**Project Description**

*Note: This template is provided for full proposal submissions to calls for Large-Scale Research, FICUS, and Exploratory Research. Please refer to the* [*EMSL website*](https://www.emsl.pnnl.gov/proposals#types-of-proposals) *for full submission details, including formatting details. There is a 4-page limit to the Project Description. All italicized text should be deleted and replaced with your proposal content.*

**Title:** *The project title must be brief, scientifically or technically valid, intelligible to a scientifically or technically literate reader, and suitable for use in the public press.*

**Specific Aims*:*** *(~250 words). State the specific objectives of the research proposed (e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology), providing concise and unambiguous detail.*

**Mission Relevance:** *(~100 words). Clearly explain how your research addresses specific mission areas and advances the science pertinent to DOE’s Biological and Environmental Research program, as well as EMSL's mission, and/or describe the value/impact of its economic or societal importance.*

**Background**: *(~400 words). Provide a concise discussion of previous work to make clear what the research problem is, why you want to do this particular study, exactly what has been accomplished, and to demonstrate why the studies need to be continued.*

**Approach or Work Plan:** *(~1200 to 1500 words). Describe the work to be conducted at EMSL for the entire project duration, along with any preliminary results, background measurements, or tests completed that validate the approach (include references where relevant and attach the full citations as an addendum). Using anonymized identifiers (such as PI-1 and PI-2, or Grad Student-1),* *identify which team member will be doing each portion of the work plan and demonstrate why your project requires EMSL resources and cannot be done elsewhere. For projects expected to require more than one year to complete, clearly delineate work activities for the first year.*

**Computing Approach** (Section 1 of 2)

*Only required if Tahoma compute cycles are requested. Provide a written description of the proposed computational method or approach and software to be used (1-page maximum). Provide details regarding the computing resources requested using the form on the next page and following the guidance provided after the form. The form does not count toward the page limit.*

**Computing Approach** (Section 2 of 2)

## Sensitive Data Restriction

The EMSL computing systems available to users are not approved for use with sensitive data. The processing, storage, or transmittal of sensitive data (e.g., Personally Identifiable Information, Official Use Only, etc.) are thus prohibited on Tahoma and Aurora. Due diligence must be used to prevent inadvertent disclosure of invention, patent, or other sensitive information.

[ ]  By checking this box, I confirm that participants on this proposal will NOT process, store, or transmit sensitive data on Tahoma or Aurora.

## Computing Resource Request

Using the form below, provide details regarding the amount of computer resources and support needed, as well as the amount of file storage you expect to need. See guidance on the following page.

|  |
| --- |
| **TOTAL RESOURCES REQUESTED** |
| **CPU Hours** (total request for first year of project) |       |
| **GPGPU Hours** (total request for first year of project)  |       |
| **Data Storage** (total request for first year of project) |       |
| **REQUEST DETAILS** |
| **Software/Code** | **Node type** (CPU or GPU) | **Estimated number of jobs** | **Estimated total node-hours**  | **Relevant expertise of team members**  | **EMSL support requested** (E.g., compiling code, libraries needed, training, etc.) |
| *Example entry (can be deleted):**DataProcessTool 2.3* | *CPU*  | *20* | *10,000* | *Expert at using. Minimal experience installing Windows version. No experience with Linux version, especially installation and using HPC (GPU and parallel versions of code; shared file system; job submission system).* | *Help installing on Tahoma. Tutorial and help logging in/running jobs. Guidance/training on managing archiving large output files to ensure compliance with EMSL data policies. Assistance to ensure reproducibility and sustainability of our workflows, e.g., using Docker or Singularity. Also, there is apparently a way to “program” the software to sweep and analyze many files using scripting; it would be helpful to learn to leverage this capability.* |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

# *Guidance for completing Computing Resource Request (delete guidance before submission)*

## *Computing Resources*

*There is no upper limit on node-hours that can be requested, but the amount of time requested must be justified and tied to the scientific aims of the proposal.*

*Tahoma allocations are awarded in units of wall-clock time expressed in node-hours, and there are a total of approximately 1,500,000 node-hours available per year. Tahoma's 160 CPU nodes each have 36 (3.1 GHz) Intel Xeon processor cores, so 10,000 Tahoma CPU node-hours are equal to 360,000 processor core-hours. The CPU nodes each have 384 GB of memory and 2 TB of on-node flash storage. Tahoma's 24 GPGPU nodes each have 36 processor cores and 2 Nvidia v100 GPGPUs, 1536 GB of memory, and 7 TB of on-node flash storage. Tahoma's 10 PB global file system is capable of 100 Gigabyte/sec bandwidth.*

*Upon successful review and approval of a proposal, computing resources will be allocated for analysis and archiving of experimental data generated at EMSL.* [*Additional details on Tahoma are available here.*](https://www.emsl.pnnl.gov/MSC/UserGuide/tahoma/tahoma_overview.html) *For questions regarding these requirements, contact* [*Jay Bardhan*](https://www.emsl.pnnl.gov/staff/Jay_Bardhan)*.*

## *Data Storage Resources*

*EMSL Computing Resources use large, shared file systems—as a result, it is important that project proposals provide a meaningful estimate of data storage needs. EMSL user projects are required to follow EMSL’s* [*Data Management Policy*](https://www.emsl.pnnl.gov/basic/data-management-policy/1243)*.*

**Appendix 1: List of References**

*List all bibliographic citations following accepted scholarly practices in providing citations for source materials relied upon when preparing any section of the proposal. Each reference must include names of all authors (in the same sequence in which they appear in the publication), the article and journal title, book title, volume number, page numbers, and year of publication.* ***Do not indicate which authors are members of the research team submitting the proposal.*** *If the document is available electronically, the website address should also be identified. In-text citations must use numbered formatting with brackets (i.e., [1] or [2-5]) corresponding to the full citation listed. This section does not have a page limit but must not be used to provide parenthetical information outside of the 4-page Project Description or 1-page Computing Approach.*

**Appendix 2: CVs**

*Insert abbreviated CVs (2-page maximum each) for the PI and each of the co-PIs.*

**Appendix 3: Active Collaborators List**

*Provide a list of active collaborators and individuals who may represent a conflict of interest for the PI and co-PI(s) from the past 2 years. Conflicts of interest are not required for participants identified as “Team Members.” In addition to research project collaborators, the list must include co-authors with whom you've actively interacted, co-editors, advisors and advisees, and financial affiliations, all from the past 2 years. Participation in very large collaborative efforts with an individual does not necessarily constitute a conflict of interest. Identify those who would have a personal interest in this proposal or whose unbiased judgment would be questioned by a reasonable person familiar with your relationship. Place an “X” in the appropriate column to indicate the type of conflict.*

|  |
| --- |
| **PI name:** |
| **Last Name, First Name** | **Key Co-Author** | **Collaborator** | **Advisee / Advisor***(specify)* | **Other***(specify nature)* |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |
| --- |
| **Co-PI name:** |
| **Last Name, First Name** | **Key Co-Author** | **Collaborator** | **Advisee / Advisor***(specify)* | **Other***(specify nature)* |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |