Developmental, Neural, and Behavioral Biology

MSc/PhD Program

in Göttingen, Germany

- Cell Biology
- Developmental Mechanisms
- Molecular Neurobiology
- Systems Neurosciences
- Behavioral Ecology
- Animal Cognition

Deadline for your application is May 15th
Start of the program is October 1st
www.biologie.uni-goettingen.de/msc_dnb

GEORG-AUGUST-UNIVERSITÄT GÖTTINGEN

Master „Developmental, Neural, and Behavioral Biology“

module	number	structure and options	C/module	C total
core modules	**3**	**lecture + seminar + methods course** choice of 10 different modules	**12**	**36**
profile module	**1**	**additional core module DNB** **core module MLS** **interdisciplinary courses***	**12**	**12**
key competence modules		**course offer 'ZESS'** **course offer 'DNB, MLS, CoBi or BEEC'** **interdisciplinary courses***	**2-6**	**12**
advanced modules	**2**	**7-9 weeks lab course**	**12**	**30**
	1	**scientific project management**	**6**	
	common examination of advanced modules			
Master thesis (26 weeks)				**30**

*** Permission of examination board required**

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Core Modules – Fachmodule

core modules (12 C)

5 week block courses

Developmental and Cell Biology			Neurobiology		Behavioral Biology			Bioinformatics	
M.Bio.303	**M.Bio.321**	**M.Bio.322**	**M.Bio.304**	**M.Bio.305**	**M.Bio.306**	**M.Bio.307**	**M.Bio.308**	**M.Bio.310**	**M.Bio.323**
Cell Biology	***Current developmental biology***	***Frontiers in neural development***	***Neuro-biology 1***	***Neuro-biology 2***	***Introduction to behavioral biology***	***Behavioral biology***	***Social behavior and communi-cation***	***Systems biology***	***Introduction to Bayesian Statistics and Information Theory***
lecture + seminar + methods course	lecture + seminar + methods course	lecture + seminar + methods course	lecture + methods course	lecture + methods course	lecture + seminar + methods course	lecture + seminar + methods course	lecture + seminar + methods course	lecture + seminar + practical training	lecture + seminar + practical training
winter term	**winter term**	**summer term**	**winter term**	**summer term**	**winter term**	**summer term**	**summer term**	**summer term**	**winter term**

Blockstruktur
Modullage in den Semestern

	Block 1	Block 2	Block 3
winter term	M.Bio.303: Cellbiology	M.Bio.304: Neurobiology 1	M.Bio.306: Introduction to behavioral biology
	M.Bio.323: Introduction to Bayesian Statistics		M.Bio.321: Current Developmental biology

	Block 1	Block 2	Block 3
summer term	M.Bio.305: Neurobiology 2	M.Bio.322: Frontiers in Neural Development	M.Bio. 307: Behavioral biology
		M.Bio.308: Social behavior and communication	
	**M.Bio.310: Systems biology		

** The practical part can be organized individually with advisor, continuous lecture and seminar

Bioinformatics	Developmental and Cell Biology	Neurobiology	Behavioral Biology

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Profile Module – Profilmodul

Key Skills – Kompetenzmodule

24 Credits to use freely – Freie Entfaltung

Key Skills – Kompetenzmodule

key competence modules: single components of core modules

(combination with associated core module is not possible)

M.Bio.343	M.Bio.363	M.Bio.392	M.Bio.393	M.Bio.394	M.Bio.395	M.Bio.344	M.Bio.346	M.Bio.366	M.Bio.347	M.Bio.340
Cell biology		***Current Developmental biology***		***Frontiers in Neural Development***		***Neuro-biology 1***	***Introduction to behavioral biology***		***Behavioral biology***	***Systems biology***
lecture + seminar	lecture	lecture + seminar	lecture	lecture + seminar	lecture	lecture	lecture + seminar	lecture	lecture + seminar	lecture + tutorial
6 C	**3 C**	**6 C**	**3 C**	**6 C**	**3 C**	**3 C**	**6 C**	**3 C**	**6 C**	**3 C**
winter term		**winter term**		**summer term**		**winter term**	**winter term**		**summer term**	

additional key competence modules

M.Bio.348	M.Bio.369	M.Bio.390	M.Bio.391	M.Bio.350	M.Bio.356	M.Bio.357	M.Bio.359	M.Bio.360	M.Bio.371	M.Bio.372	M.Bio.373	M.Bio.376	M.Bio.374	M.Bio.358
Human genetics		***Cellular & molecular immunology***		***From vision to action***	***Motor systems***		***Development and plasticity of the nervous system***		***Neurological and psychiatric diseases***	***Matlab in Biopsychology and Neuroscience***	***Visual Psychophysics - From Theory to Experiment***	***Laboratory animal course***	***Computational modelling and human cooperative behavior***	***Basic applied statistics***
lecture + seminar	lecture	lecture + seminar	lecture	lecture	lecture + seminar	lecture	lecture	seminar	seminar (block course)	lecture + tutorial	lecture + computer-training	e-Learning unit	seminar + computer-training (weekend course)	methods course (block course)
6 C	**3 C**	**6 C**	**3 C**	**3 C**	**6 C**	**3 C**	**3 C**	**3 C**	**2 C**	**3 C**	**3 C**	**2 C**	**3 C**	**6 C**
winter term		**summer term**		**winter term**	**summer term**		**winter term**		**summer term**	**summer term**	**summer term**	**winter term**	**winter term**	**summer term**

Profile Module – Profilmodul

Key Skills – Kompetenzmodule

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advanced modules	**2**	**7-9 weeks lab course**	**12**	**30**
	1	**scientific project management**	**6**	
	common examination of advanced modules			
Master thesis (26 weeks)				**30**

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Advanced Modules – Vertiefungsmodule

advanced modules (12 C)

individual courses for each student: time frame has to be arranged with advisor

Developmental and Cellbiology					Neurobiology			Behavioral Biology		Bioinformatics
M.Bio.381	**M.Bio.382**	**M.Bio.383**	**M.Bio.319**	**M.Bio.380**	**M.Bio.314**	**M.Bio.315**	**M.Bio.316**	**M.Bio.317**	**M.Bio.318**	**M.Bio.320**
Current Developmental Biology	***Frontiers of Developmental Biology***	***Developmental Cell Biology***	***Human Genetics***	***Cellular & Molecular Immunology***	***Cellular Neurobiology***	***Molecular Neurobiology***	***Systemic Neurobiology***	***Population and behavioral biology***	***Social behavior, communi-cation and cognition***	***Bioinformatics***
lab course 9 weeks	lab course 9 weeks	lab course 9 weeks	lab course 9 weeks	lab course 7 weeks	lab course 7 weeks	lab course 7 weeks	lab course 7 weeks	lab course 7 weeks	lab course 7 weeks	lab course 9 weeks

Modules required for specialization

main focus		modules	remarks
Cell and Developmental biology	**Core modules**	**M.Bio.321**: Current Developmental biology	obligatory module
		M.Bio.322: Frontiers in Neurodevelopment	one module obligatory, other recommended
		M.Bio.303: Cell biology	
	Advanced modules	**M.Bio.381**: Current developmental biology	Two out of these modules are obligatory
		M.Bio.382: Fontiers of developmental biology	
		M.Bio.383: Cell biology	
		M.Bio.319: Human genetics	
		M.Bio.380: Cellular and molecular immunology	
	Master thesis	in department of one of the two selected advanced modules	
Neurobiology	**Core modules**	**M.Bio.304**: Neurobiology 1	both modules are obligatory
		M.Bio.305: Neurobiology 2	
	Advanced modules	**M.Bio.314**: Cellular Neurobiology	Two out of these modules are obligatory
		M.Bio.315: Molecular Neurobiology	
		M.Bio.316: Systemic Neurobiology	
		M.Bio.318: Social behavior, communication and cognition	
	Master thesis	in department of one of the two selected advanced modules	
Behavioral biology	**Core modules**	**M.Bio.306**: Introduction to behavioral biology	obligatory module
		M.Bio.307: Behavioral biology	one module obligatory, other recommended
		M.Bio.308: Social behavior and communication	
	Advanced modules	**M.Bio.316**: Systemic Neurobiology	Two out of these modules are obligatory
		M.Bio.317: Population and behavioral biology	
		M.Bio.318: Social behavior, communication and cognition	
	Master thesis	in department of one of the two selected advanced modules	

Cell and Developmental Biology

main focus		modules	remarks
Cell and Developmental biology	**Core modules**	**M.Bio.321**: Current Developmental biology	obligatory module
		M.Bio.322: Frontiers in Neurodevelopment	one module obligatory, other recommended
		M.Bio.303: Cell biology	
	Advanced modules	**M.Bio.381**: Current developmental biology	Two out of these modules are obligatory
		M.Bio.382: Fontiers of developmental biology	
		M.Bio.383: Cell biology	
		M.Bio.319: Human genetics	
		M.Bio.380: Cellular and molecular immunology	
	Master thesis	in department of one of the two selected advanced modules	

Neurobiology

Neurobiology	**Core modules**	**M.Bio.304**: Neurobiology 1	Both modules are obligatory
		M.Bio.305: Neurobiology 2	
	Advanced modules	**M.Bio.314**: Cellular Neurobiology	Two out of these modules are obligatory
		M.Bio.315: Molecular Neurobiology	
		M.Bio.316: Systemic Neurobiology	
		M.Bio.318: Social behavior, communication and cognition	
	Master thesis	in department of one of the two selected advanced modules	

Behavioral Biology

Behavioral biology	**Core modules**	**M.Bio.306**: Introduction to behavioral biology	obligatory module
		M.Bio.307: Behavioral biology	one module obligatory, other recommended
		M.Bio.308: Social behavior and communication	
	Advanced modules	**M.Bio.316**: Systemic Neurobiology	Two out of these modules are obligatory
		M.Bio.317: Population and behavioral biology	
		M.Bio.318: Social behavior, communication and cognition	
	Master thesis	in department of one of the two selected advanced modules	

Core Modules – Fachmodule

„From the Cell to Cognition“

core modules (12 C)

5 week block courses

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lecture + seminar + methods course	lecture + seminar + methods course	lecture + seminar + methods course	lecture + methods course	lecture + methods course	lecture + seminar + methods course	lecture + seminar + methods course	lecture + seminar + methods course	lecture + seminar + practical training	lecture + seminar + practical training
winter term	**winter term**	**summer term**	**winter term**	**summer term**	**winter term**	**summer term**	**summer term**	**summer term**	**winter term**

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Master thesis (26 weeks)				**30**

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Faculty

Johann-Friedrich-Blumenbach-Institute for Zoology and Anthropology

Cellular Neurobiology
Prof. Martin Göpfert
Prof. Ralf Heinrich

Molecular Neurobiology of Behaviour
Prof. Andre Fiala

Multiscale Biology
Prof. Dr. Jan Huisken

Systems Neurobiology
Prof. Dr. Siegrid Löwel

Evolutionary Developmental Genetics
Prof. Gregor Bucher

Developmental Biology
PD Dr. Gerd Vorbrüggen
Prof. Ernst A. Wimmer

Sociobiology & Anthropology
Prof. Peter Kappeler

Behavioural Ecology
Prof. Julia Ostner

Data-driven Analysis of Biological Networks
Prof. Michael Wibral

Faculty

Affective Neuroscience and Psychophysiology
Prof. Annekathrin Schacht

Georg-Elias-Müller Institut für Psychologie

Cognitive Ecology
Prof. Julia Fischer

Cognitive Neurosciences
Prof. Stefan Treue
Prof. Alexander Gail

Neurobiology of Primates
Prof. Hansjörg Scherberger

Stem Cell Biology
Prof. Rüdiger Behr

German Primate Center, DPZ

Faculty

Molecular Oncology
Prof. Matthias Dobbelstein
Human Genetics
Prof. Bernd Wollnik, Prof. Heidi Hahn
Neuro- and Sensory Physiology,
Prof. Silvio Rizzoli
Anatomy and Embryology
Prof. Christoph Viebahn
Anatomy and Cell Biology
Prof. Jörg Wilting
Otolaryngology – InnerEarLab
Prof. Tobias Moser
Cellular and Molecular Immunology
Prof. Jürgen Wienands
Medical Bioinformatics
Prof. Tim Beissbarth

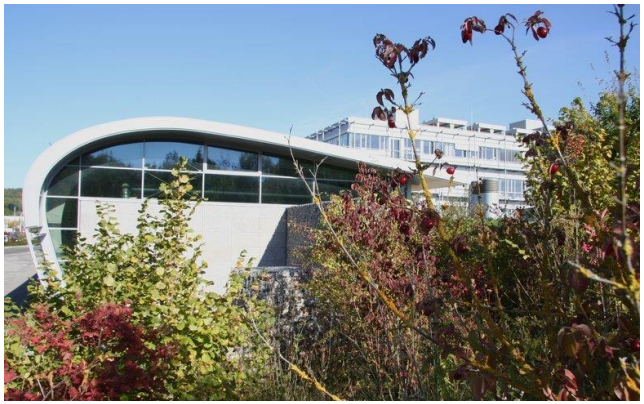
University Medical Center

UNIVERSITÄTSMEDIZIN GÖTTINGEN : UMG

Faculty

Theoretical Neurophysics
Prof. Fred Wolf

MPI for Dynamics and Self Organisation and
Campus Institute for Dynamics of Biological Networks



Molecular Neurobiology
Prof. Nils Brose

Neurogenetics
Prof. Klaus Armin Nave

MPI for Multidisciplinary Sciences
(formerly Experimental Medicine)

Faculty

Biophysics
Dr. Dieter Klopfenstein
Computational Neurosciences
Prof. Florian Wörgötter

III Physical Institute

Cellular Logistics
Prof. Dirk Görlich
Nuclear Architecture
Dr. Volker Cordes
Meiosis
Dr. Melina Schuh
Tissue Dynamics and Regeneration
Dr. Jochen Rink

MPI for Multidisciplinary Sciences (formerly Biophysical Chemistry)

Faculty

Bioinformatics
Prof. Jan de Vries

Institute of Microbiology and Genetics

Epigenetics and Systems Medicine in Neurodegenerative Diseases,
Dr. André Fischer

DZNE German Center for Neurodegenerative Diseases

Olfactory Memory
Dr. Thomas Frank

Synaptic Vesicle Dynamics
Dr. Ira Milosevic

Neural Computation and Behavior
Dr. Jan Clemens

European Neuroscience Institute Göttingen

Bachelor of Science (life science)

Master / PhD Program: Developmental, Neural, and Behavioral Biology

	modules	credits
semester 1	core I 3 weeks lab course & seminar & lecture	12
	core II 3 weeks lab course & seminar & lecture	12
	key skills	6
semester 2	core III 3 weeks lab course & seminar & lecture	12
	advanced I 7 - 9 weeks lab course	12
	key skills	6
semester 3	profile extended selection according to special interest	12
	advanced II 7 - 9 weeks lab course	12
	advanced III	6
semester 4	master thesis 6 months in a research group of the program	30

There is flexibility in the choice of modules in the first three semesters.

career entry

external PhD

PhD (direct access to GAUSS and GGNB)

Continuing Ph.D. programs

GAUSS

Georg-August-University-School of Science

Faculty Ph.D. program, Faculty of Biology and Psychology

Behaviour and Cognition

GGNB
Göttingen Graduate Center
for Neurosciences, Biophysics and Molecular Biosciences

GGNB

International Max Planck Research Schools
Physics of Biological and Complex Systems
Genome Science

PhD Programs of the Göttingen Center for Molecular Biosciences (GZMB)
Biomolecules: Structure - Function - Dynamics
Microbiology and Biochemistry
Molecular Biology of Cells
Genes and Development
} **Cells and Organisms: From Genes to Evolution**

PhD Programs of the DFG Research Center Molecular Physiology of the Brain (CMPB)
Molecular Physiology of the Brain (in the future **Neurosciences)**

PhD Program of the Bernstein Center for Computational Neuroscience (BCCN)
Theoretical and Computational Neuroscience

PhD Program of the Medical School
Sensory and Motor Neuroscience

PhD Program of the Center for Systems Neuroscience
Systems Neuroscience

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	common examination of advanced modules			
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	example	
term 1	core I	12
	core II	12
	key competence	6
term 2	profile	12
	core III	12
	key competence	6
term 3	advanced I	12
	advanced II	12
	scientific project management	6
term 4	Master thesis	30

PhD
different programs available