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"

Winter and Summer Semester 2019 / 2020

Hannover Medical School Hannover Biomedical Research School



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Winter and Summer Semester 2019 / 2020

www.mh-hannover.de/hbrs.html

PhD Curriculum

Hannover Medical School

Academic Year

Winter Semester 2019 / 2020

Start:

October 14th, 2019 (Opening ceremony October, 21st)

End:

February 28th, 2020

MD/PhD "Molecular Medicine" intermediate examination: February 26 th , 2020 (students organise the date)	from	January	14 th	to
PhD "Infection Biology" / "DEWIN" intermediate examination:	March	24 th , 2020		
PhD "Regenerative Sciences" intermediate examination:	by Ma	rch 30 th , 20)20	
PhD "Epidemiology" and PhD "Auditory Sciences" intermed decided on an individual basis, depending also on status of PhD	iate ex thesis	kamination	i: To	be

Summer Semester 2020

Start:	April 6 th , 2020
End:	July 14 th , 2020

Organisation of Hannover Biomedical Research School

Hannover Biomedical Research School



Members of the International Advisory Board:

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Jasper Götting

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Dr. Stefanie Castell & Dr. Jördis Ott (coordinators) Daniela Gornyk & M.T. Nguyen (students)

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Content:

	Page
Obligatory seminars for PhD programs, Good Scientific Practice	14
1st Semester MD/PhD "Molecular Medicine"	15
- in-depth seminars for medical students	18
- in-depth seminars for life scientists	18
2 nd Semester MD/PhD "Molecular Medicine"	20
3rd Semester MD/PhD "Molecular Medicine"	22
- Focus Immunology	22
- Focus Genetics and Cell Biology	22
4th Semester MD/PhD "Molecular Medicine"	24
- Focus Infection and Immunity	24
- Focus Differentiation and Oncology	25
1st Semester PhD "Infection Biology / DEWIN"	27
2 nd Semester PhD "Infection Biology / DEWIN"	30
3 rd Semester PhD "Infection Biology/ DEWIN"	31
4th Semester PhD "Infection Biology/ DEWIN"	
1st Semester PhD "Regenerative Sciences"	35
2 nd Semester PhD "Regenerative Sciences"	
3 rd Semester PhD "Regenerative Sciences"	41
4th Semester PhD "Regenerative Sciences"	43
Additional Offers PhD "Regenerative Sciences"	45
PhD program "Auditory Sciences"	46
PhD program "Epidemiology"	50
Specific seminars	51
- organised by HBRS	51
Optional courses	52
Rules and Requirements	53
Мар	63

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)

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"

Year 1	Year 2	Year 3			
 Sem. + Lect. Monday (4.30 – 6.00 pm; 6 cp) Journal Club in students own department (15 h) + attendance of 15 scientific lect. at MHH / HZI / TiHo (such as SFB-Sem. or Immunol. Colloquium; 2 cp) 	 Seminar based on reviews and original manuscripts (Monday 4.30 – 6.00 pm) (4 cp) Presentation of one original manuscript and one research topic during these seminars (4 cp) Journal Club in students own department (15 h) + attendance of 15 scientific lect. at MHH / HZI / TiHo (such as SFB-Sem. or Immunol. Colloquium; 2 cp) 				
 3-year PhD project work (125 cp) Public presentations/project reports (i.e. Retreat) (10 cp) Three presentations in department over three years (10 cp) Three presentations of manuscripts at the departments Journal Club over three years (3 cp) Talk / presentation at international congress (2 cp) Practical courses (80 hours) (10 cp) Participation in summer schools / interdisciplinary seminars (e. g. soft skills) / congress (20h) (2 cp) 					
	Intermediate exam	after 18 months			

cp: credit points

PhD thesis and final exam after 3 years

Structure of the PhD-Program "Regenerative Sciences"

Year 1	Year 1 Year 2	
 Seminars + Lectures in basic sciences Thursday (4.15 - 5.45 pm) Tutorials Thursday (3.00- 4.00 pm) 	 Seminars + Lectures in basic sciences Thursday (4.15 - 5.45 pm) Tutorials Thursday (3.00 - 4.00 pm) 	Focus on experimental work

• 3-year PhD project work

- Three presentations in department within three years (regular attendance)
- 3 Presentations of manuscripts at the department's Journal Club within three years (regular participation, i. e. 10 times per year)
- Public annual presentation/project report (i. e. retreat)
- Talk / presentation at international congress
- Project-orientated seminars / courses; including practicals and summer schools (80 h)
- Participation in interdisciplinary seminars (e.g. soft skills / congresses) (40h)

Intermediate exam after 18 months

PhD thesis and final exam after 3 years

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 45

Structure of the PhD-Program "Epidemiology"

Year 1	Year 2	Year 3	
research projectaccompanying program	research projectaccompanying program	research project	
	Intermediate evaluation after 18 months	Thesis defense, final exam after 3 years	

- 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)

 \rightarrow total accompanying program of a minimum of 300 hrs

!!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, 15 October 2019

8.30 am	First Seminar: Good Scientific Practice
- 10.00 am	Introduction and Data Management; Beate Schwinzer
	Lecture Hall S, building J6

Wednesday, 16 October 2019

8.30 am	Second Seminar: Good Scientific Practice
- 10.00 am	Scientific Misconduct and Plagiarism; Beate Schwinzer
	Lecture Hall S, building J6

Thursday, 17 October 2019

- 8.30 pm Third Seminar: Good Scientific Practice
- 10.00 am Ethics and Statistics; Dr. Stephan and Dr. Olga Halle Lecture Hall S, building J6

1st Semester

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

<u>MD / PhD "Molecular Medicine"</u>: 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.

Episode I – The hematopoetic wonderland (Focus Immunology I)	Seminar	Monday, 14.10.2019	4.30 - 6.00 pm	Christine Falk	
HBRS Opening: Monday, 21 October 2019, 5.00 pm (building J6, Level S0, lecture hall R)					
Innate immunity (Focus Immunology II)	Seminar	Monday, 28.10.2019	4.30 - 6.00 pm	Annett Ziegler	
B cells and antibody responses (Focus Immunology III)	Seminar	Monday, 04.11.2019	4.30 - 6.00 pm	Siegfried Weiß	
T cells and T cell response (Focus Immunology IV)	Seminar	Monday, 11.11.2019	4.30 - 6.00 pm	Francesca Rampoldi	
Cytotoxic T cell response (Focus Immunology V)	Seminar	Monday, 18.11.2019	4.30 - 6.00 pm	Berislav Bosnjak	

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

In HBRS Seminar room (Oncology):

Gene expression analysis in cancer research (Focus Oncology I)	Seminar	Monday, 25.11.2019	4.30 - 6.00 pm	Adrian Schwarzer
Genetic modification with lentiviral vector technologies (Focus Oncology II)	Seminar	Monday, 02.12.2019	4.30 - 6.00 pm	Tobias Mätzig
Design and application of shRNA- based methods in biomedical research (Focus Oncology III)	Seminar	Monday, 09.12.2019	4.30 6.00 pm	Marc-Jens Kleppa

Disease modelling and drug discovery with the CRISPR-Cas9 system (Focus Oncology IV)	Seminar	Monday, 16.12.2019	4.30 - 6.00 pm	Sofia Gialesaki
Induced pluripotent stem cell resources for the treatment of congenital diseases (Focus Oncology V)	Seminar	Monday, 06.01.2020	4.30 6.00 pm	Nico Lachmann
Mouse models (Focus Oncology VI)	Seminar	Monday, 13.01.2020	4.30 - 6.00 pm	Arnold Kloos

In lecture hall B (Microbiology):

Common themes in bacterial pathogenesis (Focus Microbiology l)	Seminar	Monday, 25.11.2019	4.30 - 6.00 pm	Günter Graßl
Paradigms of Infection Biology: Salmonella (Focus Microbiology II)	Seminar	02.12.2019	4.30 - 6.00 pm	Günter Graßl
Paradigms of Infection Biology: Chlamydia and Listeria (Focus Microbiology III)	Seminar	Monday, 09.12.2019 4.30 - 6.00 pm		Andreas Klos
Paradigms of Infection Biology: Streptococci and Staphylococci (Focus Microbiology IV)	Seminar	Monday, 16.12.2019	4.30 - 6.00 pm	Peter Valentin-Weigand
Paradigms of Infection Biology: Toxoplasma (Focus Microbiology V)	Seminar	Monday, 06.01.2020	4.30 - 6.00 pm	Dirk Schlüter
Paradigms of Infection Biology: Role of the commersal flora for human health (Focus Microbiology VI)	Seminar	Monday, 13.01.2020	4.30 - 6.00 pm	Marius Vital

				17	
Taxonomy of Viruses and Viral Diseases (Focus Virology I)	Seminar	Monday, 20.01.2020	4.30 - 6.00 pm	Anke Kraft	
	Tutorial	Monday, 27.01.2020	3.15 - 4.15 pm	Anke Kraft	
Transcription + Replication of RNA viruses (not Flaviviridae)	Seminar	Monday, 27.01.2020	4.30 - 6.00 pm	Thomas Pietschmann	
(Focus Virology II)	Tutorial	Monday, 03.02.2020	3.15 - 4.15 pm	Thomas Pietschmann	
Transcription + Replication of DNA viruses	Seminar	Monday, 03.02.2020	4.30 - 6.00 pm	Jens Bohne	
(not Herpesviridae) (Focus Virology III)	Tutorial	Monday, 10.02.2020	3.15 - 4.15 pm	Jens Bohne	
Virus assembly, maturation and egress	Seminar	Monday, 10.02.2020	4.30 - 6.00 pm	Gisa Gerold	
(Focus Virology IV)	Tutorial	Monday, 17.02.2020	3.15 - 4.15 pm	Gisa Gerold	
Viral Pathogenesis and Host Defense	Seminar	Monday, 17.02.2020	4.30 - 6.00 pm	Abel Viejo-Borbolla	
(not Flavi/ Herpes) (Focus Virology V)	Tutorial	Monday, 24.02.2020	3.15 - 4.15 pm	Abel Viejo-Borbolla	
Oncogenic Viruses (Focus Virology VI)	Seminar	Monday, 24.02.2020	4.30 - 6.00 pm	Каі Кгорр	
	Tutorial	Monday, 02.03.2020	3.15 - 4.15 pm	Каі Кгорр	
Location seminar: Lecture hall B, building J2 Location tutorial: HBRS seminar room 1140, building J4, level 01 (2 nd floor)					

*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, 14.10.2019	3.45 - 4.15 pm	Susanne Kruse
	No seminar because of opening ceremony	Monday, 21.10.2019		
Electron Microscopy	Seminar	Monday, 28.10.2019	3.15 - 4.15 pm	Stephanie Groos
ТВА	Seminar	Monday, 04.11.2019	3.15 - 4.15 pm	Christine Happle
	No seminar because of animal course	Monday, 11.11.2019		
Clinical Immunology: pathogenesis of an autoimmune disease (Lupus erythematosus)	nical Immunology: thogenesis of an autoimmune Seminar sease (Lupus erythematosus)		3.15 - 4.15 pm	Torsten Witte
Hannover Unified Biobank	Seminar	Monday, 25.11.2019	3.15 - 4.15 pm	Thomas Illig
Super resolution light microscopy	Seminar	Monday, 02.12.2019	3.15 - 4.15 pm	Rudolf Bauerfeind

				19
FACS analysis	Seminar	Monday, 09.12.2019	3.15 - 4.15 pm	Roland Jacobs
Gene Technology and Biosafety	Seminar	Monday, 16.12.2019	3.15 - 4.15 pm	Ruth Knorr
Chip cytometry	Seminar	Monday, 06.01.2020	3.15 - 4.15 pm	Christian Hennig
Cell sorting	Seminar	Monday, 13.01.2020	3.15 - 4.15 pm	Matthias Ballmaier
Immunotherapy and cancer vaccines	Seminar	Monday, 20.01.2020	3.15 - 4.15 pm	Tetyana Yevsa
Location: Hannover Biomedical Research School, HBRS seminar room 1140, building J4, level 01 (2 nd 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 cell cycle and its implications in diseases (Focus Cell Biology I)	Seminar lecture hall B	Monday, 06.04.2020	4.30 - 6.00 pm	Hans J. Hauser
	no Tutorial			
	No seminars on 13 April , public holiday			
	Tutorial	Monday, 20.04.2020	3.15 - 4.15 pm	Hans J. Hauser
Intracellular trafficking	Seminar lecture hall B	Monday, 20.04.2020	4.30 - 6.00 pm	Theresia Stradal
	Tutorial HBRS seminar room	Monday, 27.04.2020	3.15 - 4.15 pm	Theresia Stradal
The structure of the cell's interior	Seminar lecture hall B	Monday, 27.04.2020	4.30 - 6.00 pm	NN
	Tutorial	Monday, 04.05.2020	3.15 - 4.15 pm	
(Now for MD / PhD MM only)				
HBRS seminar room				
5.) Biochemistry and Genetics; methods				
Next generation sequencing	Seminar	Monday, 04.05.2020	4.30 - 6.00 pm	Robert Geffers (HZI)
Next generation sequencing	No tutorial	Monday, 11.05.2020		
Transcriptomics	Seminar	Monday, 11.05.2020	4.30 - 6.00 pm	Oliver Dittrich- Breiholz
(seminar / tutorial in building J3, level 01, room 2020)	Tutorial	18.05.2020	3.15 - 4.15 pm	Oliver Dittrich- Breiholz

				21
Strategies to analyse gene	Seminar / tutorial	Monday, 18.05.2020	4.30 - 6.00 pm	Achim Gossler
function <i>in vivo</i>	Tutorial	25.05.2020	3.15 - 4.15 pm	Achim Gossler
Physical Methods in Biochemistry: Characterization of Protein - Protein Interactions	Seminar	Monday, 25.05.2020	4.30 - 6.00 pm	Ute Curth
No seminars - public holiday on 1 June 2020				
See above (building J6, level S0, (seminar room 76), room no. 4150	Tutorial	Monday, 08.06.2020	3.15 - 4.15	Ute Curth
Molecular mechanisms of heart failure	Seminar / Tutorial	Monday, 08.06.2020	Monday, 08.06.2020 4.30 - 7.00 pm	
(building J6, level S0, (seminar room 76), room no. 4150	No tutorial	Monday, 15.06.2020		
Proteomics	Seminar	Monday, 15.06.2020	4.30 - 6.00 pm	Andreas Pich
Metabolomics	Tutorial	Monday, 22.06.2020	3.15 - 4.15 pm	Andreas Pich
ТВА	Seminar	Monday, 22.06.2019	4.30 - 6.00 pm	Christian Wahl -Schott
	Tutorial	Monday, 29.06.2020	3.15 - 4.15 pm	Christian Wahl -Schott
Stem cells	Seminar	Monday, 29.06.2020	4.30 - 6.00 pm	Axel Schambach
	Tutorial	Monday, 06.07.2020	3.15 - 4.15 pm	Axel Schambach
Techniques of miRNAs and	Seminar / Tutorial	Monday, 06.07.2020	4.30 - 6.30 pm	Jan Fiedler
IncRNAs				

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

Unfortunately, this focus is not offered this study year as there are too less participants.

2. Focus: Genetics and Cell Biology

1. Techniques and diagnostics / therapy, genetics					
Viral vectors for gene transfer <i>in</i>	Seminar/ Tutorial	Monday, 14.10.2019	Monday, 3.15 - 6.00 14.10.2019 pm		
<i>vitro</i> and <i>in vivo</i>	No Tutorial	Monday, 28.10.2019	3.15 - 4.15 pm		
Opening Ceremony, Monday, 21 October 2019, 5.00 pm, lecture hall R					
Molecular mechanisms of vascular aging in health and disease	Seminar	Monday, 28.10.2019	4.30 - 6.00 pm	Yulia Kiyan	
	Tutorial	Monday, 04.11.2019	3.15 - 4.15 pm	Yulia Kiyan	
Embryonic and somatic cloning in mammals	Seminar	Monday, 04.11.2019 4.30 - 6.30 p		Heiner Niemann	
	Tutorial	Monday, 11.11.2019	3.15 - 4.15 pm	Heiner Niemann	
Molecular mechanisms of heart failure	Seminar	Monday, 11.11.2019	4.30 - 6.00 pm	Melanie Ricke-Hoch	
	Tutorial	Monday, 18.11.2019	3.15 - 4.15 pm	Melanie Ricke-Hoch	

				23
2. Signalling				
Fibulin 6 affects TGF signalling in	Seminar	Monday, 18.11.2019	4.30 - 6.00 pm	Christine Herzog
context of cardiac remodelling	Tutorial	Monday, 25.11.2019	3.15 - 4.15 pm	Christine Herzog
Functions of sodium channel	Seminar	Monday, 25.11.2019	4.30 - 6.00 pm	Frank Echtermeyer
Nav1.3 in neutrophil extravasation	Tutorial	Monday, 02.12.2019	3.15 - 4.15 pm	Frank Echtermeyer
Interactions between signalling,	Seminar	Monday, 02.12.2019	4.30 - 6.00 pm	Asha Balakrishnan
metabolic pathways and miRNAs in HCC	Tutorial	Monday, 09.12.2019	3.15 - 4.15 pm	Asha Balakrishnan
Small GTPases as targets of bacterial toxins	Seminar	Monday, 09.12.2019	4.30 - 6.00 pm	Harald Genth
	Tutorial	Monday, 16.12.2019	3.15 - 4.15 pm	Harald Genth
3. Cell Biology and disease				
Glycosylation and dispasss	Seminar	Monday, 16.12.2019	4.30 - 6.00 pm	Hans Bakker
	Tutorial	Monday, 06.01.2020	3.15 - 4.15 pm	Hans Bakker
Molecular mechanisms in	Seminar	Monday, 06.01.2020	4.30 - 6.00 pm	Maren Leifheit- Nestler
cardiorenal syndrome	Tutorial	Monday, 13.01.2020	3.15 - 4.15 pm	Maren Leifheit- Nestler
Stem cells in renal injury	Seminar / Tutorial	Monday, 13.01.2020	4.30 - 6.30 pm	Roland Schmitt
	No tutorial	Monday, 20.01.2020		
How molecular motors work	Seminar /	Monday, 20.01.2020	4.30 - 6.00 pm	Dietmar Manstein
How molecular motors work	Tutorial	Monday, 27.01.2020	3.15 - 4.15 pm	Dietmar Manstein

				24	
Membrane domains	Seminar	Monday, 27.01.2020	4.30 - 6.00 pm	Robert Lindner	
	Tutorial	Monday, 03.02.2020	3.15 - 4.15 pm	Robert Lindner	
Micro RNAs from disease mechanisms to therapeutic approaches	Seminar	Monday, 10.02.2020	1.45 - 3.15 pm	Thomas Thum	
	Tutorial	Monday, 10.02.2020	3.15 - 4.15 pm	Jan Fiedler	
Enigonatics and Cancor	Seminar	Monday, 10.02.2020	4.30 - 6.00 pm	Anke Bergmann	
	Tutorial	Monday, 17.02.2020	3.15 - 4.15 pm	Anke Bergmann	
Liver fibrogenesis - basic mechanisms and clinical implications	Seminar	Monday, 17.02.2020	4.30 - 6.00 pm	Ingmar Mederacke	
	Tutorial	Monday, 24.02.2020	3.15 - 4.15 pm	Ingmar Mederacke	
Location: Hannover Biomedical Research School, building J4, level 01 (2 nd floor), seminar room 1031					

MD / PhD program "Molecular Medicine"

4th Semester

3. Focus: Infection and Immunity

Unfortunately, this focus is not offered this study year as there are too less participants.

4. Focus: Differentiation and Oncology

1. Development and cancer				
Liquid biometers	Seminar	Monday, 06.04.2020	4.30 - 6.00 pm	Anja Thorenz
Liquid biopsies and biomarkers	Tutorial	Monday, 20.04.2020	3.15 - 4.15 pm	Anja Thorenz
No seminars on 13 April 2020, public holiday				
Liver organogenesis and hepatic stem cell	Seminar	Monday, 20.04.2020	4.30 - 6.00 pm	Michael Ott
	Tutorial	Monday, 27.04.2020	3.15 - 4.15 pm	Michael Ott
Epigenetics in cancer	Seminar	Monday, 27.04.2020	4.30-– 6.00 pm	Ulrich Lehmann- Mühlenhoff
	Tutorial	Monday, 04.05.2020	3.15 - 4.15 pm	Ulrich Lehmann- Mühlenhoff
2. Stem cells and cancer				
Onco-Immunology: Translational research at the interface between	Seminar	Monday, 04.05.2020	4.30 - 6.00 pm	Friedrich Feuerhake
	Tutorial	Monday, 11.05.2020	3.15 - 4.15 pm	Friedrich Feuerhake
Metabolism and cancer: concept, players, therapy	Seminar	Monday, 11.05.2020	4.30 6.00 pm	Anuhar Chaturvedi
	Tutorial	Monday, 18.05.2020	3.15 - 4.15 pm	Anuhar Chaturvedi
Adoptive T cell therapies in hematopoietic stem cell transplantation	Seminar	Monday, 18.05.2020	4.30 - 6.00 pm	Martin Sauer
	Tutorial	Monday, 25.05.2020	3.15 - 4.15 pm	Martin Sauer

				26	
PH-regulation in cancer cell motility	Seminar	Monday, 25.05.2020	4.30 - 6.00 pm	Christian Stock	
	Tutorial	Monday, 08.06.2020	3.15 - 4.15 pm	Christian Stock	
No seminars on 1 June 2020, public holiday					
3. Signalling (and cancer)					
Oncogenes and myeloproliferation	Seminar	Monday, 08.06.2020	4.30 - 6.00 pm	Matthias Eder	
	Tutorial	Monday, 15.06.2020	3.15 -4.15 pm	Matthias Eder	
T-box genes in development and	Seminar	Monday, 15.06.2020	4.30 - 6.00 pm	Andreas Kispert	
disease	Tutorial	Monday, 22.06.2020	3.15 - 4.15 pm	Andreas Kispert	
T cell vaccines for tumor therapy	Seminar	Monday, 22.06.2020	4.30 - 6.00 pm	Thomas Wirth	
	Tutorial	Monday, 29.06.2020	3.15 - 4.15 pm	Thomas Wirth	
Molecular basis of	Seminar	Monday, 29.06.2020	4.30 - 6.00 pm	Adrian Schwarzer	
leukemogenesis	Tutorial	Monday, 06.07.2020	3.15 - 4.15 pm	Adrian Schwarzer	
Location. nannover biomedical Kes	sedicii School	, building J4, level (51 (Z 11001), Sen		

1st Semester								
Tutorials:	Mondays,	15:15-16:15 hr	Seminars: Mondays, 16:30-18:00 hrs					
Location:	Room 114	10, Building J4,	level1	Location: Lecture Hall B, Building J2				
		-						
DATE	TYPE	FOCUS	LECTURER	SUBJECT				
	J							
14.10.2019	Seminar	Immunology I	Falk	Episode I - The hematopoetic wonderland				
21.10.2019 HBRS Opening: 17:00 - 19:00 hrs (Building J6, Level S0, Lecture Hall R)								
28.10.2019	Seminar	Immunology II	Ziegler	Innate Immunity				
04.11.2019	Seminar	Immunology III	Weiß	B cells and antibody responses				
11.11.2019	Seminar	Immunology IV	Rampoldi	T cells and T cell response				
18.11.2019	Seminar	Immunology V	Bosnjak	Cytotoxic T cell response				
25.11.2019	Seminar	Microbiology I	Graßl	Common Themes in Microbial Pathogenesis				
02.12.2019	Seminar	Microbiology II	Graßl	Paradigms in Infection Biology: Salmonella				
09.12.2019	Seminar	Microbiology III	Klos	Paradigms in Infection Biology: Chlamydia and Listeria				

DATE	TYPE	FOCUS	LECTURER	SUBJECT
16.12.2019	Seminar	Microbiology IV	Valentin- Weigand	Paradigms in Infection Biology: Streptococci and Staphylococci
06.01.2020	Seminar	Microbiology V	Schlüter	Paradigms in Infection Biology: Toxoplasma
13.01.2020	Seminar	Microbiology VI	Vital	Role of the commensal flora for human health
20.01.2020	Seminar	Virology I	Kraft	Taxonomy of Viruses and Viral Diseases
27.01.2020	Seminar	Virology II	Pietschmann	RNA Virus Transcription + Replication (not Flaviviridae)
03.02.2020	Seminar	Virology III	Bohne	DNA Virus Transcription + Replication (not Herpesviridae)
10.02.2020	Seminar	Virology IV	Gerold	Virus assembly, maturation and egress (not Flavi/Herpesviridae)
17.02.2020	Seminar	Virology V	Viejo-Borbolla	Viral Pathogenesis and Host Defenses (not Flavi/Herpesviridae)
24.02.2020	Seminar	Virology VI	Кгорр	Oncogenic Viruses

PhD Programs "Infection Biology / DEWIN"

2nd Semester						
: Mondays, 15:15- : Room 1140, Buil	-16:15 hrs ding J4, level1	Seminars: Mondays, 16:30-18:00 hrs Location: Lecture Hall B, Building J2				
ТҮРЕ	FOCUS	LECTURER	SUBJECT			
Seminar	Cell Biology I	Hauser	The cell cycle and its implication in disease			
Seminar	Cell Biology II	Stradal	Intracellular trafficking			
Seminar	Cell Biology III	Stradal	The structure of the cell's interior			
& Location: Mond	ays, 16:30-18:	00 hrs, MHF	H, TPFZ/I-11, Seminar Room S0-1420			
FOCUS	SUPERVISOR	STUDENT	SUBJECT			
Project Presentation Topic Focus						
Project Presentation Topic Focus						
Project Presentation Project Presentation						
Project Presentation Topic Focus						
	: Mondays, 15:15- : Room 1140, Buil TYPE Seminar Seminar Seminar Seminar CLOCATION: MONDA FOCUS Project Presentation Topic Focus Project Presentation Topic Focus Project Presentation Project Presentation Project Presentation Project Presentation Project Presentation Project Presentation Project Presentation	2n : Mondays, 15:15-16:15 hrs : Room 1140, Building J4, level? TYPE FOCUS Seminar Cell Biology I Seminar Cell Biology II Seminar Cell Biology II Seminar Cell Biology II Seminar Cell Biology II A Location: Mondays, 16:30-18: FOCUS SUPERVISOR Project Presentation	2nd Semester : Mondays, 15:15-16:15 hrs : Room 1140, Building J4, level1 TYPE FOCUS Seminar Cell Biology I Seminar Cell Biology II Seminar Cell Biology II Seminar Cell Biology III Seminar Cell Biology III Stradal Seminar Cell Biology III Stradal Project Nondays, 16:30-18:00 hrs, MHH FOCUS SUPERVISOR STUDENT Project Presentation Topic Focus Project Presentation Project Presentation			

DATE	FOCUS	SUPERVISOR	STUDENT	SUBJECT
02 06 2020	Topic Focus]]	
Tuesday!	Topic Focus			
	Topic Focus]		
08.06.2020	Topic Focus			
	Project Presentation			
15.06.2020	Topic Focus			
	Topic Focus			
22.06.2020	Topic Focus			
	Project Presentation			
29.06.2020	Topic Focus			
	Project Presentation			
06.07.2020	Topic Focus			

PhD Programs "Infection Biology / DEWIN"

3rd Semester Times & Location: Mendays, 16:30, 18:00 brs, MHH, TPE7/L11, Seminar Reem S0, 1/20								
DATE	FOCUS	SUPERVISOR	STUDENT	SUBJECT				
14 10 2010	Торіс	Stoin	Cornelius	Cellular Restriction Factors interfering with HIV infection				
14.10.2013	Original Paper	Stein	Tikla	Witzigmann et al. 2019, eLife, Optimization- by-design of hepatotropic lipid nanoparticles				
21.10.2019	HB	RS Opening: 17:00 -	19:00 hrs (Building	J6, Level S0, Lecture Hall R)				
	Торіс		Adriawan	Innate immune responses against infections II: PAMPs, TLR, NOD				
28.10.2019	Original Paper	Kalinke	Cleeves	Lin et al. 2019, nature immunology, The long noncoding RNA Lnczc3h7a promotes a TRIM25-mediated RIG-I antiviral innate				
	Торіс		Sun	Assembly, Maturation and Egress of herpesvirus particles				
04.11.2019	.2019 Original Paper Sodeik	Sodeik	Götting	Andersen et al. 2015, Cell, Clinical sequencing uncovers origins and evolution of Lassa virus				
11 11 2010	Торіс	Poution	Alvarez	Bacterial adhesins and pathogenicity				
11.11.2019	Original Paper	Routier	Pust	Nat Commun. 2019; 10: 2183 or Cell Host & Microbe 2019, 25, 1–13				
	Торіс		Mulenge	B cell responses during infection				
18.11.2019	Original Paper	Weiß	Zargari	Corti et al, Therapy against Ebola, Science 2016 and Misasi et al, Structure Ebola, Science 2016				
	Торіс		Richardo	Viral glycoproteins and cellular receptors used by cytomegalovirus for cell entry				
25.11.2019	Original Paper	Kay-Fedorov	Sun	McNamara et al. 2019, PLoS Pathog, Extracellular vesicles from Kaposi Sarcoma- associated herpesvirus lymphoma				
	Торіс		Götting	Maintenance of latency by alpha- herpesviruses – molecular mechanisms				
02.12.2019	Original Paper	Кгорр	Richardo	Peng et al. 2017, J Exp Med, Keratinocytes produce IL-17c to protect peripheral nervous systems during human HSV-2 reactivation				
	Торіс		Jürgens	Interactome of viral and cellular proteins				
09.12.2019	Original Paper	Vieyres	Szymanska	Full et al. 2019, Nat Microbiol, Centrosomal protein TRIM43 restricts herpesvirus infection by regulating nuclear lamina integrity				

DATE	FOCUS	SUPERVISOR	STUDENT	SUBJECT
	Торіс		Pospich	Differentiation and function of T-helper cells during infection
16.12.2019	Original Paper	Förster	Binz	Neumann et al.2019, Nature Immmunol., c- Maf-dependent Treg cell control of intestinal TH17 cells and IgA establishes
	Торіс		Odum	Microbiome and colonization resistance
06.01.2020	Original Paper	Suwandi	Villarreal	Harp et al. 2019, Cell Host & Microbe, Mucispirillum schaedleri Antagonizes Salmonella Virulence to Protect Mice against Colitis
	Торіс		Szymanska	Viral Modulation of cell-intrinsic defense mechanisms
13.01.2020	Original Paper	Viejo-Borbolla	Osanyinlusi	Campbell et al. 2019, PLoS Pathog, Functional paralysis of human natural killer cells by alphaherpesviruses
	Торіс		Cleeves	The inflammasome and its modulation by bacterial and viral infections
20.01.2020	Original Paper	Prinz	Bruhn	Ilyas et al, 2018, Cell Reports, Regulatory Evolution Drives Evasion of Host Inflammasomes by Salmonella Typhimurium
	Торіс		Pust	Gut-lung axis in infection and inflammation
27.01.2020	Original Paper	Vital	Alvarez	Trompette et al. 2018, Immunity, Dietary Fiber Confers Protection against Flu by Shaping Ly6c– Patrolling Monocyte
	Торіс		Tikla	HIV inhibitors – mode of action and inhibited
03.02.2020	Original Paper	Bohne	Cornelius	Bejarano et al. 2019, Elife, HIV-1 nuclear import in macrophages is regulated by CPSF6-capsid interactions
	Торіс		Binz	The role of NK cells in fighting infections
10.02.2020	Original Paper	Halle	Adriawan	Ruscetti et al, 2018, Science, NK cell– mediated cytotoxicity contributes to tumor control by a cytostatic drug combination
	Торіс		Villarreal	Pattern recognition receptor signaling during
17.02.2020	Original Paper	Schlüter	Odum	Guillamot et al. 2019, nature immunology, The E3 ubiquitin ligase SPOP controls resolution of systemic inflammation
24.02.2019	Topic Focus	n.n.		

PhD Programs "Infection Biology / DEWIN"

4th Semester Times & Location: Mondays, 16:30-18:00 hrs, MHH, TPF7/I-11, Seminar Room S0-1420						
	,	,	, ,	,		
DATE	FOCUS	SUPERVISOR	STUDENT	SUBJECT		
	Tania	Shelden	Ocenvinluci	Viral interference with interferen signaling		
06.04.2020		Sheidon	Osanyiniusi	Hernaez et al. 2018 Nat Commun. A virus-		
	Original Paper	n.n	Jürgens	encoded type I interferon decoy receptor		
	Торіс	Witte	Zargari	Anti-viral therapies		
20.04.2020	Original Paper	Häußler	Mulenge	Winer et al. 2018, Sci Transl Med, Preclinical assessment of antiviral combination therapy		
	Торіс	Lochner	Bruhn	Intestinal immunity to pathogens		
27.04.2020	Original Paper	Gerold Pospich		Omenetti et al, 2019, Immunity, The Intestine Harbors Functionally Distinct Homeostatic Tissue-Resident and Inflammatory Th17 Cells		
04.05.0000	Project Presentation	Sodeik	Cornelius	Microtubule motor binding of the large tegument protein pUL36 of Herpes-Simplex Virus		
04.03.2020	Project Presentation	Sodeik	Richardo	Dynamics of Herpes-Simplex Virus spread in skin and to the peripheral nervous system		
		, <u> </u>				
11.05.2020	Project Presentation	Braun	Cleeves	Influence of host-pathogen interactions in human lung tissue on the chronification of Pseudomonas aeruginosa infections		
11.03.2020	Project Presentation	Schulz	Götting	Deep Sequencing of Human Cytomegalovirus and Epstein-Barr Virus on the genome and trancriptome level		
18.05.2020	Project Presentation	Witte	Adriawan	Identification of genetic factors underlying primary and secondary hypogammaglobulinemia		
	Project Presentation					
25.05.2020	Project Presentation	Bleich	Odum	Mimicking intestinal microbiome using defined bacterial consortia to define and modulate disease paths in a susceptible host		
	Project Presentation	Bleich	Villarreal	Characterisation of the colitogenic candidate gene Alpk1 during infection		

33



Retreats: November 12th, 2019 for the Classes of 2016, 2017 and 2018 May 20th, 2020 for all Classes

Intermediate Exam for the Class of 2018: March 24th, 2020

PhD Final Exams: January 17th, 2020 June 26th, 2020

PhD Program "Regenerative Sciences"

Chairman of program committee:Professor Ulrich MartinVice-chairwoman:Professor Ina Gruh

Times (in general):TutorialsThursday, 3.00 – 4.00 pmSeminarsThursday, 4.15 – 5.45 pm

21st May 2020 is Ascension Day ('Christi Himmelfahrt') which is a public holiday. Therefore, this week's teaching is shifted to 19th May 2020.

Exceptions in day and time are printed in bold *italic*.

Locations (in general) Semester 1 & 2 MHH, building I/J 04, level 01, HBRS seminar room 1140 Semester 3 & 4 MHH, building I/J 11, Hans-Borst-Zentrum (HBZ), level S0, seminar room 6040

Exceptions in location are marked **.

1 st semester	1 st semester					
Introductory lecture Welcome address, the curriculum of REBIRTH & HBRS, Q & A, Principles of regenerative sciences and the REBIRTH approach	seminar**	Monday, 02.10.2019	2.00 –3.00 pm	Ina Gruh		
Principles of growth factor signalling 1	seminar	Thursday, 17.10.2019	4.15 – 5.45 pm	Rainer Niedenthal		
 Paracrine and juxtacrine signaling Signalling pathways involved in the regulation of growth 	tutorial	Thursday, 24.10.2019	3.00 – 4.00 pm	Rainer Niedenthal		
Principles of growth factor signalling 2	seminar	Thursday, 24.10.2019	4.15 – 5.45 pm	Michael Morgan		
receptors	tutorial**	Tuesday, 05.11.2019	3.00 – 4.00 pm	Michael Morgan		
Basic mechanisms of inflammation 1	seminar**	Tuesday, 05.11.2019	4.15 – 5.45 pm	Siegfried Weiß		
Innate and adaptive immunity and differentiation	tutorial	Thursday, 07.11.2019	3.00 – 4.00 pm	Siegfried Weiß		
Principles of developmental biology and organogenesis 1 - Commitment, differentiation, apoptosis, patterning	seminar**	Tuesday, 12.11.2019	4.15 – 5.45 pm	Andreas Kispert		
- Morphogenetic gradients and cell-cell communication - Genetic and epigenetic mechanisms	tutorial**	Tuesday, 19.11.2019	3.00 – 4.00 pm	Andreas Kispert		

	-			36
Principles of developmental biology and organogenesis 2	seminar	Thursday, 14.11.2019	4.15 – 5.45 pm	Achim Gossler
- Model systems in developmental Biology Embryogenesis and fetal development	tutorial	Tuesday, 26.11.2019	3.00 – 4.00 pm	Achim Gossler
Principles of stem cell biology 1	seminar*	Thursday, 28.11.2019	3.00 – 4.30 pm	Thomas Müller
- Culture methods	tutorial*	Thursday, 28.11.2019	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	Thursday, 05.12.2019	4.15 – 5.45 pm	Amar Deep Sharma
	tutorial	Thursday, 12.12.2019	3.00 – 4.00 pm	Amar Deep Sharma
Principles of chromosomal	seminar	Thursday, 12.12.2019	4.15 – 5.45 pm	Gudrun Göhring
instability	tutorial	Thursday, 19.12.2019	3.00 – 4.00 pm	Gudrun Göhring
Cellular senescence, tumor	seminar**	Tuesday, 07.01.2020	3.00 – 4.15 pm	Anette Melk
suppression and organismal aging	tutorial	Thursday, 09.01.2020	3.00 – 4.00 pm	Anette Melk
Principles of cell engineering 1 - MicroRNAs (miRNA) and downstream targets - technical approaches - Use of miRNA target identification	seminar	Thursday, 09.01.2020	4.15 – 5.45 pm	Thomas Thum
software - Design of miRNA - Luciferase-gene reporter assays (tutorial)	tutorial	Thursday, 16.01.2020	3.00 – 4.00 pm	Jan Fiedler

Principles of cell engineering 2 - Transient DNA delivery - Episomal maintenance	seminar	Thursday, 16.01.2020	4.15 – 5.45 pm	Axel Schambach
 Stable DNA delivery Homologous recombination Site-specific DNA modification 	tutorial	Thursday, 23.01.2020	3.00 – 4.00 pm	Axel Schambach
Basic mechanisms of	seminar * **	Tuesday, 28.01.2020	3.00 – 4.30 pm	Ulrich Lehmann- Mühlenhoff
Infection & cancer	tutorial * **	Tuesday, 28.01.2020	4.45 – 5.45 pm	Ulrich Lehmann- Mühlenhoff
Synthetic biology and options for	seminar	Thursday, 30.01.2020	4.15 – 5.45 pm	Dagmar Wirth
regeneration	tutorial	Thursday, 06.02.2020	3.00 – 4.00 pm	Dagmar Wirth
Principles of cell engineering 3	seminar	Thursday, 06.02.2020	4.15 – 5.15 pm	Thomas Scheper
Bioreactors	tutorial**	Thursday, 13.02.2020	4.30 – 6.00 pm	Thomas Scheper / Frank Stahl

Please note the following changes:

* The seminars on 28th November 2019 and 28th January 2020 will be immediately followed by the associated tutorial.

** The seminars on 7th and 28th January 2020 will take place at the building I/J 11, Hans-Borst-Zentrum (HBZ), level S0, seminar room 6040.
The tutorial (Thomas Scheper) on Thursday, 13th February 2019 will NOT take place at MHH but at the Institute of Technical Chemistry
Leibniz Universität Hannover (LUH)
Callinstr. 3
30167 Hannover
Callinstr. 3 (LUH) can easily be reached by tram no. 4 directly from MHH to stop Schneiderberg/Wilhelm-Busch-Museum (20 minutes tram)

PhD Program "Regenerative Sciences"

2 nd semester				
Principles of materials sciences for regenerative medicine 1	seminar * **	Thursday, 16.04.2020	3.00 – 4.00 pm	Annette Barchanski
 Nanoparticles in medicine (seminar) Nanomanufacturing (tutorial) 	tutorial * **	Thursday, 16.04.2020	4.15 – 5.45 pm	Annette Barchanski
Principles of materials sciences for regenerative medicine 2 Introduction to biomaterials	seminar * **	Thursday, 23.04.2020	3.00 - 4.30 pm	Peter Behrens
- Ceramic materials (seminar) - Chemistry (tutorial)	tutorial * **	Thursday, 23.04.2020	4.45 – 5.45 pm	Peter Behrens
Principles of materials sciences for regenerative medicine 3 - Polymeric and metallic materials	seminar **	Thursday, 30.04.2020	4.15 – 5.45 pm	Birgit Glasmacher
(seminar) - Cell-biomaterial interactions (seminar) - Scaffold technologies (tutorial)	tutorial **	Thursday, 07.05.2020	3.00 – 4.00 pm	Birgit Glasmacher
Principles of growth factor engineering	seminar*	Thursday, 14.05.2020	3.00 - 4.30 pm	Michael Morgan
Engineering growth factors and their receptors for regenerative medicine	tutorial*	Thursday, 14.05.2020	4.45 – 5.45 pm	Michael Morgan
Laser technology in medicine 1 Imaging - Basics of microscopy	seminar * **	Tuesday, 19.05.2020	3.00 – 4.30 pm	Alexander Heisterkamp
 Contrast mechanisms Modern approaches in imaging Superresolution microscopy 	tutorial * **	Tuesday, 19.05.2020	4.45 – 5.45 pm	Alexander Heisterkamp
Laser technology in medicine 2 Laser manipulation/machining - Surface treatment, structuring,	seminar * **	Thursday, 28.05.2020	3.00 – 4.00 pm	Boris Chichkov
polymerization - Laser-tissue interaction - Laser manipulation of cells	tutorial * **	Thursday, 28.05.2020	4.15 – 5.45 pm	Boris Chichkov
Animal models of human disease 1	semina*r	Thursday, 04.06.2020	3.00 – 4.00 pm	Achim Gossler
Murine models of human disease	tutorial*	Thursday, 04.06.2020	4.15 – 5.45 pm	Achim Gossler
Principles of organ transplantation 1	seminar*	Thursday, 11.06.2020	3.00 – 4.30 pm	Axel Haverich et al.
Heart, lung, and vessels	tutorial*	Thursday, 11.06.2020	4.45 – 5.45 pm	Axel Haverich et al.

Animal models of human disease 2	seminar*	Thursday, 18.06.2020	3.00 – 4.30 pm	Thomas Moritz
- Humanized mouse models	tutorial*	Thursday, 18.06.2020	4.45 – 5.45 pm	Thomas Moritz
Animal models of human disease 3 - Transgenic pigs	seminar*	Thursday, 25.06.2020	3.00 – 4.30 pm	Heiner Niemann
 Xenotransplantation Donor animal engineering 	tutorial*	Thursday, 25.06.2020	4.45 – 5.45 pm	Heiner Niemann
Cardiovascular tissue engineering: Principles	seminar	Thursday, 02.07.2020	4.15 – 5.45 pm	Andres Hilfiker
	tutorial	Thursday, 09.07.2020	3.00 – 4.00 pm	Andres Hilfiker
Principles of organ transplantation 2 Liver, pancreas, and ß-cells	seminar	Thursday, 09.07.2020	4.15 – 5.45 pm	Michael Ott
	tutorial	Thursday, 16.07.2020	3.00 – 4.00 pm	Michael Ott
Stem cell based organ regeneration	seminar	Thursday, 16.07.2020	4.15 – 5.45 pm	Robert Zweigerdt
- clinical translation	tutorial	Thursday, 23.07.2020	3.00 – 4.00 pm	Robert Zweigerdt

Please note the following changes

* The seminars on16th and 23th April, 14th, 19th and 28th May 2020 and4th, 11th,18th and 25th June 2020 will be immediately followed by the associated tutorial.

**The seminars and tutorials on 16th, 23th and 30th April 2020 and 7th, 19th, 28th May 2020 will NOT take place at MHH, please find the respective addresses below.

Additional information on "Principles of materials sciences for regenerative medicine", part 1, 2 and 3 General topics:

- materials engineering, biomaterials in medicine,
- ex vivo and in vivo application,
- degradable materials,
- cell-biomaterial interactions

Literature: Biomaterials Science (Third Edition), BD Ratner, AS Hoffman, FJ Schoen, JE Lemons (eds.) Elsevier Amsterdam 2013; available online, MHH library

Lecturers and locations of lectures and tutorials:

16.04.2020 Dr. Annette Barchanski NIFE - Lower Saxony Centre for Biomedical Engineering, Implant Research and Development Stadtfelddamm 34 30625 Hannover

23.04.2020 Prof. Dr. Peter Behrens Leibniz Universität Hannover (LUH) Institute of Inorganic Chemistry Callinstrasse 9, 30167 Hannover

30.04. and 07.05.2020 Prof. Dr. Birgit Glasmacher NIFE - Lower Saxony Centre for Biomedical Engineering, Implant Research and Development Stadtfelddamm 34 30625 Hannover

19.05.2020 Prof. Dr. Alexander Heisterkamp NIFE - Lower Saxony Centre for Biomedical Engineering, Implant Research and Development Level S0, big seminar room Stadtfelddamm 34 30625 Hannover

28.05.2020 Prof. Dr. Boris Chichkov NIFE - Lower Saxony Centre for Biomedical Engineering, Implant Research and Development Stadtfelddamm 34 30625 Hannover

PhD Program "Regenerative Sciences"

3rd semester				
Regenerative approaches: Blood and immunity 1 - Thymus and T-cell development	seminar	Thursday, 17.10.2019	4.15 – 5.45 pm	Siegfried Weiß
- B-cell development - Flow cytometry	tutorial	Thursday, 24.10.2019	3.00 – 4.00 pm	Christine Falk
Regenerative approaches: Blood and immunity 2	seminar * **	Tuesday, 05.11.2019	3.00 – 4.30 pm	Nico Lachmann
Embryonic stem cell derived hematopoiesis	tutorial * **	Tuesday, 05.11.2019	4.45 – 5.45 pm	Nico Lachmann
Regenerative approaches: Blood and immunity 3 - Principles of hematopoietic stem cell transplantation and lymphocyte	seminar*	Thursday, 07.11.2019	3.00 – 4.30 pm	Matthias Eder
infusions - HLA system and HLA compatibility (tutorial)	tutorial*	Thursday, 07.11.2019	4.45 – 5.45 pm	Constanca Figueiredo
Regenerative approaches: Liver 1 - Physiology and pathophysiological changes of the liver	seminar	Thursday, 28.11.2019	4.15 – 5.45 pm	Michael Ott
- Liver cell therapy, basics in translation	tutorial	Thursday, 05.12.2019	3.00 – 4.00 pm	Michael Ott
Regenerative approaches: Liver 2 - Liver regeneration and stem cells	seminar	Thursday, 05.12.2019	4.15 – 5.45 pm	Tobias Cantz/Reto Eggenschwiler
- Stem cell-derived hepatocytes	tutorial	Thursday, 12.12.2019	3.00 – 4.00 pm	Tobias Cantz/Reto Eggenschwiler
Regenerative approaches: Blood and immunity 4 - Genetic disorders of hematopoiesis	seminar	Tuesday, 10.12.2019	3.00 – 4.30 pm	Axel Schambach
- Leukemia and leukemogenic stem cells	tutorial	Tuesday, 17.12.2019	3.00 - 4.00 pm	Axel Schambach
Regenerative approaches: Liver 3 - Liver tissue engineering	seminar	Thursday, 12.12.2019	4.15 – 5.45 pm	Tobias Cantz/Reto Eggenschwiler
- Artificial liver / extracorporal devices	tutorial	Thursday, 19.12.2019	3.00 – 4.00 pm	Tobias Cantz/Reto Eggenschwiler
Non-coding RNAs in cardiovascular disease	seminar	Tuesday, 07.01.2020	4.15 – 5.45 pm	Christian Bär
approaches	tutorial	Thursday, 09.01.2020	3.00 – 4.00 pm	Jan Fiedler

	seminar	Thursday, 09.01.2020	4.15 – 5.45 pm	Hildegard Büning
Genome Engineering and AAV	tutorial	Thursday, 23.01.2020	3.00 – 4.00 pm	Hildegard Büning
Constavisity and monitoring	seminar*	Thursday, 16.01.2020	3.00 – 4.30 pm	Michael Rothe
Genotoxicity and monitoring	tutorial*	Thursday, 16.01.2020	4.45 – 5.45 pm	Michael Rothe
Immunotoxicity and	seminar	Thursday, 23.01.2020	4.15 – 5.45 pm	Christine Falk
immunomonitoring	tutorial	Thursday, 30.01.2020	3.00 – 4.00 pm	Christine Falk
Animal experiments - Introduction to animal experiments	seminar*	Thursday, 06.02.2020	3.00 – 4.30 pm	André Bleich
- Presentation of the animal house	tutorial*	Thursday, 06.02.2020	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*	Monday, 10.02.2020	3.00 – 4.30 pm	Christian Mühlfeld
	tutorial*	Monday, 10.02.2020	4.45 – 5.45 pm	Christian Mühlfeld
Molecular Imaging of Regenerative Medicine (seminar)	seminar	Thursday, 13.02.2020	4.15 – 5.45 pm	James Thackeray
Tour of the Department of Nuclear Medicine (tutorial)	tutorial	Thursday, 20.02.2020	3.00 – 4.00 pm	James Thackeray
Design of clinical trials & regulation	seminar	Tuesday, 25.02.2020	3.00 – 4.30 pm	Heiko von der Leyen
Cell sorting - Method based seminar	seminar	Thursday, 20.02.2020	4.15 – 5.45 pm	Matthias Ballmaier
- Visit to MHH sorter lab → instrumentation (tutorial)	tutorial	Thursday, 27.02.2020	3.00 – 4.00 pm	Matthias Ballmaier
Regenerative approaches: Blood	seminar	Thursday, 27.02.2020	4.15 – 5.45 pm	Renata Stripecke
- Antigen presenting cells	tutorial	Thursday, 05.03.2020	3.00 – 4.00 pm	Renata Stripecke

Please note the following change

 * The seminars on 5th and 7th November 2019 and 16th January 2020 and 6th and 10th February 2020 will be immediately followed by the associated tutorial.

** The seminar and tutorial by Nico Lachman on Tuesday 5th of November 2019 will take place at Seminarraum 70 (I6-S0-3020), I06 Theoretische Institute II

PhD Program "Regenerative Sciences"

4 th semester					
Regenerative approaches: Heart and vessels 1 - Basics in Cardiology	seminar	Tuesday, 21.04.2020	4.15 – 5.45 pm	Kai Wollert	
- Protein therapeutics for cardiovascular repair (tutorial)	tutorial	Thursday, 23.04.2020	3.00 – 4.00 pm	Marc Reboll	
Regenerative Approaches: Heart and vessels 2	seminar	Tuesday, 28.04.2020	4.15 – 5.45 pm	Denise Hilfiker- Kleiner	
heart in response to cancer und anti- cancer treatment	tutorial	Thursday, 30.04.2020	3.00 – 4.00 pm	Denise Hilfiker- Kleiner	
Regenerative approaches: Heart and vessels 3	seminar	Thursday, 30.04.2020	4.15 – 5.45 pm	Florian Limbourg	
- Angiogenesis und arteriogenesis in development and disease	tutorial	Thursday, 07.05.2020	3.00 – 4.00 pm	Florian Limbourg	
Regenerative approaches: Heart and vessels 4	seminar	Thursday, 07.05.2020	4.15 – 5.45 pm	Ina Gruh	
 Cardiac differentiation of pluripotent stem cells & myocardial TE 	tutorial	Thursday, 14.05.2020	3.00 – 4.00 pm	Ina Gruh	
Regenerative approaches: Lung 1	seminar	Thursday, 14.05.2020	4.15 – 5.45 pm	Ruth Olmer	
	tutorial	Thursday, 28.05.2020	3.00 – 4.00 pm	Ruth Olmer	
	seminar	Thursday, 28.05.2020	4.15 – 5.45 pm	Ruth Olmer	
Regenerative approaches. Lung 2	tutorial	Thursday, 04.06.2020	3.00 – 4.00 pm	Ruth Olmer	
The AxolotI – an Amphibian Model	seminar * **	Thursday, 18.06.2020	3.00 – 4.30 pm	Sarah Strauß	
Organism of Regeneration	tutorial * **	Thursday, 18.06.2020	4.45. – 5.45 pm	Sarah Strauß	
Possibilities and limits of adult mesenchymal stem cells within the context of Tissue Engineering	seminar	Thursday, 25.06.2020	4.15 – 5.45 pm	Cornelia Blume	
	tutorial	Thursday, 02.07.2020	3.00 – 4.00 pm	Cornelia Blume / Rebecca Jonczyk	
Regenerative Approaches: Nerve - Degeneration and regeneration in the central and peripheral nervous system - Animal models of acute and chronic neurotoxicity	seminar	Thursday, 02.07.2020	4.15 – 5.45 pm	Susanne Petri	
- Cell therapy in the nervous system: neuronal and non-neuronal cells - Application modes - Clinical trials	tutorial	Thursday, 09.07.2020	3.00 – 4.00 pm	Susanne Petri	

Patent protection of academic inventions	seminar	Thursday, 09.07.2020	4.15 – 5.45 pm	Torben Söker Ascenion GmbH
	tutorial	Thursday, 16.07.2020	3.00 – 4.00 pm	Torben Söker Ascenion GmbH
Good Manufacturing Practice (GMP), Advanced Therapy Medicinal Products (ATMP)	seminar * **	Tuesday, 14.07.2020	3.00 – 4.30 pm	Ulrike Köhl / Stephan Klöss
	tutorial * **	Tuesday, 14.07.2020	4.45. – 5.45 pm	Ulrike Köhl / Stephan Klöss
Quality Management - QM	seminar	Thursday, 23.07.2020	3.00 – 4.30 pm	Christoph Priesner
	tutorial**	Thursday, 30.07.2020	4.45. – 5.45 pm	Christoph Priesner

44

Please note the following change

* The seminars on 18th June 2020 and 14th July 2020 will be immediately followed by the associated tutorial.

** The seminars and tutorials on 18th June and 14th July 2020 will NOT take place at the MHH, please find the respective addresses below:

18.06.2020 Dr. rer. nat. Sarah Strauß Ambystoma Mexicanum Bioregeneration Center & Spider Silk Laboratory Feodor-Lynen Str. 21, 30625 Hannover Building M05 level S0 seminar room 0110

14.07.2020 Prof. Dr. Ulrike Köhl und Dr. Stephan Klöss ATMP-GMP-DU Building 05, level 4 Feodor-Lynen-Straße 21, 30625 Hannover Seminar level 3 and the tutorial on level 1

30.07.2020 Christoph Priesner only tutorial M05-E04 Feodor-Lynen-Str. 21, 30625 Hannover

Additional offers:

	Title	Name	Department	Location	Date	Time
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Meet The Expert

<u> </u>					
From bedside to the lab-side: friends and foes of industrial high throughput qPCR molecular diagnostics	Thomas Müller	Molecular Biology, Synlab Mecial Care Unit Weiden	HBZ seminar room	29.11.2019	10.30 - 12.00 am

Method Based Seminar

Novel trends in cryopreservation of tissues and cryomicroscopy	Oleksandr Gryshkov	Institute of Multiphase Processes, LUH	NIFE	07.05.2020	4.00 – 5.30 pm
Telomeres & Telomerase: from measurement to manipulation of longevity	Christian Bär	Institute of Molecular and Translational Therapeutic Strategies (IMTTS), MHH	HBZ Seminar room (J11-S0-6040)	29.01.2020	4.00 – 5.30 pm
Laser based methods for imaging and manipulation of cells and tissue	Stefan Kalies	Institute for Quantum Optics, LUH	NIFE – Lower Saxony Centre for Biomedical Engineering, Implant Research and Development	May 2020 (tbd)	tbd

Date and time for all semesters on appointment (registration required).

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

For further information and registration please contact (if not noted elsewhere): <u>jra.courses@hearing4all.de</u> / <u>baumhoff.christine@mh-hannover.de</u> / <u>mark.pottek@uni-oldenburg.de</u>

Obligatory courses:

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

Title	Course organiser	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, 6 th floor, seminar room S66 On request
1.2 Audiology and Physics of Hearing	Prof. Hannes Maier	10 hours 1 CP	MHH NIFE, M20-01-1140 On request
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 Participants: 5-20 students On request
1.5 Psychophysical Methods in Hearing Research	Prof. Andreas Büchner	10 hours 1 CP	MHH Seminar room "DHZ", Hannover On request
1.6 Introduction to Biomaterials, Laser Spectroscopy and Microelectronics	Prof. Peter Behrens Prof. Andreas Heisterkamp Prof. Holger Blume	25 hours 3 CP	LUH On request
1.7 Fundamentals of Auditory Physiology	Prof.'in Christine Köppl Prof. Georg Klump	30 hours 3 CP	UOL tba
1.8 Summer School and Internal Retreat	N.N.	20 hours 2 CP	tba

2.1 Nanotechnology in Medicine	Prof. Theo Doll	12 hours	MHH, NIFE
			onrequest
2.2 Sound Coding	JunProf. Waldo	15 hours	MHH
Strategies and Signal	Nogueira	1.5 CP	On request
Cochlear Implants and			
Hearing Aids			
2.2 Nouvel Cienel	lun Drof Malda	1 F haura	N 41 11 1
2.3 Neural Signal	Noguoira		
		1.5 CF	Onrequest
2.4 Biomedical	PD Dr. Omid Majdani	10 hours	MHH
Technology	Dr. Thomas Rau	I CP	On request
2.5 Medical Image	PD Dr. Omid Majdani	12 hours	МНН
Processing for Medical	Dr. Thomas Rau	1-1.5 CP	On request
Applications			
2.6 Modulation of Basal	Prof. Joachim Krauss	1.5 hours	МНН
Ganglia Activity in			building K6, node B, 05 ¹¹
Movement Disorders by			floor, seminar room 65
Functional Neurosurgery			
2.7 Animal Models for	Prof.'in Kerstin Schwabe	1.5 hours	
Psychiatric Disorders			building K6, node B, 05
	Duef Andrei Kuel	25 h aa	TIOOR, SEMINAR ROOM 65
2.8 Auditory Plasticity	Prof. Andrej Krai	25 nours	MIHH, NIFE
		3 CP	On request
2.9 Scientific Writing	Prof. Andrej Kral	30 hours	MHH, NIFE
		3 CP	On request
2.10 Statistical	Prof. Andrej Kral,	10 hours	МНН
Approaches in Auditory		1 CP	NIFE M20-01-1140
Sciences			On request
2.11 Lab Meeting	N.N.	1 hour /	МНН
Otolaryngology		meeting	NIFE, M20-S0-2520,
			Wednesdays 5-6pm
2.12 Journal Club	N.N.	2 hours /	MHH,
(Neuroscientific Studies		meeting	building K5, node B, 3 rd
on Humans)			floor, seminar room 63,
			last Wednesday of the
			month 11am-1pm
2.13 Hearing(4all)	N.N.	1 hour /	MHH
Research Seminar		meeting	Wednesdays every second
			month; 5 - 6pm; Place: tba

			48
2.14 Colloquium Medical	Prof.'in Lilli Geworski	1 hour /	MHH, building K7, floor S0,
Physics		meeting	seminar room 1321
			Every second Tuesday
			3 - 4pm
			Registration required
2.15 Lunchseminar	Prof.'in Lilli Geworski	1 hour /	MHH, Radiology
Radiology		meeting	Wednesdays,
			12am - 1pm
			Registration required
2.16 Colloquium	Prof.'in Lilli Geworski	1 hour /	MHH, Radiology
Radiology		meeting	Tuesdays 08:15 - 09:00am
			Registration required
2.17 Audio Signal	Jun - Prof. Waldo	15h/2 CP	MHH, NIFE
Processing for Cochlear	Nogueira		On request
Implants and Hearing			
Aids in Python			

Elective courses at LUH:

2.18 Basics of Digital	Prof. Holger Blume	12 hours	LUH / IMS
Systems		1 CP	Seminar room 335
			Appelstr. 4, 3 rd floor
			Hannover
			On request
			10am - 1pm, 2pm - 5pm
			(each day)
2.19 Application-	JunProf. Guillermo	12 hours	LUH / IMS
Specific Instruction-Set	Payá Vayá	1 CP	Seminar room 335
Processors for Hearing			Appelstr. 4, 3 rd floor
Aid Systems			Hannover
			On request
			10am - 1pm, 2pm - 5pm
			(each day)
2.20 Principles of Signal	JunProf. Guillermo	12 hours	LUH / IMS
Processing in MATLAB	Payá Vayá	1 CP	Seminar room 335
			Appelstr. 4, 3 rd floor
			Hannover
			On request
			10am - 1pm, 2pm - 5pm
			(each day)

Combined electives:

2.31 Combined Hot	Christine Baumhoff/	2 h/seminar	Dates:
Topic Seminar	Mark Pottek		tba
(Web Conference)			10-11am

2.21 Research techniques in Neuroscience 2.22 Einführung in die Sprachverarbeitung	Prof. Christiane Thiel Prof. Georg Klump Dr. Bernd Meyer	3 CP 25 hours	UOL 20.02., 24.227.2. & 2.35.3.2020 12-5pm UOL Weekly Wednesday 2-4pm
2.23 Aktuelle Probleme der Akustik, Signalverarbeitung und Medizinischen Physik	Dr. Jörn Anemüller Prof. Simon Doclo Prof. Volker Hohmann Prof. Birger Kollmeier Prof. Björn Poppe Dr. Stefan Uppenkamp Prof. Steven van de Par	3 CP 25 hours 3 CP	W32 1-113 UOL Weekly Tuesday 2- 4pm W02 1-148
2.24 Oberseminar Signal- und Sprachverarbeitung	Prof. Simon Doclo	25 hours 3 CP	UOL Weekly Monday 10am-12pm
2.25 Machine Listening, Machine Vision and Models of Sensory Neuroscience	Dr. Jörn Anemüller Prof. Jörg Lücke	25 hours 3 CP	UOL Weekly Thursday 12-2pm W32 1-113
2.26 Digital Signal Processing	Prof. Simon Doclo	50 hours 6 CP	Weekly Monday 4- 6pm & Wednesday 12-2pm W32 1-112
2.27 Oberseminar Medizinische Physik	Dr. Stefan Uppenkamp Prof. Volker Hohmann, Dr. Thomas Brand	25 hours 3 CP	UOL Weekly Tuesday 10am-12pm W32 1-112
2.28 Ausgewählte Probleme der Hörtechnik und Audiologie	Dr. Thomas Brand	25 hours 3 CP	UOL Weekly Monday 8am-10am W02 1-156
2.30 Current Topics in Machine Learning and its Applications	Prof. Jörg Lücke	25 hours 3 CP	UOL Weekly Wednesday 2-4pm W02 1-162

Module*	Туре	Dates 2019/2020**	Duration/TUs***	Lecturer/Organizer
Textmining with R	Lecture	Winter 2019	1 day (approx. 8 TUs)	Stephan Glöckner
Teaching on Teaching	Lecture and exercises	Summer 2018 and Winter 2019	4 sessions (8 TUs)	Stefanie Castell
Good Epidemio- logical Practice and its Practical Application	Lecture and exercises	During 2020	2-3 hours (approx. 3 TUs)	Jördis Ott
Data Quality	Lectures and exercises	Spring 2020	3 days (approx. 24 TUs)	Stephan Glöckner
Methods on Statistical Learning	Lectures and exercises	Spring 2020	3 days (approx. 24 TUs)	Stephan Glöckner
Signal Detection	Lectures and exercises	Spring 2020	3 days (approx. 24 TUs)	Stephan Glöckner
Surveillance and Outbreak Investigations	Lectures, exercises, practical application	Autumn/Winter 2020	One week module (36 TU)	Gérard Krause
Journal Club	Presentations by students	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, given on one or several subsequent days.

- ** as of Sept. 2019. More courses to follow and be announced. Please contact phdepidemiology@helmholtz-hzi.de for more information.
- *** TU=Teaching Unit (à 45 min)

Students enrolled in the PhD Programme "Epidemiology" and those working at the HZI can attend courses and symposia offered 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 can be 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 2020.

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: 27th/28th February 2020)

Gene Technology Security (September 2019, in English)

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

Career Day (March 13th, 2020)

GMP / GLP workshop (January 29th, 2020, Gerdelmann, Pägelow and Papamichael, ITEM)

Scientific communication / writing, "tips and tricks" (January 17th, 2020, Kruse)

Scientific writing, advanced (February 2020th John Chandler)

Animal Experiments (2 days theory: November 11^h and 12th 2019; exam November 25th;

2-day practical courses: February 24th / 25th 2020 Bleich / Dorsch)

Conflict Management (December 3rd / 4th, 2019, G. Kümmele, Berlin) and

Stress Management (January 14th / 15th 2020 and February 4th / 5th, 2020, G. Kümmele)

Time Management (March 18th, 2020 Golin)

Team Work and Leadership (April 8th, 2020 Golin)

Intercultural communication (weekend, June 2020; A. and S. Petersen, Aachen; together with MSc / PhD programs in Göttingen)

Seminars on career perspectives (continuously)

Bioinformatics: October Oct 8 – 10, 2019 Part 1 and April 7-9, 2020 Part 2 (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 Colloqium
- Microbiological Colloquium, Virological Colloqium

In the departments (a must!!)

- Lab-Seminars
- Journal-Clubs

Internal practical courses

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

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

German Classes

Fridays: 4.00 - 6.00 pm (beginners, Ms Gudrun Dettmar), seminar room 1031 (J4, level 01); Tuesdays: 4.00 - 6.00 pm (advanced, Ms Gudrun Dettmar); seminar room 1031 (J4, level 01)

English conversation and language skills

Mondays: 6.15 pm - 7.30 pm (Ms Lydia Lange), HBRS seminar room 1140 (J4, level 01)

Optional

<u>Note</u>: 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.mh-hannover.de/hbrs.html 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 and October 17th, 2018)*

§ 1

Objective of PhD Studies

Research studies at the Hannover Medical School (MHH) for the purpose of obtaining a PhD 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) 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 period, 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 co-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.

Scientific Colloquia (retreats)

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 report, shall be submitted in writing by the PhD student to the PhD Program Committee.

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.

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

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.

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.

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

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.

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

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 2).

The final version of the dissertation should be submitted in six printed copies as well as a digital version (appendix 1).

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.

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.

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.

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.

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

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.

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.

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.

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.

The following grades can be awarded:

Excellent/ very good/ good / satisfactory (Failed)

Equivalent to excellent / summa cum laude, very good / magna cum laude, good / cum laude, passed / rite. The overall grade_excellent =

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.

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.

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

PhD students are obliged to publish their dissertation.

Once the student has passed the PhD examination and has distributed six copies of the dissertation (plus one 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 (latest one year after the PhD exam). 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.

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.

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.

At the end of the "Hold", the library is automatically publishing the dissertation if there is no further application for extension.

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 of PhD

If by error requirements for PhD registration have been taken for granted or if the candidate has strongly violated the rules of "good scientific practise", the senate of MHH can abrogate the PhD title after at first evaluation of the MHH "Committee for Good Scientific Practise" and then after consultation of the respective PhD Program Committee.

§ 14 Revocation of PhD title

The PhD title is revocated by the senate of MHH (after consultation of the respective PhD program committee) in cases of criminal conviction or strong violation against the rules of "good scientific practise" in the PhD thesis. The decision is to be delivered to the aggrieved party.

§ 15 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. P. Manns Title

Logo of PhD Program

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

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. Christopher Baum Supervisor: Co-supervisors: External expert: Internal expert: Day of final exam/public defense:

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 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 Präsident/in der Medizinischen Hochschule Hannover Programmsprecher/in

Appendix 4

(MHH Logo)

Hannover Medical School under its President Professor first name last name confers upon first name last name

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



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