



# 2020 Annual Report

HSeT Foundation  
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<https://hset.org>



## Executive summary

HSeT. Which ) celebrated its 15th birthday., is a Swiss non-profit organization created in 2006. It works with a network of leading experts from world-wide to develop online training programs in health and life sciences.

Training programs developed by HSeT are delivered through institution-specific websites and can be used to complement existing curriculum or construct new ones. They can be followed by students in a self-directed manner or in combination with traditional face-to-face teaching.

HSeT provides Customized On Line Training (COLT) that is to say training programs tailored to the needs of specific groups of trainees as defined by the institutions themselves. COLT integrates novel pedagogical approaches and tools to map the student's individual progress at every step.

### Changes in the HSeT organization

- **Board of directors.** Jonathan Fuchs from the UCSF, San Francisco has resigned after serving for 15 years. He contributed to the development of a series of learning activities, including "How to write a paper," "How to write a grant," "Protocol-Based Learning" and numerous workshops in Africa, South and North America. HSeT is grateful for his major contribution. Isabelle Decosterd, Vice Dean of education of the Faculty of Biology and Medicine, University of Lausanne resigned after serving for two years. Walter Reith, University of Geneva and future CEO of HSeT and François Verrey, University of Zürich were appointed to the Board in 2020.
- **Scientific Advisory Board.** Two new members Jozsef Kiss, Neurosciences and Patrick Linder, Bacteriology, both from the Faculty of Medicine of the University of Geneva have joined the SAB.

### Major training activities

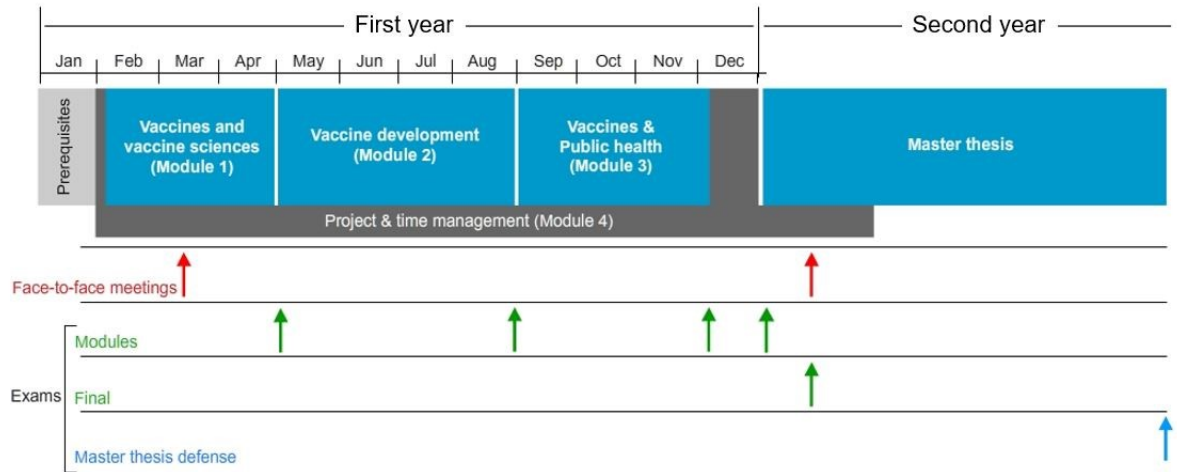
- **International Master of Vaccinology (IMVACC) (University of Lausanne).** Since 2016, 34 students have enrolled in the program. Four students have completed their master thesis and received 60 ETCS credits and the diploma from the University of Lausanne. Students of classes 2018 and 2019 are currently working on their master thesis. The students of class 2020 have completed the first year and have successfully passed the final exam. They all have selected a master thesis project.
- **Postgraduate study curriculum in Translational Medicine and Biomedical Entrepreneurship (TMBE) and Artificial Intelligence in Medical Imaging (AI in MI) at the University of Bern.** HSeT has continued its collaboration with sitem-insel AG (Prof. Jürgen Burger, Pascale Anderle) with respect to the study program in TMBE and the new program on AI in MI.
- **DAS CAS in Translational nephrology.** The program provides relevant knowledge and insights into basics of nephrology and kidney pathophysiology. Participants will acquire and strengthen basic knowledge in pathophysiology of kidney disease by studying annotated online resources, clinical cases and key articles
- **Courses and workshop at the Institut Pasteur Paris.** A new course on Biobanking has been created and a first class of 17 students have completed the course.

### IT development.

- HSeT in collaboration with Amaris has implemented a new user responsive interface, thus facilitating its use on tablets and smartphones. The new interface is used as a content management System. HSeT in collaboration with the Swiss Italian University (USI) has set up a Moodle server hosted at USI which serves as a Learning Management System .

# International Master of Vaccinology

- **IMVACC** an initiative of the Swiss Vaccine Research Institute (SVRI, G. Pantaleo and Fabio Candotti) and the HSeT team, is proposed by the University of Lausanne which offers 60 ECTS and a diploma. IMVACC consists of 4 web-based modules with tutoring during the first year and a master thesis during the second year which can be carried out in an academic or an industrial organization (<https://imvacc.org>) as shown in the figure.



- Since the starting date in 2016, a total of **34 students** have been enrolled in the Master program. Most of the students come from low and middle income countries.

The 4 students that started the MAS in 2016 have completed and successfully defended their master thesis. They received the UNIL diploma. One of them, **Nicolas Peyraud**, from MSF Switzerland, published his master thesis entitled "Potential use of microarray patches for vaccine delivery in low- and middle- income countries" in the Journal Vaccine. He has joined the HSeT team to contribute in developing learning activities based on his extensive experience in humanitarian pediatric medicine and vaccination. The thesis title of **Luc Gwom**, from Cameroon, was "Challenges and opportunities in introducing HPV vaccine in Cameroon and other African countries". He benefited from a collaboration with WHO. The thesis work of **Rodrigo Romero Feregrino** was entitled "Ten years of experience in the acquisition of vaccines for the Expanded Program on Immunization (EPI) in Mexico"., and **Bontle Motloung** thesis was entitled "A cross sectional study into the expanded programme on immunization vaccine (EPI) cold chain management among healthcare workers". The conclusion of her study was that there were major dysfunctions in the cold chain management.

He has joined the HSeT team to contribute in developing learning activities based on his extensive experience in humanitarian pediatric medicine and vaccination. The thesis title of **Luc Gwom**, from Cameroon, was "Challenges and opportunities in introducing HPV vaccine in Cameroon and other African countries". He benefited from a collaboration with WHO. The thesis work of **Rodrigo Romero Feregrino** was entitled "Ten years of experience in the acquisition of vaccines for the Expanded Program on Immunization (EPI) in Mexico"., and **Bontle Motloung** thesis was entitled "A cross sectional study into the expanded programme on immunization vaccine (EPI) cold chain management among healthcare workers". The conclusion of her study was that there were major dysfunctions in the cold chain management.



Nicolas Peyraud from MSF

Excerpts from the students' experience with the IMVACC program:

*The IMVACC course offered me the perfect opportunity to master my knowledge in vaccinology in order to apply them later into my humanitarian medical practice. ...I do not remember how many times I had the opportunity to grab my phone, text a message and directly have a "what's app" call with a teacher to speak about a specific topic from the course. This is what makes the difference with several master courses followed by hundreds of students. Nicolas Peyraud.*

*The IMVACC program was well organized and all the professors involved were very helpful. I have learnt so many new skills during the program that enabled me to work on a broad range of issues related to vaccines. The set of skills and knowledge acquired from the IMVACC program has strongly impacted my professional life as the quality of the work I now deliver is both appreciated and highly demanded. I have already used these skills to provide technical support to several countries in Africa through my work with NGOs and WHO. Luc Gwom.*

IMVACC is an international program.

- The high tuition fees (20'000 Swiss francs) are not compatible with the financial resources of students from low and medium income countries.
- Fellowships were therefore requested and obtained for such students .
- Fourteen South African students were supported by the South African Medical research Council (MRC).
- Seven students from Kenya, Uganda and Tanzania were supported by the European and Developing Countries Clinical Trials Partnership (EDCTP) program.
- One Cameroon student was supported by the Fondation Biochimie in Lausanne
- One South African student from a Geneva Foundation.
- Due to financial constraints the South African MRC fellowship program was discontinued in 2020, and the EDCTP proposal ended this year .

Austria	1		Marocco	1	
Cameroon	1		Mexico	1	
Germany	1		South Africa	15	
India	2		Switzerland	4	
Kenya	2		Tanzania	1	
Madagascar	1		Uganda	4	

*National origin of the trainees*

**Customized OnLine Training (COLT)** is the main educational approach of IMVACC. It offers flexibility, accommodates the time constraints of the trainees, and saves long-distance travel and housing expenses. It focuses on case studies and problem-solving exercises. It is moderated by tutors who are in regular contact with the students to guide them, to answer questions, and to maintain momentum. All the students of classes 2018, 2019 and 2020 have completed the first year and successfully passed the modules and the final exams. They are all actively working on their master thesis projects under the supervision of a local thesis director.

**Assessment fits a formative paradigm** designed to assess learning and acquisition of skills. They provide an opportunity to make up for gaps in knowledge by offering links to relevant teaching material. Each module ends up with a self assessment quiz. At the end of the first year there is a final exam.



Comments of a student of class 2020 after she received the scores of the 4 module tests and final exam:

*"I am very humbled by my score. Looking at my score sheet, one would think that this was a very easy course! And it was anything but easy for me, very enjoyable though! Prior to the course, my knowledge was limited to Phase 1-3 HIV clinical trials. I have learnt so much more than I imagined I would. Now when I read an investigator's brochure, I actually understand every part of it."*



# Programs of SITEM INSEL Foundation and the University of Bern

HSeT continued its collaboration with the sitem-insel School. In addition to the MAS/DAS/CAS in **Translational Medicine and Biomedical Entrepreneurship** (TMBE) and the CAS in **Artificial Intelligence in Medical Imaging** (AI) the sitem Center launched a new MAS in **Medical Device Regulatory Affairs and Quality Assurance** (MDRQ) with students from Switzerland, the UK and Malaysia. The first feedback was very positive.

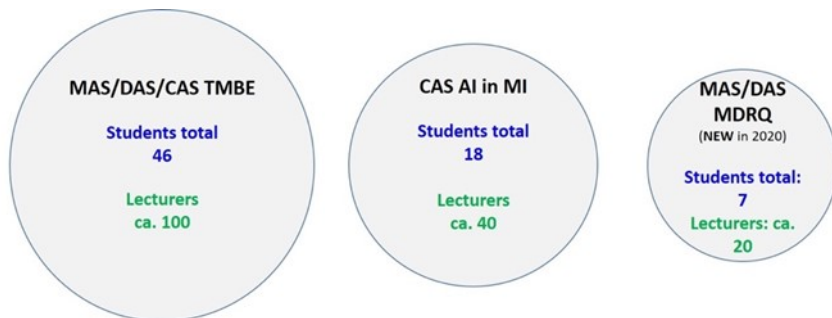
For the first time, the sitem-insel School organized a scholarship award competition. Out of the many applications 10 researchers with excellent track records from the University of Bern, the ETH, the University of Geneva, the University of Basel and the University of Mainz, and 2 start-up companies, namely MachineMD and Retinai, were awarded a scholarship.

Despite the Covid situation the sitem School was very successful in the recruitment of new students for all three programs, namely 12 for the TMBE, 11 for AI and 6 for MDRQ. Also, thanks to the blended learning format the sitem-insel School was mandated to continue its teaching activities as planned. The onsite sessions could be easily organized and recorded thanks to HSeT's IT infrastructure. In response to the Covid situation the sitem-insel School organized its traditional AI symposium as an online event only. Thanks to this format, more international speakers and attendees participated at the event than at the previous symposium. The talks and virtual coffee breaks with the speakers were highly appreciated.



Left panels: Symposium in framework of the CAS in artificial intelligence in Medical Imaging.

Right panel: Kick off sessions of the programs in Translational Medicine and Biomedical Entrepreneurship and Medical Device Regulatory Affairs and Quality Assurance.



Number of students and lecturers in the study programs of the sitem-insel School:

TMBE: Translational Medicine and Biomedical Entrepreneurship,  
AI in MI: Artificial Intelligence in Medical Imaging,  
MDRQ: Medical Device Regulatory Affairs and Quality Assurance



# Certificate and Diploma of Advanced Studies in Translational Nephrology

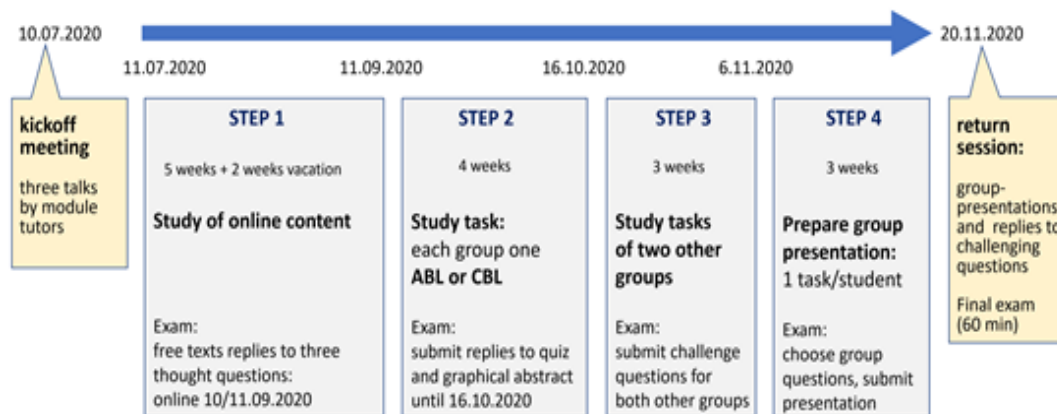
As of , **HSeT** has developed a **blended e-learning course** in Translational Nephrology commissioned by the Swiss consortium **NCCR Kidney.CH** for the education of its PhD students and postdocs. The course comprises now **six modules** with the following topic:

- Salt, Water and Hypertension
- Acid-base Homeostasis
- Calcium and Phosphate
- Oxygen Signaling and Cancer
- Metabolism and Kidney Function
- Inflammation and Immunology

Total number of participants up to now:	64
Number of participants having finished a full module cycle:	22
Number of participants having been awarded a CAS or DAS:	21
Number of current participants:	18

Modules consist of face-to-face and/or online kick-off and return sessions with lectures and group presentations and a e-learning part during which participants review reading material, take quizzes, read key articles, explore clinical cases and train in Translational Nephrology . Here the example of a module:

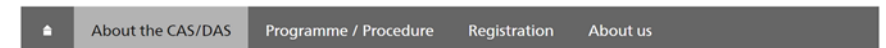
## Module 2 – Acid-Base Homeostasis



The Translational Nephrology course is now recognized as a CAS/DAS of the University of Bern and is open to national and international graduates. This advanced study program officially started in March 2017. A new cycle of six modules lasting two years started in March 2020. HSeT is responsible for the e-learning courses of the program



## Translational Nephrology



**Objectives**

**General Information**

**Timeline**

**Diploma**

### Objectives of the programme

The programme provides to graduates in medicine and life sciences relevant knowledge and insights into the basics of nephrology and kidney pathophysiology. Participants will acquire and strengthen basic knowledge in pathophysiology of kidney disease by studying annotated online resources, clinical cases and key articles and test their progress with online quizzes and evaluations as well as face-to-face sessions with module leaders and tutors.



The NCCR Kidney.CH will end in 2022 and will thus no longer sponsor the TN course or provide participants. To continue the course, it will be crucial to attract PhD students and postdocs working on kidney-related topics and MD's working in nephrology independent of the NCCR. Currently we have three MD's not associated with the NCCR taking the course.

It is planned that a new «**Kidney**» **Center of Competence** of the University of Zurich will take the academic lead of the TN course after the end of the NCCR.

**Translational Nephrology**  
CAS/DAS



## Other training activities

**Course in Biobanking.** The Institut Pasteur Paris, the Network of Biological Resources of the Institut Pasteur (BIPnet), the European Virus Archive goes Global (EVAg), and the HSeT Foundation have developed an online training course, that is based on their experience in the surveillance of infectious diseases, and is adapted to the training and transfer of knowledge to students and staff of biobank structures, especially in developing countries. Due to the Covid-19 pandemic, the course was entirely online with 16 participants from Africa, Asia, South America and Europe. The students received 5 ECTS from the University of Lausanne after passing the final exam



**Institut Pasteur Vaccinology course.** Twenty eight participants from all over the world followed the 13th vaccinology course of the Institut Pasteur. The course consisted of face-to-face lectures, a workshop on Vaccine Design, and online, self-directed learning activities to be conducted before and during the course.

**Master of advanced studies in toxicology (MASTOXICO).** A new session started on September 2020. The 21 students came from all parts of Switzerland and from several European countries. As the participants were actively engaged in their professional life, they particularly appreciated the distance format of HSeT's module, "Basic Principles in Toxicology". In response to a request from the MAS direction, the content prepared by HSeT for several modules was transferred to the UNIGE Moodle LMS platform.

**CAS in laboratory medicine.** This new program was launched in 2020 by the University of Geneva to replace the mandatory "FAMH courses". HSeT course on the Preanalytical phase canceled in March because of the Covid-19 pandemic. The HSeT course on Statistics in Laboratory Medicine was scheduled from August 6 to October 9 and was followed by 22 students. The program started with the study of HSeT online courses and self-assessment quizzes. The initially planned one day face-to face-course was instead given by videoconference.

**Preanalytical Phase course of the University Cheikh Anta Diop in Dakar, Senegal.** A three-week course (July-August, 2020) on the preanalytical phase was organized in collaboration with the French African telemedicine network (RAFT, Geneva) within the superior study diploma (DES) of Clinical Biology for MDs and pharmacists.

**Faculty of Medicine, University of Geneva.** HSeT was approached by the Faculty of Medicine of the University of Geneva to update the online clinical cases used for bachelor studies at Mauritius University, to adapt case studies for the bachelor curriculum in Geneva, to explore the development of online article-based learning for the Masters curriculum, and to participate in the development of new MAS and CAS programs.

# IT development

HSeT uses Microsoft technology for running its Content Management System (Microsoft SQL) and Moodle to handle its Learning Management System. HSeT has created two public websites in WordPress that describes the features of the [HSeT Foundation](#) and [IMVACC](#) to advertise the International Master of Vaccinology.

## Moodle platform

The HSeT Moodle platform (<https://elearning.hset.org/course/index.php>) was developed by Christian Milani at the University of Italian Switzerland (USI). Some HSeT activities are also hosted on the Moodle platform of the University of Geneva.

Registration of the students, tracking their progress and reporting and communication is performed on the Moodle platform.

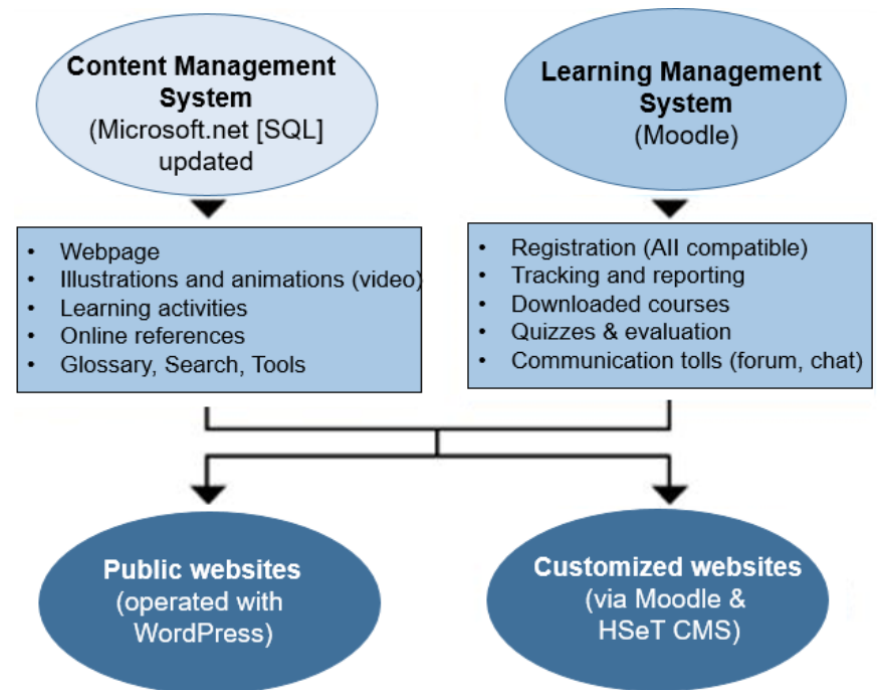
## HSeT platform

The collaboration with our IT partner Amaris in Renens, Switzerland for the development of new functionalities has continued to be successful. HSeT has further developed the new user interface that has a more modern look and is responsive, such that it can be used on tablets and smartphones. The platform also offers many tools, including a print function, a search function, a glossary, and a sitemap.

Moreover, HSeT has advanced significantly with the procedure for extracting high quality content material from its CMS, and is in the process of developing a WordPress based prototype.

## LinkedIn platform

With the help of Ivan Santos from the SITEM/INSEL Foundation HSeT has created a [HSeT website](#) LinkedIn with the aim of valorizing and promoting its activities and online training programs.





# HSeT organization

## Foundation Board

- **Michelle Rossier**, HSeT Foundation, President
- **Jean-Pierre Kraehenbuhl**, HSeT Foundation CEO & University of Lausanne
- **Uyen Huynh-Do**, University of Bern
- **Mathieu Nendaz**, Vice Dean, Faculty of Medicine, University of Geneva
- **Armelle Phalipon**, Institut Pasteur, France
- **William Pralong**, Federal Institute of Technology Lausanne
- **Walter Reith**, University of Geneva & HSeT Foundation
- **Frédéric Rochat**, esq, Etude Kellerhals-Carrard, Lausanne
- **Bernard Rossier**, University of Lausanne, HSeT Foundation
- **Amadou Sall**, Institut Pasteur, Dakar, Senegal
- **Dominique Sprumont**, University of Neuchâtel
- **François Verrey**, University of Zurich

Professors Isabelle Décosterd and Nicolas Fasel (University of Lausanne), and Dr. Jonathan Fuchs, resigned in 2020. We wish to thank them for their valuable collaboration. They have been replaced by Walter Reith (Emeritus professor, University of Geneva), François Verrey (Emeritus professor, University of Zürich) and Dr. Armelle Phalipon (Institut Pasteur, Paris, France).

## The HSeT team

- **Pascale Anderle**, Translational medicine
- **Nathalie Debard**, Immunology, Microbiology
- **Jean Gruenberg (SAB member)**, Cell Biology
- **Jozsef Kiss (SAB member)**, Neurosciences
- **Ivana Knezevic (SAB member)**, Vaccinology
- **Jean-Pierre Kraehenbuhl**, Immunology, Vaccinology
- **Claude Meric**, Entomology, Vaccinology
- **Li Long**, Computer science
- **Patrick Linder**, Microbiology
- **Alain Meystre**, Infographic design
- **Walter Reith**, Immunology, Pathology
- **Bernard Rossier**, Nephrology, Toxicology
- **Michelle Rossier**, Laboratory Medicine
- **François Verrey (SAB member)**, Nephrology



Pascale Anderle



Nathalie Debard



Jean Gruenberg



Patrick Linder



Jozsef Kiss



Jean-Pierre Kraehenbuhl



Claude Meric



Li Long



Ivana Knezevic



Alain Meystre



Walter Reith



Bernard Rossier



Michelle Rossier



François Verrey

# Perspectives

HSeT has been approached by members of the Faculty of Medicine of the University of Geneva to participate in the development of two new MAS and CAS programs.

**CAS in Biobanking** The aim of the Certificate of Advanced Studies (CAS) in Biobanking is to extend the scope and depth of the Biobanking course of the Institut Pasteur. In collaboration with selected specialists from the Faculty of Medicine of the Geneva University and Hospitals (HUG), and the Swiss Biobanking platform ([SBP](#)), a one year program will be offered. The proposed CAS will be open to healthcare professionals, researchers, clinicians, biobank managers and database managers from Switzerland and abroad. The CAS will provide theoretical and applied training relevant to the principles, skills and operations required to create new biobanks, or to further develop and maintain existing ones. The training program will consist of online content and learning activities dispatched in 5 modules addressing the following themes: basics of biobanking; governance and planning; quality management systems; biosafety & biosecurity; regulations; ethics, privacy, security and informed consent; biospecimen collection, processing, storage and distribution; data systems and records management; specificities of different types of biobanks (e.g. microbiological samples, healthy and pathological tissues, body fluids).

The CAS will be operative in 2022 and recruitment will start in the spring of 2023.

## MAS in Translational Oncology

The creation of an International Master of Advanced Studies in Translational Oncology using innovative approaches to effectively promote integration in the rapidly changing field of Oncology is an initiative of members of the Faculty of Medicine, University of Geneva.

The aims of the two-year program is to provide training in Clinical research with an emphasis on molecular oncology and in clinical & translational research as well as clinical trial design. The MAS program will include partners from the Lemanic Oncology (SCCL), the Universities of Geneva and Lausanne and the Swiss Federal Technology Institute of Lausanne. HSeT will provide its expertise in distance learning.

