Bringing Next-Generation Sequencing Technology to the UM Research Community

The Institute for Bioscience and Biotechnology Research (IBBR) is expanding its core services to include high throughput sequencing, based on the recent purchase of an Illumina HiSeq 1000 instrument plus supporting equipment. The instrument is located in the IBBR DNA Sequencing Facility on the 5th floor of the Plant Sciences Building on the College Park campus, which has offered Sanger sequencing for many years. The purchase of this “Next-Gen” instrument, the first on the UM campus, was facilitated by Dr. Norma Andrews (Chair, Cell Biology and Molecular Genetics) and financially supported by the College of Computer, Mathematics and Natural Sciences, the office of Vice-President for Research, and four campus departments (CBMG, Animal and Avian Sciences, Veterinary Medicine and Biology). This state-of-the-art technology is rapidly becoming an essential tool for diverse research applications, including whole-genome sequencing, resequencing, transcriptome analysis, small RNA discovery, and protein-nucleic acid interaction analysis.

The Illumina HiSeq was selected for the UM campus for its flexibility, range of use and extremely high throughput. Illumina's sequencing-by-synthesis methodology enables detection of single nucleotide bases as they are incorporated into growing DNA strands. Up to 8 separate samples can be run simultaneously with additional levels of multiplexing made practical through the use of barcoded adapter sequences. The end result is the most accurate data for a broad range of applications.

“The Illumina platform fills a much needed gap on campus as our investigators increasingly integrate NGS tools and innovative approaches in their research”, says Dr. Najib El-Sayed. Dr. El-Sayed and Dr. Jerome Regier (IBBR) will serve as co-directors of the Illumina core. Dr. El-Sayed, an internationally renowned host-pathogen interactions and bioinformatics researcher, will be consulting with researchers on experimental design and coordinate the first steps of bioinformatics analysis. Dr. Regier, a leading expert in arthropod and lepidopteran phylogenomics, serves as the Director of the IBBR sequencing core and will be working with the core technicians to ensure highest quality data generation.
The Illumina HiSeq is available to the entire UM research community as well as off-campus entities on a fee-for-service basis. More information about the Illumina instrument, workflow, the sequencing core, and how to schedule sample runs can be found at http://www.ibbr.umd.edu/facilities/sequencing. A special Next-Gen sequencing seminar presentation to introduce the technology and applications will be held on October 31, 2011 at 11:00 am. Seating is limited so please contact Lisa Garlena at lgarlena@umd.edu if you are interested in additional information.