

Course Objectives

The use of laboratory animals in life science research is numerous and widespread, involving universities and research institutes, as well as companies producing pharmaceuticals, chemicals, cosmetics and food. In the Netherlands, for example, nearly 800.000 animals are used on an annual basis for fundamental research, vaccine testing and drug development.

Although European legislation on laboratory animal use is very strict, ethical debate and social demand stress the need for reliable alternatives to animal testing.

We offer a comprehensive program of 30 ECTS (5 month full time Minor) on alternatives to animal testing. After completion of the course, students will:

- have an overview of the different themes that are associated with the field of alternatives to animal use;
- know how animal and non animal data can be optimally analysed;
- have specific knowledge of drug discovery, safety testing, validation and acceptance of alternative models;
- be able to provide scientific arguments in favour of or against certain experiments involving animals;
- be able to explain the meaning and application of the three Rs in scientific research and development;

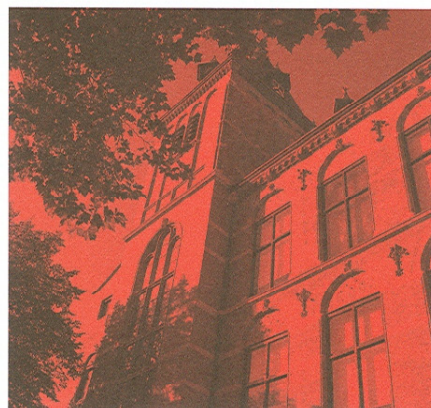
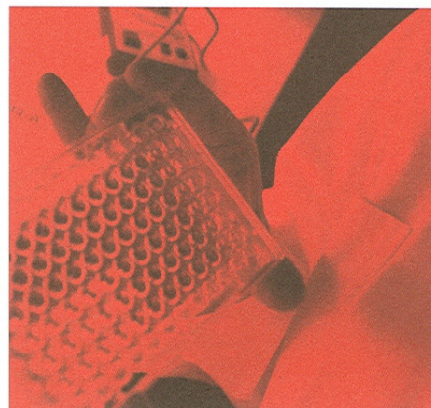
- have hands-on experience with models replacing, refining and reducing animal experiments: like a simulation model of the intestinal tract and cell and tissue culture experiments;
- have practical experience with computerized models that are commonly used in drug discovery and safety evaluation, such as Physiologically Based Pharmacokinetic (PBPK) modelling;
- have general insight in the set-up of an experimental strategy in drug discovery and safety testing.

Course accessibility

The course is open to all bachelor students in Life Sciences or Chemistry who have completed their second year. Students from technical disciplines are also invited to apply for admission. Our International Office (see www.hu.nl) can provide further details for foreign students. Students with a background different from the field of Life Sciences and/or Chemistry will have to send their resume to the minor coordinator (see backside) before admission. This minor has also been approved for students from Utrecht University with a relevant background.

The Program

The program consists of several modules that are arranged thematically. All modules have an interdisciplinary character and contain both theoretical elements and laboratory practice. Each module contains different work forms like lectures; workshops; case studies and laboratory work.



The program consists of the following modules:

1) 'The three Rs' (2 ECTS)

The three Rs consider the possibility to either reduce the number of animals used; replace the animal experiment for an equally suitable alternative; or refine the animal experiments when one deems the experiment necessary (Russel and Burch, 1959). During this module we will consider the importance of the three Rs principle for the field of alternatives on one hand, and for the biomedical progression on the other hand. Furthermore, the use of this principle in legislation on laboratory animal use will be discussed.

2) 'Efficacy & Safety testing' (12 ECTS)

Many hazard and risk assessment studies in toxicology and pharmacology involve animal testing. In this module newly developed risk assessment methods (with a reduced number of animals or even without) will be introduced.

Comparably, animal models used to elucidate biological processes (e.g. in physiology and pathology) can in certain cases be replaced by a less complex model, such as cell cultures or computer simulations. During this module we will focus on different new models that are used to replace, refine or reduce the use of laboratory animals.

3) Data management and Databases (5) ECTS)

To benefit optimally from animal and non-animal data, information technology is indispensable. During this module students will be trained in the basic principles of data management, database systems, statistics, data extrapolation and uncertainties, and data reduction. Furthermore, a short course will be held on how to generate complex computer models.

4) 'Ethics & Public opinion' (3 ECTS)

Ethical debate is important and unavoidable when considering animal experimentation. In this module more insight in ethical debate will be generated. Students will get hands-on experience in discussing ethical problems and learn how public opinion and media can influence objective ethical issues and policy making.

5) 'Mission Alternative' (8 ECTS)

During the course, students will work out a research project under supervision of one of the affiliated institutions or companies. By integrating existing and newly acquired knowledge, students will have to work out a relevant problem concerning alternative testing strategies.

During the course, students will be given the opportunity to visit institutes or industrial labs in which alternative models and strategies are being used. The course will be concluded with a mini conference where project results will be presented, an evaluation of the course and a diner for participants.

The Institute for Life Sciences & Chemistry and TNO

The Institute for Life Sciences & Chemistry has a rich history in the education of technicians for life sciences research and diagnostics. The Institute is a department of the Utrecht University of Applied Sciences and as such interested in finding practical solutions for problems from industry and scientific institutions.

The course has been set up in collaboration with the Dutch Organization for Applied Scientific Research; TNO. This resulted in an excellent program on both conceptual and practical aspects. Students participating in this course will benefit from facilities and expertise available at TNO. To learn more about TNO please visit: www.tno.nl

'Working out a real corporate assignment provides a great opportunity to experience how things go in real working life!' (Denise Schaapman, student Chemistry 2006/2007).



To apply for enrolment or for further information, please contact the minor coordinator.

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