI	Vital	Role of the commensal bacteria for human health
17.01.2022	Seminar	Virology I	Bohne	RNA Virus – Emerging Viruses, Transcription + Replication
24.01.2022	Seminar	Virology II	Depledge	DNA Virus Transcription + Replication
31.01.2022	Seminar	Virology III	Döhner	Virus assembly, maturation and egress
07.02.2022	Seminar	Virology IV	Kraft	Virus Taxonomy and Viral Diseases
14.02.2022	Seminar	Virology V	Viejo-Borbolla	Viral Pathogenesis and Host Defenses
21.02.2022	Seminar	Virology VI	Kropp	Oncogenic Viruses

2nd Semester

Tutorials: Mondays, 15:15-16:15 hrs **Seminars:** Mondays, 16:30-18:00 hrs

Location: Room 1140, Building J4, level1 **Location:** Lecture Hall B, Building J2

DATE	TYPE	FOCUS	LECTURER	SUBJECT
04.04.2022	Seminar	Cell Biology I	Stradal	The structure of the cell's interior
11.04.2022	Seminar	Cell Biology II	Wirth	Molecular mechanisms of gene regulation
25.04.2022	Seminar	Cell Biology III	Hauser	The cell cycle and its implication in disease

Times & Location: Mondays, 16:30-18:00 hrs, MHH, TPFZ/I-11, Seminar Room S0-1420

DATE	FOCUS	SUPERVISOR	STUDENT	SUBJECT
02.05.2022	Project Presentation			
	Topic Focus			
09.05.2022	Project Presentation			
	Topic Focus			
16.05.2022	Project Presentation			
	Topic Focus			
23.05.2022	Project Presentation			
	Topic Focus			

DATE	FOCUS	SUPERVISOR	STUDENT	SUBJECT
30.05.2022	Project Presentation			
	Topic Focus			
07.06.2022 **Tuesday!**	Project Presentation			
	Topic Focus			
13.06.2022	Project Presentation			
	Topic Focus			
20.06.2022	Project Presentation			
	Topic Focus			
27.06.2022	Project Presentation			
	Topic Focus			
04.07.2022	Project Presentation			
	Topic Focus			

3rd Semester

Times & Location: Mondays, 16:30-18:00 hrs, MHH, TPFZ/I-11, Seminar Room S0-1420

DATE	FOCUS	SUPERVISOR	STUDENT	SUBJECT
11.10.2021	Topic	Bohne	Hüsers	Cellular Restriction Factors interfering with HIV
	Original Paper		Schneider	Fan-W et al., 2021, Cell, TRIM7 inhibits enterovirus replication and promotes emergence of a viral variant with increased pathogenicity.
18.10.2021	HBRS Opening: 17:00 - 19:00 hrs (Building J2, Lecture Hall A)			
25.10.2021	Topic	Witte	Yang	Anti-viral therapies
	Original Paper		Do	Bastard et al, 2021, Sci. Immunol., Autoantibodies neutralizing type I IFNs are present in ~4% of uninfected individuals over
01.11.2021	Topic	Winstel	Beyer	Autophagy and bacterial infection
	Original Paper		Bamu	Keller et al., 2020, Nature, Decoy exosomes provide protection against bacterial toxins
08.11.2021	Topic	Cornberg	Rezalotfi	The inflammasome and its modulation by bacterial and viral infections
	Original Paper		Leon Lara	Li et al., 2021, Hepatology, Hepatitis E virus infection activates NLRP3 inflammasome antagonizing interferon response but
15.11.2021	Topic	Schulz	Clever	Vaccines in use and in development against CoVID-19
	Original Paper		Plückebaum	Trimpert-J et al., 2021, Cell Rep., Development of safe and highly protective
22.11.2021	Topic	Haid	Duven	Entry of flaviviruses (receptors and mechanisms)
	Original Paper		Hüsers	Srivastava-M et al., 2020, Nat Commun., Chemical proteomics tracks virus entry and uncovers NCAM1 as Zika virus receptor.
29.11.2021	Topic	Vital	Bamu	Intestinal Microbiom
	Original Paper		Beyer	De Filippis et al., 2020, Current Biology, Newly Explored *Faecalibacterium* Diversity IsConnected to Age, Lifestyle, Geography,
06.12.2021	Topic	Schreiner	Plückebaum	Interference of herpesviruses with intrinsic cellular defense mechanisms
	Original Paper		Duven	Vlahava-VM et al., 2021, J Clin Invest., Monoclonal antibodies targeting nonstructural viral antigens can activate

DATE	FOCUS	SUPERVISOR	STUDENT	SUBJECT
13.12.2021	Topic	Förster	Leon Lara	Differentiation and function of T-helper cells during infection
	Original Paper		Urbanek-Quaing	
20.12.2021	Topic	Sheldon	Schneider	Currrent medication against influenzavirus and novel antiviral strategies
	Original Paper		Clever	Lo-MK et al., 2020, PNAS, Remdesivir targets a structurally analogous region of the Ebola virus and SARS-CoV-2 polymerases.
10.01.2022	Topic	Kalinke	Do	Innate immune responses against infections: PAMPs, TLR, NOD
	Original Paper		Obara	Döring et al., 2021, Sci. Signal.Single-cell analysis reveals divergent responses of human dendritic cells to the MVA vaccine
17.01.2022	Topic	Lochner	Urbanek-Quaing	Intestinal immunity to pathogens
	Original Paper		Yang	Kiner et al., 2021, nature immunology, Gut CD4+ T cell phenotypes are a continuum molded by microbes, not by TH archetypes
24.01.2022	Topic	Weiß	Obara	B cell responses during infection
	Original Paper		Rezalotfi	Turner et al., 2021, Nature, SARS-CoV-2 infection induces long-lived bone marrow plasma cells in humans
31.01.2022	Topic	Klos	Sagar	Mechanisms of bacterial invasion in human cells
	Original Paper		Schwermann	Hänsch et al., 2020, PNAS, Chlamydia-induced curvature of the host-cell plasma membrane is required for infection
07.02.2022	Topic	Graßl	Schwermann	Colonization resistance
	Original Paper		Sagar	Graef et al., 2021, PLoS Pathog, Fasting increases microbiome-based colonization resistance and reduces host inflammatory responses during an enteric bacterial infection
14.02.2022	Topic Focus	n.n.		
21.02.2022	Topic Focus	n.n.		

4th Semester

Times & Location: Mondays, 16:30-18:00 hrs, MHH, TPFZ/I-11, Seminar Room S0-1420

DATE	FOCUS	SUPERVISOR	STUDENT	SUBJECT
04.04.2021	Project Presentation	Winstel	Schwermann	Infection dynamics of nosocomial pathogens colonizing humans
	Topic Focus			
11.04.2022	Project Presentation	Volz	Clever	Recombinant MVA vaccines delivering SARS-2 antigens – search for correlates of protection against severe respiratory disease
	Topic Focus			
25.04.2022	Project Presentation	Gerold	Duven	The role of tetraspanins in infection and transmission of mosquito-borne re-emerging alphaviruses
	Topic Focus			
02.05.2022	Project Presentation	Schlüter	Beyer	Regulation of macrophages by OTUB2 in listeriosis and salmonellosis
	Project Presentation		Sagar	Function of OTUB1 in intestinal epithelial cells and macrophages in salmonellosis
09.05.2022	Project Presentation	Bosnjak	Do	The role of bronchus-associated lymphoid tissue (BALT) in lung immunity
	Topic Focus			
16.05.2022	Project Presentation	Kalinke	Obara	Spatial antibody treatment strategies of pulmonary SARS-COV-2 infection
	Topic Focus			
23.05.2022	Project Presentation	Viejo-Borbolla	Plückebaum	Characterization of novel modulatory strategies developed by human herpesviruses
	Topic Focus			

DATE	FOCUS	SUPERVISOR	STUDENT	SUBJECT
30.05.2022	Project Presentation	Ravens	Leon Lara	Understanding the role of γδ T cell in the neonates' immune system
	Project Presentation		Yang	Deciphering developmental and molecular differences between Scart1+ and Scart2+ IL-17-producing γδ T cells
07.06.2022 **Tuesday!**	Project Presentation	Galardini	Bamu	A microbial genotype-to-phenotype map for transcriptional regulation
	Topic Focus			
13.06.2022	Project Presentation	Cornberg	Urbanek-Quaing	Impact of different chronic hepatitis viral infections on the epigenetic signature of immune cells
	Topic Focus			
20.06.2022	Project Presentation	Förster / Braun	Rezalotfi	Developing an in vitro test system to predict immunogenicity of biological compounds in humans
	Topic Focus			
27.06.2022	Project Presentation	Sodeik	Hüsers	Elucidating the molecular mechanisms of MxB-mediated restriction of herpes simplex virus infections
	Topic Focus			
04.07.2022	Project Presentation	Schulz	Schneider	Identifying new druggable targets in SARS-CoV-2-infected cells
	Topic Focus			

Retreats:
June 2022 for all Classes

Intermediate Exam for the Class of 2020:
March 22nd, 2022

PhD Final Exams:
January 28th, 2022
July 8th, 2022

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

LUH*:

Prof. Dr. Peter Behrens & Dr. Nina Ehlert **(**Seminar & tutorial: 14.04.2022, 2nd semester**)**
Leibniz Universität Hannover (LUH)
Institute of Inorganic Chemistry
Callinstrasse 9, 30167 Hannover

Feodor-Lynen Str. 21*:

Dr. Sarah Strauß **(**Seminar & tutorial: 02.06.2022, 4th semester**)**
Ambystoma Mexicanum Bioregeneration Center & Spider Silk Laboratory
Feodor-Lynen Str. 21, 30625 Hannover
Building M05 level S0 seminar room 0110

Dr. Stephan Klöß **(**Seminar & tutorial: 07.07.2022, 4th semester**)**
ATMP-GMP-DU
Building 05, level 4
Feodor-Lynen-Straße 21, 30625 Hannover
Seminar: Building 05, level 3
Tutorial: Building 05, level 1

1st semester				
Introductory lecture - Welcoming speech - The curriculum of RegSci & HBRS - Q & A - Principles of regenerative sciences and the REBIRTH approach	seminar	**Monday, 04.10.2021**	**10:00 – 11:30 am, lecture hall M, J1**	Ulrich Martin, Gaby Froriep
Principles of growth factor signaling 1 - Paracrine and juxtacrine signaling - Signalling pathways involved in the regulation of growth	seminar	14.10.2021	4:15 – 5:45 pm	Rainer Niedenthal
Good Scientific Practice Part 1: Introduction and Data Management **(MANDATORY!)**	seminar	**Tuesday, 19.10.2021**	**2:00 - 3:30 pm, lecture hall R, J6**	Beate Schwinzer
Good Scientific Practice Part 2: Statistics & Good Scientific Practice **(MANDATORY!)**	seminar	**Wednesday, 20.10.2021**	**2:00 - 3:30 pm, lecture hall R, J6**	Olga Halle, Stephan Halle
Good Scientific Practice Part 3: Scientific misconduct and how to avoid it **(MANDATORY!)**	seminar	**Thursday, 21.10.2021**	**2:00 - 3:30 pm, lecture hall R, J6**	Beate Schwinzer
Principles of growth factor signaling 1 - Paracrine and juxtacrine signaling - Signalling pathways involved in the regulation of growth	tutorial	21.10.2021	**3:45 – 4:45 pm**	Rainer Niedenthal
Principles of growth factor signaling 2 - Cytokines, hormones, and their receptors	seminar	21.10.2021	**4:45 – 6:15 pm**	Michael Morgan
	tutorial	28.10.2021	3:00 – 4:00 pm	
Basic mechanisms of inflammation 1 - Innate and adaptive immunity and differentiation	seminar	28.10.2021	4:15 – 5:45 pm	Siegfried Weiß
	tutorial	04.11.2021	3:00 – 4:00 pm	
Principles of developmental biology and organogenesis 1 - Commitment, differentiation, apoptosis, patterning - Morphogenetic gradients and cell-cell communication - Genetic and epigenetic mechanisms	seminar	04.11.2021	4:15 – 5:45 pm	Andreas Kispert
	tutorial	11.11.2021	3:00 – 4:00 pm	
Principles of developmental biology and organogenesis 2 - Model systems in developmental Biology - Embryogenesis and fetal development	seminar	11.11.2021	4:15 – 5:45 pm	Achim Gossler
	tutorial	18.11.2021	3:00 – 4:00 pm	

Principles of stem cell biology 1 - Embryonic derivation of stem cells - Culture methods	seminar & tutorial	25.11.2021	3:00 – 4:30 pm 4:45 – 5:45 pm	Thomas Müller
Principles of stem cell biology 2 - Tumor stem cells and mechanisms of transformation - Principles of cell cycle regulation	seminar	02.12.2021	4:15 – 5:45 pm	Amar Deep Sharma
	tutorial	09.12.2021	3:00 – 4:00 pm	
Principles of chromosomal instability	seminar	09.12.2021	4:15 – 5:45 pm	Gudrun Göhring
	tutorial	16.12.2021	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	16.12.2021	4:15 – 5:45 pm	Jan Fiedler
	tutorial	06.01.2022	3:00 – 4:00 pm	
Cellular senescence, tumor suppression and organismal aging	seminar	06.01.2022	4:15 – 5:45 pm	Anette Melk
	tutorial	13.01.2022	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	13.01.2022	4:15 – 5:45 pm	Axel Schambach
	tutorial	20.01.2022	3:00 – 4:00 pm	
Basic mechanisms of inflammation 2 - Infection & cancer	seminar & tutorial	27.01.2022	3:00 – 4:30 pm 4:45 – 5:45 pm	Ulrich Lehmann-Mühlenhoff
Synthetic biology and options for regeneration	seminar	03.02.2022	4:15 – 5:45 pm	Dagmar Wirth
	tutorial	10.02.2022	3:00 – 4:00 pm	
Principles of cell engineering 3 - Cell expansion Bioreactors	seminar	10.02.2022	4:15 – 5:45 pm	Robert Zweigerdt
	tutorial	17.02.2022	3:00 – 4:00 pm	

PhD Program "Regenerative Sciences"

2nd semester				
Principles of materials sciences for regenerative medicine 2♦ Introduction to biomaterials - Ceramic materials (seminar) - Chemistry (tutorial)	seminar & tutorial	14.04.2022	3:00 – 4:30 pm **LUH, Callinstr. 9*** 4:45 – 5:45 pm **LUH, Callinstr. 9***	Peter Behrens, Nina Ehlert
Principles of materials sciences for regenerative medicine 3♦ - Polymeric and metallic materials (seminar) - Cell-biomaterial interactions (seminar) - Scaffold technologies (tutorial)	seminar	21.04.2022	**4:15 – 6:15 pm NIFE***	Birgit Glasmacher
	tutorial	28.04.2022	3:00 – 4:00 pm **NIFE***	Oleksandr Gryshkov
Principles of growth factor engineering - Engineering growth factors and their receptors for regenerative medicine	seminar & tutorial	05.05.2022	3:00 – 4:30 pm 4:45 – 5:45 pm	Michael Morgan
Laser technology in medicine 1 - Imaging - Basics of microscopy - Contrast mechanisms - Modern approaches in imaging - Superresolution microscopy	seminar & tutorial	12.05.2022	3:00 – 4:30 pm **NIFE*** 4:45 – 5:45 pm **NIFE***	Alexander Heisterkamp
Animal models of human disease 1 - Murine models of human disease	seminar & tutorial	19.05.2022	3:00 – 4:30 pm 4:45 – 5:45 pm	Achim Gossler
Animal models of human disease 2 - Primate models - Humanized mouse models	seminar	02.06.2022	4:15 – 5:45 pm	Thomas Moritz
	tutorial	09.06.2022	3.00 – 4:00 pm	
Large animal models in biomedical research - Transgenic pigs - Xenotransplantation - Donor animal engineering	seminar	09.06.2022	4:15 – 5:45 pm	Heiner Niemann
	tutorial	16.06.2022	3:00 – 4:00 pm	
Principles of organ transplantation 1 - Heart, lung, and vessels	seminar & tutorial	23.06.2022	3:00 – 4:30 pm 4:45 – 5:45 pm	Jawad Salman
Cardiovascular tissue engineering: Principles	seminar	30.06.2022	4:15 – 5:45 pm	Birgit Andree
	tutorial	07.07.2022	3:00 – 4:00 pm	
Principles of organ transplantation 2 - Liver, pancreas, and ß-cells	seminar	07.07.2022	4:15 – 5:45 pm	Michael Ott
	tutorial	14.07.2022	3:00 – 4:00 pm	
Stem cell based organ regeneration - Heart and ß-cells - Clinical translation	seminar	14.07.2022	4:15 – 5:45 pm	Robert Zweigerdt
	tutorial	21.07.2022	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

PhD Program "Regenerative Sciences"

3rd semester				
Regenerative approaches: Blood and immunity 1 - Thymus and T-cell development - B-cell development - Flow cytometry	seminar	14.10.2021	4:15 – 5:45 pm	Siegfried Weiß
	tutorial	21.10.2021	3:00 – 4:00 pm	Christine Falk
Regenerative approaches: Blood and immunity 2 - Embryonic stem cell derived haematopoiesis	seminar & tutorial	28.10.2021	3:00 – 4:30 pm 4:45 – 5:45 pm	Nico Lachmann
Regenerative approaches: Blood and immunity 3 - Principles of hematopoietic stem cell transplantation and lymphocyte infusions HLA system and HLA compatibility (tutorial)	seminar	04.11.2021	4:15 – 5:45 pm	Matthias Eder
	tutorial	11.11.2021	3:00 – 4:00 pm	Constanca Figueiredo
Regenerative approaches: Blood and immunity 4 - Genetic disorders of hematopoiesis, Leukemia, and leukemogenic stem cells	seminar	11.11.2021	4:15 – 5:45 pm	Axel Schambach
	tutorial	18.11.2021	3:00 – 4:00 pm	
AAV capsid engineering for in vivo gene therapy	seminar	18.11.2021	4:15 – 5:45 pm	Hildegard Büning
	tutorial	25.11.2021	3:00 – 4:00 pm	
Regenerative approaches: Liver 1 - Physiology and pathophysiological changes of the liver Liver cell therapy, basics in translation	seminar	25.11.2021	4:15 – 5:45 pm	Michael Ott
	tutorial	02.12.2021	3:00 – 4:00 pm	
Regenerative approaches: Liver 2 - Liver regeneration and stem cells Stem cell-derived hepatocytes	seminar	02.12.2021	4:15 – 5:45 pm	Tobias Cantz
	tutorial	09.12.2021	3:00 – 4:00 pm	Tobias Cantz, Reto Eggenschwiler
Regenerative approaches: Liver 3 - Liver tissue engineering - Artificial liver / extracorporal devices	seminar	09.12.2021	4:15 – 5:45 pm	Tobias Cantz
	tutorial	16.12.2021	3:00 – 4:00 pm	Tobias Cantz, Reto Eggenschwiler
Non-coding RNAs in cardiovascular disease - Regeneration and therapeutic approaches	seminar	13.01.2022	4:15 – 5:45 pm	Christian Bär
	tutorial	20.01.2022	3:00 – 4:00 pm	Shambhabi Chatterjee
Immunotoxicity & immunomonitoring	seminar	20.01.2022	4:15 – 5:45 pm	Christine Falk
	tutorial	27.01.2022	3:00 – 4:00 pm	
Genotoxicity & monitoring	seminar & tutorial	03.02.2022	3:00 – 4:30 pm	Michael Rothe

Animal experiments - Introduction to animal experiments - Presentation of the animal house	seminar & tutorial	10.02.2022	3:00 – 4:30 pm 4:45 – 5:45 pm	André Bleich
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	17.02.2022	3:00 – 4:30 pm 4:45 – 5:45 pm	Christian Mühlfeld
Molecular Imaging of Regenerative Medicine - Molecular Imaging (seminar) - Tour of the Department of Nuclear Medicine (tutorial)	seminar & tutorial	24.02.2022	3:00 – 4:30 pm 4:55 – 5:45 pm	James Thackeray
Cell sorting - Method based seminar - Visit to MHH sorter lab → instrumentation (tutorial)	seminar & tutorial	03.03.2022	3:00 – 4:30 pm 4:45 – 5:45 pm	Matthias Ballmaier
Regenerative approaches: Blood and immunity 5 - Antigen presenting cells and innovative vaccines	seminar tutorial	10.03.2022 17.03.2022	4:15 – 5:45 pm 3:00 – 4:00 pm	Renata Stripecke
Design of clinical trials & regulation	seminar	17.03.2022	4:15 – 5:45 pm	Heiko von der Leyen

PhD Program "Regenerative Sciences"

4th semester				
Regenerative approaches: Heart and vessels 1 - Basics in Cardiology - Protein therapeutics for cardiovascular repair (tutorial)	seminar	14.04.2022	4:15 – 5:45 pm	Kai Wollert
	tutorial	21.04.2022	3:00 – 4:00 pm	Marc Reboll
Regenerative Approaches: Heart and vessels 2 - Pathogensis and regeneration of the heart in response to cancer und anti-cancer treatment - Echocardiography (tutorial)	seminar	**Tuesday, 26.04.2022**	4:15 – 5:45 pm	Melanie Ricke-Hoch
	tutorial	28.04.2022	3:00 – 4:00 pm	
Regenerative approaches: Heart and vessels 3 - Angiogenesis and arteriogenesis in development and disease	seminar	28.04.2022	4:15 – 5:45 pm	Florian Limbourg
	tutorial	05.05.2022	3:00 – 4:00 pm	
Regenerative approaches: Heart and vessels 4 - Cardiac differentiation of pluripotent stem cells & myocardial TE	seminar	05.05.2022	4:15 – 5:45 pm	Ina Gruh
	tutorial	12.05.2022	3:00 – 4:00 pm	
Regenerative approaches: Lung 1	seminar	12.05.2022	4:15 – 5:45 pm	Ruth Olmer
	tutorial	19.05.2022	3:00 – 4:00 pm	
Regenerative approaches: Lung 2	seminar	19.05.2022	4:15 – 5:45 pm	
	tutorial	Tba	3:00 – 4:00 pm	
Possibilities and limits of adult mesenchymal stem cells within the context of Tissue Engineering	seminar	Tba	4:15 – 5:45 pm	Cornelia Blume, Sebastian Heene
The Axolotl – an Amphibian Model Organism of Regeneration	seminar & tutorial	02.06.2022	3:00 – 4:30 pm **Feodor-Lynen-Str. 21***	Sarah Strauß
			4:45 – 5:45 pm **Feodor-Lynen-Str. 21***	
Possibilities and limits of adult mesenchymal stem cells within the context of Tissue Engineering	tutorial	09.06.2022	3:00 – 4:00 pm	Cornelia Blume, Sebastian Heene
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	09.06.2022	4:15 – 5:45 pm	Nadine Thau-Habermann
	tutorial	16.06.2022	3:00 – 4:00 pm	

Patent protection of academic inventions	seminar	16.06.2022	4:15 – 5:45 pm	Torben Söker, Ascenion GmbH
	tutorial	23.06.2022	3:00 – 4:00 pm	
Good Manufacturing Practice (GMP), Advanced Therapy Medicinal Products (ATMP)	seminar & tutorial	30.06.2022	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	07.07.2022	3:00 – 4:30 pm	Inga Bernemann
			4:45 – 5:45 pm	

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, 26.11.2022	10:30 – 12:00 am

Method-based Seminars

Advances in cryopreservation of native tissues and tissue-engineered constructs	Oleksandr Gryshkov, IMP, LUH	NIFE*	TUESDAY, 03.05.2022	4:00 – 5:30 pm
Telomeres & Telomerase: from measurement to manipulation of longevity	Christian Bär, IMTTS, MHH	HBZ	TUESDAY, 18.01.2021	4:00 – 6:00 pm
Laser based methods for imaging and manipulation of cells and tissue	Stefan Kalies, IQO, LUH	NIFE*	May 2022 tbd	tbd
Laser technology in medicine – Laser manipulation/machining	Anastasia Koroleva, IQO, LUH	NIFE*	2022 tbd	tbd

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

PhD Program "Auditory Sciences: Physics and Engineering, Physiology and Therapy of Hearing"

For further information and registration, please contact (if not noted otherwise):
baumhoff.christine@mh-hannover.de for courses in Hannover
mark.pottek@uni-oldenburg.de for courses in Oldenburg

Obligatory courses:

red: obligatory courses for all students; black: electives for UOL and LUH, obligatory for MHH

Title	Instructor(s)	Credit	Time and place
1.1 Clinic, Diagnostic and Therapy of Peripheral and Central Hearing Disorders	Prof. Thomas Lenarz	25 hours 3 CP	MHH building K6, node B, 6th floor, seminar room S66 18.10.2021-22.10.2021
1.2 Audiology and Physics of Hearing	Prof. Hannes Maier	15 hours 11,5 CP	MHH NIFE, M20-01-1140 Date t.b.d.
1.3 Sensory Neuroscience	Prof. Andrej Kral	25 hours 3 CP	MHH NIFE, M20-01-1140 On request
1.4 Imaging Methods in Medicine	Prof.'in Lilli Geworski	25 hours 3 CP	MHH Building K7, floor S0, seminar room 1321 Date t.b.d.
1.5 Psychophysical Methods in Hearing Research	Prof. Andreas Büchner	15 hours 1,5 CP	MHH Seminar room "DHZ", Hannover Date t.b.d.
1.6 Audio signal processing	Prof. Waldo Nogueira	15 hours 1,5 CP	MHH Hannover Date t.b.d.
1.7 Introduction to Biomaterials, Laser Spectroscopy and Microelectronics	Prof. Peter Behrens, Prof. Andreas Heisterkamp, Prof. Holger Blume	25 hours 3 CP	LUH Date t.b.d.
1.8 Fundamentals in Auditory Physiology	Prof.'in Christine Köppl, Prof. Georg Klump	30 hours 3 CP	UOL Block course during SuSe
1.9 Summer School and Internal Retreat	N.N.	20 hours 2 CP	Summer 2022

Elective courses at MHH:

Title	Instructor(s)	Credit	Time and place
2.1 Nanotechnology in Medicine	Prof. Theo Doll	12 hours 1 CP	MHH, NIFE On request
2.2 Sound Coding Strategies and Signal Processing Methods for Cochlear Implants and Hearing Aids	Prof. Waldo Nogueira	15 hours 1.5 CP	MHH On request
2.3 Neural Signal Processing	Prof. Waldo Nogueira	15 hours 1.5 CP	MHH On request
2.4 Biomedical Technology	PD Dr. Omid Majdani	10 hours 1 CP	MHH On request
2.5 Medical Image Processing for Medical Applications	PD Dr. Omid Majdani, Thomas Rau	12 hours 1-1.5 CP	MHH On request
2.6 Modulation of Basal Ganglia Activity in Movement Disorders by Functional Neurosurgery	Prof. Joachim Krauss	1.5 hours	MHH On request
2.7 Animal Models for Psychiatric Disorders	Prof.'in Kerstin Schwabe	1.5 hours	MHH On request
2.8 Auditory Plasticity	Prof. Andrej Kral	25 hours 3 CP	MHH, NIFE On request
2.9 Scientific Writing	Prof. Andrej Kral	30 hours 3 CP	MHH, NIFE On request
2.10 Statistical Approaches in Auditory Sciences	Prof. Andrej Kral, Dr. Wiebke Konerding	10 hours 1 CP	MHH NIFE M20-01-1140 On request
2.11 Lab Meeting Otolaryngology	N.N.	1 hour / meeting	MHH NIFE, M20-S0-2520, Wed noon
2.12 Journal Clubs	Prof. Andrej Kral Prof. Waldo Nogueira	1 hour/ meeting	MHH
2.13 Hearing(4all) Research Seminar	N.N.	1 hour / meeting	MHH Wed every 2nd month: 5–6 pm Place: t.b.a.; Contact: baumhoff.christine@mh-hannover.de
2.14 Colloquium Medical Physics	Prof.'in Lilli Geworski	1 hour / meeting	MHH, building K7, floor S0, seminar room 1321 Every second Tue 3–4 pm Registration required!

2.15 Lunch seminar Radiology	Prof.'in Lilli Geworski	1 hour / meeting	MHH Radiology Wed 12–1 pm Registration required!
2.16 Colloquium Radiology	Prof.'in Lilli Geworski	1 hour / meeting	MHH Radiology Tue 8:15–9:00 am Registration required!
2.17 Audio Signal Processing for Cochlear Implants and Hearing Aids in Python	Prof. Waldo Nogueira	15 hours 2 CP	MHH, NIFE On request

Elective courses at LUH:

Title	Instructor(s)	Credit	Time and place
2.18 Basics of Digital Systems	Prof. Holger Blume	12 hours 1 CP	LUH / IMS Seminar room 335 Appelstr. 4, 3rd floor On request
2.19 Application-Specific Instruction-Set Processors for Hearing Aid Systems	Jun.-Prof. Guillermo Payá Vayá	12 hours 1 CP	LUH / IMS Seminar room 335 Appelstr. 4, 3rd floor On request
2.20 Principles of Signal Processing in MATLAB	Jun.-Prof. Guillermo Payá Vayá	12 hours 1 CP	LUH / IMS Seminar room 335 Appelstr. 4, 3rd floor On request

Elective courses at UOL:

Title	Instructor(s)	Credit	Time and place
2.21 Aktuelle Probleme der Akustik, Signal-verarbeitung und Medizinischen Physik	Prof. Simon Doclo, Prof. Volker Hohmann, Prof. Birger Kollmeier, Prof. Steven van de Par et al.	25 hours 3 CP	UOL Tue 2–4 pm
2.22 Oberseminar Signal- und Sprachverarbeitung	Prof. Simon Doclo	25 hours 3 CP	UOL Mon 10 am – 12 pm
2.23 Oberseminar Medizinische Physik	Prof. Birger Kollmeier	25 hours 3 CP	UOL Tue 10 am – 12 pm
2.24 Psychophysik und Audiologie	Prof. Birger Kollmeier, Prof. Steven van de Par, Dr. Stephan Ewert	50 hours 6 CP	UOL WiSe: Tue 8–10 am & Fri 8–10 am
2.25 Advanced Topics of Speech and Audio Processing	Prof. Simon Doclo	25 hours 3 CP	UOL WiSe: Mon 2–4 pm & Thu 10 am – 12 pm
2.26 Clinical Neuropsychology	Prof. Stefan Debener	25 hours 3 CP	UOL WiSe: Tue 8–10 am
2.27 Einführung in die Sprachverarbeitung	Prof. Bernd Meyer	25 hours 3 CP	UOL SuSe: Wed 2–4 pm
2.28 Artificial Intelligence, Biological Intelligence and Learning	Prof. Jörg Lücke, Dr. Jörn Anemüller	25 hours 3 CP	UOL SuSe: Thu 10 am –12 pm
2.29 Digital Signal Processing	Prof. Simon Doclo	50 hours 6 CP	UOL SuSe: Mon 4–6 pm & Wed 12–2 pm
2.30 Neurophysik (Neurokognition)	Prof. Volker Hohmann, Dr. Stefan Uppenkamp	25 hours 3 CP	UOL SuSe: Tue 4–6 pm
2.31 Akustik	Prof. Steven van de Par, Dr. Stephan Ewert, Prof. Birger Kollmeier	50 hours 6 CP	UOL SuSe: Tue 4–6 pm & Fri 8–10 am

Combined electives:

2.34 Combined Hot Topic Seminar (Web Conference)	Dr. Christine Baumhoff, Dr. Mark Pottek	1 h / seminar	MHH/UOL/LUH Dates t.b.a.

PhD Program "Epidemiology"

Module*	Type	Dates 2021/2022**	Duration/TUs***	Organizer/Lecturers
Systematic Reviews and Meta Analyses	Lectures and exercises	Autumn/Winter 2021	ongoing, several lectures (42 TUs)	Berit Lange, Jördis Ott et al.
Good Epidemiological Practice and its practical application (GEP)	Lecture and exercise	Autumn/Winter 2021	2-3 hours (3 TUs)	Jördis Ott
Evaluation of Data Quality	Lectures and exercises	Winter 2021/2022	4 days (32 TUs)	Stephan Glöckner
Textmining with R	Lectures and exercises	Winter 2021/2022	1 day (8 TUs)	Stephan Glöckner
Survival Analysis	Lecture and exercises	Spring 2022	2 days (16 TUs)	Berit Lange Barbora Kessel
Multivariate Methods	Lectures and exercises	Spring/Summer 2022	3 days (24 TUs)	Patrizio Vanella
Surveillance and Outbreak Investigations	Lectures, exercises, practical application	Summer 2022	One week module (36 TUs)	Gérard Krause Berit Lange Juliane Dörrbecker (and others)
Data Visualisation using R	Lectures and exercises	Summer/Autumn 2022	2 days (16 TUs)	Frank Klawonn
From Lab to Tables	Lectures and exercises	Summer/Autumn 2022	5 days (36 TUs)	Monika Strengert Berit Lange Gérard Krause (and others)
Journal Club	Presentations by students	Monthly	Regular attention and one own presentation required (1 TU)	PhD Students
Coding Club	Presentations by students and postdocs	Monthly	Regular attention and one own presentation required (1 TU)	PhD Students

* Teaching modules in the PhD Programme "Epidemiology" are usually organized as compact courses.
** Additional modules or courses may take place, depending on capacity and need.
*** TU=Teaching Unit (à 45 min)

Students enrolled in the PhD Programme "Epidemiology" and conducting their research work at the HZI are offered to attend courses and symposia organized by the HZI Graduate School.

Students of the PhD Programme "Epidemiology" are encouraged to attend courses at institutes of the MHH and of the HBRS at the MHH. Teaching units are accredited after consulting with the coordinating team and in line with the requirements of the programme.

The annual PhD retreat of the Programme "Epidemiology" is taking place annually in Braunschweig and is scheduled for Summer 2022.

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Biomedical Data Science

Curriculum Winter and Summer Semester 2021/2022

The BIOMEDAS curriculum builds upon the fields of:

- Computer Science: discipline of formalisms and scalable algorithmic processes;
- Data Science: discipline for discovering intrinsic data properties, value, and actionable insights;
- Open Science: field for enabling access to research outcomes; and
- Biomedicine: area that combines natural sciences, especially the biological and physiological sciences, to clinical medicine

and thus, offers a multidisciplinary curriculum to train data scientists with the required skills to address the challenges of transforming biomedical data into actionable knowledge that will support the discovery and interpretation of insights in biomedicine.
Depicted program modules below develop the required skills using mathematical and computational models to draw reliable conclusions from biomedical data. The accompanying program provides efficient further qualification.

Information given as of Sept 22, 2021.
The actual curriculum can be viewed here at any time:

In case of questions, please contact the BIOMEDAS office: biomedas@translationsallianz.de

Program modules

The program modules group into four clusters (Biomedical Science, Computational Method Development, Machine Learning and Data Mining, Interdisciplinary) and consists of lecture series and related methodological courses.

Journal Club and Progress Seminar

Title	Lecturer/Organizer	Duration/Credit	Time/Place
BIOMEDAS Journal Club	BIOMEDAS students	45 min/bi-weekly	tba/web-based
BIOMEDAS Progress Seminar	BIOMEDAS students	45 min/bi-weekly	tba/web-based

Annual Retreat

The annual PhD retreat of the Program BIOMEDAS is taking place annually. More information to follow.

Soft Skill Courses

Please refer to the courses offered via the HBRS.

Alternative Courses

Students enrolled in BIOMEDAS are encouraged to attend courses with relevant content from other graduate programs or university lectures of partner institutions. Hours of lessons can be accredited after consulting with the thesis committee and in line with the requirements of the program.

Specific seminars and practicals

(see special announcements provided by the HBRS office, program offices and the respective departments)

Organised by the HBRS Office:

Presentation of projects / retreat (weekend, 2 days; for MD / PhD MM: 3rd/4th March 2022)

Gene Technology Security (September 2021, in English)

Translation workshop (Drug development, Patenting, Clinical Studies etc.: TBA)

Career Day (March 18th, 2022)

GMP / GLP workshop (January 2022, Gerdelmann, Pägelow and Papamichael, ITEM)

Scientific communication / writing, "tips and tricks" (January 14th, 2022, Kruse)

Animal Experiments (2 days theory: November 8th and 9th, 2021; exam November 25th)

2-day practical courses: December 2022, Bleich / Dorsch)

Conflict Management (Schröder, November 26th and December 10th, 2021)

Stress Management (TBA, 2022, G. Kümmele)

Time Management (February 2nd and 9th, 2022, Golin)

Team Work and Leadership (March 23rd, 2022, Golin)

Intercultural communication (weekend, June 2022; A. and S. Petersen, Aachen; together with MSc / PhD programs in Göttingen)

Seminars on career perspectives (continuously)

Bioinformatics: TBA (Chouvarine, DeLuca)

<u>Further courses</u>: Assessment Center, Career Coaching, Project Management, Team Leadership, Presentation workshops (German and English), Weekend Workshop German Culture etc. will be announced in course of the year.

Seminars offered by Helmholtz Centre for Infection Research Braunschweig, TWINCORE, Fraunhofer Institute or TiHo: see announcements

Lectures (see special announcements and websites)

Interdisciplinary

- Seminars of the SFBs
- Seminars of Clusters of Excellence"
- Immunological Colloquium
- Gastroenterology Colloquium
- Microbiological Colloquium, Virological Colloquium

In the departments (a must!!)

- Lab-Seminars
- Journal-Clubs (these should be in English!)

Internal practical courses

The supervisors will provide you with special practical trainings if needed. You might also ask your co-supervisors or fellow PhD students for help.

Program offices and HBRS will offer a number of short practical courses (see announcements).

German Classes

Wednesdays: 3.00 - 4.30 pm (beginners, Mrs Anna Kiefer), seminar room 1031 (J4, level 01);
Wednesdays: 4.45 - 6.15 pm (advanced A2, Mrs Anna Kiefer); seminar room 1031 (J4, level 01)

English conversation and language skills

Tuesdays: 6.00 pm - 7.15 pm (Ms Lidia Lange), HBRS seminar room 1140 (J4, level 01)

Optional

Note: You are welcome to visit most of the seminars / courses organised for the German Biology and Biochemistry students, as well as medical students. You are also welcome to visit seminars / courses offered by all programs of HBRS [including the Graduate School at the University of Veterinary Medicine Hannover (TiHo)].

http://www.mhh.de/hbrs
http://www.helmholtz-hzi.de

Rules and Requirements for Postgraduate (PhD) Studies and Examinations in structured doctoral programs of Hannover Biomedical Research School (HBRS), Hannover Medical School

On December 15th, 2000 the Senate of the Hannover Medical School approved the following **Rules and Requirements for Postgraduate (PhD) Studies and Examinations in structured doctoral programs of Hannover Biomedical Research School (HBRS)** [alternatively Dr.rer.nat.]. *(Modifications on June 4th 2002, February 11th 2004, April 21st 2005, March 14th 2007, April 15th 2009, November 9th 2011, November 14th 2012, June 18th 2014, May 11th, 2016, February 1st, 2017, October 17th, 2018 and January 15th, 2020)*

§ 1
Objective of PhD Studies

Research studies at the Hannover Medical School (MHH) for the purpose of obtaining a PhD or Dr.rer.nat. degree (hereinafter referred to as PhD studies) shall facilitate postgraduate training with a focus on specific research projects with a view to enabling the candidate to do in-depth scientific work on his or her own and to provide him or her with additional professional qualifications for future assignments in research or related areas of work. PhD studies shall foster the development of outstandingly gifted up-and-coming academics. The standard time allowed for completing PhD studies shall be three years. Once these PhD studies have been successfully completed, and the PhD examination has been passed, the MHH will award the degree of a Doctor of Philosophy (PhD) to medical students (including dentists), veterinarians, pharmacists, engineers, life scientists, and graduates with biomedical or health science related focus or Dr. rer. nat. to natural and life scientists and pharmacists (not to medical students).

§ 2
Requirements for Access and Admission

(1) Anybody having successfully completed university studies in medicine, veterinary medicine, engineering, pharmacy, natural sciences or biomedical/ health science focus (normally Master, Diploma or Staatsexamen/MBBS) shall have access to PhD studies.

(2) Applicants are required to render evidence of above-average results obtained at university. The applicant's past career must reveal his or her particular qualification for and dedication to scientific work. Decision on whether or not a candidate qualifies for access to PhD studies is up to the PhD Program Committee (§ 4).

§ 3
Admission to PhD Studies

(1) The number of applicants that can be admitted to PhD studies is limited; the number depends on the respective program. The respective PhD Program Committee shall select the applicants to be admitted (§ 4). As a rule, the President of the MHH will give notice of the date of commencement of PhD studies once a year.

(2) Details of the as a rule three-step selection process (written application, written test in home countries or selection by program committee, interview) are regulated in the respective program 'rules of admission'.
(3) Application papers shall be submitted to the chairperson of the PhD Program Committee. Details of current application procedures are described on the website of HBRS.

(4) On the basis of the results of the selection process, the PhD Program Committee shall decide on admission to PhD studies.

(5) At MHH, candidates are enrolled as PhD students for the whole duration of their PhD work. Matriculation is done at the beginning of studies (usually winter semester).

§ 4
PhD Program Committee

(1) The respective PhD Program Committee shall be responsible for the conduct of PhD studies according to the Rules and Requirements for postgraduate studies and examinations to obtain a PhD (Dr.rer.nat.) degree. In the PhD program Infection Biology/ DEWIN the steering committee of the Centre for Infection Biology (ZIB) is acting as PhD program committee.

(2) As a rule, the PhD Program Committee shall be composed of four professors (or competent habilitated/senior scientists), a university scientist with a doctoral degree, and student representatives of every study year who have a joint vote. Students suggest on person from every batch to act as “class-speaker”. Members of the PhD Program Committee shall be appointed by the scientists of a respective program for a period of four years, or two years in case of student members. Re-election shall be possible. The respective PhD Program Committee shall be affirmed by the Research Committee of MHH. The PhD Program Committee is then constituted by the Dean of HBRS and shall elect a professor from among its ranks as chairman. The steering committee of ZIB is elected by its members. The steering committee then appoints a speaker among their ranks.

(3) The PhD Program Committee will meet regularly.

(4) The PhD Program Committee will evaluate proposed projects (open projects) according to quality (with external referees if necessary), financial support, guarantee of independence for PhD students.

(5) The PhD Program Committee shall appoint a team of co-supervisors (thesis advisory board) for each PhD student. Team members shall be habilitated or equally qualified. The team of co-supervisors shall be composed of the student’s personal supervisor at the MHH or partner institutes, and two further scientists qualified as university teachers whose professional activity shall be closely related to the subject of the project. Members of the thesis advisory board usually come from different departments/institutes. In case of several PhD students doing research in the same line, the respective co-supervisors’ teams can be composed of the same individuals.

§ 5
Contents of Studies

(1) The contents to be learned shall be conveyed to the students through their experimental or equivalent theoretical research work and through project-related as well as inter-disciplinary research-oriented courses and seminars. For that purpose, the PhD Program Committee shall prepare and submit, after consultation with the university institutions or partner institutes involved in these studies, a curriculum indicating compulsory and recommended courses or seminars for each discipline.
The courses and seminars shall be held by the teachers and professors of the MHH as well as partner institutes, including visiting professors. Teaching shall be in English. Lectures and seminars of different programs are mutually acknowledged. PhD students may also register for suitable courses or seminars offered by other scientific schools (Leibniz University, University of Veterinary Medicine, etc.). Students are encouraged to do active teaching themselves, e.g. by giving lectures at seminars or postgraduate research training programs [Doktorandenkolleg]. PhD students independently maintain a study book, in which all training activities and presentations are documented. Each student’s individual progress at PhD courses and seminars shall be monitored by the respective teachers (by signatures in study books).

(2) PhD students shall design, after consultation concert with their co-supervisors, their respective individual schedules pursuant to the curriculum established by the PhD Program Committee. Such individual schedule shall require approval by the respective co-supervisors’ team. The student must complete a minimum of 300 hours at courses and seminars during his or her PhD studies; as a rule, at least 80% thereof must be taken at project-related courses and seminars and up to 20% may be spent on interdisciplinary learning (e.g. experimental techniques and bio-informatics, molecular biology, bio-statistics, scientific communication etc.).

During the first year of PhD studies, courses for physicians, dentists and veterinarians are intended to provide participants with a chance to consolidate their knowledge of the fundamental principles of natural sciences and courses for natural scientists are intended to consolidate their knowledge in medical aspects.

(3) PhD students could apply for a leave if justified (e.g. in case of pregnancy), but for no more than 12 months. Short time stays abroad are very much appreciated and will be supported. If students take seminars and courses abroad, they could be acknowledged for the respective PhD program.

§ 6
Supervision

(1) PhD students shall supervised by the members of their respective thesis advisory board (§ 4) appointed by the PhD Program Committee. The responsibilities of the team shall be:

a) To act as co-supervisors and to give individual expert advice to PhD students all through their PhD studies.

b) Within the scope of their research project, students have to work with appropriate methods on a clearly defined subject so that, with some realistic prospect of success, scientific knowledge can be expected to be incremented and the results of such research should be published in international peer-review journals. The co-supervisors shall make sure, and satisfy the PhD Program Committee to that effect, that students are not entrusted with any tasks unrelated to their PhD studies.

c) To evaluate PhD students' progress during their studies by receiving their reports (annually) and conducting exams; and to assess their written final examination papers. The thesis advisory board meeting is conducted at least once a year. It is documented by a written protocol.

d) Within a time of probation of 6 months from start of the PhD project, PhD students have to prove themselves and are evaluated mainly by the main supervisors. Within this time peroid, student status can be changed easily on both sides in agreement with the team of co-supervisors and PhD Program Committee. Upon request, the PhD Program Committee can decide about the termination of collaboration with the student.
The termination of collaboration after the time of probation requires first a moderated discussion by a member of the PhD Program Committee between the student and the respective thesis advisory board. A student member of the PhD Program Committee is allowed to join as well. Afterwards, the PhD Program Committee announces their recommendations.

(2) The supervisors shall be responsible for the financing of the respective research project and shall make efforts, during the standard period of PhD studies (three years), to raise the money needed for the PhD students they are in charge of. Any scholarships available at the MHH shall be awarded or distributed to the individual PhD programs by resolution of the HBRS Committee of MHH.
(3) (Co-)supervisors should assist PhD students in planning their further professional career.

(4) The responsibilities of (co-)supervisors for PhD students shall end upon the date when the latter pass their PhD examination (§ 10), which is normally three years but no later than five years after commencement of PhD studies. The duration of PhD could only be extended in exceptional cases for a maximum of one year. Reasons could be: a) intermittent medical training (specialization) by medical students during their PhD studies, b) prolonged parental leave or c) serious illness.

§ 7
Scientific Colloquia (retreats)

(1) PhD students shall be invited annually by the PhD Program Committee to attend a public colloquium (retreat), giving them an opportunity to give an oral or poster presentation on the current status of their research (§5). The contents of such presentation, constituting an interim/project report, shall be submitted in writing by the PhD student to the PhD Program Committee.

(2) The PhD Program Committee shall decide whether or not this progress report constitutes a sufficient step towards the successful completion of the student's research. If the Committee's comment is negative, such result shall be communicated in writing to the student and his or her co-supervisors' team, indicating the reasons.

(3) Pursuant to a period of one month, the student shall submit a modified work plan for the next year of his research, giving due consideration to the recommendations made.

§ 8
Intermediate Examination

(1) The oral intermediate examination shall be held no later than 18 months after commencement of PhD studies. By way of exception, which must be well-founded, the intermediate examination can be taken at a later date. If a student wishes such exception, he shall apply in writing to the PhD Program Committee adding a comment prepared by his co-supervisors' team.

(2) The dates for intermediate examinations shall be determined by the PhD Program Committee. The intermediate examination shall be held by an expert in the special field and an additional member of the HBRS faculty (chairman). These two examiners are elected by the PhD Program committee. The exam shall cover topics from the student's research project and from the courses and seminars the student has registered for. The examination usually is held in English.

(3) The following grades are given: excellent / very good / good / sufficient/ failed

(4) If the student fails the intermediate examination he shall be allowed to retake it once, pursuant to a period of at least three and no more than six months as the examiners may decide. If the student fails again, he or she shall be deemed to have finally and absolutely failed. Following such final and absolute failure the student shall be taken off the register.

(5) The "chairman" shall report the result of the intermediate examination to the PhD Program Committee. The result of the exam will account for 20% of the final grade (PhD or Dr.rer.nat.).

§ 9
Requirements for Signing up for PhD Examination

(1) After completion of PhD studies, which is normally at the end of the third year, the PhD examination shall be held. The PhD student shall submit the following documents when signing up for the PhD examination:

1. Certificate of regular attendance at and completion of courses and seminars according to the curriculum, i.e. a total of at least 300 hours, and of three colloquia pursuant to § 7;

2. Certificate of attendance of a course on "good scientific practise",

3. Certificate of intermediate examination;

4. A scientific thesis (dissertation) prepared as a Monograph in English or German by the PhD student on the research project the student worked on during his or her PhD studies, with introduction, materials and methods, results, discussion and summary. The thesis shall constitute an essential original scientific contribution to the discipline the student's research project pertains to;

5. Alternatively (instead of a Monograph), usually two first author publications in internationally peer reviewed science journals (published or accepted) as a cumulative thesis. Shared first authorships are allowed. The PhD student's personal contribution to such publications shall be clearly identified as well as the contribution of the other authors. In that context, "accepted" shall be deemed equivalent to "published". As for this publication requirement, exceptions are possible with reasons to be given by the supervisor.
   The publications must be in one scientific context, and shall be supplemented by a newly composed, detailed description under a joint title in English or German of the research subject, including an overall summary and a discussion of results. Hereby, current literature shall be considered.

6. A written agreement to a potential screening of the thesis with plagiarism detection software (appendix 1).

(2) The final version of the dissertation should be submitted in six printed copies as well as a digital version (appendix 2).

(3) Before evaluation by the internal/external examiners, the dissertation can be checked for the agreement with the MHH guidelines on ”good scientific practice“. This includes the screening of primary data as well as screening for plagiarism. In case of suspicion of scientific fraud, the dissertation is passed on to an ombudsman, who can initiate proceedings according to the guidelines on „good scientific practice“. During the ombudsman proceedings, the PhD process is paused.

(4) The registration for the PhD examination (the submission of the PhD thesis) can be withheld after the PhD student had announced this to the PhD committee in written form. The PhD program committee informs the office of president.

(5) To assess the thesis, the PhD Program Committee shall procure at least two independent expert opinions. Usually there is one external expert’s opinion, as well as one internal expert’s opinion. Experts are experienced researchers with a habilitation (or equivalent qualification). The external expert shall not be a member of MHH or HBRS faculty. The internal expert is not a member of the thesis advisory board. To be on the save side, one expert shall be nominated as substitute in case of unforeseen drop outs. For the Dr. rer. nat., at least one of the experts (internal or external) has to have a natural scientist qualification. In addition, the co-supervisors’ team shall prepare an expert report on the dissertation, and such report together with the external and internal expert’s opinion shall serve to make the final assessment. The following grades can be given in the reports:
excellent / very good / good / sufficient / failed
or
ausgezeichnet / summa cum laude,
sehr gut / magna cum laude,
gut / cum laude,
genügend / rite,
nicht bestanden / non sufficit

All three reports are considered equally for the final assessment, together 60% for the final mark.

(6) If one of the expert reports detects any shortcomings in the dissertation, the PhD Program Committee can be requested to have such shortcomings eliminated or remedied as a precondition for acceptance of the thesis. The chairperson can allow a reasonable period for the PhD candidate to remedy the shortcomings and recommend that he or she submit the thesis anew. In that respect, the chairperson of the PhD Program Committee can extend this period once only. The experts or the thesis advisory board shall assess the thesis again once the shortcomings have been remedied.

(7) If, based on such second experts’ vote, the PhD Program Committee declines to accept the thesis, the candidate shall be deemed to have failed the PhD examination finally and absolutely. In that case, the PhD student shall be taken off the register.

§ 10
PhD Examination

(1) The PhD examination consists of a public presentation (usually 15-20 min, in English) held by the PhD student at the Hannover Medical School on the subject of his research, a subsequent public disputation of the project of at least 30 minutes of duration to assess the knowledge acquired by the student on the subject of his specific area of research as well as on interdisciplinary subjects. The interview also serves to assess whether the candidate has acquired, and is able to apply, any knowledge and skills relating to the scientific environment of the subject of his research.

(2) The examination is taken by an examination board: the external and internal examiner as well as a member of the PhD Program Committee (with PhD degree) who acts as chairman.

(3) The final grade results from: the intermediate exam (20%), the written reports of dissertation by thesis advisory board/ the two experts’ opinions (60%), the oral examination (20%). In justified exceptional cases, the examination committee may deviate from the latter rule.

(4) The oral examination shall be taken on record in abridged form and shall indicate:

A short summary of the examination content
the grade earned for the intermediate examination
the grade earned for the thesis (three independent written reports),
the grade earned for the oral examination,
the overall grade average earned for the PhD examination.

It shall be signed by the chairman of the board of examiners.

(5) The following grades can be awarded:

Excellent/ very good/ good / sufficient / failed

Equivalent to
ausgezeichnet / summa cum laude,
sehr gut / magna cum laude,
gut / cum laude,
genügend / rite,
Nicht bestanden / non sufficit.

The overall grade „excellent – summa cum laude“ is usually awarded only if at least one first-author manuscript is accepted for publication. Shared first-authorships are considered equally.

(6) If the candidate fails the final examination, he or she shall be allowed to retake it once with the same board of examiners, pursuant to a period of at least three and no more than six months as the thesis advisory board may decide. Should the student then fail again, he or she shall be deemed to have finally and absolutely failed the PhD examination. Following such final and absolute failure the student shall be taken off the register.

(7) The result of the PhD examination shall be communicated to the PhD Program Committee and the President's office (in case of failure with reasons and instructions about a person's available legal remedies) as well as to all German universities.

§ 11
Publication

(1) PhD students are obliged to publish their dissertation.

(2) Once the student has passed the PhD examination, he or she has to distribute within one year six copies of the dissertation (plus one electronic version). Formatting has to be done according to the rules of MHH library. The publication in form of a monograph is allowed if it is clearly indicated that the dissertation has been published by MHH.

(3) If the deadline of one year is missed all rights acquired by the PhD exam are extinct.

(4) The PhD student together with the supervisor can apply at the 'Forschungsdekanat' for a so called 'Hold of the dissertation for publication' in order to protect intellectual property or patent issues. This application form needs to be handed in at the library together with the copies of the dissertation. In case of discordance of student and supervisor, the president of MHH or a designated person will decide on granting a 'Hold'. All information concerning the hold needs to be protected from unwanted distribution by a written agreement on confidentiality, for example in an application process. The PhD office can certify that the obligatory copies of the dissertation had been handed in and that the electronic version matches the printed version.

(5) In consequence, there is a delay in making the dissertation publicly available. The "Hold" can be applied for one year. It can be extended twice for another year upon request.

(6) At the end of the „Hold“, the library is automatically publishing the dissertation if there is no further application for extension.

§ 12
Award of the Academic Degree of a Doctor of Philosophy (PhD)

(1) After successful PhD examination and distribution of six final printed copies and an electronic version, as well as a declaration that all documentation, electronic data, lab books and materials had been handed over in the respective department/institute, he or she shall be awarded the academic degree of a Doctor of Philosophy (PhD) or a Dr. rer. nat. degree by the MHH.

(2) A document as shown in Appendix 3 and 4 shall be issued to him or her in evidence of such award. The award shall authorize the candidate to use the academic title of a PhD or Dr. rer. nat..

§ 13
Abrogation, invalidity and revocation of the doctorate

(1) The examination board suspends the PhD examination procedure, if an investigative or criminal procedure concerning the doctorate is pending against the PhD student.

(2) If the doctoral candidate is found to be guilty of a serious breach of good scientific practice or deception regarding the doctoral achievements or that there are no essential requirements for admission to the doctorate, the Senate declares upon suggestion of the president, the immediate termination of the procedure and the invalidation of the PhD work performed so far. In this case, it is not permitted to conduct a PhD again at the MHH.

(3) If, after completion of the PhD, it turns out that the doctoral candidate committed a deception, threat or bribery during a doctoral thesis, the Senate can subsequently withdraw the doctoral degree after hearing the doctoral candidate. This applies in particular to deceptions about the circumstances mentioned in paragraph 2. If the doctoral degree is withdrawn, the president revokes the doctoral certificate and title. Paragraph 2 sentence 2 and paragraph 48 of the Administrative Procedure Act apply accordingly. Withdrawal affects the time of completion of the doctorate.

(4) The doctoral degree - including an honorary doctorate - can be withdrawn by the Senate, if the doctoral candidate has been legally sentenced to at least one year in prison for an intentional crime or if he or she has been legally sentenced for an intentional crime in its preparation and perpetration of the doctoral degree. Paragraph 48 of the Administrative Procedure Act applies accordingly.

§ 14
Coming into Effect

The Rules and Requirements for Postgraduate Studies and Examinations in structured doctoral programs of Hannover Biomedical Research School (HBRS) to obtain a PhD degree (or Dr. rer. nat.), as approved by the senate of MHH, are hereby published within the Hannover Medical School and are coming into effect.

Hannover,

The President
Professor Dr. Michael P. Manns

Appendix 1 Declaration

Declaration

Herewith, I confirm that I have written the present PhD thesis myself and independently, in compliance with "the policy of Hannover Medical School on the safeguarding of good scientific practice and procedural rules for dealing with scientific misconduct" and that I have not submitted it at any other university worldwide.
Herewith, I agree that MHH can check my thesis by plagiarism detection software as well as randomly check the primary data. I am aware that in case of suspicion, ombudsman proceedings according to § 9 of MHH 'Guidelines of Hannover Medical School to guarantee good scientific practice and dealing with scientific fraud' will be initiated. During such proceedings, the PhD process is paused.

Hannover, (Month Year)

Appendix 2. Front pages of thesis (example)

Title

Logo of PhD Program

A thesis submitted for the degree of
Doctor of Philosophy (PhD) [or Doctor of Natural Sciences (Dr.rer.nat.)]
in the subject of XXX
by
First name Last name, Degree (e.g. Master)
Month Year

Hannover Medical School
International PhD program "XXX"
in Hannover Biomedical Research School (HBRS)
Department of XXX

2nd page

Acknowledged by the PhD committee and head of Hannover Medical School

President: Prof. Dr. Michael P. Manns
Supervisor:
Cosupervisors:
External expert:
Internal expert:
Day of final exam/public defense:

Example of PhD certificate (According to § 11)

Appendix 3

(MHH Logo)
Die Medizinische Hochschule Hannover unter der Präsidentschaft der Professorin/des Professors
Name Vorname verleiht
Frau/Herrn .Name Vorname
geboren am TT. Monat JJJJ in Stadt, Land
den Grad einer/s
Doktorin/Doktors der Naturwissenschaften (Dr. rer. nat.)
bzw. Doctor of Philosophy (PhD)
nachdem sie/er im Rahmen der Hannover Biomedical Research School unter Teilnahme am PhD Programm
XXXX durch ihre/seine Dissertation
TITEL
angefertigt in der Abteilung, Institut, Einrichtung,
sowie der öffentlichen Disputation der Arbeit ihre/seine Befähigung zu vertiefter selbstständiger wissenschaftlicher
Arbeit nachgewiesen und dabei das Gesamturteil
Summa Cum Laude (exzellent)/Magna Cum Laude (sehr gut)/Cum Laude (gut)/Rite (genügend)
erhalten hat.
Hannover, den TT. Monat JJJJ
(Siegel)

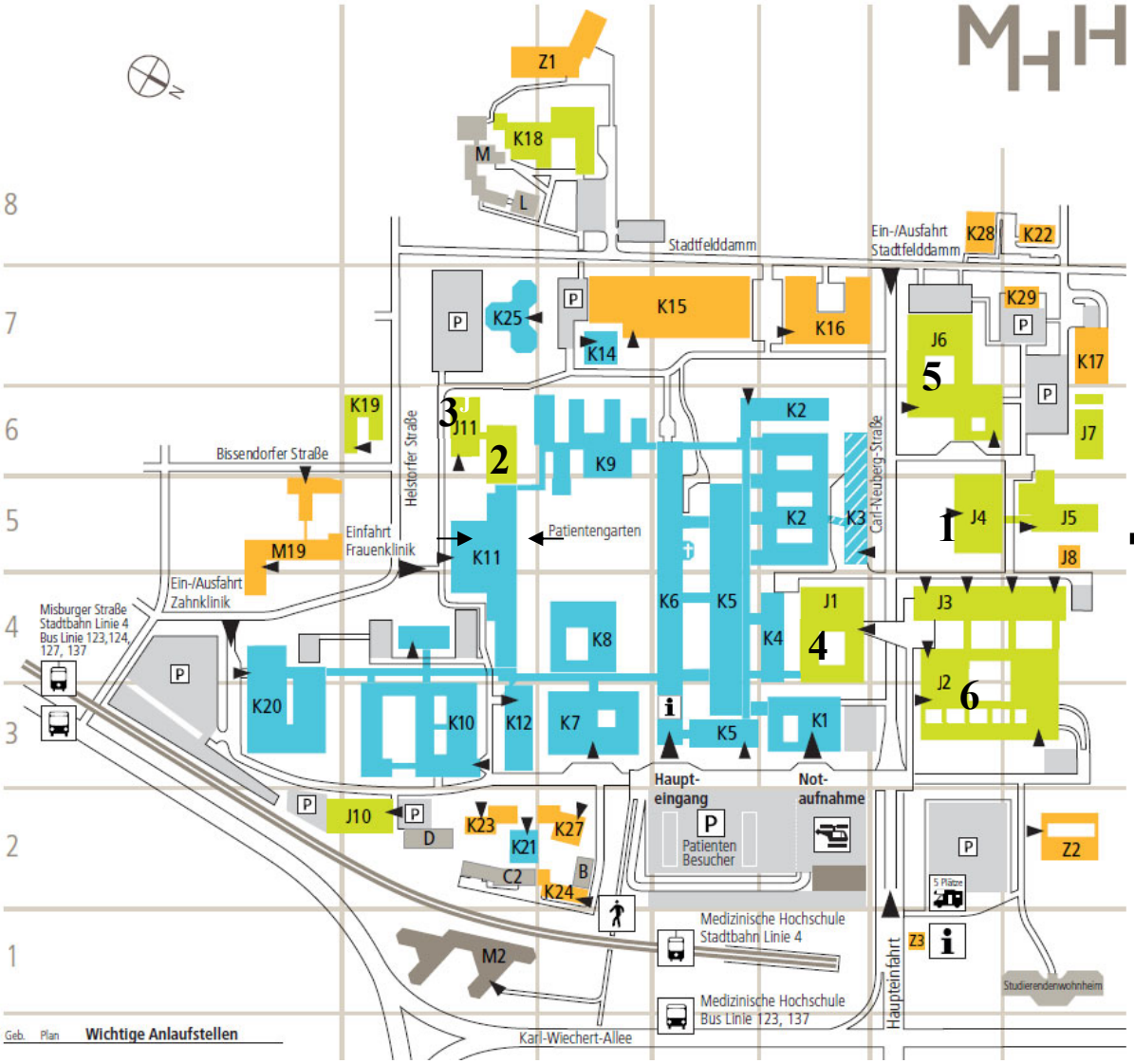
Unterschrift	Unterschrift
Programmsprecher/in	Präsident/in der Medizinischen Hochschule Hannover

Appendix 4

(MHH Logo)
Hannover Medical School under its President Professor Firstname Lastname confers upon
Firstname Lastname
Born on DD Month YYYY in town, country
the degree of
Doctor rerum naturalium (Dr. rer. nat.) / Doctor of Philosophy (PhD)
having participated in the PhD Program xxx within Hannover Biomedical Research School and having demonstrated the ability to undertake advanced independent research in his/her thesis
TITEL,
completed at the Institute of xx, Hannover Medical School, and a public defense of this thesis, which has been awarded the overall grade of
excellent (summa cum laude) / very good (magna cum laude) / good (cum laude) / sufficient (rite)

Hannover, DD Month YYYY

Signature	Signature
Chairman/woman PhD Program	President



TWINCORE ITEM

1: Building J4 (Forschungswerkstätten)
MD/PhD/ HBRS Office; HBRS seminar room 1140; level 1
Seminar room 1031, level 01,
Seminar room S 1400 (ground floor),

2: TPFZ Research building
(for entrance see arrows)
PhD Infection Biology Office and DEWIN, level 2
Seminar room 1420, ground floor

3: HBZ Building (Hans Borst Zentrum, J11)
PhD Regenerative Science Office, level 2
Seminar room, ground floor

4: Main lecture hall building (F-N), Library, registrar's office

5: Lecture halls Q, R

6: Lecture halls A - E