

Faculty of Science and Engineering

Profile report: Precision Drug Therapy (Precisie Farmacotherapie)

- Discipline: Precision Medicine, Pharmaco-epidemiology, Pharmaceutical therapy, Genetics
- Level: Assistant professor (tenure track)
- Fte: Full time (1.0)

1. Scientific discipline

The core of the discipline Precision Drug Therapy is to classify individuals into subgroups that respond differently to drugs due to differences in drug and disease susceptibility, in the pathological molecular mechanisms underlying the disease and/or in disease prognosis (also referred to as the broader discipline Precision Medicine). It entails the customisation of pharmaceutical therapy using (innovative) diagnostic/genetic tests and pharmaceuticals as well as clinical decision making, and practices being tailored to the individual needs of a patient. The ultimate aim of the discipline is to target preventive or therapeutic drug interventions to those who will benefit most, reducing ineffectiveness and potentially serious and costly adverse effects for those who will not.

2. Vacancy

This position is opened by the Board of the Faculty (PT/gl/19/00030) and will be embedded in the Groningen Research Institute of Pharmacy (GRIP), department of PharmacoTherapy, -Epidemiology & -Economics (PTEE). The position falls within the framework of 'Career Paths in Science 4' ('Bèta's in Banen 4'). Please see link for [criteria and conditions](#).

3. Selection committee (BAC)

Prof dr. H.W. Frijlink, director Groningen Research Institute of Pharmacy, chair

Dr. H.J. Woerdenbag, deputy programme director, BSc Pharmacy

Prof dr. B. Wilffert, chair department of PharmacoTherapy, -Epidemiology & -Economics

Prof dr. E. Hak, professor of Clinical Pharmacoepidemiology

Prof. dr. K. Taxis, associate professor of Pharmacotherapy

External member: Prof. Dr. A.H. Maitland- van der Zee, professor of Precision Medicine in Respiratory Disease, AMC

Student-member: N. Aldarij, student MSc Pharmacy

Advisors: H.Y. Haagsma (HR advisor)

Dr. A.J. Lexmond, scientific coordinator GRIP

Prof dr. R.P.H. Bischoff, professor of Analytical Biochemistry

Prof. dr. R.H. Sijmons, professor of Medical Translational Genetics (UMCG)

4. Research area

The discipline of Precision Drug Therapy concerns a fast-growing area with various scientific challenges and opportunities for top research related to the healthy ageing research agenda. Examples are scientific investigations into epidemiological risk stratification according to causal drug-effect groups and molecular profile testing, and incorporation of genetic testing into a primary care setting to assess the clinical utility of diagnostic molecular and genetic testing for the prognosis of various drug-treated chronic diseases, such as diabetes, asthma, COPD, cardiovascular diseases, depression among adults and seniors as well as ADHD and atopic diseases among children.

Great prospects are also foreseen in the coming years for scientific investigations into improved molecular and clinical diagnostic testing for the prevention of drug interactions and serious adverse events associated with drugs as part of the Precision Medicine initiative.

The novel life-cycle approach in drug research integrating knowledge acquired over the various study phases, ranging from drug design and preclinical studies to pre-marketing randomised trials and post-marketing pharmacoepidemiological and pharmaco-economical studies (bench to bedside and vice versa), to arrive at optimal drug development and evaluation programmes in clinical practice, comes with potential for multidisciplinary top research.

5. Embedding: institute (and department)

The department PTEE is part of the Groningen Research Institute of Pharmacy (GRIP) of the Faculty of Science and Engineering. GRIP participates in the Undergraduate and Graduate Schools of Science and Engineering (UGSE and GGSE). GRIP also participates in the Research Institute GUIDE (Groningen University Institute for Drug Exploration) of the Faculty of Medical Sciences/University Medical Center Groningen (FMS/UMCG). Hence, GRIP is in an ideal position to benefit from co-operation with both faculties. Pharmaceutical research at the GRIP is multidisciplinary. It bridges clinical and biomedical sciences on the one side and chemistry, mathematics, statistics and physics on the other side. The interaction of the pharmaceutical sciences with both fundamental and clinical sciences offers excellent opportunities for cutting-edge research.

GRIP consists of the following departments (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 and Biopharmacy (Prof dr. H.W. Frijlink)
- Pharmacokinetics, Toxicology and Targeting (Prof dr. K. Poelstra)
- PharmacoTherapy, -Epidemiology & -Economics (Prof dr. B. Wilffert)

The candidate will be embedded in the GRIP department of Pharmacotherapy, -Epidemiology & -Economics (PTEE). PTEE participates in the GUIDE programme Real world studies in PharmacoEpidemiology, -Genetics, -Economics, &-Therapy (PEGET) together with the UMCG departments of Epidemiology and Clinical Pharmacy and Pharmacology.

Health care Big Data, stored in large locally available databases, such as our in-house prescription databases VIPP and IADB.nl linked to the Lifelines cohort in the PharmLines Initiative, and other databases such as Eurocat, GIANTT, Lareb, and RNG, are available at the University Groningen.

6. Local and (inter)national position

In the Netherlands, education and research in the area of Precision Drug Therapy is mainly carried out at the Utrecht Institute for Pharmaceutical Sciences (UIPS) of the University Utrecht (UU) and at the GRIP of the University Groningen. Additionally, various research groups of the university medical centres of Leiden, Amsterdam, Utrecht and Groningen focus on Precision Medicine in general or in specific patient groups. In Groningen, Precision Drug Therapy research is shaped by collaboration with the disciplines Pharmacogenetics, Clinical Pharmacoepidemiology, Pharmacoconomics, Molecular Pharmacology, Analytical Biochemistry and Clinical Pharmacy.

Research partnerships are sought with Lifelines, the inter-university Dutch Biomarker Development Center, the Groningen Data Science and Systems Complexity Center (FSE) and the Department of Genetics (UMCG). In addition, the candidate will also benefit from PTEE's (inter)national collaborations with the Central EUROCAT-network (birth defect registries covering one-third of all births in Europe), the Health Protection Agency (London), and the universities of Ghent and Boston, among others.

Within the context of this vacancy a new Center of Precision Drug Therapy is considered. The tenure track position in Precision Drug Therapy will be instrumental in developing this center and integrating research and education from various angles. An important part concerns the formal establishment of a network of practicing pharmacies and nursing homes for academic research and education. Internationally only few western countries (e.g. USA, UK, Canada) have started integrating novel diagnostic tools and clinical prediction rules into actual pharmaceutical practice. The Pharmaceutical Care Network Europe (PCNE) and the European Society of Clinical Pharmacy (ESCP) are large networks enabling the conduct of innovative research, but Precision Drug Therapy is at its infancy.

7. Expected contributions to research

The Tenure Track candidate is expected to extend and develop his/her research program in the field of Precision Drug Therapy. The research should compete on 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 and GUIDE in the program PEGET (see UMCG [website](#)). Further, the candidate should contribute to the participation and integration of the fundamental disciplines in his/her research line, like the biomarker research of the department of Analytical Biochemistry and the Dutch Biomarker Development Center.

8. Expected contributions to teaching

The candidate is expected to contribute to the teaching of the course unit Precision Medicine (BSc Pharmacy, under construction) and Academic Skills (MSc Pharmacy and MSc Medical Pharmaceutical Sciences). He/she will be involved in development and/or teaching within the Pharmacy Curriculum with emphasis on Precision Drug Therapy aspects and will contribute to a good quality of the network of community pharmacies (via IADB.nl and PharmLines) to enable high quality internships as well as research internships. He/she will also be actively involved in the development of new courses and/or revision of existing courses. Supervision of bachelor, master and PhD-students is also an essential part of the teaching tasks.

9. Expected contributions to the organisation

The candidate is expected to have an active interest and to provide a positive contribution to the management and organisational tasks of the institute. At the level of the FSE and GRIP, the candidate will contribute to the organisation 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 organisations.