**RESOURCE NEEDS**

At a high level, please check the types of capabilities that you are considering for your research approach, including JGI capabilities and BIO-SANS at CSMB. This list allows management and instrument staff to get an idea of the information that would be needed for a full proposal.

EMSL resources are organized below in alphabetical order by groupings of instrument types (not by research platforms). Details about these instruments, as well as their operating hours, are listed on EMSL’s [website](https://www.emsl.pnl.gov/emslweb/instruments). Information about the BIO-SANS at CSMB can be found on their [website](https://neutrons.ornl.gov/biosans).

**CSMB**

**BIO-SANS**

Biological Small-Angle Neutron Scattering Instrument (BIO-SANS)

**JGI**

*For each capability selected, please indicate the approximate number of samples being requested for each type. More information on the products listed can be found here:* [*https://jgi.doe.gov/our-science/product-offerings/*](https://jgi.doe.gov/our-science/product-offerings/)*.*

|  |  |
| --- | --- |
| **CELL SORTING AND SIP CAPABILITIES** | |
| ***Capabilities Available*** | ***Approx. # of Samples*** |
| FACS sorting of bacterial/archaeal cells (limit 4 samples) |  |
| Stable Isotope Probing (SIP) fractionation (limit 36 samples) |  |

|  |  |
| --- | --- |
| **DNA SYNTHESIS** | |
| ***Capabilities Available*** | ***Approx. # of Samples*** |
| Constructs <5kb |  |
| Constructs 5-10kb |  |
| Constructs >10kb |  |
| sgRNA library |  |

|  |  |
| --- | --- |
| **METABOLOMICS** | |
| ***Capabilities Available*** | ***Approx. # of Samples*** |
| Non-polar metabolite analysis (LC/MS) |  |
| Polar metabolite analysis (LC/MS) |  |

*More information available at* [*https://jgi.doe.gov/our-science/science-programs/metabolomics-technology/metabolite-analyses/*](https://jgi.doe.gov/our-science/science-programs/metabolomics-technology/metabolite-analyses/)

|  |  |
| --- | --- |
| **SEQUENCING** | |
| ***Capabilities Available*** | ***Approx. # of Samples*** |
| Algal *de novo* genomes |  |
| Algal resequencing |  |
| Algal RNA-seq |  |
| Bacterial/archaeal *de novo* genomes |  |
| Bacterial/archaeal resequencing |  |
| Bacterial/archaeal RNA-seq |  |
| Bacterial/archaeal single cells |  |
| Fungal *de novo* genomes |  |
| Fungal resequencing |  |
| Fungal RNA-seq |  |
| Metagenomes (no iTags) |  |
| Metatranscriptomes |  |
| Plant *de novo* genomes |  |
| Plant resequencing |  |
| Plant RNA-seq |  |
| Stable Isotope Probing (SIP) metagenomes |  |
| Other sequencing request |  |

**EMSL**

**ANALYTICAL / CHEMICAL / OTHER**

Chromatograph (Analytical, Ion)

C, H, N, S Analyzer

Ice Nucleation Chamber

Volatile Organic Compounds GC-MS

**BIOLOGICAL SYSTEMS GROWTH, ISOLATION, AND CHARACTERIZATION**

Cell Characterization (Fluorescent in situ hybridization, single-cell RNA-seq)

Cell Isolation (Microdissection, Cell Sorting, and Flow Cytometry)

Molecular Ecology Laboratory

Plant Sciences or Soil Incubation Laboratories

*Note: Biological fluorescence microscopy can be found under the Microscopy section below.*

**COMPUTING, ANALYTICS, AND MODELING**

Computing: Tahoma (Linux Cluster)

Computing: Data Visualization

**DEPOSITION**

Molecular Beam Epitaxy

Pulsed Laser or Mass-Selected Ion Deposition Systems

Thin Film

**FLOW CELLS or MICROMODELS**

Flow Cells

Pore Scale Micromodels

**MASS SPECTROMETRY**

Aerosol Particle

FTICR (organic matter analysis)

Imaging

Ion Surface

Isotopic Elemental

Lipidomics

Metabolomics

Metallomics

NanoPOTS

Proteomics

**MICROFABRICATION**

Microfluidics and Microfabrication

**MICROSCOPY**

Electron

Fluorescence / Optical

Ion

Scanning Probes

**NMR / EPR**

EPR

High-Resolution Liquids

Metabolomics

Solid-State

**SPECTROSCOPY / SPECTROMETRY**

Electron

Fluorescence

Ion / Molecular Beam

Mössbauer

Optical

Vibrational

**X-RAY DIFFRACTION AND TOMOGRAPHY**

X-Ray Computed Micro- or Nano-Tomography, Micro

X-Ray Diffraction (Microbeam, Powder, or Thin Film)