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ABOUT THIS HANDBOOK

This handbook has been created to help clarify the Vermont Genetics Network’s (VGN) goals and policies. As this is our first edition, we are especially interested in receiving feedback on how to improve the handbook for future years. I would also like to emphasize that VGN is here to support faculty and undergraduate research across Vermont. Please feel free to reach out to myself or other VGN staff if any questions should arise. We are here to help!

Dr. Tabitha Finch

MESSAGE FROM THE DIRECTOR

The VGN has a goal of increasing the infrastructure for biomedical research in the state of Vermont though funding faculty research at the baccalaureate institutions and involving undergraduates in this research. We believe this handbook provides guidance to both faculty who intend to apply for VGN funding and those currently funded by VGN, as well as their research advisors. I hope that it will answer most of your questions!

Dr. Rex Forehand
VGN STAFF

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VGN MISSION STATEMENT

VGN Mission Statement

The mission of VGN is to build a culture to promote the biomedical research infrastructure in Vermont. Our focus is on human health and behavior as broadly defined. The goal is to build and sustain a culture of research throughout the state by facilitating the research capacity of faculty members, and the education of undergraduates, at our baccalaureate partner institutions.

IDeA Networks of Biomedical Research Excellence (INBRE) Program Goals as defined by the National Institute of General Medical Sciences (NIGMS)

The primary goals of the INBRE program are to: 1) build on the established multi-disciplinary research network with a scientific focus to strengthen the biomedical research expertise and infrastructure of the lead and partner institutions; 2) build and increase the research base and capacity by providing support to faculty, postdoctoral fellow and graduate students at the participating institutions; 3) provide research opportunities for students from primarily undergraduate institutions, community colleges and Tribally Controlled Colleges and Universities (TCCUs) as appropriate and serve as a “pipeline” for these students to continue in health research careers within Institutional Development Award (IDeA) states; and 4) enhance science and technology knowledge of the state’s workforce.
The VGN is in its third phase of funding with a five-year $17.8 million award from the INBRE program of the NIGMS at the National Institutes of Health. The mission of VGN is to build human and physical infrastructure in Vermont for biomedical research. At the lead institution, the University of Vermont, we have developed state-of-the-art facilities for Proteomics and Bioinformatics to provide to researchers across Vermont the resources they need to carry out world class research and compete for federal funding. To address workforce development and its diversity, we build cultures of research by supporting faculty and student research at our Baccalaureate Partner Institutions: Castleton University, Northern Vermont University, Middlebury College, Norwich University, Saint Michael's College and Green Mountain College. We also work with students in college lab classes throughout Vermont in order to bring state-of-the-art research resources into their education, including at the Community College of Vermont and Landmark College.
Each Baccalaureate Partner Institute (BPI) has a Coordinator on campus to work with VGN faculty and students over the course of the entire calendar year. BPI Coordinators should be the first point of contact for faculty and students who have VGN-related questions. The Coordinators understand VGN policies and the award process, and can provide a wealth of knowledge and support. Specifically, BPI Coordinators are expected to actively meet with VGN funded faculty, read drafts of grant proposals, assist in the VGN Award and reporting processes, help organize VGN’s annual faculty professional development events, monitor the mentoring of faculty and students, and work with campus administrators to expand and sustain a culture of research.

<table>
<thead>
<tr>
<th>Institution</th>
<th>Coordinator</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Vermont University</td>
<td>Dr. Elizabeth Dolci</td>
</tr>
<tr>
<td>Castleton University</td>
<td>Dr. Andrew Vermilyea</td>
</tr>
<tr>
<td>Norwich University</td>
<td>Dr. Darlene Olsen</td>
</tr>
<tr>
<td>Middlebury College</td>
<td>Dr. Robert Cluss</td>
</tr>
<tr>
<td>Saint Michael's College</td>
<td>Dr. Mark Lubkowitz</td>
</tr>
<tr>
<td>Green Mountain College</td>
<td>Dr. Susan Sutheimer</td>
</tr>
</tbody>
</table>

### 2018 FUNDED FACULTY

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Institution</th>
<th>Award Category</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>David</td>
<td>Allen</td>
<td>Middlebury College</td>
<td>Pilot Award</td>
<td>Development and Field Parameterization of a Climate-driven Lyme Dynamics Model</td>
</tr>
<tr>
<td>Greg</td>
<td>Engel</td>
<td>Castleton University</td>
<td>Pilot Award</td>
<td>Neuropeptide-like Precursor 3 in Ethanol Behavioral Plasticity</td>
</tr>
<tr>
<td>Michael</td>
<td>Dash</td>
<td>Middlebury College</td>
<td>Pilot Award</td>
<td>Local Sleep Homeostatis and the Control of Behavioral State</td>
</tr>
<tr>
<td>Megan</td>
<td>Doczi</td>
<td>Norwich University</td>
<td>Pilot Award</td>
<td>Pharmacological Isolation of Kv1 Channels During Hypothalamic Development</td>
</tr>
<tr>
<td>Michael</td>
<td>Durst</td>
<td>Middlebury College</td>
<td>Pilot Award</td>
<td>High-Speed Volumetric Temporal Focusing Microscopy</td>
</tr>
<tr>
<td>Robert</td>
<td>Moeller</td>
<td>Middlebury College</td>
<td>Project Award</td>
<td>College Student Mental Health Pathways</td>
</tr>
<tr>
<td>Preston</td>
<td>Garcia</td>
<td>Castleton University</td>
<td>Project Award</td>
<td>Genetic Regulation by a Unique two component Signal Transduction system in S. meliloti</td>
</tr>
<tr>
<td>Lesley-Ann</td>
<td>Giddings</td>
<td>Middlebury College</td>
<td>Project Award</td>
<td>Structural &amp; Kinetic Characterization of Putative Desferrioxamine Biosynthetic Enzymes, DesA and B</td>
</tr>
<tr>
<td>William</td>
<td>Landesman</td>
<td>Green Mountain College</td>
<td>Project Award</td>
<td>Role of the Ixodes scapularis Microbiome in Lyme Disease Transmission Risk</td>
</tr>
<tr>
<td>Joe</td>
<td>Latulippe</td>
<td>Norwich University</td>
<td>Project Award</td>
<td>Mathematical Model for the Effects of Amyloid Beta on Calcium Regulation</td>
</tr>
<tr>
<td>Thomas</td>
<td>Shell</td>
<td>Norwich University</td>
<td>Project Award</td>
<td>Tissue Penetrating Photopharmaceutical to Head and Neck Cancers</td>
</tr>
<tr>
<td>Christine</td>
<td>Palmer</td>
<td>Castleton University</td>
<td>Project Award</td>
<td>Diet Specialization and Gut Microbiota in Neotropical Katydid</td>
</tr>
<tr>
<td>Amanda</td>
<td>Crocker</td>
<td>Middlebury College</td>
<td>Small Award</td>
<td>Characterization of the Gene NinaA in the Preception of Nociception</td>
</tr>
<tr>
<td>Ruth</td>
<td>Fabian-Fine</td>
<td>Saint Michael's College</td>
<td>Small Award</td>
<td>Co-transmission in Efferent Neurons in an Invertebrate Model System</td>
</tr>
<tr>
<td>Brian</td>
<td>Glenney</td>
<td>Norwich University</td>
<td>Small Award</td>
<td>Heading Off Helmet Interventions for Injury Prevention in Skateboarding</td>
</tr>
</tbody>
</table>
VGN has three funding mechanisms, described below, to support faculty research: Project Awards, Pilot Awards and Small Awards. Faculty who receive Project and Pilot Award funding are required to have a research advisor (see page 15 for details).

**Eligibility:** Faculty members who are full-time tenure track at one of our Baccalaureate Partner Institutions are eligible to apply for VGN funding. Priority will be given to early career faculty.

**Funding Limits:** There is a limit to the number of VGN awards an investigator may receive. Faculty may receive up to three Project Awards or four awards that are a combination of Pilot and Project Awards. These are exclusive of Small Awards. The VGN administration recognizes that the BPIs are at different stages in developing and sustaining their cultures of research and will accept requests for support for additional funding beyond these guidelines. These requests will be reviewed on an individual basis, and will involve input of the research advisor and the BPI coordinator, and supporting documentation that includes summary statements from extramural grant proposals. Progress toward extramural funding must be demonstrated.

**Review of Project and Pilot Award Applications:** The review of Project and Pilot Award applications begins with the assignment of the application to at least two and preferably three outside reviewers. The reviewers are given the Request For Applications (RFA) and are asked to write a short response for each of the NIH review criteria (Significance, Investigator, Innovation, Approach and Environment). The NIH utilizes a 9-point rating scale (1 = exceptional; 9 = poor) for all applications; the same scale is used for overall impact scores and for criterion scores. As with NIH reviews, when the reviewer has submitted their online reviews, they can then see the critiques of others who have the same application assignments. Reviewers are compensated for this work. This is a confidential process and the reviewers are asked not to share any insights into their reviews or even which applications they reviewed, just as at NIH. VGN does not share the list of reviewers because the pool of reviewers is not as large as at NIH.

Once the reviews and scores are compiled, the VGN Director, Program Coordinator, and PDE Core Coordinator read the reviews and analyze the results. The pay line is determined by the amount of funding that is available for Project and Pilot Awards that year. Other data (publication record, compliance with VGN requirements for funding, advisor reports, and the critiques of proposals submitted to federal agencies) are also considered when making the final decisions about funding.

VGN's goal is to fund as many Project and Pilot Awards as possible, but fund only meritorious applications.

**Request For Applications (RFA)**

**Project Award**

**Project Duration: One year**

Funding Level and Allowable Expenses: Direct costs up to $75,000 per year may be requested. A requirement from NIH is that Project Award PIs spend on average 50% effort in research over the award year, which can divided into summer and academic year time. Permitted expenses include PI salary for summer and/or academic year, technicians, supplies, small equipment, undergraduate wages, participant costs and conference travel. Use of the funds must be outlined and justified as part of the application.
Project Award Key Dates

Grant Writing Workshop Attendance
DATE: November 10, 2018

In order to be eligible for 2019-2020 Project Award funding, faculty must attend the VGN Grant Writing Workshop at the University of Vermont.

Letter of Intent
DUE: December 1, 2018

Applicants must submit a Letter of Intent to VGN with a working title and key words. VGN will distribute the template to those who attended the Grant Writing Workshop.

Application Due Date
DUE: February 1, 2019

Project Award applications are submitted online via the VGN application site, which will be accessible beginning December 1, 2018. Funding decisions are made and communicated to applicants by the end of March. Note that formatting must adhere to NIH standards as outlined on their website.

Application components include:

• Face Page
• Project Summary and Relevance
• Budget
• Budget Justification
• Research Plan (not to exceed 11 pages, or 13 pages if applying for a renewal)
• Specific Aims
• Introduction (renewal applications can add up to two pages for a progress report)
• Research Strategy
• Research Resources and Environment
• Biosketch
• If applicable, IRB approvals*
• If applicable, IACUC approvals*

*IRB and IACUC approvals must be submitted with the application by the due date. A proposal will not be reviewed with a pending status.

Funding Period:
June 1, 2019-May 31, 2020

Funding of Project Awards is contingent upon NIH approval.
### VGN Project Award

#### Project Award Key Dates

<table>
<thead>
<tr>
<th>Completion of the following:</th>
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<tbody>
<tr>
<td>• A report describing your summer research progress and meetings with your research advisor due September 1, 2019.</td>
</tr>
<tr>
<td>• Individual Development Plan (IDP) due September 1, 2019.</td>
</tr>
<tr>
<td>• Annual VGN survey and periodic VGN longitudinal surveys.</td>
</tr>
<tr>
<td>• Annual Progress Report (APR).</td>
</tr>
<tr>
<td>• For PIs with no previous VGN Project or Pilot Award funding: Submit a draft of a research proposal to a federal or comparable extramural agency that your research advisor has reviewed by June 1, 2019.</td>
</tr>
<tr>
<td>• For PIs with previous VGN Project or Pilot Award funding: Submit a research proposal to a federal or comparable extramural agency that your research advisor has reviewed by June 1, 2019.</td>
</tr>
</tbody>
</table>

#### Attendance at the following:

| Annual VGN Career Day for students in April 2019 and April 2020. |
| Annual VGN Faculty Retreat in Summer 2019 and 2020. |
Request For Applications (RFA)

Pilot Award

Project Duration: One year

Funding Level and Allowable Expenses: Direct costs up to $25,000 per year may be requested. Permitted expenses include PI salary for summer and/or academic year, technicians, supplies, small equipment, undergraduate wages, participant costs and conference travel. Use of the funds must be outlined and justified as part of the application.

<table>
<thead>
<tr>
<th>Pilot Award Key Dates</th>
</tr>
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<tbody>
<tr>
<td>Grant Writing Workshop Attendance</td>
</tr>
<tr>
<td>DATE: November 10, 2018</td>
</tr>
</tbody>
</table>

In order to be eligible for 2019-2020 Pilot Award funding, faculty must attend the VGN Grant Writing Workshop at the University of Vermont.

| Letter of Intent |
| DUE: December 1, 2018 |

Applicants must submit a Letter of Intent to VGN with a working title and key words. VGN will distribute the template to those who attended the Grant Writing Workshop.

| Application Due Date |
| DUE: February 1, 2019 |

Pilot Award applications are submitted online via the VGN application site, which will be accessible beginning December 1, 2018. Funding decisions are made and communicated to applicants by the end of March. Note that formatting must adhere to NIH standards as outlined on their website.

Application components include:

- Face Page
- Project Summary and Relevance
- Budget
- Budget Justification
- Research Plan (not to exceed 6 pages, or 8 pages if applying for a renewal)
  - Specific Aims
  - Introduction (renewal applications can add up to two pages for a progress report)
  - Research Strategy
- Research Resources and Environment
- Biosketch
- If applicable, IRB approvals*
- If applicable, IACUC approvals*

*IRB and IACUC approvals must be submitted with the application by the due date. A proposal will not be reviewed with a pending status.
### Pilot Award Key Dates

**Funding Period:**
June 1, 2019-May 31, 2020

Funding of awards is contingent upon NIH approval.

### Pilot Award Conditions

Completion of the following:

- A report describing your summer research progress and meetings with your research advisor due September 1, 2019.
- Individual Development Plan (IDP) due September 1, 2019.
- Annual VGN survey and periodic VGN longitudinal surveys.
- Annual Progress Report (APR).
- For PIs with no previous VGN Project or Pilot Award funding: Submit a draft of a research proposal to a federal or comparable extramural agency that your research advisor has reviewed by June 1, 2019.
- For PIs with one year of previous VGN Pilot Award funding: Submit a research proposal to a federal or comparable extramural agency that your research advisor has reviewed by June 1, 2019 OR provide evidence of a submitted manuscript.
- For PIs with two or more years of previous VGN Pilot Award funding: Submit a research proposal to a federal or comparable extramural agency that your research advisor has reviewed by June 1, 2019.

Attendance at the following:

- Annual VGN Career Day for students in April 2019 and April 2020.
- Annual VGN Faculty Retreat in Summer 2019 and 2020.
Request For Applications (RFA)

Small Award

If you are interested in applying for a Small Award, contact the BPI Coordinator to discuss your proposal submission. All Small Award applications must be submitted to the VGN email address (vgn@uvm.edu) by the BPI Coordinator.

A recent change in VGN policy is that Small Awards will be made in a competitive manner with all Small Award applications due on July 1, 2018.

Project Duration: One year

Funding Level and Allowable Expenses: Small Awards are for up to $5,000 to support NIH-fundable activities. It is possible to bundle two Small Awards for course release support up to $10,000. If two Small Awards are bundled for this purpose, the faculty member must receive release time for two courses. While VGN will accept applications for other purposes, applications requesting academic year course release time for faculty will be given the highest priority.

<table>
<thead>
<tr>
<th>Small Award Key Dates</th>
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</thead>
<tbody>
<tr>
<td>Application Due Date</td>
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<tr>
<td>DUE: July 1, 2018</td>
</tr>
</tbody>
</table>

All Small Award applications must be submitted to the VGN email address (vgn@uvm.edu) by the BPI Coordinator. Note that formatting must adhere to NIH standards as outlined on their website.

Application components include:

- Face Page
- Research Plan (not to exceed 2 pages)
  - Project Summary: concise statement for use of the funds
  - Research Strategy with Specific Aims
- Budget
- Budget Justification
- Biosketch
- If applicable, IRB approvals*
- If applicable, IACUC approvals*

*IRB and IACUC approvals must be submitted with the application by the due date. A proposal will not be reviewed with a pending status.

Funding Period:
August 1, 2018-May 31, 2019

Funding of Small Awards is contingent upon NIH approval.
<table>
<thead>
<tr>
<th>Small Award Key Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Award Conditions</td>
</tr>
</tbody>
</table>

Completion of the following:

- A report describing the outcomes of the use of funds due June 30, 2019.
- Individual Development Plan (IDP) due October 1, 2019.
- Annual VGN survey and periodic VGN longitudinal surveys.

Attendance at the following:

- Annual VGN Career Day for students in April 2019.
- Annual VGN Faculty Retreat in Summer 2019.
Research advisors work with our faculty to ensure that their research plans and career development move forward. VGN Pilot and Project Awardees are required to have a research advisor in the state of Vermont or at Dartmouth College in order to facilitate face-to-face meetings. However, faculty may have as many other advisors as they wish from outside Vermont. VGN will compensate advisors every time they review a manuscript or grant proposal for their mentee.

**VGN science advisors agree to:**

- Communicate at least once per quarter with the faculty member they are advising
- Send reports describing your interaction with the faculty member (template provided) to VGN three times per year on September 1, February 1 and May 1
- Help the faculty member complete the VGN Individual Development Plan by September 1 to outline goals for their research progress
- Provide feedback on manuscripts and grant proposals
- Know the career goals of the faculty member and give advice relative to these goals
- If possible, attend the VGN retreat each summer to hear the faculty member present research progress
- Acknowledge to VGN each year the willingness to continue as an advisor and understanding of these obligations

**VGN funded faculty members agree to:**

- Be proactive in initiating contact with the research advisor
- Meet in person or by video conferencing with the advisor at least once per quarter
- Send manuscripts and grant proposal drafts to the advisor for review before submission
- Work with your advisor to complete the VGN Individual Development Plan due on September 1 to outline your research goals and progress
- Submit a faculty member progress report describing your interactions with your advisor and your research progress to VGN by September 1
- Work with the advisor on career goals, presentation skills and other aspects as appropriate
The Individual Development Plan (IDP) is a common tool used for reflecting on and planning for professional career goals. It provides a personal roadmap for accomplishing immediate, intermediate and long-term goals by identifying skills and developmental needs, resource needs, mentors and role models, and target dates for career building milestones. Treat this as a live document, subject to periodic review and revisions, as needed to correct course, and as a compact with your VGN assigned mentor. This IDP is limited to your VGN related research commitment.

Here are some quick tips for a successful IDP:

- Communicate with your VGN assigned mentor early and often; take the lead in maintaining contact and take ownership of your professional development.
- Set aside time: discuss strategies to achieve goals as well as obstacles that may be hindering your progress. Set clear expectations.
- Supplement this IDP with additional resources from within your own institution and professional organizations, as appropriate.
- Follow the process outlined below to prepare a first draft of an IDP prior to meeting with your mentor. Discuss with your mentor, reflect on the feedback received before making revisions, and revisit with your mentor before implementing your strategy.
- Do not hesitate to reach out to the BPI Coordinator at your institution, Elizabeth Dolci (Program Coordinator) at Northern Vermont University-Johnson, and/or Tabitha Finch (Professional Development & Education Core) in the UVM VGN office. They are here to facilitate your work, including if you find yourself in a difficult or uncomfortable situation in your mentoring relationship.

**Process**

**Step 1.**
Think intentionally about your goals and prepare a timeline: for each, identify the BIG GOAL and the interim steps towards the goal. Include actions that you need to take as well as activities that you need to stop doing to achieve the goal. Be as specific as possible. Justify how each interim step contributes towards the BIG GOAL and indicate how you will measure progress and completion to a successful outcome. List your goals in order of priority: Incorporating key VGN deadlines into your timeline. The timeline below is divided into three periods and is based on a one-year project/pilot funding period. (Note that funding is for one year with a renewal application with demonstrated progress meriting additional funding.)

1. Immediate - within the next three months
2. Intermediate - within the next three to six months
3. Long-term - within the next six to twelve months
Step 2.
Assign each goal to a category below and indicate percent effort you will dedicate.

1. Research
   a) Acquire requisite skills (e.g., technical, lab management)
   b) Mentor and train students
   c) Design methods, conduct experiments, analyze data

2. Grants and Funding
   a) Acquire requisite skills (e.g., hypothesis framing, grant writing mechanics)
   b) Identify funding source and establish connection with agency/program officer
   c) Work backwards from the due date to establish milestones and their target dates

3. Collaborations or consultations (if applicable)
   a) Identify needed expertise to carry out the project
   b) Assign tasks and responsibilities
   c) Establish regular meeting/conference schedule

4. Publications and Presentations
   a) Acquire requisite skills (e.g., manuscript preparation, oral presentations)
   b) Establish milestones and target dates
   c) Identify publication outlet/presentation venue
   d) Identify internal reviewers

Step 3.
Project and Pilot Awardees complete an IDP by August 15th and submit to both your science advisor and the BPI Coordinator at your institution. Plan to meet with your science advisor before September 1st to discuss your IDP. Prior to September 1st, also solicit input from your BPI Coordinator. Submit your IDP (with suggestions from both the science advisor and coordinator incorporated) by September 1st to Tabitha Finch (Tabitha.Finch@uvm.edu)
# EXAMPLE

## Milestones and Writing Time Table For Writing a Grant

**MILESTONES**

<table>
<thead>
<tr>
<th>Writing Time Table¹</th>
<th>12 months</th>
</tr>
</thead>
</table>

**I. Problem Identification**

1. Presentation of research interest.
2. Narrowing down interest into testable hypotheses with mentor.
3. Identification of funding sources that fit with hypotheses.
4. Identification of target funding source(s) with mentor.
5. Obtain information from target funding sources of proposal Formats – check with mentor.

**II. Operationalizing Constructs Presented in Hypotheses**

1. Presentation by mentee of their procedures to his/her mentor.
2. Feedback from mentor.

**III. Writing the Conceptualization and Procedures**

1. Draft the specific aims and significance sections of proposals.
2. Draft the method procedures section.
3. Draft circulated to mentor.
4. Mentors return draft with comments to mentee.

**IV. Conceptionalization to Operationalization to Data Analysis**

1. Draft analysis section.
2. Draft circulated to mentor.
3. Mentors return draft with comments.

**V. Mechanics**

1. Human Subjects Forms or Vertebrate Animals/IRCUC Forms.
2. Budget – Draft a proposed budget with assistance of mentor.
4. Prior research and preliminary studies – Draft circulated to mentors.
5. Mentors return draft with comments.

**VI. Completed Proposal Circulated to Mentor and Others**

2½ months

**VII. Feedback on Completed Proposal from Mentor and Others**

2 months

**VIII. Revisions and Elaboration**

2 to 0 months

**IX. Final Proposal Ready**

Ready!

¹ Months prior to proposal being ready for submission.
The NIH utilizes a 9-point rating scale (1 = exceptional; 9 = poor) for all applications; the same scale is used for overall impact scores and for criterion scores. Each reviewer assigned to an application gives a separate score for each of five review criteria described below.

**Significance.** Does the project address an important problem or a critical barrier to progress in the field? Is there a strong scientific premise for the project? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

**Investigator(s).** Is the PI well suited to the project? For Early Stage Investigators or New Investigators, or in the early stages of independent careers, do they have appropriate experience and training?

**Innovation.** Does the application challenge and seek to shift current research or clinical practice paradigms by utilizing novel theoretical concepts, approaches or methodologies, instrumentation, or interventions? Are the concepts, approaches or methodologies, instrumentation, or interventions novel to one field of research or novel in a broad sense? Is a refinement, improvement, or new application of theoretical concepts, approaches or methodologies, instrumentation, or interventions proposed?

**Approach.** Are the overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project? Have the investigators presented strategies to ensure a robust and unbiased approach, as appropriate for the work proposed? Are potential problems, alternative strategies, and benchmarks for success presented? If the project is in the early stages of development, will the strategy establish feasibility and will particularly risky aspects be managed? Have the investigators presented adequate plans to address relevant biological variables, such as sex, for studies in vertebrate animals or human subjects?

If the project involves human subjects, are the plans to address 1) the protection of human subjects from research risks, and 2) the inclusion (or exclusion) of individuals on the basis of sex/gender, race, and ethnicity, as well as the inclusion (exclusion) of children, justified in terms of the scientific goals and research strategy proposed?

**Environment.** Will the scientific environment in which the work will be done contribute to the probability of success? Are the institutional support, equipment and other physical resources available to the investigators adequate for the project proposed? Will the project benefit from unique features of the scientific environment, subject populations, or collaborative arrangements?
NIH REVIEW TIPS

Tips from Dr. Grace Spatafora, an NIH Reviewer and Faculty Member at Middlebury College

Dr. Spatafora is generously providing these tips she learned while serving on a Study Section in 2017. It is worthwhile to note that she spent a full day for an entire academic year writing her R01 proposal, which was funded. While these comments are specific to the NIH, they are applicable to NSF proposals.

Consider becoming a reviewer! Allow the funding organizations ample opportunity to know you...so that when your grant comes up for review, they can attach a face with the name.


NSF Reviewer Information:

https://www.nsf.gov/bfa/dias/policy/merit_review/reviewer.jsp#3

Set aside ample time to research and articulate your ideas in writing. Good grantsmanship cannot derive from a rushed job.

Significance

• Use the phrase “scientific premise”, possibly as a subheading as well as in the text. Be explicit.
• Address the weaknesses or shortcomings of your field and how your research will fill that gap.
• Address the feasibility of your research.
• Include explicit language like "this work is significant because...."

Investigator(s)

• This is not the time to be modest!
• Define a strong team of collaborators; outstanding science cannot be done in isolation...methods in the life sciences have become too interdisciplinary.

Innovation

• Address how the work you propose to do is innovative and not just "me too" science.
• Think outside of the box; cite ways in which the proposed research sets you apart from what is already known or being pursued in the field.
Approach

• Use the phrase “scientific rigor” to address this requirement...again, be explicit.
• Explain the statistics you will apply to data analysis and any power analyses that justify the experimental design.
• Clearly explain the use of controls.
• Explain how you will interpret, report on and make data available to the public.
• Use the term “biological variables”.
  • That is, address all 5 points in the vertebrate animals section to describe the animal subjects you will use and how many.
  • Explain why you are proposing to use animals of a certain age and/or sex.
• Incorporate the phrase “this work will have a major scientific impact because...”
  • Reviewers have to distinguish between research that will only make incremental changes in the field from research that may very well prove paradigm-shifting.
  • “Me too” science is not rising to the top anymore.

Environment

• Be sure that your description of the environment is one that can support the work proposed. Be specific about what is available most immediately, but also about resources to which you have ready access.
• Provide proof (i.e. a letter) of institutional support, including letters from Core Facilities that you plan to use to promote your work.
CONTACTING THE NIH

Contacting Staff at the NIH Institutes and Centers

NIH staff is here to help. The best people to talk with you about the scientific or administrative information in your particular application or award are in the NIH institute or center that may fund the grant. We strongly encourage you to communicate with NIH staff throughout the grant life cycle. The information on this page can help you understand the roles of NIH staff and help you contact the right person at each phase of the application and award process.

More info at: https://grants.nih.gov/grants/how-to-apply-application-guide/resources/contacting-nih-staff.htm

<table>
<thead>
<tr>
<th>Role</th>
<th>Responsibility</th>
<th>When to Contact</th>
<th>Where to find contact</th>
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<tbody>
<tr>
<td>Program Officials</td>
<td>Develop research and research training initiatives</td>
<td>To identify the right type of grant program and/or funding opportunity for you and your research</td>
<td>When exploring NIH:</td>
</tr>
<tr>
<td></td>
<td>Write funding opportunity announcements</td>
<td>To verify that your idea fits within the mission and priorities of an NIH Institute or Center</td>
<td>Look at organization charts of each NIH institute or center (IC)</td>
</tr>
<tr>
<td></td>
<td>Provide scientific guidance to investigators pre- and post-award</td>
<td>To discuss whether your research is considered a clinical trial</td>
<td>Use our Matchmaker tool in RePORTER to find NIH funded grants on topics related to yours. A Program official tab identifies the program officials associated with the matched projects and includes its own filters for Institute/Center and Activity Code.</td>
</tr>
<tr>
<td></td>
<td>Monitor the programmatic, scientific, and/or technical aspects of a grant</td>
<td>For approval to submit an application with budget &gt;$500,000 direct costs for any single year or an R13 conference grant</td>
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</tr>
<tr>
<td></td>
<td>Work in partnership with grants management staff on post-award administration,</td>
<td>To discuss the summary statement and outcome of review</td>
<td>After finding an FOA:</td>
</tr>
<tr>
<td></td>
<td>including review of progress reports</td>
<td>To talk about progress or scientific and administrative issues that arise with the grant after award</td>
<td>Refer to section VII of the FOA for Scientific/Research Contact(s)</td>
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<tr>
<td></td>
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<td>After application submission or award:</td>
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<td>Look in your eRA account for the assigned program staff contact for your application</td>
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<tr>
<td>Role</td>
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| **Scientific Review Officers** | Review applications for completeness and conformance with application requirements  
Ensure fair and unbiased evaluation of scientific and technical merit  
Provide a summary of the evaluation in the form of summary statements for applicants | Point of contact for applicants during the review process to:  
• Discuss the review assignment  
• Request permission to send additional/corrective materials  
• Discuss any review concerns (e.g., expertise needed on the review panel, conflicts, reviewers that may have bias) | After finding an FOA:  
Refer to section VII of the FOA for Peer Review Contact(s)  
After application submission:  
Look in your eRA account for the name and contact information for the assigned scientific review officer for your application |
| **Grants Management Officials** | Evaluate applications for administrative content and compliance with policy  
Negotiate Awards  
Interpret grants administration policies | To discuss financial or grants administration issues  
For interpretation of grants policies | After finding an FOA:  
Refer to section VII for Financial/Grants Management Contact(s)  
After application submission and/or award:  
Look in your eRA account for the name and contact information for the assigned grants management staff for your application |
| **Division of Receipt and Referral in NIH’s Center of Scientific Review** | Evaluate applications for compliance with policy  
Assign applications to institutes/centers or partner agencies for funding consideration  
Assign applications to appropriate group for initial peer review | To identify institutes/centers at NIH or a Scientific Review Group (SRG) that might be appropriate for your application.  
To request a reassignment of an application to an institute, center or review group seems inappropriate, the Program Director/Principal Investigator (PD/PI) may request reassignment in writing.  
To officially withdraw an application from funding consideration prior to review. | When Exploring NIH:  
301-435-0715  
csrdr@mail.nih.gov  
To request reassignment or withdrawal of an application:  
Send an email to csrdr@mail.nih.gov with an attached letter including: an ink signature of an authorized organization representative, name of contact PD/PI, application number, and the details of the request. |
New Tool To Find a Program Officer

Here's a new and easy method to find and contact an appropriate NIH program officer (PO) for your area of science. That PO can advise you on your application ideas and help you navigate the grant submission and review process.

As you may already know, NIH Research Portfolio Online Reporting Tools (https://projectreporter.nih.gov/reporter.cfm?source=aifn) provides detailed information on funded projects.

The feature to find a PO is now part of RePORTER. Here's how to locate and use it:

1. Look at the top of the RePORTER search form and find the navigation tabs.
3. Paste or type any text in the Matchmaker form field, such as keywords or a scientific abstract.
4. Choose the new "Similar Program Officials" button at the bottom of the Matchmaker form.

Matchmaker Results

As shown in the image, Matchmaker will return graphs of relevant NIH institutes or centers and activity codes. Below the graphs, you'll see a table of POs ranked by the number of relevant projects in their portfolios. Click the number in the Projects column to see the list of awards.

Since the tool uses document fingerprinting technology to analyze the text you provide, it may not precisely pinpoint the proper PO. Even so, it's likely that one of your top matching POs can direct you to the right person.

Do not send a single email to all the POs listed in your query results. Instead, view the abstracts of the linked projects first and then direct your question to the PO whose projects most closely match your interests.

Learn more about other uses for RePORTER in our August 3, 2017 article "Use NIH Databases To Find Topics and Teammates."
Students Funded by VGN

In addition to funding students through faculty Project, Pilot, and Small awards, VGN supports three students per BPI for summer research with our funded faculty. There is a competitive process specific to the BPI for selecting these students. If the BPI Coordinator cannot place all three students in summer research with VGN funded faculty, there are two options: 1) let one or more students use the salary during the academic year to work with VGN funded faculty or, 2) VGN will allow for another BPI to have more than three VGN funded students.

Undergraduate Student Summer Research Support

VGN offers a specific opportunity for students from our BPIs to apply to conduct summer research in a laboratory outside of their home institution, including but not limited to the University of Vermont (UVM), UVM Medical Center and the Albany College of Pharmacy and Health Sciences. The application deadline for these internships is February 18, 2019, and acceptance notifications will be sent in March. Applicants must be enrolled as an undergraduate student in Fall 2019 in order to be eligible to apply.

All students receiving VGN funding are required to present a poster at the annual Career Day event help on April 3, 2019, and to provide contact information in order to participate in annual and long-term career tracking.

Why can’t I have a VGN funded students even though I am not VGN funded myself?

VGN’s first responsibility is to make our funded faculty competitive for extramural funding. Student support is reserved for those who will work with VGN funded faculty as a way to help the faculty member make research progress. Also, students working with our funded faculty are ensured to have resources because we know their projects and how they are funded.

We ask your college to support other students and to join VGN in developing a culture of research at your institution.
VGN staff have developed educational modules for undergraduate students in the areas of bioinformatics and proteomics. These resources are freely available and can be used in full or modified to fit the needs of a specific audience.

**Bioinformatics module:** [https://vgn.uvm.edu/outreach/bioinformaticsoutreach](https://vgn.uvm.edu/outreach/bioinformaticsoutreach)

The goal of this module is to expose undergraduates in the state of Vermont to online databases and data mining techniques. It is intended to serve as an introduction to the concepts and principle databases of bioinformatics and structural biology. This series of exercises enables students to access and analyze sequence and structure data, create and edit images of molecules, and present their results in several formats.

In order to access this content, you will need to create an account:


**Proteomics module:** [https://vgn.uvm.edu/outreach/proteomicsoutreach](https://vgn.uvm.edu/outreach/proteomicsoutreach)

The goal of this module is to expose undergraduates in Vermont to proteomics technology using hands-on laboratory experiences. In this series of experiments, students will learn how protein expression in yeast is changed after exposure to oxidative stress or an environmental toxin. Proteins with differential expression will be isolated from a 2D gel and prepared for Mass Spectrometry at the VGN Proteomics Core. Once the data are processed, students examine their results and use bioinformatics to understand the biological implications of their results.
VGN CORE FACILITIES

BIOINFORMATICS CORE
https://vgn.uvm.edu/bioinformatics

OUR CORE

The VGN Bioinformatics Core supports investigators across our network whose research requires biological information data analysis. VGN Bioinformatics Core members also participate in regional and national projects to provide comprehensive bioinformatics support for life sciences researchers throughout Vermont and other Northeast IDeA states. Specifically, we assist users of the Proteomics Facility and VGN BPI investigators in proteomics informatics, gene expression analysis, functional analysis, database design, and manuscript and grant proposal preparation.

OUR SERVICES

PROTEOME INFORMATICS

• Quantitative proteomics, motif analysis, identifying enriched motifs and structural domains, and homology analyses for functional predictions

GENE EXPRESSION

• Experimental design, power analysis, differential expression analysis, linear mixed model, variance analysis, clustering, and hypothesis testing for microarray and RNA-Seq data
• Microarray differential expression analysis - primary analysis includes microarray data normalization, exploratory data analysis (e.g. PCA), and gene-level and/or isoform-level differential expression analysis (i.e. spreadsheets, plots, heatmaps, etc.)
• Next generation sequence data analysis in partnership with the Center for Bioinformatics and Computational Biology at the University of Delaware

FUNCTIONAL ANALYSIS

• Functional-group analysis of variance of microarray data- KEGG Pathway-ANOVA and GO-ANOVA analyses in Partek Genomics Suite
• Enrichment analysis - enrichment analysis of genes, motifs, structural domains and post-translational modifications. Software used includes DAVID, Partek Genomics Suite, Motif-x, Scansite, PhosphositePlus
• Database design
• Database infrastructure, database maintenance, pathway analysis database, protein phosphorylation database, etc.

GRANT PROPOSAL AND PUBLICATION SUPPORT

• Data publishing- data deposition into public repositories
• Grant proposal and manuscript support- bioinformatics methods text, figure, and table preparation
The VGN Proteomics Facility is located in the Marsh Life Science building at the University of Vermont. The Facility enables investigators to use an array of state-of-the-art mass spectrometry-based techniques for proteomics experiments, ranging from routine protein identification, post-translational modification characterization, to large-scale quantitative proteomic analyses using stable isotopes. Since its inception in 2006, the facility has analyzed close to 20,000 samples and facilitated data acquisition to support 100+ publications.

The facility is equipped with five mass spectrometers: two linear ion traps, one LTQ-Orbitrap, one Q Exactive, and one Q Exactive Plus. Working closely with the VGN Bioinformatics Core, Proteomics Facility staff provide tailored bioinformatic solutions to investigators. The facility also trains investigators in experimental design and proteomics methods, while assisting with data interpretation, manuscript preparation, and grant submission.

OUR SERVICES

- Protein identification and isoform characterization
- Identification of protein-protein interacting partners and determination of binding stoichiometry
- Identification of common/atypical post-translational modifications of defined masses (e.g., phosphorylation, methylation, acetylation, trimethylation, ubiquitination, S-nitrosylation, glutathionylation, and S-sulfenylation)
- Peptide fractionation and enrichment from complex mixtures
  - Off-line peptide separation (e.g., SCX)
- Enrichment of post-translationally modified peptides by antibody-based or chemical derivatization approaches:
  - Phosphopeptide enrichment (e.g., IMAC, TiO2, P-Tyr-100 Ab, 4G10 Ab)
  - Acetylated peptide enrichment (e.g., PTMScan Acetyl-Lys Motif (Ac-K); p-PKA Substrate)
- Large-scale quantitative proteomics using stable isotopes:
  - Stable isotope labeling by amino acids in cell culture
  - Dimethyl labeling
  - Tandem Mass Tags
- Absolute quantification of proteins using isotopically labeled standards
- Quantification of target peptides using Parallel Reaction Monitoring on Q-Exactive and Skyline
The NIGMS of the NIH, which funds the Vermont Genetics Network, requires that we acknowledge them as the source of funding that supports your work whenever you publish papers, chapters, abstracts or otherwise present your work. Please help us to comply with their requirement by using the citation below for our INBRE grant.

Citation For Any Presentation or Publication of VGN Funded Research from 1/1/2012-05/31/2020

Research reported in this (publication, project, release) was supported by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103449. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of NIGMS or NIH.

Citation For Any Publication That Used VGN Core Facilities (Proteomics, Bioinformatics) from 1/1/2012-05/31/2020

Research reported in this (publication, release) was supported by an Institutional Development Award (IDeA) from the National Institute of General Medical Sciences of the National Institutes of Health under grant number P20GM103449. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of NIGMS or NIH.

**You may also add specific details related to the core facility you worked with. For example, “All target preparation (or other analyses, etc.) were performed in the VGN Proteomics Facility”.

Download the VGN Logo for use in presentations
FREQUENTLY ASKED QUESTIONS

Why can't I have a multiple year award?

The faculty already have the opportunities for multiple years of funding, just not guaranteed as some would like. Most applicants successfully renew their awards.

Can I use facilities other than VGN facilities at UVM?

Yes, you can contact other UVM Core facilities directly, but VGN does not have arrangements to offer faculty at our BPIs special pricing or discounts on their services, unlike at the VGN-run Proteomics and Bioinformatics Cores. Check out the new Core Marketplace searchable database on the VGN web site (https://vgn.uvm.edu/core-marketplace) for other facilities. These facilities charge for their use and most have mechanisms to work with outside users.
Why can’t VGN help us with equipment purchases?

We do not have the staff or ability to help BPIs with their purchasing. Each BPI has a subcontract and professional staff who can help you.

Are Preprints taken into account at the NIH?

The NIH’s policy on reporting preprint and other interim research products can be found at https://grants.nih.gov/grants/guide/notice-files/NOT-OD-17-050.html

Can I use the UVM Library for electronic journals?

The University of Vermont is charged for use of journals by numbers of UVM IDs and cannot allow persons outside UVM to access their electronic holdings. You would have to become an adjunct faculty member at UVM or get a colleague at UVM to access a journal for you.
The current funding cycle is from June 1, 2018- May 31, 2019.

**July 1, 2018** - Small Award applications due

**August 15, 2018** - Faculty Retreat at the Trader Duke's Hotel in South Burlington

**September 1, 2018** - Faculty Progress Reports and IDP due

**September 1, 2018** - Pilot/Project Award Research Advisor Report due

**October 1, 2018** - Small Award IDP due

**November 10, 2018** - Grant Writing Workshop at the University of Vermont

**December 1, 2018** - Pilot/Project Award Letter of Intent due

**December 1, 2019** - Pilot/Project Award application site open

**February 1, 2019** - Pilot/Project Award applications due

**February 1, 2019** - Pilot/Project Award Research Advisor Report due

**February 18, 2019** - Undergraduate Student Summer Research Support application due

**Spring 2019 (Date and Location TBD)** - Professional Development Seminar

**April 3, 2019** - Career Day at the Trader Duke's Hotel in South Burlington

**May 1, 2019** - Pilot/Project Award Research Advisor Report due

**June 1, 2019** - Pilot/Project Award compliance (i.e. extramural proposal/manuscript submission) due

**June 30, 2019** - Small Award progress report due

**Summer 2019 (Date and Location TBD)** - Faculty Retreat