

Major Cancer Biology

within the Master Program 'Molecular Biosciences' University of Heidelberg, Faculty of Biosciences



GERMAN
CANCER RESEARCH CENTER

all Major Cancer Biology teaching activities can be found in the Academic Calendar of the University at <http://\lsf.uni-heidelberg.de>

Overview HP-L's offered in WS 2011/2012 - Modules "Biolab" and "Working in Bioscience"

Definition: A 'Biolab' or 'Working in Bioscience' lab practical – duration: minimum 6 weeks – should consist of a small scientific project.

The protocol should be written in the style of a master thesis, consisting of abstract, title page, introduction, materials and methods, results, discussion and references.

Ifd Nr.	Term	Type	Supervisor(s) Contact	Date Time Location No. of places	Title and Description
1.	WS 11/12	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Biolab <input type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> Hellmut Augustin h.augustin@dkfz.de b.boeck@dkfz.de 	<ul style="list-style-type: none"> to be arranged 8.00-18.00 DKFZ, INF 280, 4. floor 2 	<p>Methods in angiogenesis research</p> <p>The term angiogenesis describes the growth of new blood vessels from existing vessels. This process is responsible for essential biological functions such as embryonic development, the female reproductive cycle, wound healing and tissue repair processes. Pathological conditions in which angiogenesis is active are malignant neoplasm/tumor and additional diseases such as cardiovascular diseases, diabetes, multiple sclerosis or autoimmune disorders. The aim of the underlying course is to provide an overview of endothelial cell biology and to gain experience in several standard angiogenesis assays.</p>
2.	WS 11/12	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Biolab <input checked="" type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> Petra Boukamp Karin Greulich-Bode k.greulich@dkfz.de 	<ul style="list-style-type: none"> to be arranged 09:00-18:00 DKFZ, INF 280 1 	<p>Telomere length regulation</p> <p>Telomeres have a specific structure and this structure can be stabilized by specific compounds, so-called G-Quadruplex inhibitors. The functional consequence of such inhibitors will be measured for proliferation, death, genomic instability, telomere length and organisation.</p>

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3.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major: MCB, Systems Biology) 	<ul style="list-style-type: none"> • Michael Boutros • m.boutros@dkfz.de Tel. 06221 42-1950 	<ul style="list-style-type: none"> • to be arranged • to be arranged • to be arranged • 2 	<p>Signaling in cancer Signaling networks control key decisions during development of organisms and deregulation of signal transduction pathways has been linked with carcinogenesis. To understand the complex biological networks, our research centers at dissecting how signals are secreted, received and transmitted. We apply modern genomic technologies as well as cell biology and genetics in model systems like Drosophila and human cells. In particular we use RNA interference (RNAi) technologies in vitro and in vivo to systematically identify pathway-specific genes and dissect their role in development and carcinogenesis. Please refer to our website for further information and references: http://www.dkfz.de/signaling/b110/Teaching.html</p>
4.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major: MCB, Systems Biology) 	<ul style="list-style-type: none"> • Michael Boutros • m.boutros@dkfz.de Tel. 06221 42-1950 	<ul style="list-style-type: none"> • to be arranged • to be arranged • to be arranged • 1 	<p>Computational analysis of high-throughput screening data The RNA interference (RNAi) method allows the systematic silencing of any known gene in the genome, helping to elucidate gene functions. Such high-throughput functional genomics experiments produce large amounts of data that need to be analysed, interpreted and stored in databases. We implement analysis tools and databases to support large-scale screening experiments.</p>
5.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Tobias P. Dick • t.dick@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • DKFZ, INF 280, H2.02 • 1 	<p>Redox regulation of signal transduction Please refer to our website for topics and references. http://www.dkfz.de/en/redoxregulation/inhalte/researchinterests/startres.html</p>
6.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major: MCB) 	<ul style="list-style-type: none"> • Sven Diederichs • s.diederichs@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 6-8 weeks; full-time • DKFZ; INF 280, H1.03.064 • 1 	<p>microRNA & non-coding RNA Biology Many non-protein-coding RNAs (ncRNAs) can exert important functions in the cell. One class of ncRNAs, microRNAs, are novel important post-transcriptional regulators of gene expression. Many microRNAs play prominent roles in tumorigenesis by targeting oncogenes or tumor suppressor genes. In our young and motivated group, you will study the biogenesis of microRNAs or the function of other non-coding RNAs as well as their dysregulation and role in cancer. The most important methods in our lab that you could learn are cell culture, transfection, microRNA isolation, microRNA Northern blots, RT-PCR & qPCR, luciferase assays, cloning using topoisomerase or Gateway methodology, mutagenesis, microRNA target prediction, splicing analysis, cellular phenotype analysis of e.g. proliferation or apoptosis. Website: www.diederichslab.org</p>
7.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Regina Feederle, Henri-Jacques Delecluse • h.delecluse@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • to be arranged • DKFZ, ATV, INF 242 • 1-2 	<p>Pathogenesis and prevention of Epstein-Barr virus-associated diseases Our research projects aim at understanding the function of the proteins and microRNAs encoded by the Epstein-Barr virus genome. To this aim, we generate knock-out viruses that lack one or several viral genetic elements. Some of these mutants have lost their transforming potential but retain their immunogenic properties; their potential as preventative vaccines is being currently investigated.</p>
8.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Markus Feuerer, David Richards • m.feuerer@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • DKFZ, H1.07.029 • 1 	<p>Molecular mechanisms involved in development and function of regulatory immune cells Quite recently, Foxp3 expressing regulatory T cells (Tregs) have emerged as critical control elements within the immune system, being of essential importance for the maintenance of self-tolerance, the limitation of excessive anti-pathogen responses and for the control of immune homeostasis. This project is part of a bigger picture that aims to decipher and compare the molecular control mechanisms involved in the development and function of Tregs that emerge along the respective pathways. http://www.dkfz.de/en/immuntoleranz/index.html</p>

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9.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:)	<ul style="list-style-type: none"> • Stephan Herzig, Anja Krones-Herzig • a.krones-herzig@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • HH, 1. OG • 1 at a time 	Gene expression and gene therapy Our group is studying the molecular causes of severe metabolic disorders such as type II diabetes and cachexia, a state of fatigue and loss of vitality as commonly associated with advanced cancer. The main causes of these metabolic disorders are believed to be hormonal malfunctions which lead to a change of activity of genes regulating our metabolism. By analyzing the activity of such hormone-dependent genes we hope to identify disease-causing malfunctions in glucose and fat metabolism. We ultimately aim to identify genes and gene products which increase the susceptibility to metabolic diseases and test their potential to serve as novel targets for drugs. So far we have found three candidate genes, all of which serve as blueprints for proteins that work like molecular switches regulating the activity of target genes. Flawed blueprints for these proteins may lead to diseases like diabetes or cachexia. http://www.dkfz.de/en/metabolic_control/
10.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input type="checkbox"/> WiB (also for Major:)	<ul style="list-style-type: none"> • Ilse Hofmann • i.hofmann@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 9.00-17.00 • CBTM, Mannheim • 1 	Cell adhesion and signaling in cancer Please refer to our website for topics and references (http://www.angiolab.de)
11.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major: MCB)	<ul style="list-style-type: none"> • Ulrike Korf • u.korf@dkfz.de • Tel. 06221 42-4765 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • INF 580, TP3 2.306 • 1 	Proteome profiling of breast cancer tumor samples using quantitative protein microarrays Proteome profiling is performed for a large set (>100) of human breast cancer biopsies using reverse phase microarrays (RPPA) to probe the abundance of >80 proteins and phosphoproteins. Clinical samples are derived from a collaboration with the University Women's Clinic Heidelberg. The 6-week practical will cover selected aspects of already ongoing work as an independent project including possibly also in vitro validation work.
12.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:)	<ul style="list-style-type: none"> • Ulrike Korf, Ramesh Ummanni • u.korf@dkfz.de • Tel. 06221 42-4765 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • INF 580, TP3 2.306 • 1 	Insulin resistance and cancer Insulin resistance plays a major role in cancer as well as in the development of metabolic disorders. We are trying to gain insights into insulin resistance mechanisms by taking a proteomic approach using reverse phase protein microarrays (RPPA). Cell culture models to induce insulin resistance were developed by us. Experiments of this practical will focus on drug assays to reverse insuling resistance to understand which signaling pathways are targeted by a particular drug.
13.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:)	<ul style="list-style-type: none"> • Rajiv Kumar • r.kumar@dkfz.de 	<ul style="list-style-type: none"> • 8 weeks; date to be arranged • 9.00-18.00 • INF 580, Rom 3.206 • 2 	Somatic and germline variants in cancers http://www.dkfz.de/en/major-cancer-biology/Dozenten/Details-Dozenten-FS-C/Kumar-Rajiv.pdf
14.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major: MCB)	<ul style="list-style-type: none"> • Ruprecht Kuner, Holger Sültmann • r.kuner@dkfz.de • Tel. 06221 56-5958 	<ul style="list-style-type: none"> • 6-8 weeks; date to be arranged • 9.00-18.00 • INF 460, NCT • 1 	Transcriptome analysis in solid tumors and surrogates The goal of the practical course is to identify and validate the expression of microRNAs and their target genes in solid tumors and surrogates. The candidate miRNAs and genes are further characterized in cancer cell line models by intervention experiments and cellular assays. The methods comprise microarray / low-density array analysis, total RNA isolation and QC, qRT-PCR, cell culture, transfection experiments and cellular assays. http://www.dkfz.de/en/genetics/TranslationalOncogenomics/cancer-genome-research.html

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15.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Bachelor students) 	<ul style="list-style-type: none"> • Bruno Kyewski, Jens Derbinski, Viktor Umansky, Frank Momburg, Inna Lavrik, Carsten Watzl, and colleagues • contact instructors 	<ul style="list-style-type: none"> • to be arranged • 10:00-18:00 • • 	Cellular and molecular tumor immunology
16.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Stephanie Laufs, Manfred Schmidt, Frank Giordano • frank.giordano@nct-heidelberg.de 	<ul style="list-style-type: none"> • 8 weeks; date to be arranged • 9.00-17.00 • INF 581 (TP4) 4th floor • 1-2 	Subgenomic sequencing of wtHIV in vivo Practical will include basic studies on HIV-1 biology with a special emphasis on genomic integration. Methods will include linker-PCR/PCR/qPCR techniques and high throughput sequencing (454/Roche, Illumina/Solexa systems)
17.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Inna Lavrik • i.lavrik@dkfz.de Tel. 06221 42-3774 or 5451281 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • Bioquant, 302; or DKFZ Main Building 06.052 • 2 	Analysis of signaling at CD95 DISC Engagement of CD95(APO-1/Fas) leads to formation of the death-inducing signaling complex (DISC), and thereby to the induction of apoptotic and non-apoptotic pathways. There are three isoforms of c-FLIP at the CD95 DISC: one long (c-FLIPL), and two short isoforms (c-FLIPS, c-FLIPR), reported to have both pro- and anti-apoptotic roles at the DISC. We also have identified some new proteins present at the DISC, which can potentially regulate CD95 signaling. In our work using a combination of imaging and quantitative western blots we aim to define conditions under which CD95 DISC can induce apoptotic or non-apoptotic signaling pathways. In addition, the possibility for performing the systems biology work, e. g. modeling CD95 signaling pathway is also present.
18.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major: Infectious Diseases) 	<ul style="list-style-type: none"> • Martin Löchelt • m.loechelt@dkfz.de Tel. 06221 42-4933 	<ul style="list-style-type: none"> • to be arranged • 08:00-18.00 • ATV, 2.108 • 1-2 	Foamy viruses: Molecular biology, epidemiology and application The student will work on a sub-project that is integrated in our ongoing research which deals with the inter-species transmission of foamy viruses and the molecular mechanisms of counteracting interspecies and zoonotic events. The student will use serological and DNA-based methods (ELISA, PCR, cloning, immunoblotting, virus cultivation and virus neutralization) as well as bioinformatics to identify interspecies transmissions of foamy viruses among life stock and pets and/or the distribution of related viruses in these host species.

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19.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major: Neuroscience3) 	<ul style="list-style-type: none"> • Ana Martin-Villalba, Susanne Kleber, Desiree Glagow, Marcin Teodorczyk, Robert Hermann, Enric Llorens • a.martin-villalba@dkfz.de Tel. 06221 42-3766 	<ul style="list-style-type: none"> • to be arranged • 10.00-18.00 • TP4, INF 581, S3.123 • 2-3 	<p>Analysing the role of the CD95/CD95L-system in different scenarios of the central nervous system</p> <p>Stem cells Our lab is interested in the function and regulation of neural stem cells in the developing and adult brain. In the adult brain there are two regions harbouring neural stem/progenitor cells (NPCs) that continuously generate new neurons, the dentate gyrus of the hippocampus (DG) and the subventricular zone of the lateral ventricles (SVZ). Newborn neurons of the hippocampus are involved in learning and memory. Stem cells in the SVZ generate interneurons involved in fine tuning of olfaction. In the diseased brain, NPCs can be activated to repair the brain. Over-activation of these cells can result in tumour formation.</p> <p>To envisage ways to repair the CNS or block tumor formation the lab studies cell proliferation, and differentiation in the developing and healthy, tumorigenic, and regenerating adult CNS. Our laboratory has identified CD95 as a receptor signaling survival and neuronal differentiation in the naive and ischemic brain (Corsini et al., Cell Stem Cell 2009).</p> <p>Axonal regeneration Santiago Ramón y Cajal made several fundamental observations that have defined the perception of axonal regeneration in the central nervous system (CNS) of the past decades. While during development and in the peripheral nervous system, regeneration of nerve fibers does occur, in the adult CNS they do not regenerate. Right after injury, transected axons in the brain and spinal cord extend short distances, but shortly afterwards regeneration is halted and growth cones turn into retraction bulbs (Cajal, 1928). Our laboratory tries to envisage new ways to coax axons towards regeneration using models of crush- and transection-injury of the spinal cord.</p> <p>Signaling CD95 was first described as the inducer of apoptosis and it is still mostly known as the "death receptor". However, research in our group questions this dogma. We showed in several cancer cell lines and primary cell types that CD95 does not act as an apoptosis inducer but rather triggers migration, invasion and differentiation. We have deciphered molecular events originating from CD95 in glioma, neural stem cells and immune cells. Currently, we are investigating corresponding pathways in differentiating neurons and pancreatic cancer. Those findings imply CD95 as a therapeutic target for treating spreading of glioblastoma, neurodegenerative disorders as well as inflammation after spinal cord injury (Kleber et al., Cancer Cell, 2008; Corsini et al., Cell Stem Cell 2009; Sancho Martinez and Martin-Villalba, Cell Cycle, 2009; Letellier et al., Immunity, 2010). Furthermore, by identification of cell-type specific adapters of CD95 signaling we enlarged a potential spectrum of pharmacological intervention.</p> <p>http://www.dkfz.de/en/neurobiologie-von-gehirntumoren/index.html</p>
20.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Norbert Mücke, Jörg Langowski, Harald Herrmann • norbert.muecke@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • • TP3 • 	<p>Characterization of the in vitro assembly process of intermediate filament proteins by atomic force microscopy</p>
21.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major: Infectious Diseases) 	<ul style="list-style-type: none"> • Martin Müller • martin.mueller@dkfz.de Tel. 06221 42-4628 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • ATV 2.114 • 2 	<p>Viruses and cancer Topics include: Adeno-associated viruses, papilloma viruses, vaccination</p>

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22.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Karin Müller-Decker • K.Mueller-Decker@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 10.00-18.00 • INF 280, H2.02.040 • 1 	<p>Molecular mechanisms of cancer development Application of molecular, biochemical, cell biological and immunological methods in order to characterise genetically engineered mouse mutants, cell cultures assays may be performed in parallel. Literature related to the practical work will be distributed 4 weeks prior to the practical. http://www.dkfz.de/de/tumormodelle/download/ProstaglandinsandCancer.html</p>
23.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major: Infectious Diseases) 	<ul style="list-style-type: none"> • Dirk M. Nettelbeck • d.nettelbeck@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • • ATV 1.212 • 1 	<p>Oncolytic adenoviruses Engineering of oncolytic adenoviruses for selective killing of cancer cells and their characterization. Involves molecular biology, cell biology and virology techniques.</p>
24.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Jürg P.F. Nüesch • jpf.nuesch@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • ATV 2.221 • 1 	<p>Cloning and evaluation of H1-Parvovirus variants Through serial passaging we have obtained H1-PV variants surpassing the parental pSR-19 isolate in their ability to propagate and spread through human glioblastoma cultures. Some of these variants have been cloned into pCR2.1 vectors and sequenced presenting a variety of mutations as compared to the parental strain. The aim of the project is to determine, which mutants are responsible for the enhanced fitness in GBM cell lines. Therefore, individual variations/mutants will be cloned into infectious H1-PV DNA clones and virus stocks are prepared. Matched stocks will be tested for replication, propagation and spreading capacity by southern/western blot, crystal violet and immunofluorescence assays in a subset of human derived GBM cultures.</p>
25.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Christoph Plass • Dieter Weichenhan • c.plass@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • INF 280, HH, 2. OG • 1 	<p>Epigenetic profiling in cancer Epigenetic alterations contribute to tumorigenesis by silencing cancer related genes. Our work focuses on several questions. What are the underlying mechanisms of epigenetic gene silencing in cancer? What are the target genes for epigenetic silencing and what are the patterns of epigenetic silencing? What is the functions of genes that are epigenetically silenced in normal tissues? Work in our group focuses primarily on acute myeloid leukemia and chronic lymphocytic leukemia.</p>
26.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Odilia Popanda • o.popanda@dkfz.de • Tel. 06221 42-3315 	<ul style="list-style-type: none"> • to be arranged • to be arranged • H02.03.071 • 2 	<p>DNA repair and epigenomics Optimal function of the cellular DNA repair machinery plays a critical role in preserving genomic integrity. Defective or impaired DNA repair increases genomic instability and contributes to malignant transformation. Genetic and epigenetic repair gene modifications are both contributing to tumor development. Promoter methylation of specific DNA repair genes is an important example how epigenetically silenced targets affect tumor development as well as tumor therapy. Our work aims to elucidate interactions of DNA damage and repair mechanisms with epigenetic gene regulation, especially DNA methylation. Methods applied in our group include characterization of repair capacity (e.g. single-cell gel electrophoresis), expression analysis of repair genes, and determination of genetic and epigenetic markers (BIO-COBRA, EpiTYPER Sequenom).</p>
27.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Anne Régnier-Vigouroux • regnier@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • INF 242, ATV, Raum 2.212 • 1 	<p>Anti-tumour immunity in the brain microglia-tumour cells interactions/glioma cell death/microglia anti-tumour activities/mouse and human models/in vitro, in vivo studies/fluorescence based-bioassays</p>

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28.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Angela Risch, Wolfgang Hagmann • a.risch@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • INF 280. H2.03.045 • 1 	<p>Methylation analyses in lung cancer Epigenetic and genetic analyses relating to lung cancer risk and treatment outcome in lung cancer patients http://www.dkfz.de/en/tox/Lung_Cancer_Genomics_Epigenomics.html</p>
29.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Manfred Schmidt, Ali Nowrouzi, Cynthia Bartholomä, Anna Paruzynski • manfred.schmidt@nct-heidelberg.de 	<ul style="list-style-type: none"> • to be arranged • 9-18 • INF 581 (TP4) Room 4.303 • 1 	<p>Vector biosafety analyses for safe and efficient clinical gene therapy The main focus of the Schmidt group is set on the efficiency and safety of gene transfer vector systems and their application in clinical gene therapy. The linear amplification mediated (LAM)-PCR technology, developed in the own lab, detects viral integration sites in minimal amounts of clinical samples, allowing the dissection of vector integrations that may lead to genotoxicity, as a side effect of gene therapy. For nearly all world-wide successful gene therapy studies, with the aim to cure immunodeficiencies, the group surveyed the clonal composition of the hematopoietic system after transplantation. These studies also provided precious insight into the biology of stem cells, physiology of hematopoietic (and other tissue) regeneration and development of malignancies. Moreover, the integration site analysis, combined with next generation sequencing and bioinformatical data management, serves as a highly valuable platform for more than 40 national and international collaborative projects, which investigate molecular mechanisms underlying gene and molecular therapeutical studies. http://www.nct-heidelberg.de/de/forschung/Molekulare_Diag/molekulare_gentherapie/molekulare_gentherapie.php</p>
30.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Andreas Trumpp, Marieke Essers • m.essers@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • 9.00-18.00 • INF 280. HH 4th floor • 1-2 	<p>Stress induced activation of hematopoietic stem cells Hematopoietic stem cells are one of the best characterized adult stem cells. In order to both maintain a supply of mature blood cells and not exhaust HSCs throughout the lifespan of the organism, most adult HSCs remain quiescent and only a limited number are cycling at any given time. The balance between self-renewal and differentiation of HSCs is controlled by external factors such as chemokines, as well as interactions of HSCs with its niche environment. In this project the influence of bone marrow stress on the amount and function of HSCs in mice will be analysed. We have recently shown that treatment of mice with IFNα, a cytokine highly produced upon virus infections, leads to the activation of HSCs. However, there might be several other forms of bone marrow stress leading to the activation of HSCs. Using in vitro models and transgenic mouse models, molecular, biochemical and histological methods as well as flow cytometry (FACS), the effect of other stress on HSCs will be analyzed. Furthermore the mechanism of activation of HSCs under these stress conditions will be further investigated. The aim of this work is to better understand which forms of bone marrow stress affect HSCs and how these forms of stress lead to activation of the HSCs.</p>
31.	WS 11/12	<ul style="list-style-type: none"> • <input checked="" type="checkbox"/> Biolab • <input checked="" type="checkbox"/> WiB (also for Major:) 	<ul style="list-style-type: none"> • Stefan Wiemann • s.wiemann@dkfz.de 	<ul style="list-style-type: none"> • to be arranged • full-time • DKFZ, TP3, INF 580 • 2 	<p>Characterization of the regulation of cancer-relevant processes by microRNAs Recent evidence has shown that microRNAs impact on cancer development by targeting genes involved in growth factor signaling. We have performed miRNome screens to identify modulators of NF-KB and other signaling pathways and identified a number of miRNAs and miRNA families. We currently work to establish, identify and verify targets of these molecules as to understand potential cross talk via different pathways via miRNA activities. This should help to better understand the roles miRNAs have in cancer progression and metastasis formation. During the practical you could perform functional cell-based assays for example, cell migration and invasion assays, to determine phenotypic changes induced by miRNA overexpression as well as miRNA knockdown, do cloning of 3'UTRs of putative target genes and perform luciferase-reporter assays to test for miRNA effects, and perform qRT-PCR and do Western blot analysis to validate RNA and protein changes, respectively.</p>