



# Study HANDBOOK

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# Welcome Message

Dear (future) students,

Welcome to our Ph.D. Medical Research – Cardiovascular Science program!

Studying is a journey where curiosity fuels every step, prior knowledge is the compass and one's own passions define the destination. We are very happy that you want to follow this exciting path together with us and that you are interested in our Ph.D. program.

Committing to a Ph.D. is no small endeavor. It demands time, dedication, and an unwavering drive. Despite, or perhaps due to these challenges, we are wholeheartedly committed to ensuring that your time with us is both rewarding and impactful. We are very much looking forward to guide and accompany you on this transformative journey.

Your chosen specialization, Cardiovascular Science, stands as one of the most pivotal and forward-looking fields in modern medicine. According to the World Health Organization, cardiovascular diseases (CVDs) claim approximately 17.9 million lives annually, making them the world's leading cause of mortality. Addressing this global health challenge requires a multifaceted approach. Beyond the indispensable role of clinicians specializing in cardiovascular medicine, there is a dire need for dedicated researchers, experienced engineers, insightful epidemiologists, and many more. In recognizing this need, we are immensely proud to present aspiring scientists like you the unique opportunity to build the foundations of a promising career in cardiovascular sciences.



Prof. Dr. med. Nikolaus Haas  
*Spokesperson of the Ph.D. MR - CVS*

At the LMU University Hospital, we offer a dynamic environment for exploring diverse facets of cardiovascular research. Our spectrum of inquiry ranges from basic science to clinical and epidemiological research. Our efforts span the landscape of discovery-driven lab research, clinical translation, experimental medicine, healthcare evaluation, implementation and policy. Beyond academic rigor, our program is designed to equip you with a plethora of skills, experiences, and invaluable networking opportunities. These are tailored not only for a prosperous academic career but also for impactful roles in healthcare, industry, government, and beyond.

This study handbook is designed to provide you with all the relevant information to assist you in making an informed decision about joining our program and to guide you step by step through your Ph.D. journey.



Dr. Sarah Scholze  
*Ph.D. MR - CVS Programm Coordination*

We are very pleased to welcome you to this vibrant learning environment as  
Ph.D. Medical Research - Cardiovascular Science student  
and wishing you nothing but success and profound discoveries during your studies at the  
University Hospital of the Ludwig-Maximilians-University Munich.

**Disclaimer:** This handbook is meant to provide a general overview and guidance. It is not a legally binding document. Official and binding regulations can be found in the study and examination regulations of the Ph.D. Medical Research published in German.

**Contact:** For questions, clarifications, or advice related to the program, please reach out to the Ph.D. MR - CVS Program Coordination. We are here to assist you and ensure your success in the program.

Ph.D. MR - CVS Program Coordination  
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University Hospital, LMU Munich

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# Introduction

## Ludwig-Maximilians-Universität (LMU) München

Ludwig-Maximilians-Universität München is one of the leading research universities in Europe, looking back on a 550-year tradition. Since its foundation in Ingolstadt in 1472, it has been committed to the highest international standards of excellence in research and teaching.

When Duke Ludwig IX the Rich of Bavaria-Landshut obtained papal permission to found Bavaria's first university in 1472, no one could have imagined that the institution would relocate twice in the following five hundred years and become one of Germany's largest university and one of the country's most important research center. 300 years after its founding, the university first moved to Landshut before being relocated to the heart of the monarchy's residential city of Munich at the beginning of the 19th century. Subjected to the dictates of the National Socialists, the university experienced the darkest period of its history in the 1930s and 1940s. Despite extensive destruction during the war, the university was the venue for the Bavarian Constitutional Convention of 1946, which was held in the Aula Maxima. Thanks to the combined efforts of many, the LMU was rebuilt and developed into one of the leading universities in Europe in the following decades.



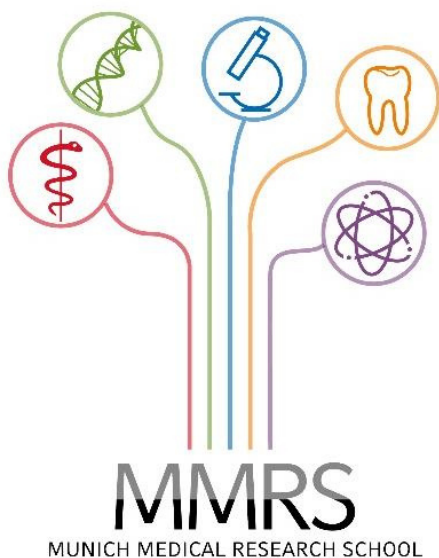
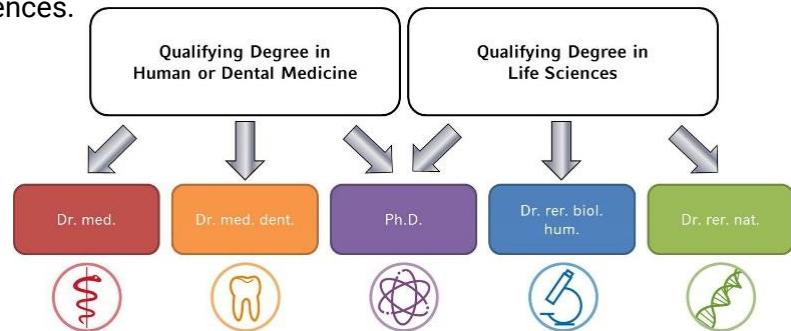
Today, with its highly diversified array of disciplines, organized in 18 faculties, it has outstanding potential for pioneering research and enjoys a high reputation for its extensive range of subjects. Its vibrant campuses are distributed in and around Munich, a city renowned for culture and the sciences. Here you can learn from leading academics at one of Germany's most renowned universities. Study in the heart of Munich while gaining first-hand practical experience.

In 2022, more than 52,418 students were enrolled and 827 professors were conducting research and teaching at LMU. LMU continues to build on its distinctive identity and core competencies in research and teaching to meet both future academic challenges and the complex demands of our changing world.

For more information on LMU's history please visit the following website:  
<https://www.lmu.de/en/about-lmu/lmu-at-a-glance/history/index.html>

# Munich Medical Research School (MMRS)

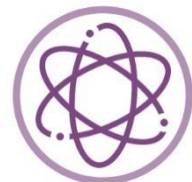
The Munich Medical Research School is a central institution of the LMU Medical Faculty. It is designed as an umbrella structure for all doctoral programs in the field of human medicine, dentistry, human biology and life sciences.



One of the main tasks of the MMRS is the establishment of Ph.D. programs according to the study and examination regulations for the 'Ph.D. Medical Research' in order to promote the internationalization of the medical faculty. The aim of the program is to enable promising doctoral students to participate in structured research training programs focusing on current topics in medical research. Here, the focus is particularly on biomedical, experimental, clinical or translational research, especially in the fields of epidemiology or public health. As a central point of contact, the MMRS office provides advice to the faculty on all aspects of developing new Ph.D. programs and conducting doctoral studies.

The MMRS office is also the central administrative unit where all matters concerning doctoral studies are managed. A central database of all Ph.D. candidates is maintained, admissions and examinations are organized, and certificates are prepared and issued.

All doctoral candidates admitted to the Ph.D. Medical Research – Cardiovascular Science program are automatically members of the MMRS.



For further information, please visit: <https://www.en.mmrs.med.uni-muenchen.de/index.html>

## Participating Departments

The Ph.D. program is jointly offered by the following departments of the Ludwig-Maximilians-Universität (LMU) München and the LMU University Hospital:

- Department of Paediatric Cardiology and Paediatric Intensive Care
- Department of Cardiology
- Department of Cardiac Surgery
- Department of Congenital and Pediatric Heart Surgery
- Department of Vascular Surgery
- Department of Angiology
- Institute of Cardiovascular Physiology and Pathophysiology



The joint organization of the Ph.D. Medical Research - Cardiovascular Science program by these seven departments underscores the interdisciplinary nature of modern research and emphasizes a holistic approach to the subject. By incorporating expertise from these different departments, the program ensures a comprehensive understanding and encourages collaborative research methods and innovative thinking. This collaborative structure not only enriches the curriculum, but also prepares all doctoral students for the multidisciplinary challenges they will face in their professional lives.



# Participating Departments

## 01 Department of Pediatric Cardiology and Pediatric Intensive Care

The Department of Pediatric Cardiology and Pediatric Intensive Care at the LMU University Hospital is a specialized unit dedicated to the treatment and care of children, adolescents, and young adults with congenital heart defects and other cardiovascular conditions. The department's primary focus areas include:

- Diagnosis and Treatment of Congenital Heart Disease
- Pediatric Intensive Care
- Acquired Heart Disease
- Catheter Interventions
- Pediatric Cardiac Surgery
- Adults with Congenital Heart Defects (EMAH)
- Transplantation of parenchymal organs
- Diagnosis of Vascular Damage and Heart Disease Prevention

The department employs **state-of-the-art therapeutic procedures**, including thoracic organ transplantation, cardiac surgical therapies, and interventional therapies in both the cardiac catheterization laboratory and operating room (so-called hybrid therapies).

In addition, the department is actively engaged in **scientific research**. Current projects encompass a wide range of topics, such as pulmonary hypertension in congenital heart defects, outcomes of Fontan operations, and advancements in intensive care medicine. Furthermore, the department is involved in pioneering research related to "**3D printing in medicine**." This includes creating 3D-printed models of complex anatomies, which are used for teaching and training purposes in pediatric cardiology and cardiac surgery. These models help in understanding cardiac catheterization techniques and surgical procedures. The benefits of this innovation extend not only to LMU students but also to the department's international collaborators.

Overall, the Department of Pediatric Cardiology and Pediatric Intensive Care at LMU Hospital plays a crucial role in providing specialized care for young patients with cardiovascular conditions, advancing medical research, and embracing innovative approaches to improve patient outcomes and medical education.

## Department of Cardiology 02

The Department of Cardiology (Medizinische Klinik und Poliklinik I) is located at two campuses: Campus Großhadern and Campus Downtown. The department's primary medical focus is on interventional cardiology, which includes cardiac catheterization, coronary intervention, as well as minimally invasive procedures for repairing the aortic (TAVI), mitral, and tricuspid valves.

In terms of research, the Department of Cardiology is dedicated to basic and translational cardiovascular research. Specifically, the department conducts research on the role of innate immune cells and platelet regulatory molecules in thrombosis, as well as the mechanisms underlying ischemia/reperfusion injury. The department also conducts large-scale clinical trials to test the efficacy of cardiovascular interventions and novel treatment regimens, bridging the gap between research and clinical practice.

Moreover, the Department of Cardiology is a member of the German Center for Cardiovascular Research (DZHK) and the Munich Heart Alliance (MHA), and participates in several Collaborative Research Centers funded by the German Research Foundation (DFG), focusing on immune cell trafficking (CRC 914), atherosclerosis (CRC 1123), neutrophil biology (CRC TR332), and neonatal immunology (CRC TR359). Additionally, researchers from Medical Department 1 receive funding from various sources, such as the European Research Council (ERC), the transatlantic Leducq consortium on clonal hematopoiesis in atherosclerosis, the Else Kröner-Fresenius-Stiftung, and others.

Further information on the working groups can be found here (currently only available in German): <https://www.lmu-klinikum.de/kardiologie/forschung-und-lehre/2caa874a06bf1303>

### 03 Department of Cardiac Surgery

The [Department of Cardiac Surgery](#) at LMU Munich has two hospitals (Campus Großhadern and Clinic Augustinum) where the complete spectrum of open heart surgery (>3,000 per year) is carried out. Besides the regular treatment of coronary artery disease by bypass surgery and minimally invasive approaches to the treatment of heart valve disease, our clinical focus is on aortic surgery. We offer our patients the most modern aortic valve and vascular prostheses and perform more than 200 of big aortic operations per year, attracting patients from all over Germany and abroad. Another clinical focus of our department is the treatment of terminal heart and lung failure by mechanical circulatory support (ECMO and ventricular assist devices) and heart and lung transplant (both in adults and children). Over the last couple of years, our department has participated in clinical studies to develop and translate modern technologies of organ preservation by machine perfusion of donor hearts into clinical practice. Together with our colleagues from the [Department of Thoracic Surgery](#) we run one of the busiest lung transplant programs in Europe.

We are engaged both in clinical and experimental research covering a wide spectrum of cardiovascular topics. Examples are genetics of aortic disease, tissue engineering of heart valves, endocarditis and xenotransplantation of both heart and lung. We have international collaborations with top class universities like Harvard, Yale and Cape Town. Our Department has funding from the German Research Foundation (DFG), German Center for Cardiovascular Research (DZHK), German Center for Lung Research (DZL) and some other smaller funding agencies.

We teach medical students, Ph.D. students and residents for Cardiac Surgery in a designated program.

## Department of Congenital and Pediatric Heart Surgery 04

The European Pediatric Heart Center ([Europäisches Kinderherzzentrum](#), EKHZ) is a fusion of the [Department for Congenital and Pediatric Heart Surgery](#) at the [German Heart Center Munich](#) (Technical University Munich) and the Division for Congenital and Pediatric Heart Surgery at Ludwig Maximilian University Hospital Munich, Campus Großhadern.

Both hospitals offer pediatric cardiac surgery at the highest medical and scientific level and together are leading centers in Germany for the treatment of congenital and acquired heart defects. There is a joint surgical team for both sites consisting of 9 surgeons. Any congenital heart defect can be corrected 24/7/365. This includes extracorporeal membrane oxygenation (ECMO) and ventricular assist device (VAD) therapy, as well as heart and lung transplants. We also offer surgical treatment of simple heart defects such as persistent ductus arteriosus in smaller hospitals outside of Munich.

The advantages and facilities of the two sites can be used for Clinical and Experimental Research. We conduct clinical outcomes research, particularly in the field of single ventricle physiology (Fontan), Morbus Fallot, grown-up congenital heart disease (GUCH) and heart transplantation. Our experimental work focuses on the development of artificial heart valves and cardiac xenotransplantation. We have numerous international collaborations (US, Switzerland, Japan).

We conduct clinical courses in the field of Congenital Heart Disease for medical students both at LMU and TU Munich.

## 05 Department of Vascular Surgery

As a highly specialized discipline, vascular surgery is part of the Vascular Center of the University Hospital of Munich and is represented at both the Campus Grosshadern and Campus Innenstadt.

Key medical focuses of the department include open and endovascular aortic surgery, peripheral arterial occlusive disease, carotid surgery, venous surgery, and shunt surgery. Furthermore, the LMU's [Department of Vascular Surgery](#) offers an exceptional spectrum of treatments, ranging from complex operations on the aorta to endovenous (minimally invasive) varicose vein ablation using radio waves. Through close collaboration with our partners of the Vascular Center, we are able to offer an individual, interdisciplinary treatment approach, especially to patients with severe vascular diseases and concomitant diseases.

The research focus of the Department of Vascular Surgery at the LMU Klinikum Großhadern is in the following areas:

- Clinical research in complex aortic disease
- Basic research on 3D printed materials and models
- Public health and vascular medicine
- Carotid disease clinical research
- Advanced peripheral arterial disease technologies and techniques
- Plaque morphology and immun-histologic analysis of carotid plaques
- Biobank of vascular pathologies

## Department of Angiology 06

As one of the few academic [departments for Angiology](#) in Germany, we are dedicated to the comprehensive and specialized diagnosis and treatment of vascular diseases. We work closely in interdisciplinary collaboration with our clinical partners in the Vascular Center, the [Department of Vascular Surgery](#), and the [Clinic and Polyclinic for Radiology](#).

In addition to common vascular medical conditions (peripheral arterial occlusive disease, carotid stenosis, arterial aneurysms, venous thromboembolism), we have also specialized in the treatment of rarer and unusual circulatory disorders. Established interdisciplinary care structures include, among others, the following conditions:

- Diabetic foot syndrome (in collaboration with Diabetology, Radiology, Foot and Vascular Surgery)
- Acral circulatory disorders and Raynaud's phenomenon
- Post-prosthetic care of abdominal aortic aneurysms (EVAR, in collaboration with Vascular Surgery and Radiology)
- Vascular malformations and circulatory disorders in children (in collaboration with Radiology and Haunersches Children's Hospital)
- Large vessel vasculitis (in collaboration with Rheumatology)
- Circulatory disorders of the eye (in collaboration with the Ophthalmology Clinic)

Thanks to the new building of the LMU Klinikum Innenstadt, operational since June 2021, the department benefits from the most modern infrastructure and state-of-the-art equipment. This provides optimal conditions for research projects and offers a direct insight into practical applications. Our [research](#) focuses on improving the diagnostic yield of multimodal vascular imaging, particularly high-end vascular sonography, in the diagnosis and follow up of vascular disorders, with emphasis on the large vessel vasculitides giant cell arteritis and Takayasu arteritis.

## 07 Institute of Cardiovascular Physiology and Pathophysiology

The [Institute of Cardiovascular Physiology and Pathophysiology](https://cv.physiol.med.uni-muenchen.de/research/index.html) (IKPP) is part of the Biomedical Center of the LMU Medical Faculty. At our institute, we are dedicated to basic research at the clinical interface, including the development of novel treatment strategies to reduce morbidity and mortality associated with cardiovascular disease. To achieve these goals, one of our main missions is to strongly support translational medicine, which will accelerate the transfer of these new treatment strategies from bench to bedside.

Research activities at our institute include the pathophysiological role of cardiac ion channels in arrhythmias and heart failure, the function of neutrophils and dendritic cells in inflammation and perinatal immunology, immune cell migration and leukocyte trafficking, as well as arteriogenesis.

Further information on our working groups can be found here:

<https://cv.physiol.med.uni-muenchen.de/research/index.html>

The Institute of Cardiovascular Physiology and Pathophysiology participates in several Collaborative Research Centers funded by the German Research Foundation (DFG), focusing on TRP ion channels (TRR152), neutrophil biology (CRC TR332), and perinatal immunology (CRC TR359). Moreover, our researchers receive funding from additional sources, such as the European Research Council (ERC) and the Hans Hofschneider Foundation.

In addition to the various research activities, our staff provides teaching in General Physiology to approximately 1000 students of human medicine and dentistry each year. The academic courses are part of the preclinical training and include main lectures, seminars, and practical courses. More than 40 main lectures introduce students to the most important topics in General Physiology, such as the function of the heart, circulatory system, blood, kidney, gastrointestinal tract and respiratory system.

# Vision and Aim

Cardiovascular diseases (CVDs) continue to dominate the global health landscape and present extensive challenges that require a multidimensional approach. They indiscriminately affect people around the world, regardless of geographic borders, socioeconomic status, and gender. The impact is felt most acutely in low- and middle-income countries, which account for at least three-quarters of global cardiovascular disease deaths. Moreover, the economic impact of CVDs is severe, burdening both developed and developing countries.

The Ph.D. MR - CVS program at the LMU Munich represents a critical step forward in educating the next generation of experts who can directly address these challenges.

## Our Vision

To create a global group of clinicians and academics, deeply rooted in the scientific basis of cardiovascular diseases, who can lead and innovate in the diagnosis, treatment, and prevention of CVDs.

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## Our Objectives

- 01 Deep Understanding:** To provide a comprehensive understanding of the science of cardiovascular disease, including normal heart functions, disease mechanisms, patient implications, established and novel treatments, and more.
  - 02 Translational Emphasis:** With a core focus on real-world applications, the program seeks to bridge the gap between theory and practical clinical implications.
  - 03 Holistic Training:** Ph.D. candidates are trained not only in the clinical and scientific aspects of CVDs but also in the essential soft skills needed to excel in the professional world. These include project management, conflict resolution, and effective communication.
  - 04 Research Flexibility:** The program offers a wide spectrum of research opportunities ranging from basic and service research to clinical trials.
  - 05 Global Collaboration:** Emphasizing national and international collaborations, the program aims to foster a culture of synergy, accelerating advancements in the field.
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## Our Aim

The Ph.D. MR - CVS program aims not just to educate but to inspire a new generation of thinkers and doers in the field of cardiovascular science. By addressing the global challenges posed by CVDs through rigorous training, cutting-edge research, and international collaboration, we aspire to shape the future of cardiovascular health.



# Key Outcomes

Upon completing the Ph.D. MR – CVS program, our graduates will possess the ability to:

- Demonstrate a robust understanding of cardiovascular science that extends to current research controversies, challenges and innovations,
- Evaluate and understand the scientific foundation of cardiovascular science,
- Understand and be able to apply the core methods and principles of cardiovascular scientific research,
- Relate scientific knowledge to the epidemiology, diagnosis, and treatment of cardiovascular diseases worldwide,
- Critically and competently evaluate scientific literature within cardiovascular sciences,
- Employ strategies to successfully plan, organize, and manage research projects,
- Interact professionally within multicultural and interdisciplinary settings, and
- Professionally articulate research outcomes.

## Career Pathways

With a robust foundation in cardiovascular sciences, the program's graduates are equipped to make significant contributions in both academic and clinical settings, across both public and private sectors.

The Ph.D. Medical Research – Cardiovascular Science program equips you to excel in your forthcoming professional pursuits. You will emerge as an independent researcher, adept at addressing cardiovascular challenges through an interdisciplinary lens. Beyond foundational theory, the program imparts deep, hands-on expertise that sets the stage for a thriving career in cardiovascular research.

We also value our continued relationship with our alumni. We eagerly await opportunities to reconnect, whether you join us as a seminar speaker, at conferences, alumni gatherings, retreats, or as a collaborative partner. Our motto, "Global for Strong Hearts," underscores our collective commitment to addressing the worldwide challenges of cardiovascular disease.



The Ph.D. is just the beginning ...

# Program Overview

Before beginning your studies, take a moment to familiarize yourself with the structure and details of the Ph.D. MR - CVS program. Both our website and this study handbook are valuable resources that offer comprehensive insights. Once you have decided to pursue a Ph.D. in Medical Research – Cardiovascular Science, you are ready to take the next steps.

<b>Duration and Attendance:</b>	3 years full-time sandwich program
<b>Total Credits:</b>	180 ECTS
<b>Academic Title:</b>	Doctor of Philosophy in Medical Research - Cardiovascular Science
<b>Awarding Institution:</b>	Ludwig-Maximilians-Universität München, Germany
<b>Program Language:</b>	English
<b>Tuition Fee:</b>	no tuition fee
<b>Application Period:</b>	01 December to 31 January

The Ph.D. Medical Research - Cardiovascular Science program welcomes both national and international applicants holding a master's degree or its equivalent in life sciences, natural sciences, medicine, or related fields such as medical engineering, veterinary medicine, and epidemiology. The three-year curriculum of the Ph.D. program is designed to provide structured scientific training in cardiovascular science to medical doctors and scientists from Germany and abroad who wish to direct their research toward an academic degree. The Ph.D. candidates are provided with up-to-date and state-of-the-art knowledge, taking advantage of the outstanding facilities of the LMU and the LMU University Hospital. The program aims to have a balance between national and international graduates, respects equal rights of all applicants and wishes to specifically support graduates from low- and middle-income settings. The language of instruction for the Ph.D. MR – CVS is English only. Upon successful completion, graduates are awarded the academic title:

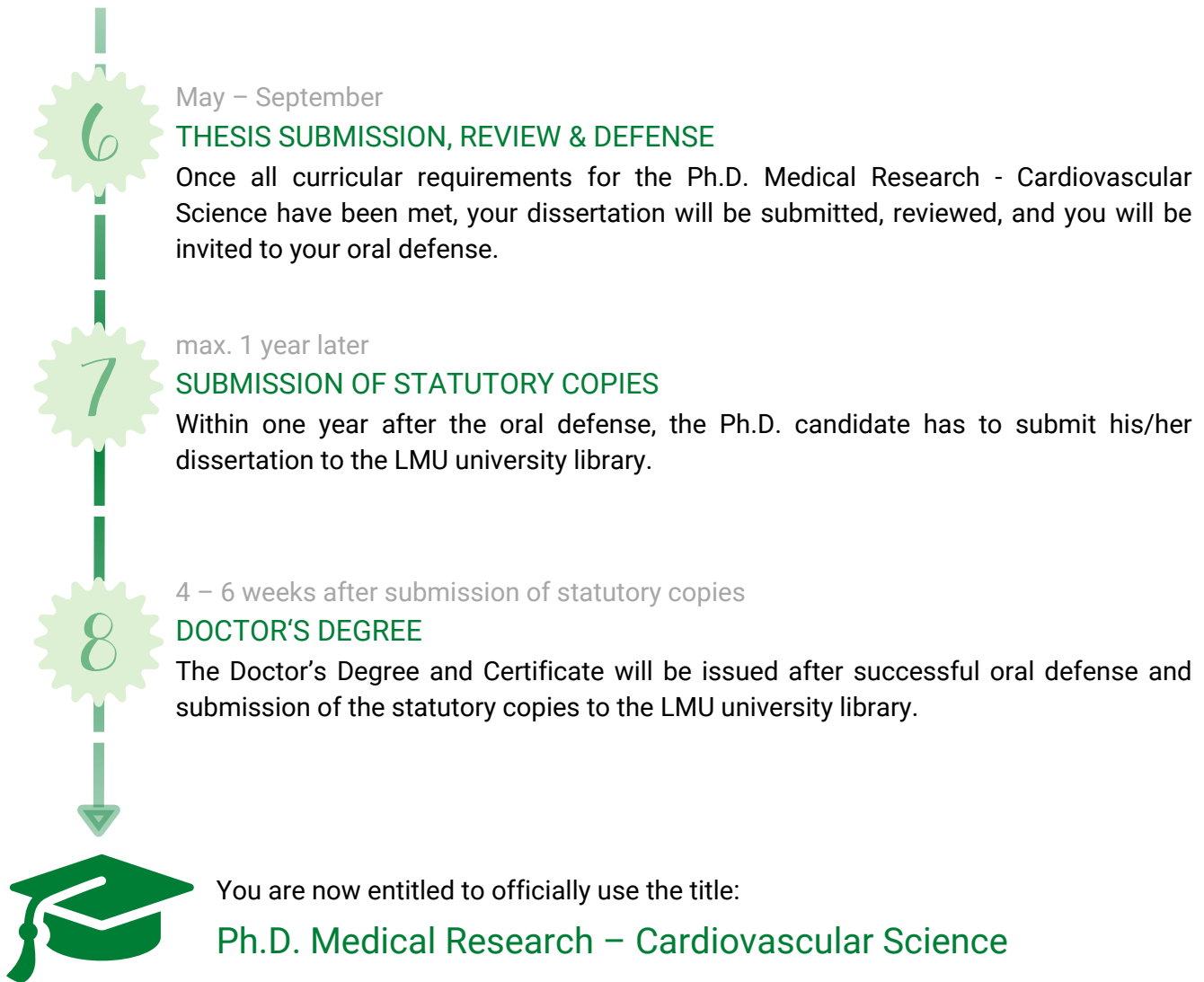
**Doctor of Philosophy (Ph.D.) in  
Medical Research – Cardiovascular Science.**



# Overall Timeline



# Overall Timeline



The Ph.D. program is designed as a sandwich program covering a minimum of three years, with two mandatory 8-week Study Blocks at the Ludwig-Maximilians-Universität (LMU) University Hospital in Munich. Doctoral candidates will undertake their research at the LMU University Hospital or elsewhere between and following these Study Blocks (Research Periods). According to the official study regulations, an extension to four years is possible; in exceptional cases, the duration can even be extended to five years. The last and final stay in Munich will be a short period, during which the defense and the MMRS Graduation Ceremony will take place.

Within the Ph.D. program, students are required to accumulate 180 European Credit Transfer System (ECTS) points. The ECTS was established as part of the EU's Erasmus mobility program with the primary aim to facilitate the transfer of academic credits between international universities. As per the MMRS guidelines, students need to secure

- 17 ECTS credits from methods training courses,
- 8 ECTS credits from attending conferences, summer schools, and/or retreats, and
- 5 ECTS credits from transferable skills training courses.

In addition to these 30 ECTS required by the MMRS guidelines, students in the Ph.D. MR – CVS program will earn additional curricular ECTS for the successful completion of predefined courses (e.g. introductory and in-depth training in cardiovascular science, program workshops and retreats). These courses will provide basic knowledge and understanding of cardiovascular disease and therapies, as well as modern aspects of research and science in cardiovascular medicine. The number of ECTS points per course is based on the total amount of work required by the students to achieve the learning objectives of the respective course. Notably, one ECTS point equates to roughly 30 work hours, which includes lectures, self-study, and exam preparation.

# Application and Selection

Each year, the program will open the application period starting on 01 December and will accept entries until the end of January of the subsequent year. All applicants interested in the Ph.D. Medical Research – Cardiovascular Science program can submit their applications using the [MMRS online application portal](#). The portal can also be accessed directly through the official Ph.D. MR – CVS website.

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## Application Requirements

In order to apply to and be accepted for the Ph.D. MR – CVS, all applicants must meet and provide documentation for the following requirements:

- ✓ a qualifying degree in medicine, veterinary medicine, life sciences, pharmacy, health sciences or a related discipline, encompassing a minimum of 240 ECTS
  - ✓ proof of English language proficiency (oral and written)
  - ✓ a CV
  - ✓ a letter of motivation
  - ✓ two letters of recommendation
  - ✓ a research proposal
  - ✓ a financial statement confirming that research funding is secured
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## Research Proposal

All applicants are required to provide a research proposal regardless of where the Ph.D. project is conducted (within or outside the LMU University Hospital). The proposal should be detailed and scientifically sound. For those planning to conduct their research outside the LMU Munich Hospital, be it in Munich, elsewhere in the city, or abroad, the proposal should be locally relevant.

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## Medical doctors

If you are a physician and wish to obtain the Ph.D. title, you must additionally sign and submit a statement (template available) that :

- ✓ you will not be required to perform any medical service during the study period of (at least) 3 years, and
  - ✓ the time you spend in the Ph.D. program will not count toward your residency training.
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## Research projects outside LMU Hospital

For applicants intending to conduct their research project outside of the LMU University Hospital, the following additional documents are required:

- ✓ Support letter of a local supervisor willing to support the research project

# Application Process

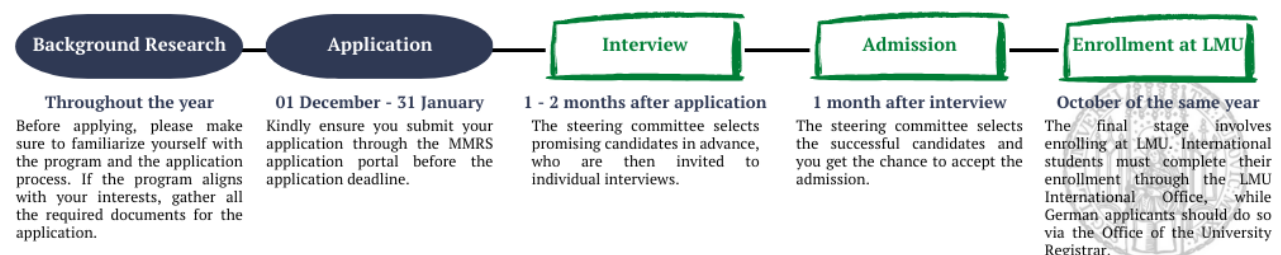
To apply for the Ph.D. Medical Research – Cardiovascular Science program, please use the [MMRS online application portal](#). Start by registering. Once your account is set up, navigate through the portal following the provided instructions, ensuring all required details are filled out. The application form is user-friendly, can be saved online, and doesn't need to be completed in one session. Remember to click the 'Submit' button once you are done. Be aware that after the submission of your application you will not be able to make changes anymore. Ensure that you apply specifically for the program with the core area "Cardiovascular Science". Choosing a different core area will lead to the immediate rejection of your application without further evaluation.

Please remember that only unencrypted PDF and JPEG formats are acceptable for uploaded documents. Each file should not exceed 5 MB. If a document spans multiple pages, it should be combined into a single file. Ensure that all documents are either in English or German. If not, they should be accompanied by an officially translated version in either language. Translations of original documents need to be certified.

## Selection Process

Each year, after the 31 January application deadline, the Ph.D. MR – CVS coordination reviews all submitted applications to ensure they meet formal criteria. Those that pass this preliminary check are then sent to the Steering Committee. This committee evaluates the suitability of both the applicant and their proposed research project. After their assessment, the Steering Committee shortlists candidates for individual interviews. Post-interview, there is a decisive meeting where the committee finalizes their selection of successful applicants. This entire process spans approximately two to three months, with selected candidates being notified of their acceptance in April.

### Application Timeline



## Admission

Successful applicants will receive an email notification from the Ph.D. MR - CVS Program Coordination. They will also receive an official acceptance letter for signature. After returning the signed letter, the program coordination will assist candidates with preparatory tasks leading up to the start of the program, such as enrollment at LMU, the visa process for international students, and assistance in finding accommodation in Munich, etc.

Each prospective doctoral student will be provided with a Supervision Agreement template. This document has to be completed, printed, and signed by both the student and their respective supervisors. Those students working on a research project within the LMU University Hospital can collect all signatures during Study Block I of the program. However, for all students working on a research project outside the LMU University Hospital, the signature of the local supervisors must be obtained before departure for Munich. The LMU supervisors can then provide their signatures when the Ph.D. candidate arrives in Munich. It is important that all students keep the original Supervision Agreement, as it must be submitted with the dissertation at the end of the program. Please note that digital signatures and copies are not acceptable for this document.

Once admitted to the program, candidates are advised to contact their LMU supervisors before the program starts. Early communication can provide insights into the supervisor's perspective on the proposed research project. It is also beneficial for students to become familiar with the topic and literature. Any such preparatory discussions/ meetings should be coordinated directly by the doctoral candidates, without the mediation of the Ph.D. MR – CVS Program Coordination.



# Supervision and Support

Every Ph.D. MR – CVS program participant is supported by at least one primary supervisor from one of the seven collaborating departments at the LMU University Hospital. Those conducting their research projects outside the LMU University Hospital will additionally need the support and guidance of at least one local supervisor. Throughout their doctoral journey, Ph.D. candidates are responsible for maintaining close contact to their supervisor(s) and the Ph.D. Program Coordination. Every two months, meetings will be arranged to discuss the project progress, potential challenges, and necessary modifications (see [Bi-monthly Progress Meetings](#)).

## Thesis Advisory Committee (TAC)

According to the MMRS rules, all students pursuing a doctorate in medical research require a **Thesis Advisory Committee (TAC)**, consisting of at least three experienced scientists – a primary supervisor and two additional scientists. This committee should be established during the first semester of the doctoral journey. Both the primary supervisor and the second TAC member must be either habilitated, professors or ‘exceptionally successful junior scientists’. The third TAC member should hold an independent group leader position. While all three TAC members can be part of the LMU Faculty of Medicine, diversity is essential; one committee member should come from a different department. Local supervisors for projects outside of LMU Hospital can either join the TAC or serve as separate advisors. The composition of the TAC is influenced by the research topic and its methodological and technical requirements. However, it should be ensured that all areas of the project are well-addressed. The TAC members commit to guiding and supporting the Ph.D. candidate during the duration of the research project. Their guidance should not only refer to activities related to the research project (e.g. defining milestones and pursuing their achievements), but also to the fulfillment of curricular activities, the acquisition of ECTS credits and personal career steps. The entire Thesis Advisory Committee should meet at least twice: once during Study Block II and again at the beginning of year three (see [TAC Meetings](#)). For extended projects, up to four meetings might be needed.

# Supervision Agreement

Globally recognized as a mark of quality in doctoral training, Supervision Agreements foster clarity by allowing doctoral candidates and their supervisors to outline mutual expectations for the doctoral journey in a transparent form. This agreement not only provides guidance but also demands commitment and accountability.

The **Supervision Agreement** must be signed by the candidate and all supervisors using their original signatures (digital signatures, copies, or scans are not accepted). This document must be submitted to the MMRS upon completion of the doctoral project, together with the submission of the dissertation.

## Target Agreement & Target Amendments

The **Target Agreement** serves to establish a formal understanding between the Ph.D. candidate and all supervisors involved in the implementation and conduct of the doctoral research project. It should contain a project description including the research question, study objectives, present research status, methodology, preliminary efforts, and a timeline. It also identifies any extra skills the student might need to successfully complete the research project. This agreement, signed in original handwriting by all parties involved (digital signatures, copies, or scans are not permitted), will later be submitted to the MMRS upon project completion, together with the dissertation.

During the first TAC meeting, the Target Agreement functions as a reference point to assess project advancement, recognize potential challenges, and align expectations. Recognizing that projects evolve over time and unforeseen challenges arise, a **Target Amendment** must be written and submitted to the Ph.D. MR - CVS Program Coordination after the first TAC meeting. This Target Amendment is then in turn considered a new binding agreement.

If candidates do not meet their research or publication milestones within three years, they will be granted an additional year for completion (see [Extension: Research Period IV and V](#)). If extending into a fourth year, a **second Target Amendment** should be submitted to the Ph.D. Program Coordination. If research extends into a fifth year, a **third Target Amendment** must timely be presented to the Program Coordination.

## Ph.D. MR - CVS Program Coordination

Currently, the coordination office for the Ph.D. Medical Research - Cardiovascular Science program is located at the [Department of Pediatric Cardiology and Pediatric Intensive Care](#) at the University Hospital of Munich, led by Prof. Dr. Nikolaus Haas.

This office is primarily responsible for handling all facets of student affairs ranging from the application process to candidate selection. Furthermore, it monitors all curricular activities and manages the allocation of ECTS credits for students. The Coordination Office also acts as the interface with the MMRS Headquarters, LMU Academic Affairs, and other graduate schools.

For any inquiries, feel free to reach out to the Coordination Office any time.

# Curricular structure

## Study Block I

Upon admission to the Ph.D. program, candidates will begin their doctoral studies with Study Block I in Munich. This study block is scheduled between October and December annually, aligning with the official start of the LMU winter semester. Regardless of their academic background or the specific research subjects, all students of the Ph.D. MR – CVS program will go through the same curriculum. This is to ensure a common knowledge base among all doctoral candidates.

Study Block I, spanning eight weeks, is intensely scheduled with lectures, workshops and seminars that occupy the entire day from morning to afternoon. During this period, unwavering dedication and full-time engagement are expected from all participants. Study Block I of the program focuses on the biology of a healthy cardiovascular system and provides insight into cardiovascular disease (CVD) and its treatment options. It also introduces the epidemiology of CVDs and associated risk factors. Furthermore, it lays the groundwork for various research methods and analytical tools tailored to cardiovascular studies. Beyond cardiovascular-specific expertise, the program also fosters interdisciplinary skills, including scientific writing and presentation techniques. The modules of Study Block I may be completed with a written or oral examination to ensure that the established learning outcomes have been met.

In addition to attending classes, all Ph.D. students should use the time to meet with their LMU supervisors and work on the design of their research project. This is especially crucial for those whose research projects are not based within the LMU University Hospital, leveraging their time in Munich. Study Block I ends in early December.

## Modules of Study Block I

### **01** Module 1 - Healthy Cardiovascular Biology

The module "Healthy Cardiovascular Biology" provides a comprehensive look into the heart's structure and function. Dive into the fundamental aspects of cardiovascular anatomy and physiology, gain insight into cardiac structure, vascular systems, and the unique cardiac differences in children. Explore the molecular and cellular dimensions, and understand the functions of cardiomyocytes, the role of endothelial cells, and the importance of the extracellular matrix. Delve into advanced hemodynamics, learning about blood flow dynamics and ventricular pressure-volume relationships. This module does not stop there; it also covers the metabolic pathways and bioenergetics vital to a healthy heart. Get acquainted with the neurohormonal regulation impacting cardiac function, and study oxidative stress dynamics. Discover the vital interplay between immunology and the cardiovascular system. Last but not least, the module also touches upon the genomic basis of cardiovascular health and the role of epigenetics. Embark on this comprehensive journey, understanding the cardiovascular system's marvels and intricacies.

### **Module 2 - Cardiovascular Diseases and Therapies** **02**

The "Cardiovascular Diseases and Therapies" module addresses the complex field of cardiovascular diseases and potential treatments. Explore the pathogenesis of cardiovascular diseases and decipher the molecular mechanisms and genetic and epigenetic alterations underlying these diseases. Investigate atherosclerosis and coronary artery disease and understand the role of LDL, inflammation, and clinical manifestations such as angina and myocardial infarction. The module takes a journey through the different types of heart failure and look at the molecular and cellular mechanisms that control cardiac contractility and remodeling. Delve into the realm of cardiac arrhythmias and explore electrophysiological abnormalities and the different types of arrhythmias. In addition, discover the complexities of hypertension and explore molecular mechanisms such as the renin-angiotensin system and its effects on vital organs. Explore the possibilities of cardiac regeneration and repair with insights into stem cell and gene therapies. Learn about pharmacologic interventions and address principles and specific drug classes such as antihypertensives, antiplatelet agents, anticoagulants, lipid-lowering agents, and heart failure medications. We are looking at interventional and surgical therapies, including coronary interventions, electrophysiological interventions, and surgical approaches. We will also look at new and emerging therapies, such as monoclonal antibodies, RNA-based therapies, and advanced regenerative approaches, including organoids and tissue engineering. Embark on this multifaceted exploration of cardiovascular disease and potential therapeutic opportunities.

### **03 Module 3 - Epidemiology of Cardiovascular Diseases and associated Risk Factors**

The module "Epidemiology of Cardiovascular Disease and Associated Risk Factors" will comprehensively address the epidemiological aspects of cardiovascular health. It begins with an introduction to the module and an overview of epidemiological principles. Dive into the epidemiology of major cardiovascular diseases, gaining insights into their prevalence, incidence, and trends. We will also dissect traditional cardiovascular risk factors, as well as explore new and novel risk factors that impact our understanding of cardiovascular health. We will look at the characteristics of cardiovascular disease in special populations and decipher how unique factors influence their prevalence and treatment. We will examine global disparities in cardiovascular health and the central role that social determinants of health play in creating these disparities. In the end of this module, we will explore prevention strategies and the implications of our findings for Public Health.

### **Module 4 - Cardiovascular Research Skills & Methods 04**

The module "Cardiovascular Research Skills & Methods" is designed to equip you with the basic tools and techniques central to cardiovascular research. Begin your learning journey with the fundamentals of research methodology, understanding the principles that underlie any scientific investigation. Then, learn about the molecular and cellular methods that are essential for cardiovascular laboratory research. The module also offers a in-depth look into clinical research specific to cardiovascular science, encompassing study design, patient engagement, and data collection. Sharpen your analytical skills by exploring methods of data analysis and interpretation to draw meaningful conclusions from research data. Finally, the module teaches you the art of scientific communication and publication, ensuring your findings leave a lasting impression on the scientific community.

## Study Block II

In September and October, after Research Period I, all Ph.D. candidates reconvene in Munich for Study Block II. This block again encompasses several compulsory pre-defined courses. However, unlike Study Block I, this period allocates more time for interactions with LMU supervisors, facilitating in-depth discussions about the research progress. During this time, candidates should also organize their first Thesis Advisory Committee meeting, subsequently submitting the meeting report to the Ph.D. Program Coordination and uploading it to their Campus Portal account. It is the student's responsibility to prearrange the TAC meeting. Following the TAC meeting, students should remember to submit the Target Amendment I to the Ph.D. Program Coordination, which serves as a midpoint assessment of their research project.

Study Period II delves deeper into cardiovascular research and its methodologies, emphasizing the latest advancements and current best practices in cardiovascular science. Furthermore, Study Block II overlaps with Study Block I for the new cohort of Ph.D. candidates, providing a platform for networking and knowledge sharing among peers.

## **Examination procedure during the Study Blocks**

During Study Block I and II, the modules are completed by written or oral examinations. These exams are spread throughout the entire 8-week period and are not solely reserved for the end of the respective Study Block. Examinations will comprise a mix of multiple-choice and open-ended questions, and mathematical problems. Each module's grading adheres to the official study and examination guidelines of the Ph.D. Medical Research, with results determined as pass or fail.

If a module examination is not passed, with the exception of the Ph.D. thesis and the oral defense, it can be retaken up to three times at a mutually agreed-upon date. However, the Ph.D. thesis and oral defense can only be retaken once, scheduled at the earliest available opportunity.

## **Attendance Policy**

Ph.D. MR – CVS students are expected to attend at least 80% of the sessions for each module during the two Study Blocks. Arriving over 15 minutes late or unexcused absence will result in the session being marked as missed. If a student misses more than 20% of a module, they may be required to complete extra coursework to be admitted to the course examination or retake the course the subsequent year. For those not based in Munich, this would necessitate an additional visit, the organization and expenses for which are the responsibility of the Ph.D. candidate.



# Research Periods

## 01 Collecting the 30 ECTS required by the MMRS

According to the MMRS guidelines, doctoral students are required to earn 30 ECTS through participation in workshops and conferences, as well as research methods and transferable skills courses, broken down as follows:

- 17 ECTS for attending Methods Courses
- 8 ECTS for attending Conferences, Retreats, etc.
- 5 ECTS for the acquisition of Transferable Skills.

It is possible to collect ECTS in multiple ways. A single ECTS corresponds to two full days of a course or conference, inclusive of the necessary preparatory and post-course tasks, or translates to 30 hours of required work.

The table below displays the ECTS allocation for different activities. While this list is illustrative and not exhaustive, it provides a general overview. Together with the Thesis Advisory Committee (TAC), students should determine their own research path, which is made possible by earning these 30 ECTS in an individualized manner.

### **ECTS for Methods**

Activity	ECTS	Time frame
Methods course	0.5	per day (min. 8h)
Online method course	1.0	per 30 h workload
Journal Club (80% attendance)	0.5	per semester
Establishing a new method in the lab	max. 3 out of 30	depending on workload
External lab visit	max. 3 out of 30	depending on length

**ECTS for Transferable Skills**

Activity	ECTS	Time frame
Soft skill course	0.5	per day
Organizing a retreat or conference	max. 2 out of 30	depending on workload

**ECTS for Conferences**

Activity	ECTS	Time frame
Conference, Meetings, Symposia, Retreats	0.5	per day
Online conference	0.5	per day
Poster/ oral presentation	0.5 – 1.0	depending on workload

**ECTS for Methods OR Transferable Skill Competencies**

Activity	ECTS	Time frame
Teaching	max. 2 out of 30	depending on workload
Supervision of students	max. 2 out of 30	depending on workload
Supervision of methods course	max. 2 out of 30	per day

## **02 Collecting the additional mandatory ECTS**

In addition to the 30 ECTS required by the MMRS guidelines, Ph.D. MR – CVS program students have to collect extra curricular ECTS through the successful completion of pre-defined courses and the mandatory bi-monthly progress meetings.

### **Bi-monthly progress meetings**

Bi-monthly, each Ph.D. student is required to present their research project's advancements to their primary supervisor in a meeting coordinated by both the Ph.D. MR – CVS Program Coordination and the student themselves. For students with local supervisors, the meeting must include both the LMU and the local supervisor, along with the Program Coordination. A brief report capturing the meeting's outcomes and decisions should be written and uploaded to the Campus Portal account. Six ECTS credits will be awarded for the timely arrangement of the meeting and the submission of a satisfactory meeting protocol.

### **TAC Meetings**

Your Ph.D. project will be supervised by a Thesis Advisory Committee (TAC), composed of at least three experienced scientists - your main LMU supervisor and two other experts. It is recommended to form the TAC during your Ph.D. project's first semester and meet on a regular basis. At least two TAC meetings are mandatory and are used to review and evaluate the progress of your doctoral project, serving as milestone assessments. The first TAC meeting will take place during Study Block II of the Ph.D. program, while the second one should be scheduled for the beginning of your third study year.

Prior to the meeting, students are expected to circulate a written summary of the research project among all TAC members. In the meeting, a presentation spanning 20 to 40 minutes, showcasing the project's advancement, should be delivered by the student. The results and conclusions of the meeting should be summarized in a TAC meeting protocol signed by all committee members and the student. This protocol should then be uploaded to the MMRS Campus Portal, following which the Program Coordination will approve the relevant ECTS credits.

# Graduation

To earn the Ph.D. degree, students must complete all curricular activities and submit a Ph.D. thesis, which will be followed by an oral defense (disputation).

## Ph.D thesis (dissertation)

The core element of the Ph.D. study is the doctoral thesis. This comprehensive work, conceived in collaboration with the candidate's LMU and possibly local supervisor, is written as an independent research work that serves to demonstrate the novel scientific insights gained throughout the doctoral study. After fulfilling all the project requirements outlined in the Target Agreement, the TAC can initiate the scientific assessment of the thesis. For this, you need to submit all relevant documents to the MMRS through your [Campus Portal](#) account, and also provide the original documents to the MMRS. Prior to submitting the printed copy of your dissertation to the MMRS, ensure you have uploaded all required documents online under "submission". The evaluation of your dissertation will start only after all documents are successfully uploaded. Detailed information on the thesis submission can be found on the [MMRS website](#).

Doctoral candidates are expected to submit their thesis no earlier than the end of April in their third academic year. Depending on the chosen format - monographic or cumulative - doctoral candidates must also forward at least one (for monographic) or a minimum of two (for cumulative) scientific manuscript(s) to a scientific peer-reviewed journal. Before starting to write the thesis, the style and structure should be determined together with all supervisors. Style templates for the two different formats are provided by the MMRS for [download](#). Please note that only accepted manuscripts can be counted.

The doctoral degree serves to demonstrate the Ph.D. student's ability to conduct in-depth academic and scientific work supported by an independently prepared written dissertation and a subsequent oral defense. By the end of the program, students must demonstrate competency in selecting, analyzing, and critically evaluating a relevant research project, integrating it into the current global discourse in Cardiovascular Science.

## **Evaluation of your Ph.D. thesis**

Once the application for admission to the doctoral examination has been submitted with all required documents, the chairperson of the Doctoral Committee requests the primary LMU supervisor and the second reviewer to provide their expert feedback. Both reviewers are given an 8-week period for their evaluations.

Once their reviews are received, the dissertation and the feedback are passed on to the remaining two members of the Examination Committee, who are given a 4 to 6 weeks to send their comments.

The thesis is accepted if all the reviews and comments all grade the thesis as "sufficient" (4.0) or better.

If needed, the thesis can be returned to the Ph.D. candidate once for revision (major revision). The revised thesis should be resubmitted to the MMRS within a year for reevaluation.

## **The Examination Committee**

The submitted thesis is evaluated by four reviewers who constitute the Examination Committee. These reviewers are:

- the students primary LMU supervisor
- another member from the Thesis Advisory Committee
- an independent third reviewer
- another independent fourth reviewer

## Oral defense (disputation)

Once the thesis is approved, the Ph.D. candidate is admitted to the oral defense.

The doctoral candidate arranges the date, time and venue of the defense with the Examination Committee. It is essential for all committee members to be present during the defense. The candidate must then inform the MMRS about the scheduled date and location a minimum of two weeks before the planned defense. Both the candidate and all Examination Committee members will receive written formal invitations to the defense at least two weeks prior to the event.

During the defense (conducted in English):

1. the candidate presents the findings of the thesis during a public presentation lasting about 45 minutes.
2. the presentation is followed by an oral examination, usually spanning 30 to 60 minutes, facilitated by the Examination Committee.

The grading and the communication of the grade to the candidate take place without the public. In case of failure, the oral defense can be repeated once within 12 months.

A record of proceedings on the oral defense is written and submitted to the MMRS after the defense.

Your Ph.D. defense is likely a one-time event. Use this unique opportunity to convince the Examination Committee that you are able to summarize the vital aspects of your work. During your presentation, consider addressing the following:

- What objectives, aims, or questions were addressed in your thesis?
- Why is your research significant?
- How does your work fit within the current scientific landscape?
- Which methods did you use?
- What outcomes did you achieve?

Students residing outside Munich will need to come to the LMU University Hospital for a brief duration, between 10 to 14 days, to defend the thesis and submit the statutory copies of the dissertation to the LMU University Library. Organizing and bearing the expenses of the stay in Munich is the responsibility of the Ph.D. candidate.

The doctoral program concludes with a successful thesis defense, the publication of the statutory copies in the LMU University Library and the subsequent award of the doctoral certificate in Medical Research – Cardiovascular Science.

## Statutory Copies and Certificates

### Submission of the Statutory Copies

Soon after your successful defense, the MMRS will provide you with a certificate of completion and details about the next steps. Please note that the certificate of completion does not entitle you to use the title 'Ph.D.'. You have a year to submit two printed, bound copies and an electronic version of your thesis to the 'Dissertationsstelle.' Guidelines for the submission of these statutory copies can be found on the University Library's [website](#).

Failing to submit the required copies within this one year will result in the forfeiture of all rights obtained by the successful completion and defense of your thesis.

### Doctor`s Certificate, Doctor`s Degree and Transcript of Records

Upon the successful completion of the oral defense and the submission of the statutory copies, the **Doctor's Degree** ("Promotionsurkunde") is issued, bearing the date of the oral defense.

Simultaneously, the **Doctor's Certificate** ("Promotionszeugnis") is provided. This certificate carries the same date as the Degree, the thesis title, individual grades for both the thesis and the oral defense, and the cumulative final grade. In accordance to the official study and examination regulations of the Ph.D. Medical Research, the final grade is the arithmetically weighted mean of the grade of your written Ph.D. thesis (factor 1.5) and your oral defense (factor 1.0).

Additionally, a detailed **transcript of records** is issued, which contains all the courses completed, their corresponding exams, ECTS, and any relevant grades (where applicable).

Please note that you are not allowed to use the title 'Ph.D.' until you have received your doctoral degree and your doctoral certificate. Only after receiving these documents, you may officially use the doctoral title. If the statutory copies are not submitted within the year, all rights obtained by the successful completion of the thesis and the oral defense are null and void.

Four to six weeks after submitting the statutory copies to the LMU university library, you can collect your doctoral degree and associated documents from the Ph.D. MR – CVS Coordination. For those who carried out their research projects outside Munich, we will securely send all necessary documents via courier. Please ensure that the Ph.D. program coordination has your up-to-date postal address and contact number.

## Extension: Research Period IV and V

Candidates who are unable to complete their research project or to submit a manuscript to a peer-reviewed journal within the regular three-year study period, an additional year, Research Period IV, will be granted for project finalization. Should the Ph.D. project extend beyond this fourth year, a final year, Research Period V, will be provided. During both Research Period IV and V, students are obligated to continue their bi-monthly meetings with their supervisors (both LMU and local, if applicable) and submit the meeting protocols to the Ph.D. MR – CVS Program Coordination.

## Important Note

Ph.D. candidates who do not successfully complete the necessary curricular components within 60 months after initiation of their Ph.D. studies (beginning of Study Block I), including

- the finalization of the Ph.D. project,
- acceptance of a manuscript to a peer-reviewed journal,
- submission of the Ph.D. thesis, and
- the successful defense in front of the LMU Examination Committee

will be dismissed from the Ph.D. MR – CVS program with the result “**failed**”.



# Your responsibilities

As a Ph.D. candidate, your responsibilities include:

- Conducting your research diligently within the allocated study timeline.
- Participating in the curricular activities organized by the Ph.D. MR – CVS Program Coordination.
- Collecting the required curricular ECTS credits throughout your doctoral journey.
- Adhering to the objectives laid out in the Target Agreement.
- Ensuring consistent communication with all your supervisors, especially when working outside the LMU University Hospital.
- Presenting your research progress and outcomes in meetings, seminars, and/or conferences.
- Complying to ethical standards throughout your research project.
- Responsibly documenting all completed courses, seminars, and activities for ECTS credit validation.
- Confidentially approaching the Ph.D. Program Coordination if you feel that a change of supervisor is desirable for any reason.
- Keeping the external party informed about significant events impacting collaboration or research/Ph.D. progression, especially relevant for externally-funded candidates.

# From start to end – your Ph.D. Application Checklist



## Preparation of a Research Proposal

- If you are not yet involved in a research project, do some literature research and identify a suitable research topic.
- Identify a potential supervising department of the Ph.D. MR - CVS program.
- Seek research funding opportunities.
- Compose a comprehensive and well-structured research proposal using the provided template.



For research projects conducted outside the LMU University Hospital, secure a local supervisor.



## Preparation of Curriculum Vitae (Europass recommended).

Scan all required documents, including:



- High School Certificate



- Degree certificates



- Degree transcripts (for international students, ensure they bear an official stamp and signature from the registrar!)



- English language certificate

Sign all necessary statements (templates available), including those for:



- Financial support



- Medical doctors (if applicable)



- Local supervisor (if applicable)



Write a Motivational Letter.



Secure two academic referees.



Register in the MMRS online application portal.



Complete and submit your application.



# From start to end – your Ph.D. Journey Checklist

- ✓ Submit your application for the Ph.D. MR – CVS program during the application period.
- ✓ Achieve successful admission to the Ph.D. MR – CVS program.
- ✓ Complete the enrollment process at LMU.
- ✓ Register at the MMRS Campus Portal.
- ✓ Have the supervision agreement signed with original signatures.
- ✓ Successfully complete Study Block I.
- ✓ Submit the Target Agreement with original signatures.
- ✓ Obtain local and/or LMU Ethical Clearance, if applicable.
- ✓ Organize the bi-monthly progress meetings I – IV and ensure successful submission of the meeting reports.
- ✓ Submit your 1st TAC Report.
- ✓ Successfully complete Study Block II.
- ✓ Submit your Target Amendment I.
- ✓ Organize the bi-monthly progress meetings V – X and ensure successful submission of the meeting reports.
- ✓ Submit your 2nd TAC Report.
- ✓ Organize the bi-monthly progress meetings XI and XII, and ensure successful submission of the meeting reports.
- ✓ Collect 17 ECTS for methods.
- ✓ Collect 8 ECTS for conferences.
- ✓ Collect 5 ECTS for soft skill competencies.
- ✓ Achieve acceptance of at least one manuscript.
- ✓ Start writing on your thesis.
- ✓ Conduct an iThenticate plagiarism check (done by the LMU supervisor).
- ✓ Submit your Ph.D. thesis to MMRS (electronically and bound copies).
- ✓ Participate in the oral defense of your Ph.D. thesis.
- ✓ Submit statutory copies to the LMU University library (both electronic and bound copies).
- ✓ Obtain official Ph.D. certificates issued by the MMRS.

# Contacts

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