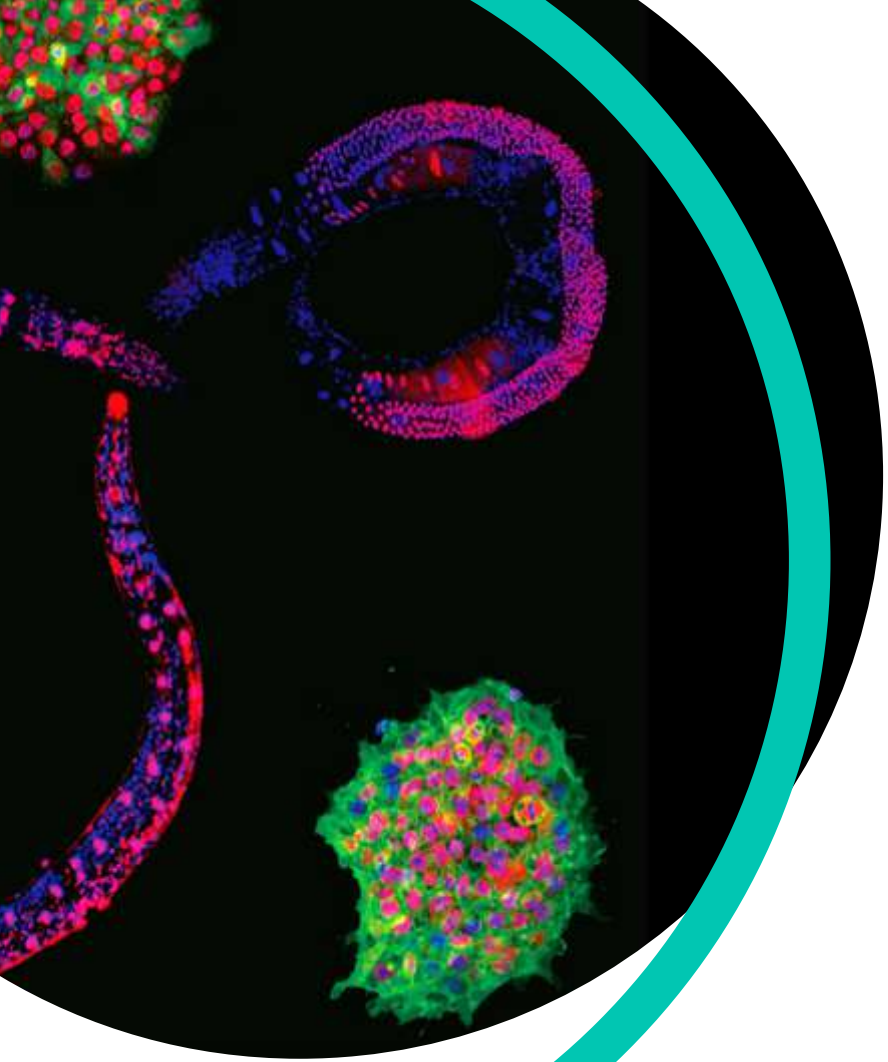


Max Delbrück Center
for Molecular Medicine

International PhD Program

MDC MAX DELBRÜCK CENTER FOR MOLECULAR MEDICINE IN THE HELMHOLTZ ASSOCIATION

MDC

Max Delbrück Center for Molecular Medicine in the Helmholtz Association (MDC) is a major biomedical research institute in Berlin. It's home to more than 1600 employees, representing over 50 nations.

www.mdc-berlin.de

Helmholtz Association

The Helmholtz Association is the largest scientific organisation in Germany. An annual budget of more than €4.7 billion finances 19 research centres and more than 40,000 staff members. Its remit is to pursue long term research goals on behalf of the German state and society, conducting research in the areas of Energy, Earth & Environment, Health, Aeronautics, Space and Transport, Matter, and Key Technologies.

www.helmholtz.de

"Welcome to our international research community here at the MDC. You are now at an exciting point in your life: the beginning of your professional career. In your time as a PhD student you will work on a fascinating, new research topic. While you are here, you will acquire a variety of skills regarding your science, but also about establishing cooperations, time management, project coordination, and many more. The completion of your project will require effort and diligence from your side. No matter whether your road will take you to academia or other, equally exciting opportunities, we are there to help you achieve your goals."

Prof. Thomas Sommer
Head of Graduate Committee
MDC Berlin

How do patterns develop?

Neto *et al.* (2018): YAP and TAZ regulate adherens junction dynamics and endothelial cell distribution during vascular development. eLife 7:e31037.

Max Delbrück Center for Molecular Medicine (MDC)

The Max Delbrück Center for Molecular Medicine (MDC) in the Helmholtz Association is one of the largest centers for biomedical research in Germany. It covers a broad, cross-disciplinary area connecting fundamental discoveries in the laboratory with the field of medicine, and aims to develop new strategies and therapies to improve human health.

Our mission – to be at the forefront of fundamental biomedical research – is supported by the ongoing development of our infrastructure and facilities, including expansion of the Berlin Institute for Medical Systems Biology (BIMSB), development of modern facilities for translational medicine in the Experimental and Clinical Research Centre, a unique Ultrahigh-Field MR Facility, and an In Vivo Pathology Laboratory. Located on the Campus Berlin-Buch and Campus Berlin Mitte, the MDC is embedded in an environment of modern biomedical science. The institute has established a range of institutional collaborations with all the major natural science institutes in Berlin, including the Leibniz Institut für Molekulare Pharmakologie (FMP), Humboldt Universität zu Berlin, the Freie Universität Berlin, the Charité-Universitätsmedizin Berlin and the Berlin Institute of Health (BIH).

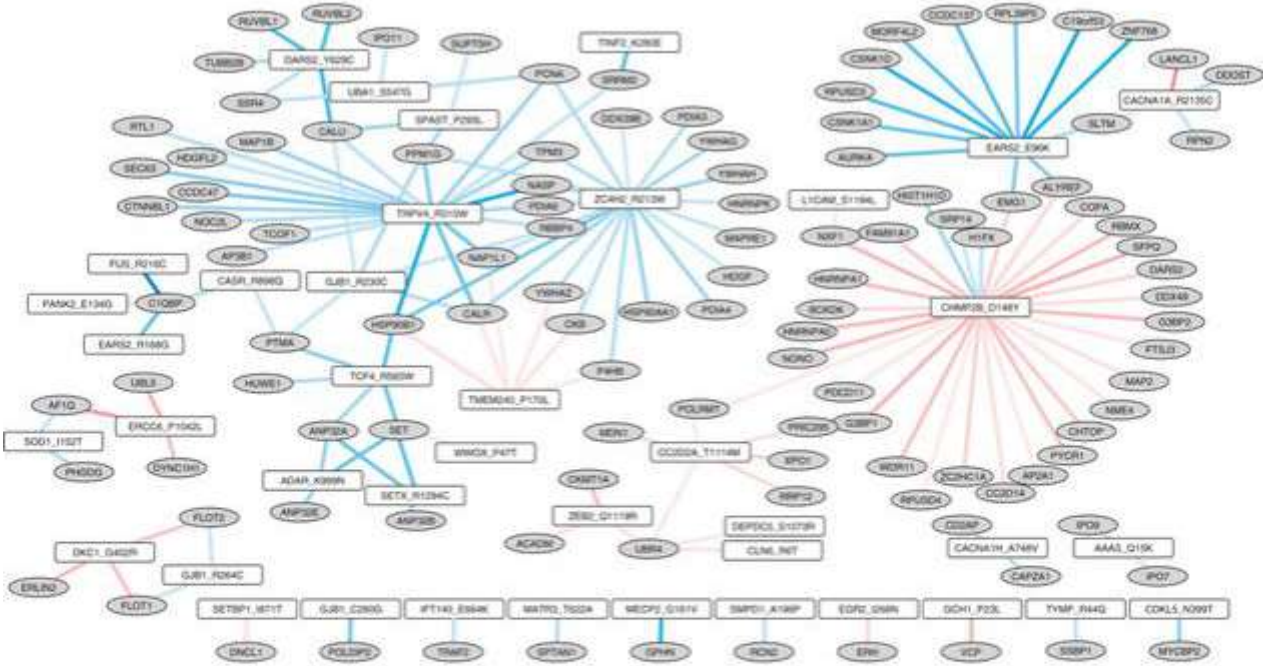
The translation of basic findings into personalised medical practice and new bedside technologies is a challenge that the institute has taken on. Founded in 1992, the MDC has grown from 400 to more than 1,600 employees. With over 380 PhD students the MDC is helping to educate a new generation of scientists.

MDC International PhD Program

380 PhD researchers are enrolled in the MDC International PhD Program. They are working in 69 research groups, representing more than 50 nations. Every year around 70 PhD candidates are admitted, 60% of these are joining the program from abroad.

If you aspire to be one of them:

Welcome to the MDC!



What is the molecular basis of health?

Meyer et al. (2018) Mutations in disordered regions can cause disease by creating dileucine motifs.
Cell 175(1): 239-253.

MDC International PhD Program

The MDC International PhD Program, founded in 2003, is a collaboration between the Max Delbrück Center (MDC) and the Humboldt-Universität zu Berlin, Freie Universität Berlin and Charité-Universitätsmedizin Berlin.

At the MDC, we believe that to be a great scientist, one needs to train a diverse set of competences. We therefore offer a structured training program in a research-intensive environment, supporting our PhD researchers to develop both personally and scientifically. We are happy to see various generations of our graduates excelling both in research and in alternative science-related career paths.

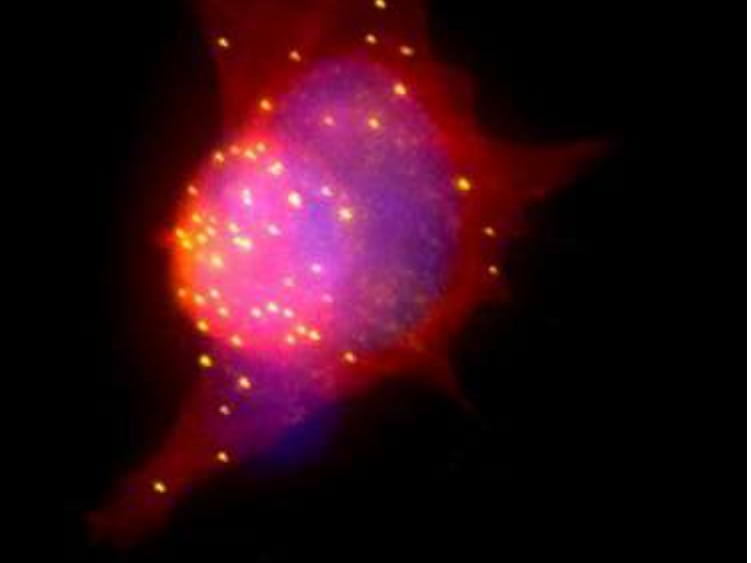
Research Schools and International Exchange Programs

By joining the MDC International PhD Program you may participate in one of our research schools or exchange programs:

SignGene German-Israeli Research School
Frontiers in Cell Signaling and Gene Regulation

MDC-NYU PhD Exchange Program in Medical Systems Biology

HEIBRiDS Data Science School



Curriculum Highlights:

- 3-year advanced training in the fields of cell signaling, gene regulation, and quantitative biology
- Exciting research projects and dual mentoring by senior scientists from Germany and Israel
- Prolonged exchange visits in a partnering laboratory abroad
- Annual scientific symposia and thematic summer/winter schools

SignGene: German-Israeli Helmholtz Research School in Cell Signaling and Gene Regulation

The International Helmholtz Research School “Frontiers in Cell Signaling and Gene Regulation” (SignGene) is a joint PhD program between MDC, Technion-Israel Institute of Technology in Haifa and the Hebrew University of Jerusalem in Israel. Funded by the Helmholtz Association, we offer first-class education for PhD students in a unique international environment. The research of the School focuses on the following areas:

Cell Signaling: How do cells respond to changes in their environment? How do cells integrate multiple extracellular signals and relay this information into cellular decisions?

Gene Regulation: How is the activation and repression of single genes and gene batteries achieved? How does this information feed into global gene expression networks?

Quantitative Biology: How do the structure and physical properties of individual molecules or multiprotein complexes determine their functions? Can we build computational models to understand complex cellular processes?

Spokespersons:

Germany
Prof. Dr. Claus Scheidereit
Coordinator Cancer Research, MDC Berlin

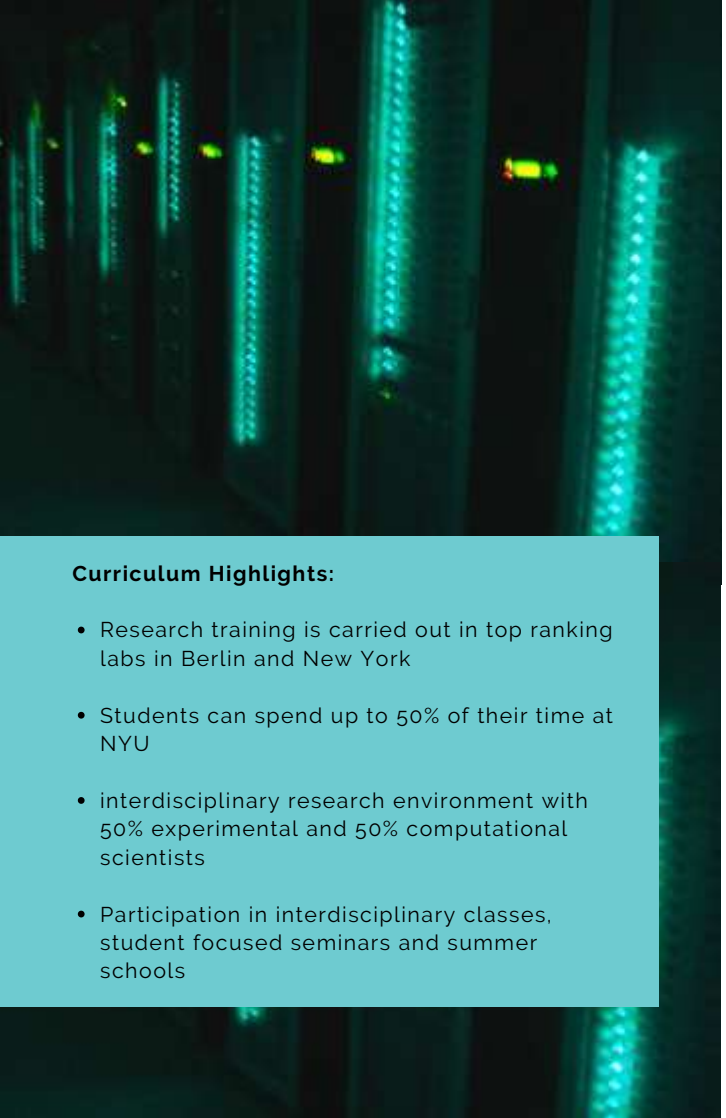
Israel
Prof. Amit Meller, PhD
Professor of Biomedical Engineering
Technion - Israel Institute of Technology, Haifa

Prof. Yinon Ben-Neriah, MD, PhD
Head of the Proteomics and Drug Design Program
The Hebrew University of Jerusalem

SignGene
Frontiers in Cell Signaling and Gene Regulation

Scientific Coordinator
Dr. Hanna Singer
MDC Berlin

Find more about us at:
www.mdc-berlin.de/signgene
Email: signgene@mdc-berlin.de



Curriculum Highlights:

- Research training is carried out in top ranking labs in Berlin and New York
- Students can spend up to 50% of their time at NYU
- interdisciplinary research environment with 50% experimental and 50% computational scientists
- Participation in interdisciplinary classes, student focused seminars and summer schools

MDC-NYU Exchange Program

The MDC-NYU Exchange Program is a joint program between the Berlin Institute for Medical Systems Biology (BIMSB) at the MDC and the Center for Genomics and Systems Biology (NYU). It was launched in 2009 to train the next generation of system biologists.

PhD students carry out joint research projects of partner labs in New York and Berlin and can spend up to 50% of their time at NYU. Both institutes have a strong reputation in systems biology and students can take advantage of state of the art technology platforms and a training program of advanced courses and personal development opportunities. Resources are available for travel from Berlin to New York for short and long term working periods, as well as for course and conference participation.

Students can receive training in high-end technologies, such as deep sequencing, single-cell sequencing, mass spectrometry, bioinformatics and high-resolution imaging.

" I was fortunate to carry out my PhD project at two very exciting research centers in Germany and the United States. Being jointly supervised by Dr. Markus Landthaler (MDC-Berlin) and Dr. Christine Vogel (NYU) allowed me to benefit from the scientific guidance of two outstanding mentors and take full advantage of the exceptional scientific environment and infrastructure of both institutes. I was able to engage with faculty and peers from diverse backgrounds, establish collaborations in two countries, build an increasingly rich scientific network, and perhaps most importantly, publish papers from two different laboratories. Looking back, I can confidently say that the MDC-NYU PhD Exchange Program provides excellent training opportunities for the aspiring system biologist and prepares the students to actively engage with a global scientific community. Finally, it is worth noting that living in two of the scientifically and culturally most blistering cities in the world most certainly is a fascinating experience.."

Mathias Munschauer, MDC-NYU Exchange Program Alumni

Spokespersons:

Berlin
Prof. Nikolaus Rajewsky
Scientific Head of the Berlin Institute for Medical Systems Biology (BIMSB)

New York
Prof. Justin Blau
Chair, Department of Biology
New York University

Scientific Coordinator
Dr. Grietje Krabbe
MDC Berlin

Find more about us at:
www.mdc-berlin.de/mdc-nyu-exchange-program
Email: Grietje.Krabbe@mdc-berlin.de

HEIBRiDS Data Science School

The MDC is one of the six Helmholtz Centers that have joined forces with the Einstein Center Digital Future to create a new PhD program in data science, located in Berlin.

Established in 2018, the Helmholtz Einstein International Berlin Research School in Data Science – HEIBRiDS – is aimed at doctoral students interested to combine disciplinary expertise with competencies of a data scientist.

HEIBRiDS focuses on data science breakthroughs in a broad range of scientific domains, from medicine, astronomy and geo-sciences, to transportation and energy. The goal of HEIBRiDS is to conduct research around topic clusters that play a key role in the various core scientific disciplines of the Helmholtz centers, with emphasis on:

- Imaging
- Deep Learning
- Novel Tools and Algorithms
- Data Management
- Mathematical Modelling
- High-throughput Data Analysis

Curriculum Highlights:

- Collaborative projects have and will be further developed in a variety of domains. These projects open numerous possibilities for interdisciplinary exchange.
- The training program applies the cotutelle training principle involving one supervisor from a Helmholtz partner and one from an ECDF partner.
- Annual meetings with the thesis advisory committee, and a combination of a core research training with soft skills training and individual training sessions are the foundation of the training program.

HEIBRIDS
Helmholtz Einstein International Berlin Research School in Data Science

Spokespersons:

Helmholtz Association
Prof. Uwe Ohler
MDC Berlin

ECDF
Prof. Johann-Christoph Freytag, Ph.D.
Humboldt-Universität zu Berlin
Digital Infrastructure, Methods and Algorithms

Scientific Coordinator
PD Dr. Eirini Kouskoumvekaki
MDC Berlin

Find more about us at:
www.heibrids.berlin
Email: HEIBRIDS@mdc-berlin.de

MDC MAX DELBRÜCK CENTER FOR MOLECULAR MEDICINE IN THE HELMHOLTZ ASSOCIATION
HELMHOLTZ RESEARCH FOR GRAND CHALLENGES
EINSTEIN CENTER

Campus Berlin-Buch

The MDC is situated at two locations in Berlin: majority of infrastructure is located on Campus Berlin-Buch, a modern science and biotechnology park with a clear focus on biomedicine.

www.mdc-berlin.de/campus

What do we offer?

01 Welcome Center
Newly arrived PhD students are supported in their first steps in Berlin. We help you take care of visas, work permits and residence requirements.

02 Orientation Sessions
Orientation Sessions for frist year PhD students provide an overview of the MDC infrastructure, training curriculum, platform technologies and facilities on both campuses, and provide useful tips for starting the PhD.

03 University Interface
The MDC Graduate Office assist you with all matters related to admission and enrolment at partner universities.

04 PhD Supervision
Students present annually their research project to the thesis advisory committee. Committees consist of the project advisor and two faculty members providing regular feedback and guidance on scientific and personal development.

05 Lectures & Seminars
A wide range of research seminars, from invited and internal speakers and dedicated teaching lectures are offered. This allows our PhD students to broaden their scientific knowledge and network with the scientific community.

06 Travel Support
Travel and Collaboration funds are available to all PhD students and include support for their participation in international conferences, external workshops and collaborative visits.

"The Graduate Program organizers are very helpful and always assist PhD students in tasks like enrolling in university, obtaining visas to visit international conferences and workshops abroad or help with German bureaucracy, which can be difficult at times.

Furthermore, the MDC international PhD Program offers the opportunity for PhD students to attend excellent talks, given by outstanding researchers across diverse research fields, as well as to discuss and network with the invited speakers. Interactions with other PhD students are also encouraged through various internal seminars and social activities as the annual PhD retreat, organized and funded by the Graduate Program. PhD students at the MDC regularly discuss their research with others, which is a great base to learn about other research fields, reflect about their own projects, form new ideas and build collaborations on and across campus. "

Julia Markowski, PhD student

Campus Berlin Mitte

Laboratories and offices of the Berlin Institute for Medical Systems Biology (MDC-BIMSB) are located on the campus of Humboldt-Universität in Berlin Mitte.

www.mdc-berlin.de/bimsb

What do we offer?

07 PhD Symposia and Retreats
These annual interdisciplinary meetings are organized by students and serve as a forum for PhD researchers to present and discuss with their peers and network with the campus community, building new collaborations and friendships.

08 Soft Skill Training
Summer School workshops are offered to strengthen soft skills, such as oral presentation, project management or scientific writing. These courses also include German classes and IT courses.

09 Method Courses
Method courses aim to introduce the PhD students to new techniques and high-end technologies. Courses include topics such as statistics, bioinformatics, or introduction to deep-sequencing and mass spectrometry.

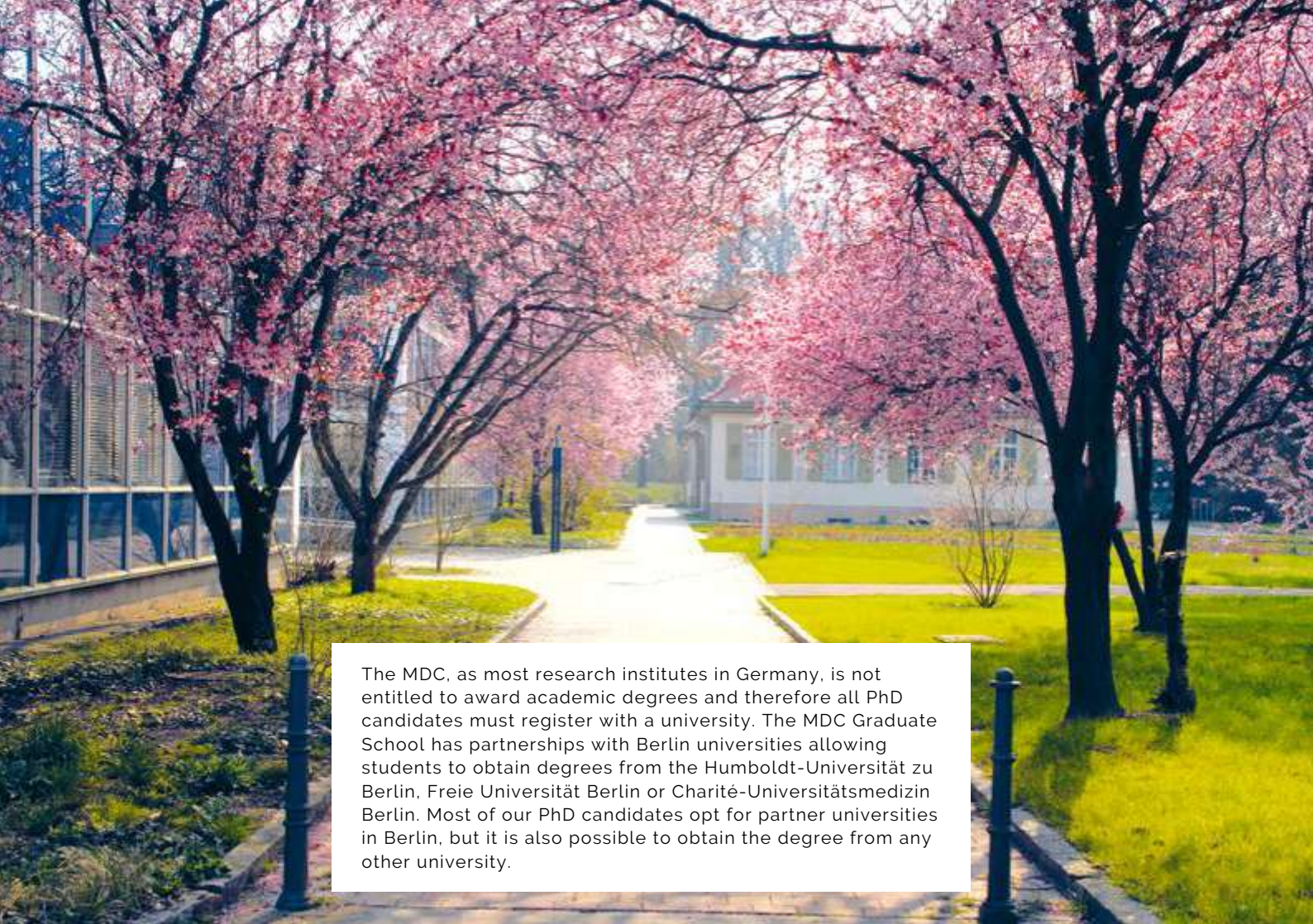
10 Career Development
We support our students in preparations for their next career step, with a series of activities, such as career talks, workshops on CV-writing, applying for grants, or job applications, and an annual MDC Career Day.

11 Social Activities
Campus social events, such as the Beer hour, help bringing our community together. PhD students find a lot of different ways to get involved, from joining the MDC running club to contributing articles to the MDC newsletter.

12 Alumni Network
Alumni stay connected with the MDC by joining the MDC LinkedIn Networking group or the Society of Friends of the MDC.

Campus Berlin-Buch and Berlin Mitte

Majority of MDC infrastructure is located at the Campus Berlin-Buch on the North Eastern part of Berlin. Reaching the Campus from the city center takes 30 minutes with the S-Bahn, while many MDC employees reach work by bike. Campus Berlin Mitte is the new home of MDC-BIMSB (Berlin Institute for Medical Systems Biology).



The MDC, as most research institutes in Germany, is not entitled to award academic degrees and therefore all PhD candidates must register with a university. The MDC Graduate School has partnerships with Berlin universities allowing students to obtain degrees from the Humboldt-Universität zu Berlin, Freie Universität Berlin or Charité-Universitätsmedizin Berlin. Most of our PhD candidates opt for partner universities in Berlin, but it is also possible to obtain the degree from any other university.

Our Partner Universities

Humboldt-Universität zu Berlin

The Humboldt-Universität zu Berlin (HU) has a history of over 200 years and is a proud „Alma mater" to a total of 29 Nobel Prize winners and many other prominent personalities. There are about 32,500 students studying at the HU, with almost a fifth of them coming from abroad. The HU has been ranked as one of the best universities in the country in the major German university excellence competition.
www.biologie.hu-berlin.de

Freie Universität Berlin

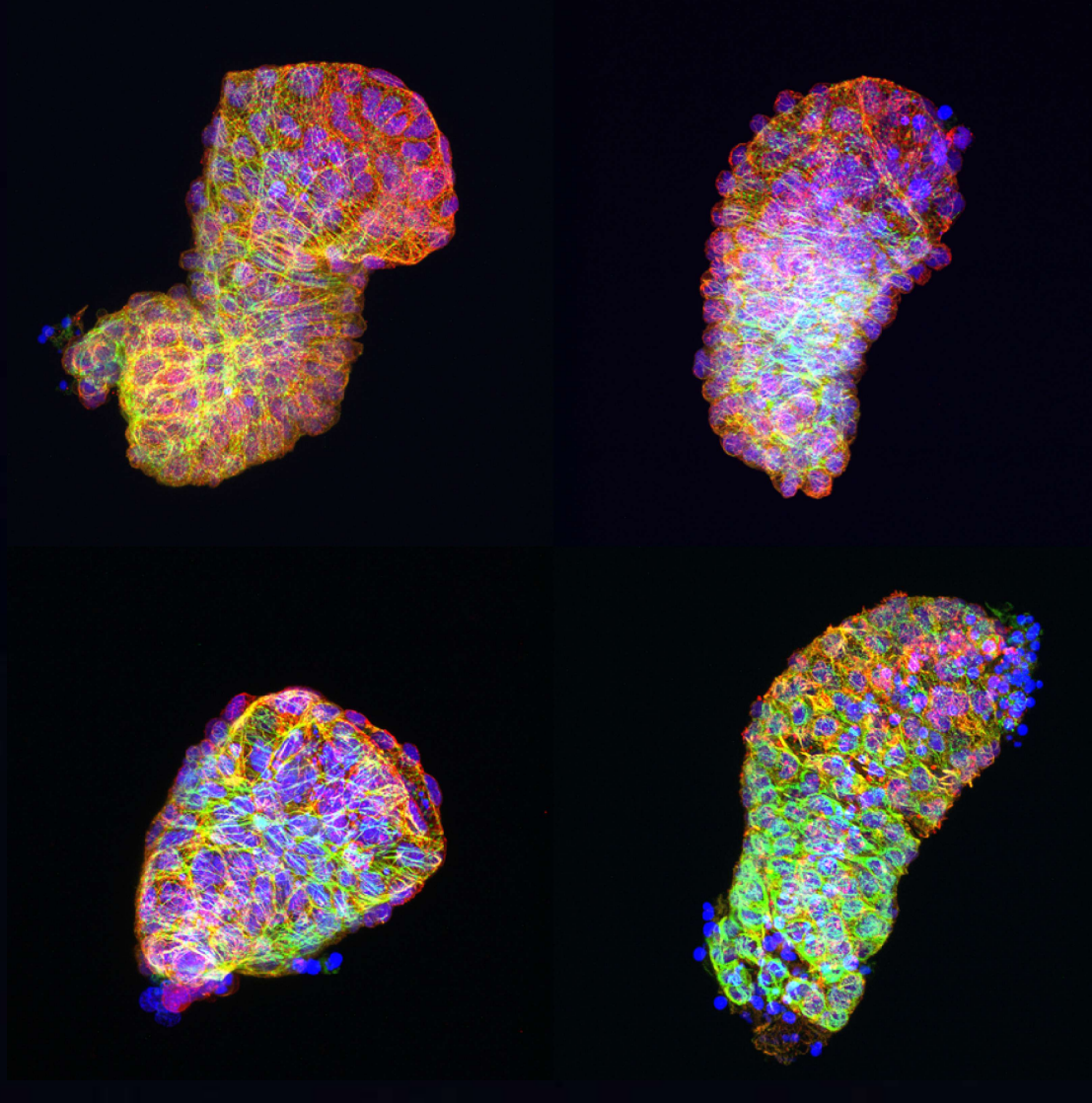
The Freie Universität Berlin (FU) is the youngest of Berlin's four universities and was established just over 60 years ago. Despite its young age, it has already been selected to be the "International Network University" within the Excellence Initiative and by extension one of Germany's top universities. Of its approximately 33,000 students, almost one fifth comes from abroad, and 35% of its PhD students are international.
www.bcp.fu-berlin.de/en

Charité – Universitätsmedizin Berlin

This is a joint medical faculty of the HU and the FU, combining basic with clinical research and patient care. It is the largest university hospital in Europe, with more than 100 clinics and institutes extending over four campuses. The MDC has a very close partnership with the Charité: there are joint clinical research groups and major institutional collaborations, such as the Experimental and Clinical Research Center (ECRC). **www.charite.de**

How does the heart shape?

Merks *et al.* (2018): Planar cell polarity signalling coordinates heart tube remodelling through tissue-scale polarisation of actomyosin activity. Nature Communications 9:2161.



www.mdc-berlin.de/application

How do I apply to the MDC PhD Program?

Which degrees are recognised?
Applicants are required to hold a Masters degree, German Diploma or equivalent degree including a research project and written thesis.

Can I apply before I receive my degree?
It is not necessary that you have completed your degree at the time of application. However, you have to have been awarded your degree by the time you start your PhD, which is within six months after the interviews.

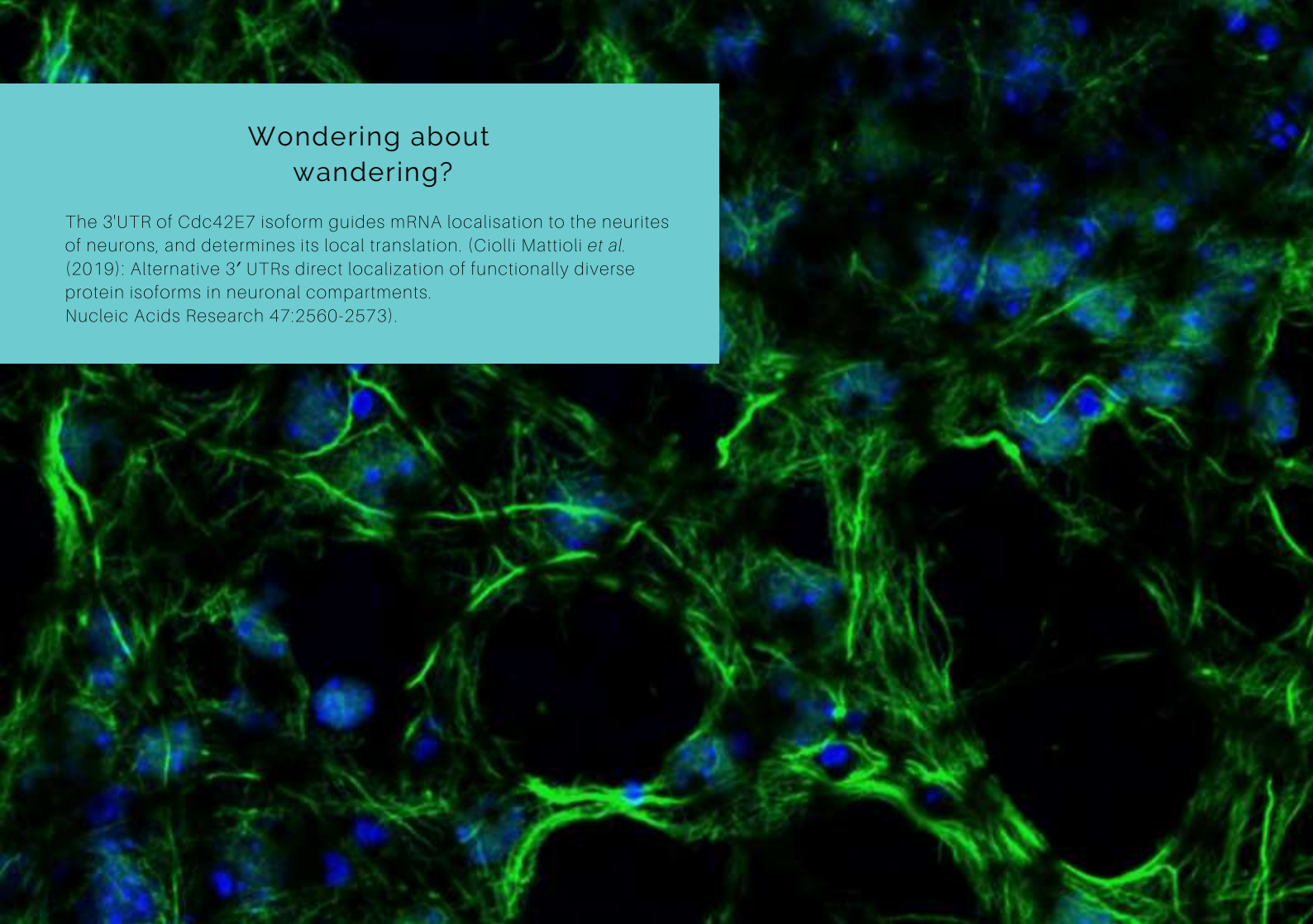
Does the program have language requirements?
The language of the PhD program is English. Proficiency in English is therefore a must. For your application, an English test is recommended, but not mandatory.

Which information has to be submitted for the application?
You have to submit information about your education, degree, research skills and interests, a letter of motivation and reference letters of two referees. We also recommend uploading available academic certificates and transcripts of English language tests.

What happens next?
The group leaders of MDC will review applications and short-listed candidates will be invited for interviews about 8 weeks after the application deadline. Interviews usually take place twice a year, in spring and fall.

"The Graduate School regularly organizes and funds events to connect the PhD students, both scientifically and personally. A highlight for me was a weekend joint retreat with the CRG in Barcelona, fully funded by the Graduate School. Great science next to the Mediterranean see, no more words needed."

Bo Hu, PhD student



Wondering about wandering?

The 3'UTR of Cdc42E7 isoform guides mRNA localisation to the neurites of neurons, and determines its local translation. (Ciolli Mattioli *et al.* (2019): Alternative 3′ UTRs direct localization of functionally diverse protein isoforms in neuronal compartments.
Nucleic Acids Research 47:2560-2573).

www.mdc-berlin.de/application

How do I apply to the MDC PhD Program?

Where and when can I apply?
Applications for the International PhD Program are accepted only through the online application portal. The portal is open usually twice a year, for spring and fall Interviews. Exact openings and application details are indicated at:
www.mdcberlin.de/application/

When do I start my PhD?
We ask all students to start within six months of the interview at the MDC. All PhD students are registered with the Graduate School and have full access to the training program and travel grants of the Graduate School, independent of their affiliation.

Can I expect some support arriving in Berlin?
The MDC Welcome Center supports all students in their first steps of arriving to Berlin, including help with applications for VISA or residency.

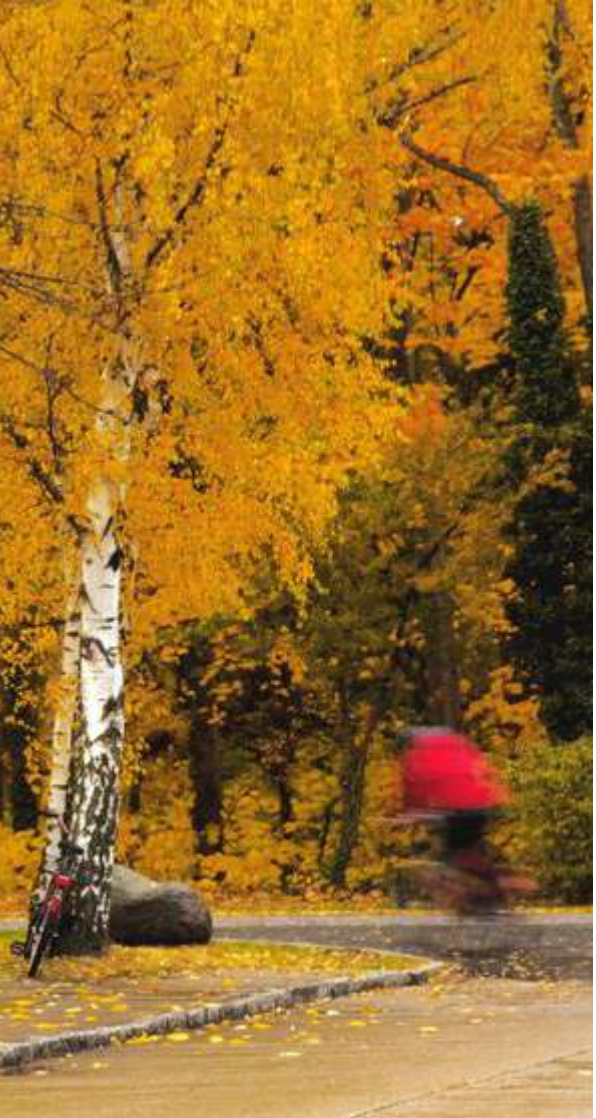
What is the interview in Berlin all about?
Interview week in Berlin last four days and includes a short presentation of your research project, a panel interview, lab presentations of recruiting group leaders and personal interviews with your groups of interest. Travel expenses and accommodation are fully covered.

When do I know whether I have been accepted to the program?
You will be notified within three days after the interview.

How am I paid?
PhD students receive an initial 3-year work contract according to the German public system, including health and social insurance, and pension scheme. It may be extended further upon agreement with your supervisor and thesis committee.

"The MDC PhD program was essential to meet the colleagues that turned out to be my friends during my time in Berlin. The Graduate Office was also really helpful every time I needed help with registering with the university, for example, as well as orienting me to available courses when I needed help with my future career. I attended several technical and soft skills courses that were extremely interesting and eye opening – all included and organized by the Graduate School – and absolutely loved to organize and participate in the yearly PhD students retreat."

Marta Bastos de Oliveira, PhD Student



Campus Life

By joining the MDC you are not only taking advantage of its excellent scientific environment, but you are also becoming a member of a large international community of more than 1000 researchers. Upon your arrival in Berlin, you can stay at one of the campus guesthouses situated in Berlin-Buch before finding your own accommodation.

The Campus Berlin-Buch is a modern science and biotechnology park with a clear focus on biomedicine. It provides a unique environment, facilitated by the proximity of two research institutes (MDC and FMP), university clinics and more than 50 biotechnology companies. Our green Campus Berlin-Buch offers plenty of outdoor space to relax, as well as modern artwork exhibitions.

Our research building for Medical Systems Biology is located in the city center in Berlin's Mitte district. It is embedded in the Life Sciences Campus of Humboldt-Universität zu Berlin.

www.mdc-berlin.de/campus

Every Friday after-work you can meet friends and colleagues over "Happy hour" or at any other events organised by our community. Social events for newcomers and cultural outings downtown are organised by the Graduate Office. There is a range of sports clubs and classes you can join (i.e. running club, soccer, basketball, fitness classes and more).

With a population of 3.7 million people, Berlin is home to almost 750,000 residents of foreign nationality and 187,000 university students.

Berlin accommodates 4 universities, 3 opera houses, 175 museums and 2,500 public parks and gardens.

There are more than 700 bikes per 1,000 inhabitants and Berlin's streets are lined with 430,000 trees.

Living in Berlin

Frequent and radical changes through Berlin's turbulent and noticeably present history have transformed the face of the city many times over. But despite this, the city has succeeded in becoming a thriving metropolis. Extraordinary wealth of cultural opportunities attract increasing numbers of visitors, making Berlin one of the most popular destinations in Europe.

It boasts a lively scene with lots of pubs, clubs, restaurants and cafés. Densely urban areas coexist with large green spaces, nature reserves, lakes and rivers, all within the city boundaries, offering a truly metropolitan lifestyle in an unusually pleasant and relaxing atmosphere.

How do antibody isotypes differentiate?

Delgado-Benito *et al.* (2018): The chromatin reader ZMYND8 regulates *Igh* enhancers to promote immunoglobulin class switch recombination. Molecular Cell 72, 636–649.

Impressum

Graduate School Office

Campus Berlin-Buch
Herrmann von Helmholtz House 84
Robert-Rössle-Straße 10
13125 Berlin
Phone: +49 30 9406 4243

Campus Berlin Mitte
Hannoversche Str. 28
10115 Berlin

Head of the Graduate School
Dr. Michaela Herzig
michaela.herzig@mfn-berlin.de

phdmdc@mdc-berlin.de

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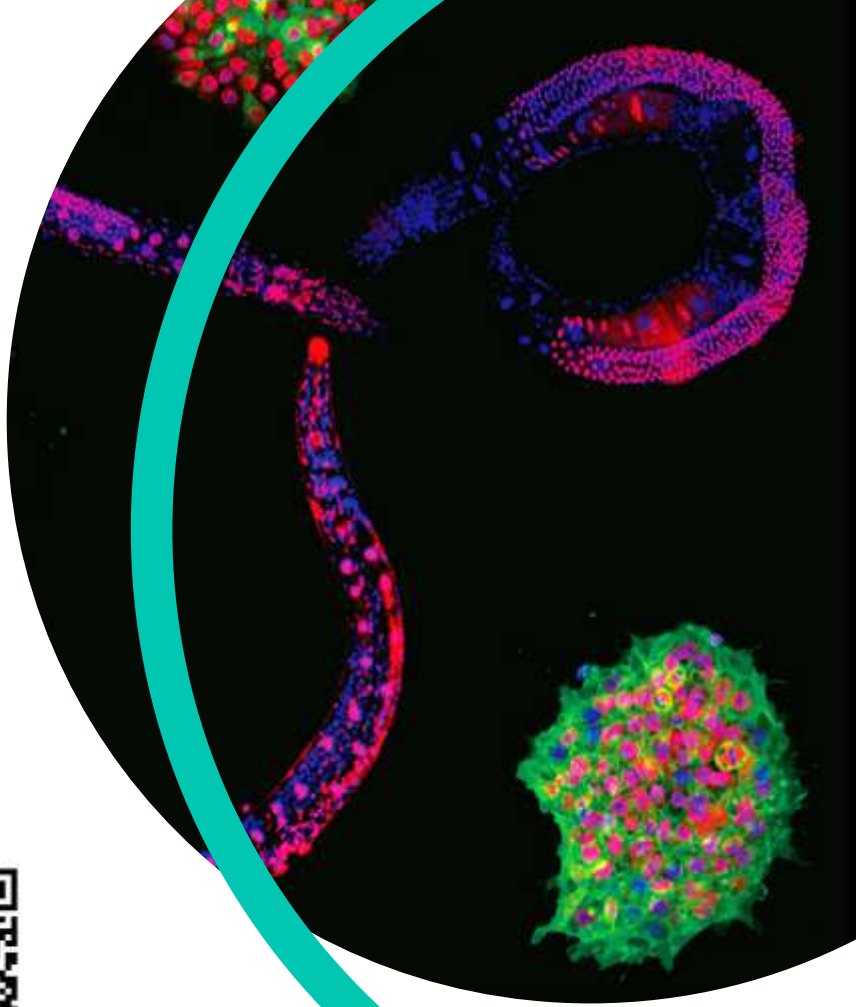

Max Delbrück Center
for Molecular Medicine
Robert-Rössle-Straße 10
13125 Berlin

phdmdc@mdc-berlin.de

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