PRESS RELEASE

16 August 2022

UCLouvain Brussels research
Discovery of a genetic factor that quadruples the risk of end-stage renal failure!

IN BRIEF:

- **Chronic kidney disease** (CKD) affects **over 10% of the world's population, including over one million people in Belgium**.
- **Genetic mutations are a major cause** of CKD. **Some mutations are very rare** and **have very severe effects** on the kidney. **Others** are much **more common** and have **barely detectable effects**.
- **For the first time, a UCLouvain team has discovered an intermediate-effect genetic mutation, present in about one in 1,000 people,** that **strongly increases the risk of CKD**.
- Discovering the genetic architecture of kidney disease **opens the door to new treatments to avoid or delay costly dialysis**.

INFO: https://www.pnas.org/doi/10.1073/pnas.2114734119

PRESS CONTACT:

Olivier Devuyst, professor, UCLouvain Institute of Experimental and Clinical Research (IREC), Institut des Maladies rares (Institute for Rare Diseases) at Cliniques universitaires Saint-Luc, olivier.devuyst@uclouvain.be, **02 764 54 50** (or Dominique Hoebeke, UCLouvain Brussels Communication, 0496 115 177)

An international team led by **Prof. Olivier Devuyst** (UCLouvain and Cliniques universitaires Saint-Luc) and **Dr Eric Olinger** (University of Zurich, Newcastle University, Cliniques universitaires Saint-Luc) **has identified, for the first time, an intermediate-effect mutation in a gene** (UMOD) that plays an important role in the kidney. This mutation, **present in about one in 1,000 people** of European descent, **increases by a factor of four to five the risk of end-stage renal failure**, which requires costly treatment (dialysis or transplantation).

Chronic kidney disease (CKD), which has a **strong genetic predisposition**, affects **10% of the world's population and** an equivalent percentage **of the Belgian population**. It most often leads to end-stage renal failure requiring dialysis or transplantation. **Deciphering the genetic architecture of CKD is crucial to identifying new therapeutic targets** for preventing or delaying the progression of CKD.

Up to now, as Prof. Devuyst has explained, **two types of genetic mutations (or variants)** were observed: either **very rare mutations with a severe effect** on the kidney, which are involved in rare diseases; or **frequent** variants that are present in everyone but have a **barely perceptible effect** on the kidney. A **third type of mutation, with an intermediate effect, had long been predicted**, to better account for the inherited component of CKD. **The team led by Dr Eric Olinger and Prof. Devuyst succeeded in identifying this type of intermediate-effect mutation in the UMOD gene** that is known to play a role in kidney disease.

The **mutation, detected in about one in 1,000 individuals**, causes an **intermediate biological effect** in the kidney that **increases the risk of end-stage CKD by a factor of four** in combined cohorts of more than 600,000 individuals. **In Belgium**, this could affect **some 10,000 people**.

This **discovery would not have been possible without access to large databases**, in particular the **UK Biobank**, which **collects genetic and clinical data on 500,000 healthy individuals**. This database, combined with others, enabled the researchers to validate their hypotheses. These genetic advances are important from the point of view of **precision medicine**: **knowledge of such genetic factors will eventually make it possible to specify the risk of certain diseases** and thus to adapt treatment.

This discovery, which provides a better understanding of the genetic architecture of CKD, has been **published in the prestigious American journal *Proceedings of the National Academy of Sciences (PNAS)***, which highlights the originality and value of the UCLouvain researchers' multidisciplinary approach and its applicability to other genes and diseases.

Olivier Devuyst is a professor at the UCLouvain Institute of Experimental and Clinical Research (IREC) and coordinator of the Institut des Maladies rares (Institute for Rare Diseases) at Cliniques universitaires Saint-Luc. Eric Olinger is a post-doctoral fellow at the University of Zurich and Newcastle University and is continuing his training at the Human Genetics Centre of Cliniques universitaires Saint-Luc.

LOUVAIN-LA-NEUVE | BRUSSELS | MONS | TOURNAI | CHARLEROI | NAMUR
Dominique Hoebeke, UCLouvain Brussels Press, +32 496 115 177, dominique.hoebeke@uclouvain.be
Sylvain Bayet, Cliniques universitaires Saint-Luc Press Department, 02 764 11 45, sylvain.bayet@saintluc.uclouvain.be