

# Learning Agreement MSc HST

## Major: Molecular Health Sciences (MHS)

Matr. no. & student's name:	
Tutor's name:	
Start of study program:	

### Qualification Profile 'Molecular Health Sciences'

Residing at the interface of biosciences, medicine and technology, Molecular Health Sciences focuses on the study of the molecular basis of tissue and organ functions and their responses to stress, diet, environmental challenges and aging, on organ-organ communication principles, stem cell function and inter- and intracellular signalling networks. Particular emphasis is given to integrating the knowledge derived from these studies into the context of whole body function to advance understanding of common complex diseases such as diabetes, obesity, heart disease, cancer, neurological and inflammatory disorders. The development of the scientific basis for rational preventive and therapeutic strategies for the successful management of human diseases is another core component of the programme. Participants of the programme will acquire the experimental skills to apply tools and insights from many disciplines ranging from genetics and genomics and molecular cell biology and physiology to biological chemistry, in vivo imaging and molecular pathology to address unsolved problems in basic and translational sciences. The successful completion of the Major in Molecular Health Sciences prepares the student for a career in biomedical research areas and pharmaceutical sciences. This education provides a solid scientific background for further academic studies towards a PhD followed by postdoctoral training, but also a scientific profile suitable for competitive positions in the fields of biomedicine, biotechnology, health technologies and health organizations. This program is offered as part of a collaboration between D-BIOL and D-HEST in the context of the MSc in Biology and MSc in Health Sciences and Technology curricula.

### Compulsory Courses of the Major

				CP		semester	exam
x	376-0300-00	Translational Science for Health and Medicine	Goldhahn	3	2G	AS .....	wSE
x	376-0302-01	GCP Basic Course (Modules 1 and 2) (or TRREE combination 1/2.1/3.1/3.2/CH-Supplement)	Senti	1	1G	AS .....	uSP
x	376-0302-00	Practicing Translational Science (Req.: Translational Science ...)	Goldhahn	2	4A	SS .....	gSP
<b>Total Core Courses</b>				<b>6</b>			

### Glossary:

V = lecture  
G = lecture with exercise  
U = exercise  
S = seminar  
K = colloquium  
P = practical/laboratory course  
A = independent project  
D = diploma thesis

AS = autumn semester  
SS = spring semester  
A/S = autumn or spring semester

wSE / oSE = written / oral Session Examination  
wEE / oEE = written / oral End-of-semester Examination  
gSP / uSP = graded / ungraded Semester Performance

## Elective Courses of the Major

Elective courses that are counted for the Bachelor diploma (please tick column BSc) cannot count for the Master diploma, too.

			CP		sem.	exam	BSc
<input type="checkbox"/>	227-0939-00	Cell Biophysics	Zambelli	6	4G	AS ..... wSE	<input type="checkbox"/>
<input type="checkbox"/>	363-1163-00	Developing Digital Biomarkers	Da Conceição	3	2V	AS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	376-0121-00	Multiscale Bone Biomechanics	R. Müller	6	4S	AS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	376-0208-00	Molecular and Cellular Biology of Exercise and Muscle Regeneration - Practical Aspects	Bar-Nur / De Bock	3	2G	AS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	376-0303-00	Colloquium in Translational Science (Autumn Semester)		1	1K	AS ..... uSP	<input type="checkbox"/>
<input type="checkbox"/>	376-1353-00	Nanostructured Materials Safety	Wick	2	1V	AS ..... wEE	<input type="checkbox"/>
<input type="checkbox"/>	376-1622-00	Practical Methods in Tissue Engineering (either this course or Practical Methods in Biofabrication)	Zenobi-Wong	5	4P	AS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	376-1661-00	Ethics of Life Sciences and Biotechnology	Blasimme	3	2V	AS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	529-0041-00	Moderne Massenspektroskopie, gekoppelte Analysenmethoden, Chemometrie	Zenobi	6	3G	AS ..... woSE	<input type="checkbox"/>
<input type="checkbox"/>	551-0223-00	Immunology III (Req.: Immunology I+II)	Kopf	4	2V	AS ..... wSE	<input type="checkbox"/>
<input type="checkbox"/>	551-0309-00	Concepts in Modern Genetics	Barral	6	4V	AS ..... wEE	<input type="checkbox"/>
<input type="checkbox"/>	551-0317-00	Immunology I	Kopf	3	2V	AS ..... wSE	<input type="checkbox"/>
<input type="checkbox"/>	551-0512-00	Current Topics in Molecular and Cellular Neurobiology	Suter	2	1S	AS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	551-0571-00	From DNA to Diversity (BIO336 UZH)	Hajnal	2	2V	AS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	551-1153-00	Systems Biology of Metabolism (Req.: Systems Biology)	Sauer	4	2V	AS ..... oEE	<input type="checkbox"/>
<input type="checkbox"/>	551-1171-00	Immunology: From Milestones to Current Topics	Ludewig	4	2S	AS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	551-1303-00	Cellular Biochemistry of Health and Disease	Kleele	4	2S	AS ..... wEE	<input type="checkbox"/>
<input type="checkbox"/>	636-0017-00	Computational Biology	Vaughan	6	5GA	AS ..... wSE	<input type="checkbox"/>
<input type="checkbox"/>	636-0108-00	Biological Engineering and Biotechnology	Fussenegger	4	3V	AS ..... wSE	<input type="checkbox"/>
<input type="checkbox"/>	701-1703-00	Evolutionary Medicine for Infectious Diseases	Hall	3	2G	AS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	752-3105-00	Physiol. Guided Food Struct. and Process Design	Fischer	3	2V	AS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	752-4009-00	Molecular Biology of Foodborne Pathogens	Loessner	3	2V	AS ..... wEE	<input type="checkbox"/>
<input type="checkbox"/>	752-6101-00	Dietary Etiologies of Chronic Disease	Zimmermann	3	2V	AS ..... wEE	<input type="checkbox"/>
<input type="checkbox"/>	752-6105-00	Epidemiology and Prevention	Puhan	3	2V	AS ..... wEE	<input type="checkbox"/>
<input type="checkbox"/>	327-2125-00	Microscopy Training SEM I – Introduction to SEM	Zeng	2	3P	A/S ..... uSP	<input type="checkbox"/>
<input type="checkbox"/>	327-2126-00	Microscopy Training TEM I – Introduction to TEM	Zeng	2	3P	A/S ..... uSP	<input type="checkbox"/>
<input type="checkbox"/>	w/o no.	Writing your Master's Thesis: Natural Sciences and Engineering C1-C2	Diverse	2	2V	A/S ..... gSP	
<input type="checkbox"/>	w/o no.	LTK Module 1: Introductory Course in Laboratory Animal Science (only with agreement of supervisor)	Diverse	2	A/S	.....	
<input type="checkbox"/>	227-0396-00	EXCITE Interdisciplinary Summer School on Bio-Medical Imaging	Kozerke	4	6G	SS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	227-0946-00	Molecular Imaging – Basic Principles and Biomedical Applications	Razansky	2	2V	SS ..... wSE	<input type="checkbox"/>
<input type="checkbox"/>	327-2144-00	Microscopy Training Cryogenic Electron Microscopy	Peterek	1	2P	SS ..... uSP	<input type="checkbox"/>
<input type="checkbox"/>	327-2224-00	MaP Dist. Lect. Ser. on Additive Manufacturing	Katzschmann	1	2S	SS ..... uSP	<input type="checkbox"/>
<input type="checkbox"/>	363-1130-00	Digital Health in Practice (University of Zurich)	Uni-Doz.	3	2V	SS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	376-1306-00	Clinical Neuroscience (University of Zurich)	Diverse	3	3V	SS ..... gSP	<input type="checkbox"/>
<input type="checkbox"/>	376-1345-00	Learning and Memory: From Molec. to Circuits	Winterer	3	2G	SS ..... gSP	<input type="checkbox"/>

				CP		sem.	exam	BSc
<input type="checkbox"/>	376-1347-00	Bioinformatic Approaches to Regulatory Genomics and Epigenomics	Germain	4	4GA	SS .....	gSP	<input type="checkbox"/>
<input type="checkbox"/>	376-1392-00	Mechanobiology: Implications for Development, Regeneration and Tissue Engineering	Shivashankar	3	2G	SS .....	wSE	<input type="checkbox"/>
<input type="checkbox"/>	376-1624-00	Practical Methods in Biofabrication (either this course or Practical Methods in Tissue Engineering)	Zenobi-Wong	5	4P	SS .....	gSP	<input type="checkbox"/>
<input type="checkbox"/>	376-1660-00	Scientific Writing, Reporting and Communication	Taylor	3	2V	SS .....	gSP	<input type="checkbox"/>
<input type="checkbox"/>	376-1986-00	Bayesian Data Analysis on Models of Behavior (University of Zurich)	Polania	3	2S	SS .....	gSP	<input type="checkbox"/>
<input type="checkbox"/>	529-0059-00	Nanoscale Molecular Imaging	Kumar	3	2G	SS .....	oSE	<input type="checkbox"/>
<input type="checkbox"/>	551-0140-00	Epigenetics	Wutz	4	2V	SS .....	wSE	<input type="checkbox"/>
<input type="checkbox"/>	551-0318-00	Immunology II (Req.: Immunology I)	Oxenius	3	2V	SS .....	wSE	<input type="checkbox"/>
<input type="checkbox"/>	551-0326-00	Cell Biology	Werner	6	4V	SS .....	wSE	<input type="checkbox"/>
<input type="checkbox"/>	551-0364-00	Functional Genomics	von Mering	3	2V	SS .....	wSE	<input type="checkbox"/>
<input type="checkbox"/>	551-0512-00	Current Topics in Molecular and Cellular Neurobiology	Suter	2	1S	SS .....	gSP	<input type="checkbox"/>
<input type="checkbox"/>	551-1100-00	Infectious Agents: From Molecular Biology to Disease	Hardt	4	2S	SS .....	gSP	<input type="checkbox"/>
<input type="checkbox"/>	551-1132-00	Allgemeine Virologie	Tobler	2	1V	SS .....	gSP	<input type="checkbox"/>
<input type="checkbox"/>	551-1310-00	A Problem-Based Approach to Cellular Biochemistry	Peter	6	2G	SS .....	gSP	<input type="checkbox"/>
<input type="checkbox"/>	636-0111-00	Synthetic Biology I	Panke	4	3G	SS .....	wSE	<input type="checkbox"/>
<input type="checkbox"/>	701-1350-00	Case Studies in Environment and Health	McNeill	4	2V	SS .....	gSP	<input type="checkbox"/>
<input type="checkbox"/>	752-1300-00	Introduction to Toxicology	Eggen	3	2V	SS .....	wEE	<input type="checkbox"/>

		Additional Electives		CP		sem.	exam
<input type="checkbox"/>	.....	.....	.....	.....	.....	.....	.....
<input type="checkbox"/>	.....	.....	.....	.....	.....	.....	.....
<input type="checkbox"/>	.....	.....	.....	.....	.....	.....	.....
<input type="checkbox"/>	.....	.....	.....	.....	.....	.....	.....

**Total Elective Courses of the Major** ..... (min. 22 CP)

### Elective Courses in Science in Perspective

				CP		semester	exam
<input type="checkbox"/>	.....	.....	.....	.....	.....	.....	.....
<input type="checkbox"/>	.....	.....	.....	.....	.....	.....	.....

**Total Elective Courses Science in Perspective** ..... (min. 2 CP)

## Practical Training (job or research oriented)

			CP	semester
<input type="checkbox"/>	376-2110-00	Practical Training 12 Weeks	15	34P .....
<input type="checkbox"/>	376-2111-00	Practical Training 8 Weeks	10	23P .....
<input type="checkbox"/>	376-2112-00	Practical Training 4 Weeks	5	11P .....

<b>Total Practical Training</b>	.....	<b>(min. 15 CP)</b>
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## Research Internship

			CP	semester
x	376-2100-00	Research Internship (min. 12 weeks full time equivalent) <i>Planned location:.....</i>	15	36A .....

<b>Total Research Internship</b>	<b>15</b>
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## Master Thesis

			CP	semester
x	376-2000-00	Master Thesis (max. 28 weeks full time (incl. 2 weeks holiday), start not before BSc completed) <i>Planned location:.....</i>	30	71D .....

<b>Total Master Thesis</b>	<b>30</b>
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## Comments (e.g. Additional Admission Requirements)

Zurich, .....

Signed .....  
Student Tutor