

PSON0009 RNAseq and miRNAseq characterization of PS-ON cell lines grown on substrates of differing viscoelastic properties and integrin ligands

PSON0009 RNAseq and miRNAseq characterization of PS-ON cell lines grown on differing viscoelastic properties and integrin ligands

- Download the dataset at ftp://caftpdc.nci.nih.gov/psondcc/PhysicalCharacterization/mRNA_miRNA

The NCI's Division of Cancer Biology (DCB), Physical Sciences-Oncology Network (PS-ON) program has established a PS-ON Bioresource Core Facility (PBCF) that provides a panel of 49 model cell lines to affiliated investigators. The PBCF cell lines have been used by investigators within PS-ON program to perform a variety of physical science based studies. To further increase the value of the PBCF cell lines, the NCI has complemented these efforts to characterize the genetics, physical properties, and proteomics of subsets of these cell lines. The data from the genomic and physical characterization studies have been made publicly available through the PS-ON Data Coordinating Center (PS-ON DCC) at https://ncipub.org/groups/nci_physci/psondcc. In addition, the genomic data has been made available through the NCBI Short Read Archive (SRA), consistent with the NIH Genome Data Sharing Policy.

The physical characterization project measured differences in physical (morphological and mechanical) properties of cells grown on substrates of varying stiffness, i.e., hydrogels with different viscoelastic properties and integrin ligands (collagen or fibronectin). Assays were conducted on 30 cell lines from the PBCF panel, grown on seven different substrates:

- glass
- crosslinked hyaluronic acid (HA) with a stiffness of 500 Pa covalently laminated with collagen
- crosslinked hyaluronic acid (HA) with a stiffness of 500 Pa covalently laminated with fibronectin
- polyacrylamide gel (PA) with a stiffness of 500 Pa covalently laminated with collagen
- polyacrylamide gel (PA) with a stiffness of 30 kPa covalently laminated with collagen
- polyacrylamide gel (PA) with a stiffness of 500 Pa covalently laminated with fibronectin
- polyacrylamide gel (PA) with a stiffness of 30 kPa covalently laminated with fibronectin

The goal of PBCF cell line proteomics characterization project, is to extend the studies done in the physical characterization project to include proteomic and phosphoproteomic analysis of nine cell lines grown under the same seven conditions that were used for the physical characterization experiment. Also included in this proteomics characterization project was a requirement to harvest and freeze cell pellets of the same nine cell lines, grown on the same seven growth conditions, to be used for subsequent RNA sequencing work. 63 cell pellets have been collected and stored at -80°C in the lab of the proteomics subcontractor (Stanford University, subcontract 15X009). Additionally, the proteomics subcontractor experimentally confirmed that the protocol chosen to harvest and freeze the pellets yields RNA of sufficient purity for downstream analysis. These pellets will be the source of the RNA to be characterized as part of this RNA sequencing project.

mRNA sequencing (mRNA-Seq) and miRNA sequencing (miRNA-Seq) characterization, of the RNA samples are expected to complement and extend the data sets obtained from both the physical characterization project and the proteomic characterization project. This characterization will further increase the value not only of the PBCF cell lines but also the experiments that have already been and are being conducted on the PBCF cell lines by the research community.

The project entries at NCBI's BioProject database, with links to their entries at NCBI's Short Read Archive (SRA) and BioSample databases:

- miRNA sequencing BioProject PRJNA412363
<http://www.ncbi.nlm.nih.gov/bioproject/412363>

Data usage policy

The data contained within the PS-ON DCC is based on several research projects and is intended to be rapidly and constantly updated for the research community to access and use. The NCI requests that any data users:

Inform the data submitters about the intention to submit a publication that uses PS-ON DCC data. Include the following statement in any publications resulting from the use of PS-ON DCC data: *Data used in this publication were generated by projects sponsored by the NCI Physical Sciences in Oncology Initiative.*