

Faculty of Science and Engineering

Profile report: Pharmacotherapy in healthy aging (Farmacotherapie bij gezond ouder worden)

- Discipline: Pharmacotherapy; Precision Medicine
- Level: tenure-track Assistant professor
- Fte: Full time (1,0)

1. Scientific discipline

Pharmacotherapy in healthy aging entails the customization of pharmaceutical therapy with (innovative) diagnostic tests and pharmaceuticals as well as clinical decision making and practices being tailored to the individual needs of a patient. The core of the discipline is to classify individuals into subgroups that differ in drug effects according to their disease susceptibility, in the pathological molecular mechanism and/or disease prognosis (also referred to as the broader discipline Precision Medicine). The ultimate aim of the discipline is to achieve healthy aging by targeting preventive or therapeutic drug interventions to those who will benefit most, reducing ineffectiveness and serious and costly adverse effects for those who will not.

2. Vacancy

This position is opened by the Board of the Faculty (JK/gl/17/00614) and will be embedded in the institute 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 PTEE / deputy director Master Pharmacy
Prof dr. M. Schmidt, Chair Molecular Pharmacology
Prof dr. E. Hak, professor of Clinical Pharmacoepidemiology
Prof. dr. R.H. Sijmons, Medical Translational Genetics (UMCG)
External member: Prof dr. A.A. de Boer , Pharmacy UU
Student-member: Maike Tromp
Advisors: H. Haagsma (HR advisor)
Prof dr. E.M.J. Verpoorte, Chair Pharmaceutical Analysis

4. Research area

The discipline of Pharmacotherapy in healthy aging is a fast-growing field of research with a multitude of scientific challenges and opportunities for top research. Increasing age is accompanied by an increase in chronic diseases and comorbidities, which can easily lead to uncontrolled polypharmacy with a poor therapeutic outcome. Rational therapeutic interventions require an optimal, often individualized, choice of drugs in the context of epidemiological risk stratification according to causal drug effect groups and molecular profile testing as well as incorporation of diagnostic genetic testing into a primary care setting to assess the clinical utility of diagnostic molecular and genetic testing for the prognosis of various simultaneous drug-treated diseases. Great research opportunities are also expected regarding 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, pre-marketing randomized trials to post-marketing pharmacoepidemiological and pharmaco-economical studies (bench to bedside and vice versa) to arrive at optimal drug development and evaluation programs in clinical practice comes with potential for multidisciplinary top research.

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 basic units (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)

The candidate will be embedded in the GRIP basic unit Pharmacotherapy, -Epidemiology & -Economics (PTEE). PTEE participates in the research institute GUIDE where the unit PTEE cooperates within the programme of PEGE, "Real world studies in PharmacoEpidemiology, -Genetics, -Economics, & -Therapy".

Tools employed in Pharmacotherapy in healthy aging include pharmacological, genetic, and biomarker diagnostic tests, clinical physical and imaging tests as well as computational methodologies and informatics software. Efficient innovative pharmacotherapy in healthy aging 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 aim 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.

6. Local and (inter)national position

In the Netherlands, education and research in the area of Pharmacotherapy in healthy aging is mainly carried out at the UIPS institute, department of Pharmacy of the University Utrecht (UU) and the GRIP institute of the University Groningen. At the UU, research into pharmacotherapy has a main focus on asthma in children and preventive cardiovascular drug treatment. In Groningen, Pharmacotherapy in healthy aging is part of the disciplines Pharmacotherapy, Pharmacogenetics, Clinical Pharmacoepidemiology, Pharmaco-economics, Molecular Pharmacology, Analytical Biochemistry and Clinical Pharmacy and Pharmacology. The research is embedded in a life-cycle drug approach combining scientific knowledge from bench to bedside and vice versa.

An important part for this tenure track position 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 his/her research program in the field of Pharmacotherapy in the area of Healthy Aging. The research should compete on a worldwide level and lead to publications in top peer-reviewed 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 programme PEGET.

8. Expected contributions to teaching

The candidate is expected to contribute to the teaching programs within the learning line Pharmacotherapy. He/she will be involved in development and/or teaching within the Pharmacy Curriculum with emphasis on Pharmacotherapy and will contribute to a good quality of the network of community pharmacies 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. Coaching and supervision of bachelor, master and PhD students also comprise an essential part of the teaching tasks.

9. Expected contributions to the organization

The candidate is expected to have an active interest 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.