XSEDE Startup allocation proposal

Title: Assessment of RNA editing over *Doryteuthis opalescens* development

Abstract:

This proposal is requesting resources from the IU/TACC Jetstream cloud system for the purpose of assessing differential RNA editing over development in the California market squid, *Doryteuthis opalescens*. Recent work has identified extensive RNA editing of coding sequences as a unique characteristic of adult coleoid cephalopods, and suggested that it may contribute to the neural and behavioral plasticity that characterizes these animals [1]. Preliminary identification of putative transcriptome-wide editing sites and RNA editing enzymes in *Doryteuthis opalescens* developmental transcriptomes suggests a role for RNA editing in developmental plasticity as well (Pierce 2017). To elucidate this role, I will analyze corresponding RNA and DNA Illumina data from *Doryteuthis opalescens* to investigate the prevalence of RNA editing across a time course of replicated samples from six time points ranging from early development until hatching.

1 Liscovitch-Brauer, Noa, Shahar Alon, Hagit T. Porath, Boaz Elstein, Ron Unger, Tamar Ziv, Arie Admon, Erez Y. Levanon, Joshua JC Rosenthal, and Eli Eisenberg. "Trade-off between transcriptome plasticity and genome evolution in cephalopods." *Cell* 169, no. 2 (2017): 191-202.

Resources requested:

The following VM resources are requested: m1.xxlarge, 6 vCPU, 16 GB RAM, 60 GB local storage

50,000 SU -

Persistent storage is also requested:

With a total of 10 TB = 1 TB of raw data x 3 (for assembly intermediate files) x 3 (for annotation, quality trimming, reads quantification files)

Fields of Study:

Marine Biology (is this an option?)

Genomics