

## Faculty of Science and Engineering

**Profile report:** Pharmacoeconomics (Farmaco-economie)

- Discipline: Pharmacoeconomics
- Level: Tenure-track Assistant/Associate professor
- Fte: Full time (0.8-1.0)

### 1. Scientific discipline

As specialization of the broader scientific discipline Health Economics, Pharmacoeconomics primarily focuses on the economics of pharmacotherapy including medical drug and vaccine treatments. A pharmacoeconomic study typically involves detailed analysis of the costs and health benefits related to pharmaceutical interventions. The discipline is embedded in a life-cycle drug approach in collaboration with scientists working at various stages of drug development.

### 2. Vacancy

This position is opened by the Board of the Faculty of Science and Engineering (PT/dja/18/00491) and will be embedded in the Groningen Research Institute of Pharmacy (GRIP), base unit Pharmacotherapy, -Epidemiology & -Economics (PTEE). The position falls within the framework of 'Career Paths in Science 3' ('Bèta's in Banen 3'). Please see link for [criteria and conditions](#).

### 3. Selection committee (BAC)

Prof dr. H.W.Frijlink, director GRIP, chair

Prof dr. B. Wilffert, chair unit Pharmacotherapy, -Epidemiology & -Economics/ deputy director Master Pharmacy

Prof dr. E. Hak, professor of Clinical Pharmacoepidemiology/ deputy director Master Medical Pharmaceutical Sciences.

Prof. dr. K. Taxis, professor of pharmaceutical analysis

Prof. dr. E. Buskens, professor of health economics (UMCG)

External member: Prof dr. M. Joore, Health Technology Assessment and Decision Making (MUMC)

Student-member: Annemiek Veldsink

Advisors:

H. Haagsma (HR advisor)

Prof dr. P. Denig, professor of drug utilization (UMCG)

### 4. Research area

The discipline of Pharmacoeconomics is a fast-growing research area with various scientific challenges and opportunities for top research. The societal relevance is high, for instance concerning decision making on reimbursement of new expensive drugs (often so-called biopharmaceuticals), and polypharmacy and the growing need for preventive pharmaceuticals within an ageing population. Specific scientific challenges concern the use of real-world data, evaluation of new drugs in early stages of the innovation cycle and economics of precision medicine. Real-world data are important to investigate daily clinical practice, and hence for real-world health technology assessments. In addition, complex computer disease models serve to combine available data from various sources. How to conceptualize such models, estimate their parameters, operationalize and validate them is

an essential element of contemporary Pharmacoeconomics. Challenging research topics include patient-level modeling for the evaluation of precision medicine and adaptive modeling to accommodate new evidence in a fast and efficient way. To be relevant for real-world decision making, models and choices for their input need to be developed with involvement of all relevant stakeholders, clinicians, policy makers and patients with integrity and due care for potential conflicts of interest. The life-cycle approach in drug research to arrive at cost-effective drug or vaccination programs in clinical practice, integrating knowledge acquired over the various patient phases from pre-marketing randomized trials to post-marketing pharmacoepidemiological and pharmacoeconomical studies (bench to bedside and vice versa) comes with a high potential for multidisciplinary top research in this challenging research discipline.

### **5. Embedding: institute (and base unit)**

Pharmaceutical research at the GRIP is multidisciplinary and assumes a central position within the Life Sciences. It bridges clinical and biomedical sciences on the one hand, and chemistry, mathematics (statistics) and physics on the other. The interaction between the pharmaceutical sciences with these fundamental and clinical sciences offers excellent opportunities for cutting-edge research. The GRIP in Groningen is positioned within the Faculty of Science and Engineering (FSE) and is physically located within the University Medical Centre Groningen (UMCG) of the Faculty of Medical Sciences (FMS). In other words, GRIP is ideally positioned to benefit from co-operations between both faculties.

GRIP consists of the following research groups (with their chairpersons):

- Analytical Biochemistry (Prof dr. R.P.H. Bischoff)
- Drug Design (Prof dr. A. Dömling)
- Molecular Pharmacology (Prof dr. M. Schmidt)
- Pharmaceutical Analysis (Prof dr. E.M.J. Verpoorte)
- Chemical and Pharmaceutical Biology (Prof dr. W.J. Quax)
- Pharmaceutical Technology & Biopharmacy (Prof dr. H.W. Frijlink)
- Pharmacokinetics, Toxicology and Targeting (Prof dr. K. Poelstra)
- PharmacoTherapy, -Epidemiology & -Economics (Prof dr. B. Wilffert)

With this vacancy GRIP's ambition is to further build on the scientific knowledge generated by the preclinical research groups (e.g. Molecular Pharmacology, Drug Design, Analytical Biochemistry) that drives precision medicine as well as the scientific knowledge from the clinical pharmacoepidemiology, pharmacotherapy and pharmacogenetics. Such knowledge needs to be further combined with the computational, economic and social sciences to arrive at the most valid and applicable health economic decision models.

The candidate will be embedded in the GRIP research group PharmacoTherapy, -Epidemiology & -Economics (PTEE). PTEE participates in GUIDE where the unit PTEE cooperates within the program of PEGET, "REAL world" studies in PharmacoEpidemiology, -Genetics, -Economics, &-Therapy" and may also be embedded in the SHARE research group VALUE.

In Pharmacoeconomics, input from epidemiological, pharmacological, genetic, and biomarker diagnostic tests, clinical physical and imaging tests need to be combined with computational methodologies and informatics software tools. Efficient innovative Pharmacoeconomics, however, can only be advanced by the application of valid epidemiological studies on large amounts of data and biological samples from various patient populations. To this end, health care Big Data, stored in large locally available databases, as

our in-house prescription databases VIPP and IADB.nl, and other databases as Eurocat, GIANTT, LifeLines, Lareb, and RNG are available at the University Groningen. Healthy ageing is a central theme in many of such databases (e.g. Lifelines, GIANTT).'

## **6. Local and (inter)national position**

In the Netherlands, scientific education and research in the area of Pharmacoeconomics is scarce and mainly carried out at the iMTA (University of Rotterdam), MUMC (Maastricht), as well as the UMCG/University of Groningen. Applied work takes place at the National Health Care Institute as well as in commission of pharmaceutical industry by a range of consultancy companies. The focus of both iMTA and MUMC is broad and covers both public health and general diseases intervention research.

At the Groningen Institute of Pharmacy, Pharmacoeconomics has been a strong discipline for more than 10 years and was headed until January 2018 by professor Maarten J. Postma. At the UMCG, Prof. dr. E. Buskens, Dr. Talitha Feenstra and Dr. Paul Krabbe as part of a broader HTA research group have been involved in several pharmacoeconomical studies, but the focus of their research is more on the broader Health economics than Pharmacoeconomics, and such a specialist is clearly needed to guide the future Pharmacy research and education in this area. Scientific improvements to the HTA modeling approach in close collaboration with epidemiologists/statisticians has been an asset of past and current research. A strong network is present both national (e.g. with ZIN and RIVM) and international (e.g. within Europe through collaborative projects or the EU-NetHTA network). The research is embedded in a multidisciplinary scientific group with experts from the epidemiology, therapy and genetics research areas. The tenure track position in Pharmacoeconomics will be instrumental to further continue this successful research as well as to further build on the increasing expertise in the area of Precision medicine.

## **7. Expected contributions to research**

The Tenure Track candidate is expected to extend his/her research program in the field of Pharmacoeconomics, specifically in the area of Healthy Ageing. The research should compete at a worldwide level and lead to publications in top journals. Obtaining substantial external funding for PhD projects is crucial. Supervision of PhD students is an important part of the research activities. The research is expected to strengthen the existing efforts to integrate applied pharmaceutical research within GRIP in the GUIDE program PEGET.

## **8. Expected contributions to teaching**

The candidate is expected to contribute to the teaching programs Pharmacy and Medical Pharmaceutical Sciences. He/she will be involved in development and/or teaching within the Pharmacy curriculum with emphasis on Pharmacoeconomics and within the learning line Pharmacoepidemiology and Pharmacoeconomics within the Curriculum of Medical Pharmaceutical Sciences. He/she will also be actively involved in the development of new courses and/or revision of existing courses. Coaching and supervision of bachelor, master and PhD-students are also an essential part of the teaching tasks.

## **9. Expected contributions to the organization**

The candidate is expected to have an active interest in and to provide a positive contribution to the management and organizational tasks of the institute. At the level of the FSE, the candidate will contribute to the organization of the faculty, for example by participating in working groups and committees, in the fields of teaching, research and

management. The candidate will participate in relevant national and international organizations.