Systems Biology towards Novel Chronic Kidney Disease Diagnosis and Treatment (SysKID)

Resumen:

SysKid, a large-scale integrating European research project, aims at deepening our understanding of chronic kidney disease. The project paves the way for progress in prevention, new diagnostic strategies and treatment options for declining kidney function, which affects millions of patients suffering from diabetes and hypertension.

Objetivos:

Aim 1: Identify persons at risk of developing chronic kidney disease utilizing epidemiology as well as molecular tools.
Aim 2: Understand the molecular processes triggering early stage chronic kidney disease and identify associated biomarkers.
Aim 3: Develop novel diagnostic and therapeutic strategies to control progression of chronic kidney disease.
Aim 4: Perform pre-clinical verification of novel therapy approaches and perform clinical testing of novel diagnostics.

Objectivos contribución:

Main objectives of WP5.2 are: i) the identification and functional characterization of target genes to be assessed in in-vivo settings, ii) the identification of interacting partners of selected biomarker candidates and their regulation, iii) the search of novel biomarkers of CKD to predict disease progression, iv) the analysis of the pathophysiological effects of biomarkers and mediators, brought into the consortium or identified in the framework of the project, on the progression of CKD, and v) evaluation of novel therapy approaches. Animal models of progressive CKD will be used.

Entregables:

D5.2.20: Models of rats with high FGF23 level (PM 45)
D5.2.22: Effect of FGF23 on cell proliferation and gene-protein expression (PM 57).

Impacto:

Chronic kidney disease is clearly a significant healthcare problem with around 10% of the population exhibiting reduced kidney function to a certain extent. Early diagnosis of CKD is in particular valuable in cohorts with hypertension or diabetes. In these populations the incidence of renal diseases is even higher. Annual healthcare costs of CKD patients are significantly higher than those of age-matched patients without CKD. Even more dramatic is the economic burden of end stage renal disease, where dialysis and/or transplantation introduce disproportional costs. The number of ESRD patients requiring dialysis treatment in the European Union increases at an estimated rate of 4% every year on average. Next to the dramatic financial implications, end stage renal disease patients experience a severely reduced quality of life and life expectancy. Clearly, novel diagnostic methods and therapeutic strategies are needed for the identification of early chronic kidney disease and the halt of progression of the disease respectively.
SysKID addresses these issues on three levels: First via epidemiological approaches aimed at identifying improved models for early stage risk assessment, second via improved laboratory diagnostics and prognostics, and third via identification of novel therapy regimes. Next to these tasks SysKID will have impact on training and dissemination of the scientific community and of the public. Epidemiological approaches Based on existing and well characterized sample cohorts, complemented by prospective sample collections we plan on deriving a clinical data-based CKD risk score for allowing a first assessment of early CKD risk. This risk score will be made available through the SysKID webpage in the form of a risk score calculator ideally helping general practitioners and patients whether or not to consult a nephrologists early in the process of disease development.

Presupuesto: 11,769,534.00

Equipo de investigación

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Enlace: http://www.syskid.eu/

Estado: published

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