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# MD/DMD/PHARM- PHD PROGRAM

OF THE TRANSLATIONAL EDUCATION PROGRAMS

Join our high quality educational program to learn the methods of translational medicine.



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SEMMELWEIS UNIVERSITY  
CENTRE FOR TRANSLATIONAL MEDICINE



# PROGRAM SUMMARY

## BASIC INFORMATION ABOUT THE PROGRAM

### WHAT WE'RE OFFERING:

- Hybrid PhD and university training
- Perform healthcare delivery science
- Understand the main modern clinical scientific methodologies
- Conduct independent research work
- Full career path, from basics to coordinator role
- PhD degree with high level scientific achievements

### IMPORTANT DATES

- Registration start: **January 1, 2023**
- Webinar: **March 28, 2023 18:00** (Hungarian), **March 29, 2023 18:00** (English)  
(click on the dates to get redirected to the webinar)
- Pre-application: **May 1, 2023**
- Completing the registration: **May 15, 2023**
- Interviews: Middle of **June, 2023**
- Acceptance by: first half of **July, 2023**
- Start of the program: **August 28, 2023**

### DURATION OF THE PROGRAM

**4** years, complex exam after 2 years

### PROGRAM DIRECTOR

**Péter Hegyi**, MD, PhD, DSc, MAE

### ORGANISERS

The **PHD PROGRAM** is organized jointly by the Centre for Translational Medicine, Semmelweis University and the Translational Medicine Foundation.

### REGISTRATION FEE

**75 EUR** / student



FOR MORE INFORMATION,  
PLEASE VISIT OUR WEBSITE



# WHO WE ARE

## ABOUT OUR INSTITUTE



### SEMMEWEIS UNIVERSITY

Simmelweis University's history started more than 250 years ago in 1769. Today SU is one of the leading institutions of higher education in Hungary and the Central European Region in the field of medicine and health sciences. At SU, our core commitment is based on the integrity of education, research and medicine that makes the University an internationally recognised centre of excellence.

### TRANSLATIONAL MEDICINE FOUNDATION

The Translational Medicine Foundation was established in 2016 to

- a)** promote the practical application of scientific results and innovations in health care
- b)** stimulate and unify the exchange of information and data flow between universities, hospitals and research centres, and to help their quality control, which can significantly improve the quality of multicenter research projects and reduce the amount of resources needed for research projects
- c)** help all members of the population (including healthy individuals, patients, doctors, etc.) to understand and implement evidence-based knowledge in everyday life through various platforms (web, printed materials, videos, etc.)
- d)** participate in the organization of conferences and trainings, in procuring research-related services and in providing financial aid in the search and selection of human resources





# THE HISTORY

## OF TRANSLATIONAL MEDICINE IN HUNGARY

The Translational Medicine (TM) “learning by doing” education model was launched in Hungary, University of Pécs in 2016 under the leadership of Péter Hegyi, who is the course director of this uniquely developed **PHD PROGRAM**. In the past five years, almost 50 PhD students and residents have participated in our programs. In this period, more than 300 high quality publications have been published through scientific research and translational patient care initiated and supported by the Translational Medicine Foundation, the University of Pécs, the University of Szeged and the Semmelweis University (*Nature Medicine*). The results have made it possible to develop and supplement a number of treatment guidelines and to immediately apply scientific results in patient care. The results have made it possible to develop and supplement a number of treatment guidelines and to immediately apply scientific results in patient care.

**Semmelweis University** aims to rank among the best universities in the world and recognized the importance and the high potential in the translational medicine. Therefore, in 2021 this programme was invited to function in a much bigger scale than before, now under the umbrella of Semmelweis University. As a results, the training at SU already enrolled more than 160 PhD students, and almost 100 undergraduate research students.



FIND MORE INFORMATION ABOUT THE CENTRE  
FOR TRANSLATIONAL MEDICINE HERE

# THE IMPORTANCE

## OF TRANSLATIONAL MEDICINE

The major goal of TM is to turn scientific results for community benefits. Why is this necessary? It is very simple: we currently use scientific findings in everyday medicine with very poor efficiency. The European Statistical Office of the European Commission has recently reported that 1.7 million people under 75 years of age died in Europe in 2016, with around 1.2 million of those deaths being avoidable through effective primary prevention and public health intervention. Therefore, Academia Europaea, one of the five Pan-European networks that form SAPEA (Science Advice for Policy by European Academies), a key element of the European Commission's Scientific Advice Mechanism (SAM), has launched a project in 2018 to develop a model to facilitate and accelerate the utilisation of scientific knowledge for public and community benefit. During the process, leaders in the field, including prominent basic and clinical researchers, editors-in-chief of high-impact journals publishing translational research articles, TM centre leaders, media representatives, academics and university leaders, developed the TM cycle, a new model that we believe could significantly advance the development of TM. This model focuses equally on the acquisition of new scientific results healthcare, understandable and digestible summation of results, and their communication to all participants. The authors, including senior officers of Academia Europaea, produced an important paper to serve as a basis for revising thinking on TM with the end result of enabling more efficient and cost-effective healthcare.



YOU CAN FIND FURTHER INFORMATION  
ON OUR YOUTUBE CHANEL AS WELL





# MD/DMD/PHARM - PHD PROGRAM

## WHAT WE OFFER

The **MD/DMD/PHARM - PHD PROGRAM** covers all aspects of the TM Cycle. The program helps students to become critical consumers of medical research papers, to gather primary data on health issues through questioning and observation, and to conduct biomedical research. Students will gain an understanding of the planning of clinical research, including systematic reviews, patient registries and clinical trials, by designing an extended project in study groups, which are led by experienced members of the TM Centre.

## THE HYBRID PHD PROGRAM FOCUSES ON THE MAIN MODERN HEALTHCARE DELIVERY SCIENTIFIC METHODOLOGIES OF TM:

- 1. Systematic reviews and meta-analysis** – we aim to introduce the essentials of meta-analyses, focusing on their role in the evidence-based medicine and the main steps leading to a meta-analysis. Questions will cover key topics, such as how to design systematic search strategies, how to read forest plots, and how to assess the validity of the findings. By attending the series of lectures, participants will learn how to read, understand, and conduct meta-analyses.
- 2. Patient registries** – in this part we aim to introduce patient registries with their role in science, focusing on practical questions. Topics will embrace the entire process from planning a registry to publication. The general built of a registry, the role of the patient registry coordinator and the contributors in the phase of registry development will be discussed. The course will include presentations on the IT background, details on how to develop an electronic case report form, data management, ethical approval, and other roles, such as biostatisticians and clinical research administrators.
- 3. Clinical trials** – this part of the school aims to overview the main features of experimental study designs and their role in science, focusing on practical questions. Topics will embrace the entire process from study planning to conclusions from result. Questions will cover key topics, such as the identification of study designs, the role of randomization, the effects of bias, and the judgement of cause-effect relationship.
- 4. Biostatistics** - aim of this lecture is to make the participants familiar with the basics of statistical methods used in the medical/biological sciences. Furthermore, to help the participants to interpret the results of statistical analysis more easily and to recognize possible biases in scientific literature. The lecture introduces the most commonly used statistical methods, thus the participants get acquainted with the most important elements of descriptive statistics, basic principles of hypothesis testing, parametric and non-parametric statistical methods and risks of decision errors. Furthermore, topics such as survival analysis, adaptation of questionnaires, sensitivity and specificity of diagnostic tests, and Receiver Operating Characteristic (ROC) Curve analysis will also be covered during the course.

**5. Clinical pharmacology** - The course will cover the fundamentals of clinical pharmacology as a translational scientific discipline focused on rational drug development and utilization in therapeutics. The course focuses on the following core principles of pharmacology: pharmacokinetics, pharmacodynamics and toxicology; drug discovery and development and clinical study protocol design. Furthermore, the course will cover advanced clinical trial concepts like medical device development, advanced therapeutic medicinal products (e.g. gene therapy), clinical trial and software development in clinical trials, and basics of pharmacovigilance. This course intends to complement the other courses of the translational research teaching program so that participants will have a broad and in-depth overview of the mainstream methodologies of clinical research.

## CTM STAFF - INTERDISCIPLINARY RESEARCH SUPPORT

Our centre provides the help of an interdisciplinary research support team to support the work of researchers and Ph.D. students. Continuous support is provided in a weekly basis during the so called group meetings and project meetings. Additional support can be requested from the other members of the team.



### CONTINUOUS SUPPORT IS OFFERED BY:

1. An **Expert Discussant** is appointed for each group. She/He is a highly experienced physician-scientist who provides help from the design of the study until the publication. She/He helps the students (1) to polish their projects, (2) to find the big picture and (3) challenges them week after week.
2. The **group leaders** are experienced physician-scientists who are well known representatives of the given field and have a record of high level research productivity.



**3. The supervisor** of each fellow is senior clinicians (expert) who raises relevant clinical questions, determines the direction of the research and bridges the gap between the theoretical and clinical work in the clinical PhD program. These tutors continuously lead the research work of the fellows during the whole program.

**4. Scientific methodology supervisors (SMS)** are a methodologist who has experience in designing and carrying out translational research projects and provides methodological support in various aspects of science including meta-analyses, patient registries, and clinical trials.

**5. Science methodology advisor and expert (SMA and SME)** are highly experienced methodologists who are responsible for the development of the learning material, for the SMS group, and provide the coordination for the different scientific methods, e.g. meta-analysis coordinator

**6. Biostatisticians** are appointed to each group to provide valuable help for the statistical work of the project.

#### **ADDITIONAL SUPPORT:**

**1. Educational supervisors** are expert in the various fields taught through courses to the fellows. Such courses include meta-analysis, patient registry, clinical trial, biostatistics, data handling and clinical pharmacology. Statisticians are appointed to each group to provide valuable help for the statistical work of the project.

**2. IT team** continuously provides help in the development of the electronic case report forms. In addition, they will help with the testing of the electronic interface and ensures the coordination of maintenance.

**3. Ethical coordinator** helps with the process of ethical licensing, obtaining, preparing and submitting the documentation required for ethical approval to the relevant authorities. Consultation with the principal investigator during the process.

**4. Soft skill trainers** provide education regarding the art of scientific communication and networking.

#### **ADDITIONAL ACTIVITIES**

Three clubs were founded to provide students the chance to relax after meetings. Sport, Art and Social clubs organise different activities based on different interests. The sport club organises weekly running, swimming and squash, while the art club offers programs, like concerts, exhibitions. Occasionally there are different themed social evenings organised by our social club.

### **OUTCOMES OF THE TRAINING**

- Participants will be able to understand the concept of the healthcare delivery science as part of the translational medicine cycle
- At the end of the training, participants will learn the main points of setting up a patient registry, initiating a clinical trial, or conducting a comprehensive systematic review with meta-analysis.
- Critically appraise clinical research studies using a systematic approach.
- Define the basic knowledges and skills required in translational research.
- Grow the professional international network of translational researchers.
- PhD degree with high level scientific achievements
- In addition, participants will gain presentation skills, debating skills, language skills, and organizational skills.

# TRANSLATIONAL MD/DMD/PHARM - PHD PROGRAM

## AND MEDICAL TRAINING

The Translational Medicine MD PhD program is about providing the opportunity to simultaneously undertake medical training and research work.

### **The program is open to anyone who:**

- 1) Students of any Semmelweis University faculties, who will start the penultimate or final academic year of the graduate program in the 2023/2024 academic year.
- 2) Previous student scientific research activity is preferred
- 3) Good English language skills

Students will follow the regular TM PhD training. However, with a decreased number of classes per semester.

Please find the structure of the classes, group meetings, and projects meetings below. Group meetings and project meetings are mandatory, except the exam period and official breaks. Classes are organized in blocks three times per week. Students can attend any of the days, or can complete the course divided into multiple days.

During the first four semesters, students focus on acquiring the necessary training credits (16 credits/ 4 semester). On the other hand they perform their research. After completion of the studies, students will undergo the Complex Exam, which is the evaluation of theoretical knowledge and research progress.

The next phase is the research and dissertation phase (1-4 semesters), when the students finish their research work and prepare their thesis.

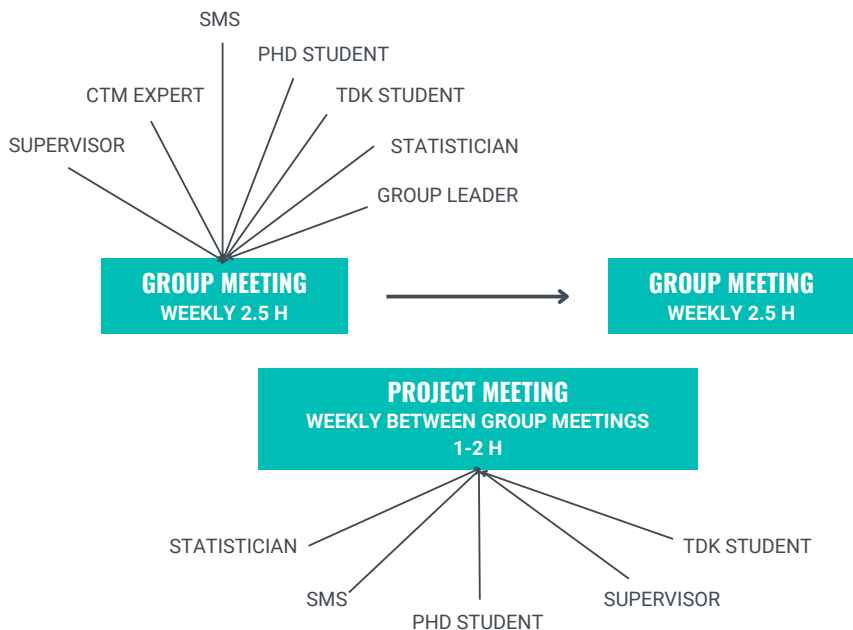
The last phase is the defense of the thesis.

Students need 2 first author publications to complete their PhD studies. Excellent students may finish their first publication until the end of the first year, and their second until the second year. This results in a scholarship at the end of the first two years.

# SCHEDULE AND CLASSES

During the training period, there will be **regular and periodical meetings**. In addition, the training structure differs between the training years. The curriculum includes e-learning materials and on-site meetings, while the project discussions are held in-person meetings and using online platforms as well. **The first year focuses** on the project conceptualization and starting the projects necessary for the PhD. For this, in the first year, we focus on the main methodologies on a weekly basis. First, we organize group meetings for students with a similar field of interest, including their supervisor. Second, in the first part of the first-year regular courses are organized, generally with e-learning followed by a practical course week. The third part of the week is represented by the project meetings, where we focus on particular projects discussed with the project team.

**Starting from the second year**, these meetings will be organized on a monthly basis, mainly focusing on patient enrollment in prospective studies or finishing up the started projects. To ensure that everyone achieves the set milestones, **regular audits are organized**.



## GROUP MEETINGS

The main structure of the program is represented by the group meetings. Student in the program are grouped according to their scientific fields. Currently we have groups based on the following topics: dentistry, gynecology, urology, cardiology, intensive care medicine, neuropsychiatry, orthopedics&traumatology, pediatrics, gastroenterology, endocrinology, COVID-19 and infectious diseases, pharmacology, and miscellaneous.

Each group includes 7-14 students, their supervisor, and project students, on the other hand the centre allocates 1-2 SMSs, a statistician and an expert discussant to the group.

During the first year, each group has a meeting each week in a pre-specified day and hour for the year. In these meetings each fellow presents his/her progress during the previous week and the group jointly discusses the scientific questions, presentations and the progresses. Starting from the second year, following the same group structure, there are pre-specified monthly meetings with the same purpose.

### **REGISTRY AND CLINICAL TRIAL MEETINGS**

Our very dedicated registry and clinical trial coordinator group organizes periodical meetings, where project groups can present their registry and clinical trial initiation and analysis plans. Each meeting is held periodically, on a pre-specified date, separately for each academic year.

### **PROJECT MEETING**

The individual projects are also weekly managed by small study groups which consist of at least the junior fellow and a senior fellow, the tutor, the biostatistician and, if necessary for the project, an expert specialist. The project meetings are lead by the SMS, dedicated to the project team. The project team contacts the SMS with any research related question, who will ensure the fastest and most accurate guidance. The projects are essentially meta-analyses, patient registries, clinical trials, and basic research projects in which the research fellow is the principal investigator (i.e. first author).

Every student will start with a systematic review and meta-analysis in his/ her research field, which should represent the literature search and the basis of the other projects like clinical trials or prospective patient registries.

### **COURSES**

Our research fellows receive scientific and methodological education which is very intensive in the first year in the frame of weekly courses. A list of the included courses are summarized in Table 1 below. Most of the courses consist of an e-learning part, followed by an on-site workshop. The courses are held by members of the centre or by invited high qualified lecturers.

Courses are organized three times per week, each day for a different set of groups. During the year we follow the same weekly schedule for the groups. Course attendance is mandatory for the first year students. However, we are continuously developing our learning material. Therefore, it is highly suggested for other years as well to follow our courses. On the other hand, the Translational Medicine PhD training ensures the necessary credits to be able to attend the Complex Exam at the end of the fourth semester.

## COURSES DURING THE TRAINING

SEMESTER	COURSES
First semester	Systematic review and meta-analysis, Biostatistic, Patient registry, Clinical Trial
Second semester	Soft skill training, Article writing, Clinical Pharmacology
Third semester	Excel course, Advanced systematic reviews and meta-analysis
Fourth semester	Grants, research, and development, Bioinformatics, Introduction to basic science

### MOODLE E-LEARNING SYSTEM

As a major improvement, we have built an e-learning platform that covers all the needs of the PhD training. Moodle serves as a platform for e-learning, group meetings, project meetings, project follow-up, and communication. For communication, we have separate forums for group meetings, project meetings, classes, and a general forum. On the other hand, communication with other colleagues is done using the chat function.

**Website:** [elearning.tm-centre.org/edu](https://elearning.tm-centre.org/edu)

### SEMINAR LECTURES

There are a total of 8 seminar lectures planned during each year of the training. For the seminar lectures we plan to invite role model researchers with an outstanding scientific achievement. The list of lecturers will be available at the start of the program. You can see a previous seminar lecture invitation [here](#).

### PROGRESS REPORTS DURING THE TRAINING

During the training we will organize regular audits for the MD PhD students. In the first year every 3-months, in the 2nd and 3rd year every 6-months. The aim of the progress reports is to provide a conference like environment for the students, where they can present their scientific question, progress since the previous audit, and they will gain important presentation skills and networking possibilities.

During the progress report students will have 8-10-minutes to present their progress followed by an open discussion. For the progress report multiple groups are schedule for one day, therefore student can have an insight in other projects and practice multidisciplinary discussions. Watch a short summary of a previous Progress Report [here](#).

### MILESTONES

The first three months is about the conceptualization of the systematic review. With the help of the group, during the group meeting we aim to find the best research questions. During the first 3-months students should end with the systematic search and selection of the literature.

During the next 3-months we concentrate on the data collection and the results. In this period, we aim to discuss the result of each project on a structured way, therefore at the end of the first 6-months students should be able to present their results of the meta-analysis.

For the meta-analysis, the next 6-months is about the article writing, at the end of this period the manuscript should be ready to be submitted to top journals. On the other hand, in this period the other projects of the students should be discussed. If the student has another systematic review, he/she should be ready with the literature search. If it is a clinical research question or basic research questions, the protocol of the study should be planned.

At the end of the first year, students can have their first paper submitted, while their second study should be started. Until the end of the second year students can have two first author papers submitted or published. Starting from the 2nd year, there will be a progress report every 6 months, with the same presentation structure.

### COMPLEX EXAM

Students attending the MD PhD training will have their Complex Exam at the end of their fourth semester.

The exam will have two parts, (1) the first one will be a written test with questions from the elearnings and courses, (2) the second will be an oral presentation of your two-year work, 10 minutes presentation followed by 10-20 minutes of discussion.

### ENGLISH LANGUAGE COURSES – HAVE ADDITIONAL CHARGE

The training is in English. The scientific English skills of the students are developed by the regular presentations, meetings, and courses. If additional language training is required the centre can provide guidance on it, however, this may have additional charges.

## MINIMUM REQUIREMENTS DURING THE TRAINING

Year	Year I MD PhD Students	Year II MD PhD Students	Supervisor(s)	TDK student(s)
Group meetings	min. 80%	mandatory	min. 80%	min. 75%
Project meeting	min. 80%	once a month	min. 80%	min. 75%
E-learning	100%	highly suggested	100%	100%
Courses	100%	100%	optional	optional
Seminar lectures	min. 80%	highly suggested	recommended	recommended
Progress reports	100%	100%	100%	recommended
CTM events	highly suggested	highly suggested	highly suggested	highly suggested

**MD PhD students** have to attend the weekly group meetings, the project meetings, and the courses. However, in the exam periods their attendance is not mandatory. Starting from the second year, the frequency of the meetings decreases. Therefore, attending one group meeting per month and at least one project meeting is mandatory.

**Supervisors** are required to spend a minimum of 4 hours/ week/ student. This is essential for the success of each project. Out of the 4 hours, 2.5 hours/ week is spent on the group meeting and 1-2 hours/ week on the project meeting.

**TDK-students** are asked to attend at least 75% of the group meeting and project meetings. Since these may overlap with other programs during their gradual training, this may vary depending on their research activity.

The completion of the **e-learning** is mandatory for every participant. For a successful closing exam, you need to score a minimum of 75%. After the completion of the e-learning an electronic certificate will be granted.

During the first-year **progress reports** are organized every 3-months and they present the official audit of each student. The attendance and successful completion are mandatory.

**CTM events** like sports events or social gatherings optional, however, are highly recommended.

**The exact dates** of the courses, group meetings, project meetings, progress reports will be decided after the admission period.

The attendance of the PhD student, supervisor, and TDK-student is continuously monitored, and the fulfillment of the minimum requirements is **reassessed every 3-months**. Please note that a continuously low attendance rate may result in exclusion from the TPhDP, however, anyone can continue their PhD program outside of TM program.





## CAREER PATH MODEL

In addition to the methodological learning, our centre gives the possibility to take part in the development of the training and to be active participants of the coordinator team.

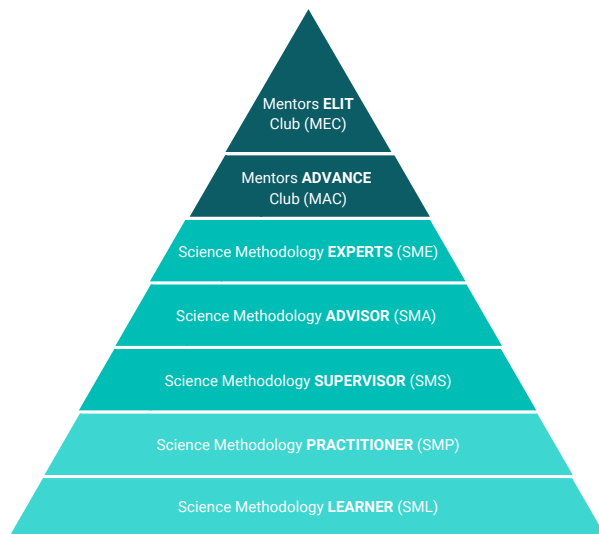
**Undergraduate student or Science Methodology LEARNER (SML)** – may take part in the program by joining a research group, by this they will have a granted position to participate in the PhD training and will be listed as co-authors in the given project.

**1st year PhD student or Science Methodology PRACTITIONER (SMP)** – students in their first year focus on learning the methodology and starting their projects, for this the centre provides the coordination, statistical and IT background.

**2nd year PhD student or Science Methodology SUPERVISOR (SMS)** – selected students will be able to join the centre's coordinator team, by this being able to participate in multiple projects and will be employed by the centre.

**3rd year PhD student or Science Methodology ADVISOR (SMA)** – students with substantial commitment to the centre may continue their coordinator role, by this they will be able to participate in multicentric trials and in advanced courses.

**4th year PhD students or Science Methodology EXPERTS (SME)** – only with invitation. This is the ultimate level in the program. These students will be selected as leaders in the centre, they will be able to participate in international trainings, they will be nominated as junior members of Academy of Science.



# APPLICATION

## HOW TO JOIN OUR PROGRAM

CLICK HERE  
OR SCAN THE  
CODE TO APPLY



### TO THE TRANSLATIONAL MD/DMD/PHARM - PHD PROGRAM YOU MAY APPLY IF

1. Students of any Semmelweis University faculties, who will start the penultimate or final academic year of the graduate program in the 2023/2024 academic year.
2. Previous student scientific research activity is preferred
3. Applicants must have a good command of English, which is assessed at the entrance interviews (minimum B2 levels, see details here).

The admission procedure is based on evaluating the candidate's general and topic-related knowledge as well as personal ability, academic competence and previous scientific activity and contribution.

### FEES

- Registration fee for the application: **75 EUR**
- Tuition fee: **10.000 EUR** / academic year. Students will receive a scholarship of 5.000 EUR/ academic year, if they submitted their first manuscript until the end of the first year, and the second until the end of the second year.

### EXCELLENCE AWARD

The Centre for Translational Medicine supports students with high performance and commitment. For a PhD, students must publish at least two first-author papers, which can be done in the first two years. Successful students can publish even more during this period, which will be awarded an excellence award. Students will receive an excellence award of **5.000 EUR**/ academic year if they submitted their first manuscript by the end of the first year and the second until the end of the second year.



## APPLICATION STEPS

- 1) Fill in the **form** and submit the application to the CTM SU by **May 1, 2023**
- 2) A CTM SU colleague will be in touch by phone to discuss the details
- 3) Submit your PhD **application** to SU PhD Office by **May 15, 2023**

## IMPORTANT DATES

- Registration start: **January 1, 2023**
- Webinar: **March 28, 2023 18:00** (Hungarian), **March 29, 2023 18:00** (English)
- Pre-application: **May 1, 2023**
- Completing the registration: **May 15, 2023**
- Interviews: Middle of **June, 2023**
- Acceptance by: first half of **July, 2023**
- Start of the program: **August 28, 2023**

## RESPONSIBILITIES OF THE CENTRE

The Centre will provide access to the training materials in case of successful recruitment, but this does not cover the technical requirements for access, in particular a stable internet connection and computer equipment. The application fee covers the costs of the application procedure, and the Centre does not undertake to reimburse the costs of unsuccessful applications. Students who are successfully admitted will be offered a training contract by the Centre. Hungarian law will apply to the application process and the training as a whole.



# APPLY TODAY



## MORE INFORMATION

Should you need any further information, please do not hesitate to contact us:

[tmk@semmelweis-univ.hu](mailto:tmk@semmelweis-univ.hu)

SU, Centre for Translational Medicine | HU-1085 Üllői út, nr. 26, 3rd floor, Office T7

[Our website](#)







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