Bringing RNA-Seq into Undergraduate Education – Virtual Workshop 2016
Project Proposal Guidelines

Experiment and Dataset Specifications

Only projects that utilize a eukaryotic organism that has a published sequenced and annotated genome will be considered. For the purpose of learning how to analyze and implement into teaching RNA-Seq data, you may propose to: 1) obtain new RNA-Seq data; 2) use data that had been obtained by previous *RNA-Seq for the Next Generation* workshop faculty (Drs. Ayme-Southgate, Brusslan, Enke, Makarevitch, Schwartz, Thurber, Woody); 3) use data that you independently obtained; or 4) use existing data that is publicly available in the Sequence Read Archive. Existing data should be paired-end Illumina data in FASTQ format. You must own the data or have permission to use it and make it freely available.

For those requesting to obtain new RNA-Seq data, your proposed project will be an experiment that is based on examining differential gene expression. Funding for new datasets will include Illumina RNA-Seq library preparation and sequencing costs for 2 or 3 biological replicates of control vs. experimental or over time points (total of 4 – 6 RNA isolations). Importantly, for those projects selected to obtain new sequence data, RNA must be received by the sequencing center no later than March 1, 2016 (no exceptions).

Proposal Narrative Specifications

Limit proposal narrative to 5 pages, 12-point Times New Roman font, with 1-inch margins, single spaced text, and one line space between each paragraph.

Organize your proposal into the following **four** sections, and provide answers for ***every specific question within each section.***

1. **Proposed Experiment for New Dataset or for an Existing Dataset** All applications must include a description of the differential gene expression experiment: What organism, tissue(s), or experiment/control conditions or time points will be (were) used, and why? What research questions and hypotheses can be asked of the data? What is the importance and relevance of this experiment?

2. **Personal and Institutional Context** How does the dataset relate to and build on your own research experience? What other faculty members will be involved in the project? How does the dataset relate to research interests and expertise at your institution? What resources are available at your institution to leverage for student research with the dataset—such as computers and lab resources for doing follow-up experiments like qRT-PCR?

3. **Instructional Context and Pedagogy** In what educational setting(s) (independent and/or classroom-based) and what specific class(es) (Course Name and Level) will the dataset be used for during the 2016–17 school year? How many students will be involved and what will be the duration of their involvement? In what ways will students be involved with the project—such as analyzing the primary data or doing follow-up experiments? How will the data be partitioned between student researchers or teams? How will RNA-Seq data analysis be incorporated into a particular course to stimulate concept development and integration?

4. **Evaluation and Broader Impact** How will the student research products and the impact of their experience be evaluated? What data products or publishable results are expected? What opportunities do you envision for student co-authorship and presentation? How will student research on NGS analysis be supported in the future at your institution? How will you share your expertise in RNA-Seq analysis with other faculty at your institution? How will participation in this project impact instructional pedagogy at your institution? How do you intend to disseminate the data and knowledge gained? How could other institutions collaborate to analyze your dataset?