As part of a European project on the Genetics of Eye Diseases we are looking to fill multiple PhD positions at the University Medical Center Groningen, The Netherlands. For two of these position (see below for project descriptions) we are looking for candidates with a master´s degree in biomedical or health science with a strong affinity for (genetic) epidemiological research. Please see www.egret-program.eu for all information (incl. eligibility criteria) and how to apply.

Heritability of eye diseases (Project 5)

LifeLines (www.lifelines.net) is a multi-disciplinary prospective population-based cohort study examining in a unique three-generation design the health and health-related behaviours of over 165,000 persons living in the North East region of the Netherlands (1, 2). It employs a broad range of investigative procedures in assessing the biomedical, socio-demographic, behavioural, physical, and psychological factors which contribute to the health and disease of the general population, with a special focus on multi-morbidity and complex genetics. Information on the occurrence of eye disease is currently collected using an extensive questionnaire. The unique family structure of LifeLines makes it possible to separate and estimate genetic and environmental influences on these eye diseases. In combination with in-depth collections of complete biomedical risk profiles as well as environmental and lifestyle exposures, Lifelines offers unique opportunities to investigate genetic and environmental sources of individual differences underlying occurrence of eye disease in the general population (3). In a number of sub-studies we will focus on specific eye diseases and, for example, investigate the controversial relationship of low blood pressure as a risk factor for glaucoma. We will also be able to explore the role of the autonomic nervous system using heart rate variability as a proxy for parasympathetic nervous system activity.

Supervision

Prof. Harold Snieder
(www.rug.nl/research/epidemiology/sniedergroningenepidemiology.nl)
Prof. Nomdo M. Jansonius (www.nomdo.nl/research.htm)

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Glaucoma screening driven by genetic and other risk factors (Project 6)

Glaucoma is a chronic eye disease, which eventually can lead to irreversible blindness. Symptoms often go unnoticed because of the insidious nature. Because treatment can slow down the progression of glaucoma, screening could be useful. At this moment, there is no nationwide periodic population-based screening program for glaucoma in the Netherlands nor in any other country. The low prevalence of glaucoma is one reason why glaucoma screening is not obviously cost-effective. The prevalence (prior probability) may be increased by limiting the screening to high-risk groups. Although this might work in some populations, we showed – in a Caucasian population in the Western world with an easily accessible health-care system – that preselection on the basis of known glaucoma risk factors (family history and myopia) would not improve the performance of a screening program. The reason was that patients with these risk factors were already more likely to be picked up in regular care (Stoutenbeek et al. 2008). An alternative approach for the time being is case finding at optician shops (Stoutenbeek and Jansonius 2006; de Vries et al. 2012); for the future, preselection based on a genetic risk profile seems promising. Currently, 65 genes are linked to glaucoma - making glaucoma a classical example of a complex disease (Jansen et al 2013). In the current project, we will assess the genetic risk profile of participants in the population-based LifeLines study (www.lifelines.net; see also project #5) and will combine this with other determinants into a glaucoma risk score. Subsequently, we will compare those with a high risk score to those with a low score. As the participants in LifeLines were not involved in the genome-wide analysis studies underlying the 65 glaucoma genes, this approach gives a unique opportunity to evaluate independently the applicability of this type of knowledge in health care.

Supervision

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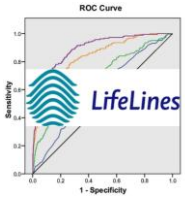

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