University of Cyprus
Department of Biological Sciences

Postgraduate Seminars

Seminar Series 2018-2019

Gregory Papagregoriou, PhD

Postdoctoral Research Associate
Molecular Medicine Research Center
University of Cyprus

"*MUC1* Kidney Disease in Cyprus – Genetics, diagnostics and therapeutics"

Wednesday, 21 October 2018, at 17:00
Building CTF 01, Room 108, Panepistimioupoli Campus

This seminar is open to the public

MUC1 Kidney Disease (MKD) is an autosomal dominant tubulo-interstitial kidney disease caused by mutations in the *MUC1* gene encoding the protein mucin-1. It is a rare congenital disease characterized by variable progression rate of end stage renal disease and patients require dialysis or kidney replacement between 21 and >70 years, with a median age of approximately 45 years. The reasons affecting disease progression are still not known. Confident diagnosis is usually impeded by the lack of solid pathognomonic criteria. The most frequent genetic event triggering the disease is a frameshift mutation caused by a single C-insertion located at the variable tandem repeat region (VNTR) of *MUC1*. The VNTR is considered a blind spot for next-generation sequencing approaches, rendering mutation detection an extremely hard task. Remarkably, in the region of Pafos resides the largest cohort of MKD patients in the world, as 1 in every 580 individuals have the C-insertion in *MUC1*. Collectively, our MKD registry includes 158 C-insertion positive patients. With the early use of genetic linkage analysis, we had previously identified 9 families that segregate an extended common founder haplotype. Through genotyping, we established the C-insertion as the causative mutation in all haplotype-positive individuals, thus confirming our previous data. Our registry since genotyping for the C-insertion became possible has expanded significantly and we make continuous efforts to identify more Cypriot families segregating different *MUC1* mutations. The methodical description of the clinical features presented by the Cypriot MKD cohort, as well as the enrollment of new families are principal objectives of this project. Currently, the search for a robust treatment for MKD is focused on identifying therapeutic agents that eliminate the *MUC1* frameshift protein, which is thought to be associated with disease manifestation. For this purpose, efforts are made to organize a clinical trial and observe the effect of a repurposed drug on Cypriot patients. Moreover, we are in search for diagnostic and prognostic biomarkers, that will facilitate confident monitoring of the progress of patients and their response to the candidate treatments.