Medical applications using radionuclides are of increasing importance in today’s world. Tomographic imaging techniques such as PET (positron emission tomography) and SPECT (single photon emission computed tomography) are important components of the molecular imaging and the development and use of radionuclides for tumour therapy require special education. The Master Programme in Medical Nuclide Techniques is highly interdisciplinary and brings together leading scientists and clinicians from Uppsala University to create a unique and stimulating educational environment.

Uppsala University has been world leading in this area for many years. This education is at the forefront of research and meets the increasing demand for knowledge in nuclide techniques for physicians, pharmacists, physicists, biologists and chemists.

ABOUT THE PROGRAMME

The programme provides theoretical and practical skills through a variety of different teaching methods and in close contact with current research projects. The development of radioactive compounds for preclinical research, medical imaging or tumour therapy requires competence from several areas.

The first semester focuses on the unique properties of ionising radiation and radionuclides and includes theoretical and practical training about radiation types and sources, medical use, development of pharmaceutical compounds and techniques to optimise detection and measurement. An important part of the education involves good manufacturing practice (GMP), i.e. how to assure product quality and patient safety in the production of pharmaceutical compounds.

During the second semester you will apply your knowledge from the previous semester with emphasis on potential strategies for research and clinical applications of radionuclides for medical imaging and cancer therapy. The semester ends with a Degree Project where you have the opportunity to focus on a research area of your specific interest.

The first year also features a seminar series covering a variety of topics such as project leadership, design methods, biostatistics, presentation techniques and research ethics.
During the first semester you will focus on methods and technologies for producing, assessing and measuring ionising radiation. You will study physical and biological aspects on ionising radiation, including sources of radiation, measurements and estimates of radiation effects and risks. The choice of labelling method is critical for functional molecules in radionuclide-based imaging and therapy and you will study various techniques for labelling and purification of radionuclides for preclinical applications. Further studies involve function and application of detectors and imaging modalities in research and for clinical practice, including PET (positron emission tomography) cameras and how to assure product quality and patient safety in the production of pharmaceutical compounds. The first year ends with an individual project where you can study, as a literature project or combined with experimental work, an area of specific interest. The programme will also give you insights into presentation techniques and research ethics.

The second year includes studies on strategies for compound development, labelling techniques, testing and evaluation of radionuclide-labelled compounds aimed for in vitro and in vivo (PET, SPECT) research and clinical practice. During the last semester you will undertake an independent degree project in a research group at an academic department, in a company or other agency in Sweden or abroad. You conclude the degree project by writing a thesis, compiling the research results, and giving a research seminar.

COURSES WITHIN THE PROGRAMME

**Year 1**
- Radiation Protection and Medical Effects, 6 credits
- Nuclide Production and Radiochemistry, 9 credits
- Detection Techniques and Dosimetry, 12 credits
- Good Manufacturing Practice, GMP, 6 credits
- Nuclide Diagnostics and Therapy, 12 credits
- Degree Project, 15 credits

**Year 2**
- Labelling Chemistry and Compound Development, 30 credits
- Degree Project, 30 credits
CAREER

With an advanced education in medical nuclide techniques you are expected to go on to careers in research, healthcare systems, pharma or biotechnology companies, and governmental organisations. The interdisciplinary training, with focus on development of radionuclide labelled compounds, and knowledge about new methods and applications are highly important for progress of molecular imaging in research as well as in healthcare. The strong association with research in the programme gives you an excellent basis for further academic research and PhD studies in the field.

APPLICATION AND REQUIREMENTS

The second round of application is open and closes on April 15. This round is primarily for students not requiring visa, since admissions will not be decided until beginning of July. Applications must be through the Swedish application system, www.antagning.se. For more information, please contact the programme before applying.

MASTER PROGRAMME IN MEDICAL NUCLIDE TECHNIQUES

120 credits

Autumn 2017 100% Campus

Location: Uppsala

Application Deadline: 2016-01-15

Enrolment Code: UU-M3900

Language of Instruction: English

Requirements:

Academic requirements

A Bachelor’s degree, equivalent to a Swedish Kandidatexamen, from an internationally recognised university. The main field of study must be medicine, pharmacy, physics, radiophysics, chemistry, biology, or a similar field of study.

Language requirements

All applicants need to verify English language proficiency. This is normally attested by an internationally recognised test such as TOEFL or IELTS with the following minimum scores:

- IELTS: an overall mark of 6.5 and no section below 5.5
- TOEFL: Paper-based: Score of 4.5 (scale 1–6) in written test and a total score of 575. Internet-based: Score of 20 (scale 0–30) in written test and a total score of 90
- Cambridge: CAE, CPE

Exemptions for students from certain countries.

Selection: Students are selected based on:

- a total appraisal of quantity and quality of previous university studies; and
- a statement of purpose (1 page).

Fees: If you are not a citizen of a European Union (EU) or European Economic Area (EEA) country, or Switzerland, you are required to pay application and tuition fees. Read more about fees.

Application Fee: SEK 900

Tuition fee, first semester: SEK 72500

Tuition fee, total: SEK 290000
Department of Immunology, Genetics and Pathology
The Rudbeck Laboratory, SE-751 85 Uppsala, Sweden

For programme-specific information, please contact: Bo Stenerlöw
bo.stenerlow@igp.uu.se
Telephone: +46 18 471 38 35
Fax: +46 18 471 34 32

For general information about Master's studies at Uppsala University, please send an email to: masterprogrammes@uu.se