

<b>Georg-August-Universität Göttingen</b> <b>Module M.MM.102: From Cells to Disease Mechanism</b>	24 C 24 WLH
<b>Learning outcome, core skills:</b> After successfully finishing this module the students should be familiar with molecular processes within the cell and corresponding aspects associated with pathological changes and pathological tissues. They are able to describe qualitatively genetic and metabolic diseases as well as inflammatory and cancerous processes. The students are familiar with tools, concepts and methods of cell biology, pathology, human genetics and mol. & experim. oncology and thus are able to describe causes and consequences of changes within genetic and cellular processes by using typical examples. Furthermore, fundamental mechanisms in pathology, genetics and cell biology are deduced including scientific paper discussions. In addition, under qualified supervision students acquire the ability to perform experimental work within the lab covering a clear cut topic or highly sophisticated method. The results of this practical course will be presented within the corresponding scientific group and written down in corresponding scientific style.	<b>Workload:</b> Attendance time: 336 h Self-study time: 384 h
<b>Course:</b> M.MM.102.LV " <b>From Cells to Disease Mechanism – selected topics in cell biology, oncology, pathology and human genetics</b> " (Lecture, Seminar)	9 WLH
<b>Examination: Written examination (180 minutes)</b> M.MM.102.1: From Cells to Disease Mechanism (written exam) <b>Examination prerequisites:</b> Regular attendance at the seminar. <b>Examination requirements:</b> Knowledge and understanding about fundamental mechanisms in gene regulation, about principles in cell communications and intracellular signaling processes, mechanisms of feedback/-forward regulatory circuits in cell signaling, hallmarks of cancer, criteria of cell transformation in in vitro und in vivo assays, models of tumor development and therapy, tools to investigate cancer cells, current concepts in cancer therapy, tumorsuppressor genes and oncogenes, proteomics, epigenetics, tumor genetics, modern concepts and mode of action, mechanisms, regulation of cell cycle phases, cell cycle check-points, posttranslational modifications as ubiquitination and phosphorylation, regulation of mitosis and chromosome segregation, genetic instability in cancer and chromosomal aberrations, DNA-damage responses, stem cell concepts, molecular pathology of carcinogenesis, colorectal cancer, lung cancer, pancreatic cancer and soft tissue sarcoma, concepts about the genetics of inflammatory reactions/diseases and, selected topic of molecular and translational oncology and hematological neoplasias, knowledge about current methods to analyse DNA, RNA and proteins as well as cell metabolism for molecular medicine and different in vivo models.	12 C
<b>Course:</b> M.MM.102.Lab " <b>Lab Rotation</b> " (Practical course)	15 WLH
<b>Examination: Presentation (approx. 30 min.) with written draft (max. 20 pages)</b> M.MM.102.2: From Cells to Disease Mechanism (Lab Rotation) <b>Examination prerequisites:</b> Regular attendance at the lab rotation.	12 C

<b>Examination requirements:</b> Characteristic tools, concepts and methods to analyse molecular processes within cells and in vivo models, use methods of diagnostics, coherent and conclusive presentation of experimental data established within the lab rotation.	
<b>Admission requirements:</b> Bachelor's degree in a related study program or successfully passed first exam in human medicine.	<b>Recommended previous knowledge:</b> Basic lectures in oncology, biochemistry, pathology, cell biology, molecular biology, dermatology und human genetics.
<b>Language:</b> English	<b>Person responsible for module:</b> Prof. Dr. Dieter Kube
<b>Course frequency:</b> once a year	<b>Duration:</b> 1 semester[s]
<b>Number of repeat examinations permitted:</b> twice	<b>Recommended semester:</b> 1 - 2
<b>Maximum number of students:</b> 30	