

Major *Cancer Biology* at the German Cancer Research Center DKFZ Heidelberg

Prof. Dr. Ilse Hofmann Scientific Coordinator

www.dkfz.de/major



Master Program 'Molecular Biosciences' - Major "Cancer Biology"

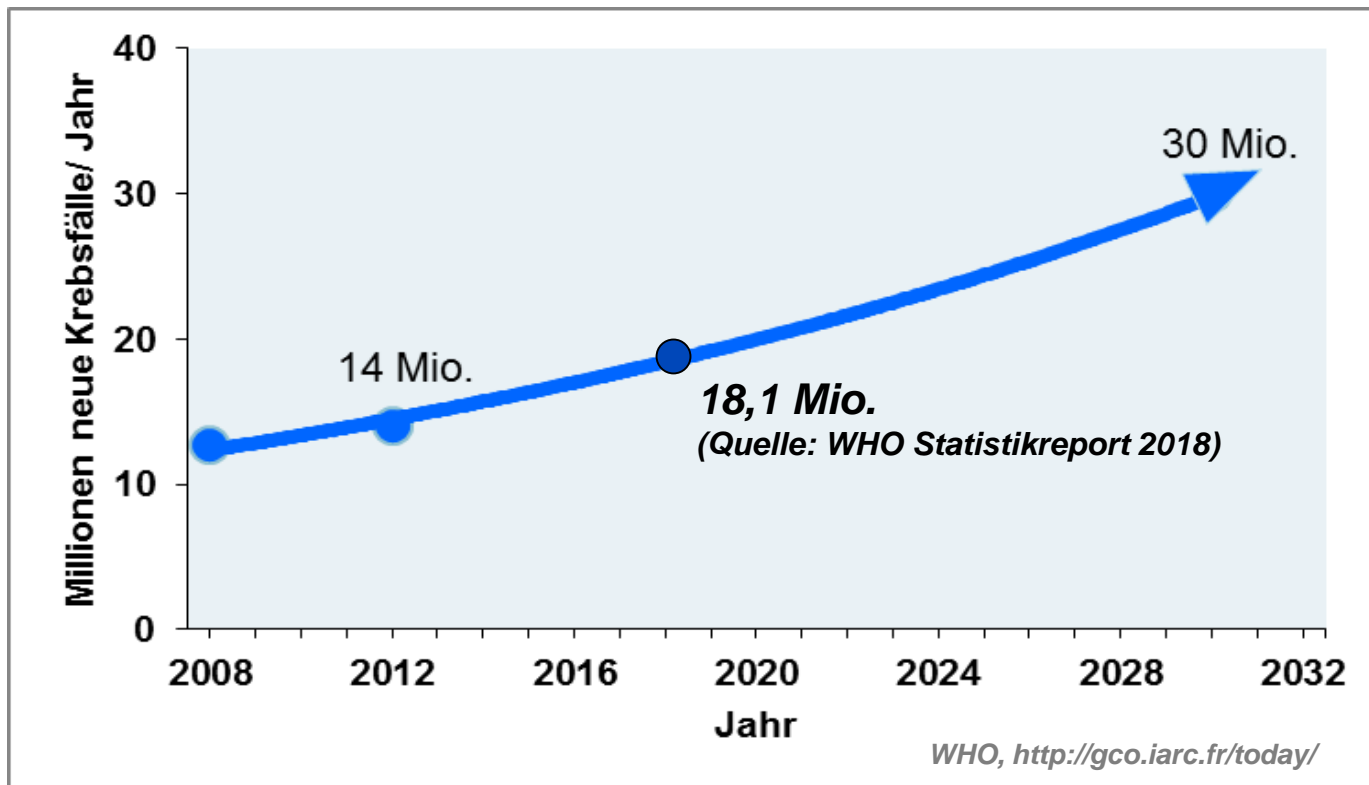


RUPRECHT - KARLS - UNIVERSITÄT
HEIDELBERG
Fakultät für Biowissenschaften

dkfz. GERMAN
CANCER RESEARCH CENTER
IN THE HELMHOLTZ ASSOCIATION

Why Major Cancer Biology?

New Cancer Incidences Worldwide p.a.



500.000 New Cancer Incidences p.a. in Germany

Where?



dkfz.

GERMAN
CANCER RESEARCH CENTER
IN THE HELMHOLTZ ASSOCIATION



Research for a Life without Cancer



German Cancer Research Center

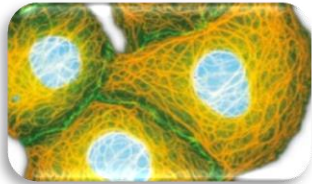
- Established in 1964
- Major national biomedical research center
- Member of the Helmholtz Association
- Close interactions with the Heidelberg campus
- Total staff in the order of 3000 members
- Basic funding from federal and state sources

DKFZ Mission Statement

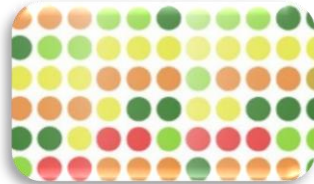
We contribute to **unraveling the causes and mechanisms** of cancer development and progression and to **developing novel strategies for prevention, early detection, diagnosis, and treatment of cancer** through innovative translational research.



Cancer Research at DKFZ – 6 Research Programs



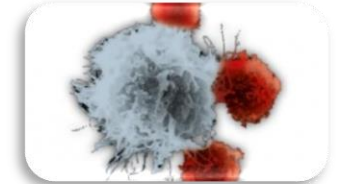
*Cell Biology and
Tumor Biology*



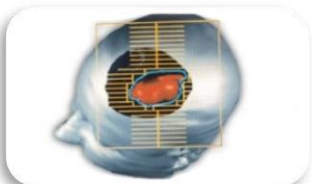
*Functional and
Structural Genomics*



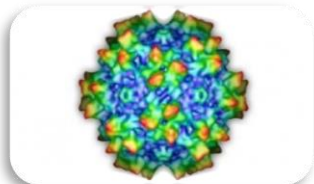
*Cancer Risk Factors
and Prevention*



Tumor Immunology



*Imaging and
Radiooncology*



*Infection, Inflammation
and Cancer*

An excellent research environment

to make

YOUR NEXT STEP

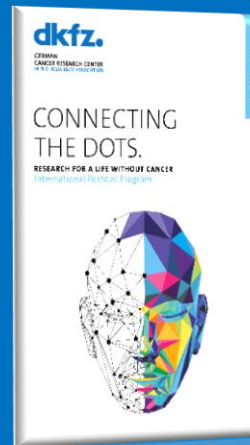
Training young scientists at all career stages



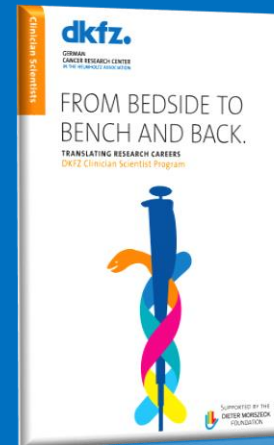
Master



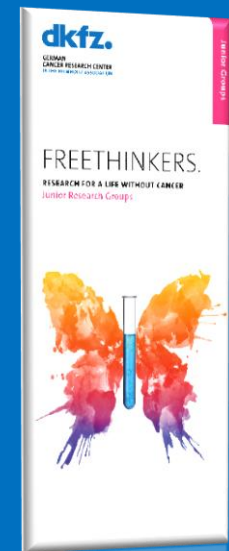
PhD



Postdoc



Clinician Scientist



Junior Group Leader

Organization of the Master Program

Semester 1					Semester 2					Semester 3					Semester 4																			
S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O									
Module 1 <i>Frontiers in Bioscience 1</i> (15 CP) 5 wks lecture 3wks practical w. seminar					Module 2 <i>Frontiers in Bioscience 2</i> (15 CP) 5 wks lecture 3wks practical w. seminar					Module 3 <i>Focus Bioscience 1</i> (15 CP) 5 wks lecture 3wks practical w. seminar					Module 4 <i>Focus Bioscience 2</i> (15 CP) 5 wks lecture 3wks practical w. seminar					Module 5 <i>Biolab</i> (15 CP) 6-8 wks lab internship inside DKFZ					Module 6 <i>Working in Bioscience</i> (15 CP) 6-8 wks lab internship inside DKFZ or external					Module 7 <i>Master Thesis</i> (30 CP) 6 months thesis, oral defense inside DKFZ				

1. Semester „Frontiers in Biosciences“

3-week Practical Courses (6-8 participants)

(two out of seven are mandatory)

- Molecular, Genetic, Cellular and Bioinformatic Approaches in Cancer Research
- Applied Tumor Immunity, Bioinformatics, and Stress Response in Stem Cells
- Epitranscriptomics, Crystallography, and Organoid Cancer Models
- Biomedical Imaging and Radiation Oncology
- Advanced Methods in Cell Biology (joint with Major MCB)
- ‘Oncolytic Viruses’ & ‘Gene Therapy’
- Transcriptional and Translational Control of Cell Fate

2. Semester „Focus Bioscience“

Module 1: Molecular Mechanisms of Cancer

- **Lecture Series and Tutorials** on "Molecular Principles of Cancer Development"
- **3-week Practical Courses (8-10 participants):**
 - Components and Mechanisms of Signal Transduction (joint with Major MCB)
 - Cancer Genomics, Proteomics and Murine Tumor Models
 - Epigenomics and Cancer

Module 2: Tumor Immunology and Virology

- **Lecture Series and Tutorials** on "Tumor Immunology, Virology and Cancer"
- **3-week Practical Practical Courses (8 participants):**
 - Tumor Heterogeneity and Proteomics
 - Immunological Methods
 - Molecular and Immunological Methods in Tumor Virology

3. Semester

'Biolab' and 'Working in Bioscience'

Two 6-week (or longer) lab internships

Where:

- 1) Faculty member Cancer Biology ('Biolab')
- 2) also possible in the context of another Major, within a foreign research program, in a company with oncological research ('Working in Bioscience')

4. Semester

Master Thesis and Oral Defense

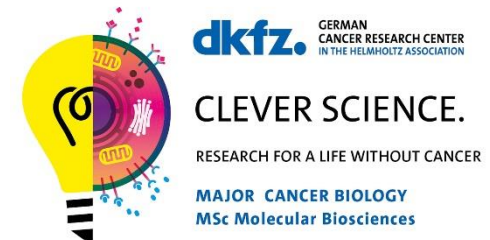
- six months
- in the laboratory of one of the teachers in the Cancer Biology program
- research project relevant to the Major
- write a thesis and defend it in an oral presentation

M.Sc. degree in "Molecular Biosciences" with a major in "Cancer Biology“:

➔ *optimal start to the **DKFZ graduate program** „International School for Cancer Research“!*

What we offer

- Comprehensive training in cancer research by internationally reputed scientists and excellent research groups at DKFZ
- Faculty members from all Research Programs of the German Cancer Research Center are actively involved
- Contact to cutting edge science and interaction with internationally leading scientists in biomedical sciences early in your career
- Mentoring program (Peer mentoring, Special workshops, Career counselling service)
- DKFZ infrastructure



Students of Major Cancer Biology

- are motivated and curious
- come from all over the world
- have a solid background in molecular cell biology
- feel responsible for their learning process
- have a strong interest in cancer research



Criteria for the evaluation process

1) Excellent degree (25%)

2) Additional experience (25%)

- special interest in cancer biology ('Letter of Motivation')
- scientific basis (research experience, special scientific courses, stays abroad, relevant activities in companies)
- stipends & honours
- description of future plans
- social engagement and activities

3) Personal interview (50%)

Competitive MSc fellowships for outstanding applicants

sponsored by the DKFZ Helmholtz International School for Cancer Research (HIGS)

(max. 4 fellowships/year by competitive application)

Benefits:



➤ Financial support:

- Amount: ~ 8.000 € per year for a total of 18 months = ~12.000€ in total
- paid by ways of a student assistant ("HiWi") contract of 65 hrs/month

➤ Associate member status at HIGS during the time of your MSc program.

This includes:

- access to advanced PhD training courses offered by HIGS
- access to extracurricular and extramural activities offered by HIGS
- free access to the DKFZ Career Service



Further Information and Contact

- <http://www.dkfz.de/major>
- Prof. Dr. Ilse Hofmann – Program Coordinator
- Eva Gundel – Administrative Office
e.gundel@dkfz.de

