

Guide to Writing a Callisto Grant Application

This document provides general guidelines for writing a successful Callisto™ instrument grant application. The guidelines are broken into sections that correspond to the structure of a National Institutes of Health (NIH) Shared Instrumentation Grant. Because Callisto is breakthrough technology, special emphasis should be placed on 1) demonstrating a clear understanding of the unique, research-advancing capabilities the platform provides and 2) providing a rational infrastructure and plan for successfully integrating the platform into the research goals of the institution post sale. As with any grant process, it is recommended not only to start early, but also to follow the instructions carefully, and to use your own words.

Justification of Need

In justifying need, it is important to articulate the unique technological attributes of Callisto and how they translate into beneficial research-advancing experiments that cannot be done with existing technologies. You also want to convey that your users currently do not have access to the technology at or near your institution. It is also useful to indicate how you will employ Callisto along with other techniques to which you already have access (microscopy, cell culture, qPCR, etc.) to achieve the aims in the proposal. Below is example text:

To understand the basis of cell development, cell lineage, and disease, efficient and predictive models that mimic in vivo cellular environments are necessary. However, in many cases, manual procedures and laborious techniques that most cellular models rely on make improvement and assessment of cellular models difficult. Callisto is uniquely capable of addressing this challenge by minimizing run-to-run variability of protocols using a single automated microfluidic system and by providing a combinatorial approach to determine the optimal conditions required for applications such as stem cell differentiation, reprogramming, and other cell development protocols. Callisto also provides users with a design-of-experiment approach in which one may perform reproducible, combinatorial studies of up to 16 factors with microfluidic precision. To assess cellular models, Callisto includes integrated downstream workflows for single- or bulk-cell targeted genomics, DNA/RNA sequencing, and protein analysis.

Acquisition of the Callisto platform will uniquely position our researchers to advance the understanding of [list specific issue(s)]. Conditions pertaining to our studies include [list specific condition(s)].

Research Projects

When you discuss research projects, we recommend having a set of projects that clearly link the unique benefits of reproducible, precise cell modeling to the proposed research. The projects should be planned in sufficient detail to indicate basic understanding of the practical considerations required for using the Callisto system in the research. They should not be achievable with existing or alternatively available instrumentation or methods. The

majority of principal investigators should have current grant funding. Proposed projects should be well-defined to the point that a set of conditions to be tested is identified.

Technical Expertise

It is beneficial to demonstrate that the site has sufficient technical expertise (or definite plans to obtain the technical expertise) to ensure successful integration of Callisto into the facility and the research goals of the community. Ideally, the facility has a strong history of tissue culture, cell culture, and/or cell modeling. In addition, it would be best if the lab has a proficiency in investigating and analyzing cellular development or cellular lineage pathways. For core facilities, we recommend having an operator with experience in microscopy, immunostaining, cell culture, and/or gene expression. A proven track record of integrating instrumentation into the research community should be highlighted, including training programs and strategies for introducing new technology. Prior experience with validation of breakthrough technology is desirable.

Administration

The administration section should clearly describe the structure in place for oversight of the new system and outline plans for integrating Callisto into the facility and research community. Because this is a new technology, particular emphasis should be devoted to methods for 1) introducing the technology to the community, 2) engaging new users and projects, and 3) supporting the growth and expertise of maturing users. These activities have the overall aim of generating a growing set of users with proficiency in experimental design, data acquisition, and data analysis sufficient for peer-reviewed papers, grant submissions, and oral presentations.

Describe your proposed plans for 1) training, 2) outreach, 3) technical support, 4) engaging new users/experiments, and 5) support of experimental design concepts and analysis. Any plan for regional/collaborative access or outreach is also beneficial to this application.

Institutional Commitment

It is important to show material institutional commitment to support the success of Callisto, including historical support for other instruments, as well as money budgeted for hiring appropriate personnel, service contract support, etc. It is preferable to show strong institutional commitment for at least a two-year period.

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