

## Invitation

Cancer risk as  
a result of evolutionary  
adaptation in extreme  
environments Thans

Friday  
February 2, 2018  
at 15:30

Venue  
CII Building (1st floor),  
Eirinis 95, 3041  
Limassol



Cyprus  
University of  
Technology

## Speaker

### **Dr. Constantinos Voskarides**

*Medical School, University of Cyprus*

Dr Konstantinos Voskarides is currently teaching Biochemistry and Genetics at the Medical School of University of Cyprus. He is working in the field of Medical Genetics for 14 years now. He contributed to the discovery of new genes being responsible for familial renal diseases and he has also contributed to the establishment of the first Biobank in Cyprus. His current research is focused on population genetics of different familial diseases and on evolutionary genetics of cancer. Dr Voskarides has authored until now 43 articles with more than 1,000 citations. Recently he has edited a book on genomic elements, evolution and human diseases, published by Springer publishing group. He is also Associate Editor at the journals "BMC Medical Genetics" and "Journal of Molecular Evolution".

It is well known that cancer incidence is increasing worldwide, with pockets of human populations and geographical locations seemingly at higher risk than others. Dr Konstantinos Voskarides, noted that populations living in very low temperatures, like the Denmark and Norway ones, had among the highest incidences of cancer in the world (Voskarides 2017) suggested that an evolutionary relationship exists between adaptation at extreme environmental conditions—like cold and high altitude—and increased cancer risk in humans.

The findings of this study provide evidence that genetic variants found to be beneficial in extreme environments, can also predispose for cancer. This effect hardly could be filtered out by natural selection since most cancers appear late on age, after most people have their children.

Dr Voskarides will present his work on analysing accurate and reliable data of worldwide cancer incidence (the GLOBOCAN-2012 database permits a variety of incidence/ prevalence analysis per country or per cancer type (<http://globo-can.iarc.fr/>), as well as sifting through genetic clues among 247 different cancer genome-wide association studies, revealing a striking pattern, with the highest incidence of certain cancers linked to those populations living in the coldest environments. Additionally, analysis of 186 human populations showed a great linearity of high cancer incidence with the lower the environmental temperature.

This is the first study that provides evidence that high cancer risk maybe a result of evolutionary adaptation in certain environmental conditions, opening a new avenue for exploring some of the key adaptive forces that could be driving cancer epidemiology.