

Genomic Sequencing of Core and Pangenomes of Soil and Plant-associated Prokaryotes (KMG4)

April 1, 2017

The Community Science Program (CSP) of the DOE Joint Genomes Institute proposes to determine the pangenomes of 100-200 species of soil or plant-associated prokaryotes. While the genome sequence of the type strain captures much of the genotype of a species, the sequence of any single strain also neglects a large part of the genetic diversity. A more complete description of the species is given by the pangenome, which comprises, in principle, the collection of all the genes in all strains of the species. Our goal is to obtain draft genomic sequences of 5-12 genomes of closely related prokaryotes associated with soil or plants and their close relatives. The type strain of the species should be included if it has not already been sequenced. Strains of human pathogens and human associated species are not eligible.

In this project, DOE-JGI will provide a draft genome sequence using the Illumina technology with an automatic annotation, yielding on average ~50 contigs. Data will become publically available and made available to the investigator as soon as it passes the final QC analysis at DOE-JGI.

Requests for sequencing should be sent to Barny Whitman at whitman@uga.edu. Include in the subject line 'JGI pangenome sequencing'. Requests should include: 1) list of the strains to be sequenced and 2) description of the site of isolation or relationship to soil or plant-associated prokaryotes for each strains.

If the request for sequencing is approved, you will be asked to agree to make the strains available to other investigators upon request and provide standardized metadata for each strain. You will also be asked to provide 500 ng of high molecular weight, RNA-free DNA from each strain. The identity and purity of the DNA to be sent should be confirmed by nearly complete (>1300 bp with <10% N) sequencing of the 16S rRNA gene. The DNA can be prepared according to a variety of protocols, and some recommendations on the purification will be provided upon acceptance of your proposal.

The sequencing of pangenomes of prokaryotes is an international effort and proceeding rapidly in many different laboratories. To determine if a genome project is currently underway for organisms of your interest, please check the NCBI [<http://www.ncbi.nlm.nih.gov/>] and GOLD [<http://genomesonline.org/cgi-bin/GOLD/index.cgi>] databases for existing sequencing projects prior to requesting sequencing through this program.

For questions, contact Barny Whitman, University of Georgia (whitman@uga.edu).