Aspasia Destouni
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Aspasia Destouni PhD is a postdoctoral researcher currently affiliated with the Aristotle University of Thessaloniki. Her main research interest focuses on understanding the molecular mechanisms that operate at the genomic and epigenomic level to regulate the integrity of the paternal and the maternal genomes during the highly plastic zygote stage. She is also interested in understanding the mechanisms underlying phenotypic innovation in reproductive traits through comparative genomic studies as key approaches to define which human specific molecular programs shape human reproduction.

She transitioned to research from the Department of Medical Genetics, UoA-EKPA Medical School, Greece where she worked as a post-doctoral clinical fellow in the development and clinical deployment of pre-implantation genetic testing technologies for the selection of human embryos in Preimplantation Genetic Testing (PGT) ART cycles. During her Marie-Curie postdoctoral fellowship at the Vermeesch Lab (KULeuven), she characterized the frequency and nature of CIN in bovine embryos and showed that this model can recapitulate the naturally occurring CIN in human pre-implantation embryos. This collaborative work (with Prof. Masoud Zamani-Esteki) showed that bovine embryos, in contrast to mice, have comparable frequencies and types of CIN with human embryos and established the bovine embryo as a more biologically relevant model for the developmental biology and reproductive genomics research communities. This work also uncovered a previously undetected form of chromosome missegregation whereby entire parental genomes are allocated in different blastomeres during the zygote mitosis, which was coined heterogonesis. She brought forward two main hypothetical models predicting the molecular mechanical causes of heterogonesis: i. “separate parental spindles” and ii. asymmetric centromere strength between parental chromosomes in the zygote. As a postdoctoral trainee at the Perelman School of Medicine at the University of Pennsylvania (Black and Lampson Labs) she investigated the model predicting asymmetric centromere specification in the mammalian zygote and the germline. This work showed for the first time that in wild type mouse zygotes the quantity of CENPA, the histone variant that epigenetically marks centromeres, is higher in maternal than in paternal chromosomes and that this difference equalizes at the 4-cell stage when other epigenetic asymmetries also cease to exist.

She graduated with a BSc in Genetics from the University of Wales, College of Cardiff and then earned her MSc in Human Molecular Genetics from the Imperial College (London) with a joint research project studying how cell-cell contacts shape cell fate decisions at the blastocyst stage in the lab of Prof. Tom Fleming at the University of Southampton. She earned her PhD in Medical Genetics from the Department of Medical Genetics, Medical School of the National and Kapodistrian University of Athens (EKPA-UoA), where she investigated the clinical significance of cell-free DNA in autoimmune and acute cardiovascular diseases.