

EMBO WORKSHOP

Computational models of life: From molecular biology to digital twins

Interview with the PerMedCoE grant recipient Andrea Kakouri

As a biologist by degree, Andrea Kakouri's academic journey took an intriguing turn during her PhD, when she was introduced to bioinformatics and data analysis. This hybrid evolution of her career has opened new horizons and opportunities, which she is excited to further explore.

What is your main professional interest?

I am currently working as a post-doctoral researcher at biobank.cy, Center of Excellence (CoE) in Biobanking and Biomedical Research. My work revolves around exploring omics data to discover biomarkers in rare kidney diseases, such as ADTKD-MUC1, which is particularly prevalent in Cyprus. Collaborating with the Broad Institute of MIT and Harvard, our center is actively engaged in a longitudinal observational study, aiming to prepare ADTKD-MUC1 patient cohorts for upcoming clinical trials. Our goal is to create a digital representation of healthy and diseased substructures, through multi-omics profiling of extracellular vesicles (EVs) in urine from affected kidney cell types.

What were your expectations from the EMBO Workshop "Computational models of life: From molecular biology to digital twins"?

The EMBO workshop provides an ideal platform to enhance my knowledge in computational modelling and deepen my understanding of established methodologies for the development of digital twin. Particularly the workshop promised insights into handling complex molecular data and advanced biomolecular simulations, as well as algorithmic approaches for high-dimensional molecular data.

Have these expectations been met?

The EMBO workshop met my expectations by covering a spectrum of thematic areas, from multi-omics and network analysis to metabolic phenotyping, bio-simulations, and molecular docking. The applications discussed ranged from cancer to rare diseases, drug development, as well as the development of the virtual human twin and population-specific human cell atlases. Interactive sessions with experts allowed for valuable discussions and problem-solving applied to our current data challenges. Additionally, the workshop organized a career session, where we were introduced and exposed to the work of successful individuals in both academia and industry.

What is your feedback regarding gender balance and equality in this workshop?

The workshop was committed to gender balance and equality. The organizers curated a diverse panel of speakers, ensuring equal representation across genders. We had the opportunity to discuss for our data challenges and ideas with all participants equally, with no distinction made between the genders of either speakers or attendees. The content of the topics covered remained focused on scientific rigor, avoiding any gender-based bias. Overall, the workshop fostered a spirit of collaboration and promoted inclusivity within the scientific community.

