Murdock Trust Equipment Use Seed Grants for Cellular Phenotyping

Innovative proposals are sought to expand the user base for the OmniLog® Phenotyping System and the ImageStream® Imaging Flow Cytometer, purchased with support from the Murdock Charitable Trust and MSU VPRED. Proposals should explore new research applications for one or both of these instruments. Small seed grants will be made available to new users to enable the development of experimental protocols and generation of results for publications and upcoming, external proposals. Priority will be given to proposals that clearly explain how these funds will lead to these products (publications or proposals). Funds can be used to purchase reagents, supplies, and minor equipment for performing the proposed experiments. Instrument details are included below.

Eligibility and funding levels:

All research personnel affiliated with Montana State University can apply, regardless of rank or type of appointment. This includes all faculty member, graduate students and other trainees, and technical personnel. Funding level is up to $3,000, to be expended within one year. Funds are to be used for reagents, minor equipment and other laboratory supplies only. Salaries, travel or indirect costs are NOT allowed.

Submission:

The deadline for submitting applications is July 1st, 2019.

Please email your application as a single pdf file to diane.bimczok@montana.edu.

In addition, also submit your proposal using the Electronic Proposal Clearance Form (ePCF) available on the Office of Sponsored Programs website, http://www.montana.edu/research/osp/ .

Prepare a "Full Proposal" form using the sponsor, MJ Murdock Charitable Trust, and enter, CELLULAR PHENOTYPING 2020, as the Program ID.

On the Attachments page of the ePCF include the following three documents as a single PDF file under the "Executive Summary/Abstract" heading:

1. A one page proposal (Arial 11, 0.5 inch margins) describing research goals and experiments to be performed on at least one of the two instruments. A description of how these results will lead to either a publication or help strengthen a grant proposal is also required (if relevant and available, include comments from previous manuscript or proposal reviews as an appendix).
2. A 2-page (maximum) NIH or NSF biosketch of the applicant. This component will be used to understand the laboratory affiliation of the applicant only, and will not be scored.
3. For students, other trainees, technical personnel and other non-tenure track applicants, please include a letter from your PI/mentor that confirms approval of the proposal and availability of research time and other required resources.

Under the "Detailed Budget" heading in the ePCF system, attach the following document:

4. A detailed supply budget, including justification for funds.

Review process:

Proposals will be reviewed by an interdisciplinary committee. Each committee member will score (1-5; 1 = highest) proposals based on overall scientific merit, how valuable the results will be for either a publication or strengthening an upcoming proposal and budget justifications. Proposal will be ranked based on average scores, and proposals will be awarded according to rank. A total of up to 5 proposals are planned to be supported at a funding level of $2,000 – 3,000 each.

Instrument Details:

OmniLog®. This instrument is a combined incubator and plate-reader that monitors up to 50 (96-well) microplates, or 1,920 phenotypic assays simultaneously to measure physiological responses in diverse microbial or mammalian cells over a period of up to several days. The OmniLog® system measures cellular energy metabolism based on respiration (NADH production) as a universal reporter, detected through a color reaction. Users chose from a large selection of pre-configured Phenotype Microarray (PM) plates that are pre-loaded with different nutrients, energy sources such as different sugars, antibiotics, or drugs, etc., ***OR*** they can configure their own experiments in 96-well format.

ImageStream®. Imaging flow cytometers combine the speed and sample size of flow cytometry with the resolution and sensitivity of microscopy in a single instrument platform. The ImageStream® (Millipore Sigma) allows high-speed multispectral imaging of eukaryotic and prokaryotic cell suspensions in brightfield, darkfield, and up to 6 fluorescence channels. The instrument is equipped with the easy-to-use IDEAS® software package with algorithms to quantify and statistically analyze parameters such as cell size and shape, cellular interactions, colocalization of proteins, viral/bacterial infection, and nuclear translocation of transcription factors. This new technology is thus superior to regular flow cytometry, since it allows visualization of individual cells in addition to analysis of overall fluorescence intensities, and it is superior to fluorescence or confocal microscopy, since it allows high-throughput analysis of imaged cells, yielding highly reliable and statistically relevant data.