Rachel O'Neill, Ph.D.

Board of Trustees Distinguished Professor, Molecular & Cell Biology and Institute for Systems Genomics at University of Connecticut

Storrs, CT, US

Dr. O'Neill's research projects use molecular genetic approaches to study centromere function and evolution

Biography

Dr. O'Neill's research projects use molecular genetic approaches to study centromere function and evolution; small RNA biogenesis; epigenetics, transcriptional control and chromatin modifiers; and whole genome and transcriptome sequencing in several model systems, including human, non-human primates, mouse, and marsupials. Using techniques such as in situ hybridization, microarray screening, cell assays, and next-generation sequencing (Illumina, 454 pyrosequencing, SOLiD 5500xl, Ion Torrent Proton), she is addressing the hypothesis that epigenetic modifiers (DNA methylation, histone modifications and small RNAs) mediate transcriptional controls and genome stability. She is lead PI on four de novo eukaryotic genome sequencing projects. Dr. O'Neill has produced next generation sequence for draft assemblies and her lab has written novel scripts for improving genome assemblies with data from multiple next generation sequencing platforms. The lab has been actively sequencing the unfinished portions of both the human and tammar wallaby (a marsupial model) genome using a combination of paired end sequencing, whole genome shotgun, BAC deep sequencing and FISH techniques. Moreover, Dr. O'Neill is involved in several different integrated genomics projects that include RNA-seq (small and whole transcriptome), ChIP-seq, RIP-seq, methyl-seq, and paired end sequencing targeting a Peromyscus disease model, a mouse model for Autism, human samples and patient-derived iPS cells, and several wallaby, primate, and marine species. She has worked with genomics techniques on several grants and research projects over the last 20 years focusing on genome stability and function. As Director of the Center for Genome Innovation within the Institute for Systems Genomics, she oversees the ABI SOLiD 5500xl, 454+ Genome Analyzer, Illumina NextSeq, Illumina Miseq and Ion Torrent Proton.

Areas of Expertise

Cancer Susceptibility , Genomics, Genome Stability

Education

La Trobe University
Ph.D.