



Vermont
Biomedical
Research
Network

VBRN FACULTY HANDBOOK 2022

CONTENTS

About This Handbook	3
VBRN Staff	4
VBRN Mission Statement	5
About VBRN	6
2022 VBRN Baccalaureate Partner Institutions	7
2022 VBRN Funded Faculty	7
VBRN Awards	
Project Award	10
Pilot Award	14
Exploratory Award	17
VBRN Science Mentor and Mentee Expectations	20
Individual Development Plan and Mentoring Needs Assessment	21
NIH AREA R15 Review Criteria	24
Contacting the NIH	28
NIH RePORTER and Matchmaker Tools	30
List of NIH Institutes, Centers, and Offices	31
NIH Research Enhancement Award (R15)	32
NIH Support For Research Excellence (SuRE)	35
How VBRN Funds Undergraduate Students	36
Teaching Resources	37
VBRN Core Facilities	
Bioinformatics Core	38
Proteomics Core	39
How To Cite VBRN Funded Research	40
NIH Public Access Policy	41
Frequently Asked Questions	42
VBRN Calendar of Events	44

ABOUT THIS HANDBOOK

This handbook has been created to help clarify the Vermont Biomedical Research Network's (VBRN) goals and policies. VBRN is here to support faculty and undergraduate research across Vermont. Please feel free to reach out if any questions should arise. We are here to help!

MESSAGE FROM THE DIRECTOR

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

As we continue our fourth phase, I believe the Vermont Biomedical Research Network is positioned to continue to enhance biomedical research throughout Vermont!



Dr. Chris Francklyn

VBRN STAFF

Chris Francklyn, Director

christopher.francklyn@med.uvm.edu

Jason Botten, Associate Director

jason.botten@med.uvm.edu

Heather Driscoll, Program Coordinator

hdriscol@norwich.edu

Proteomics Core

Wai Lam, Director

ying-wai.lam@uvm.edu

Bin Deng, Manager

Sydney Cohn-Guthrie, Senior Technician

Bioinformatics Core

Julie Dragon, Director

julie.dragon@med.uvm.edu

Heather Driscoll, Analyst

hdriscol@norwich.edu

Professional Development & Education (PDE) Core

Professional Development Team

Alicia Ebert

alicia.ebert@uvm.edu

Robert Hondai

robert.hondai@uvm.edu

Jason Botten

jason.botten@uvm.edu

Administrative Core

vbrn@uvm.edu

Briana Sadler, Administrative Coordinator

Nate Herzog, IT Specialist

Marianne Baggs, Program Assistant

VBRN MISSION STATEMENT

VBRN Mission Statement

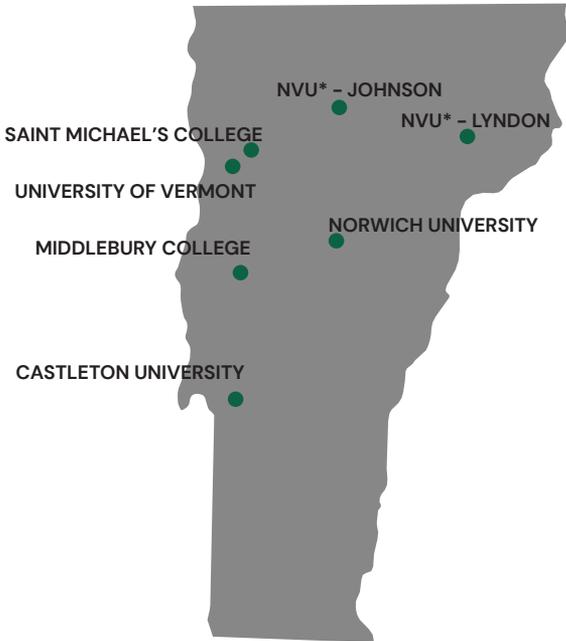
The mission of VBRN is to build a culture to promote the biomedical research infrastructure in Vermont. Our focus is on human health and behavior as broadly defined. The goal is to build and sustain a culture of research throughout the state by facilitating the research capacity of faculty members, and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

ABOUT VBRN

The Vermont Biomedical Research Network (VBRN) is in its fourth phase of funding with a five-year \$19.4 million award from the INBRE program of the NIGMS at the National Institutes of Health. The mission of VBRN 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, Middlebury College, Northern Vermont University (Lyndon and Johnson campuses), Norwich University, and Saint Michael's 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, Landmark College, and Champlain College.



*NORTHERN VERMONT UNIVERSITY

VBRN is funded by the National Institute of General Medical Sciences as part of the **National Institutes of Health initiative IDeA Networks of Biomedical Research Excellence (INBRE)** under award number P20-GM103449.

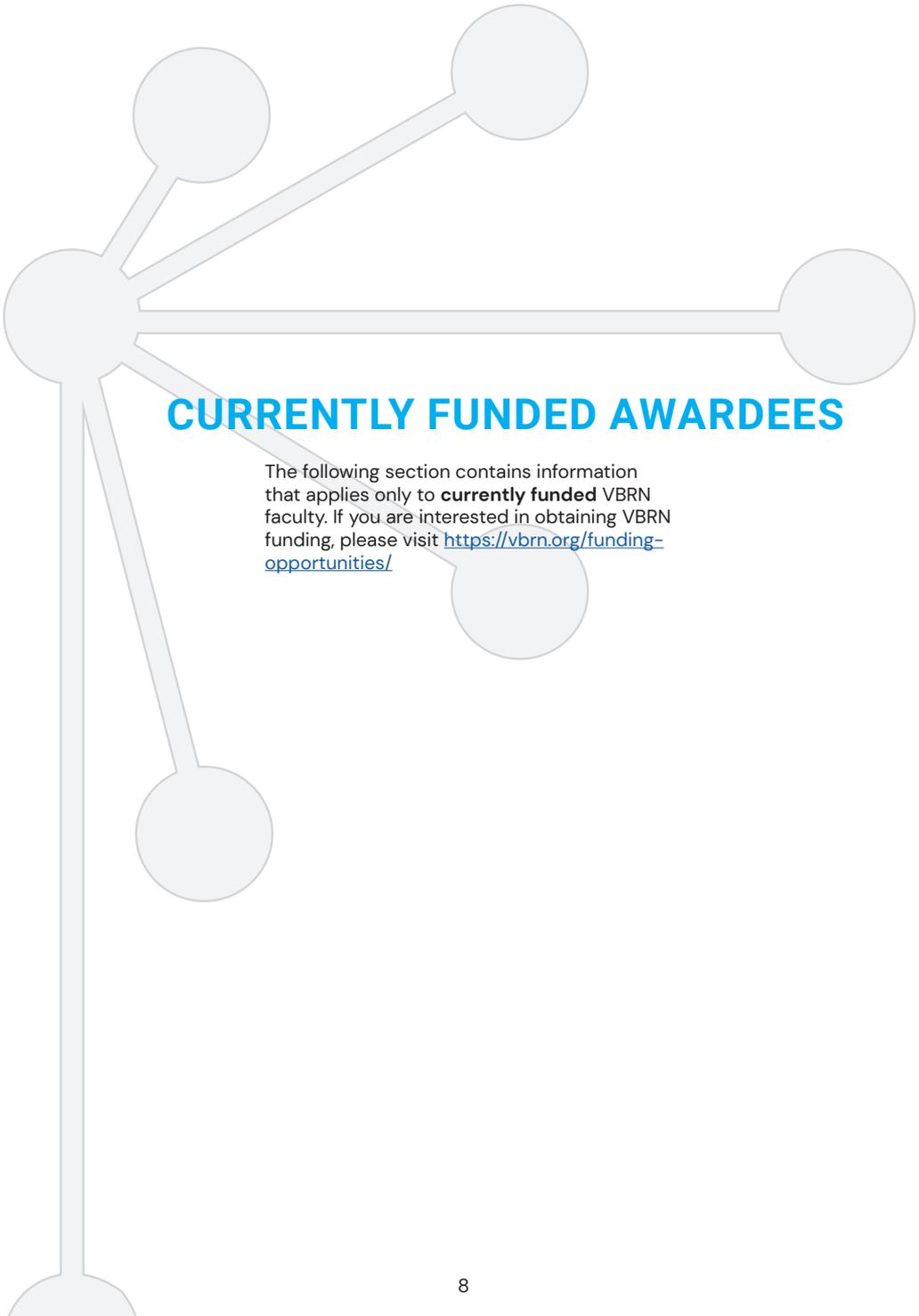
VBRN BACCALAUREATE PARTNER INSTITUTIONS

Each Baccalaureate Partner Institute (BPI) has a Coordinator on campus to work with VBRN 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 VBRN-related questions. The Coordinators understand VBRN policies and the award process, and can provide a wealth of knowledge and support. Specifically, BPI Coordinators are expected to actively meet with VBRN funded faculty, read drafts of grant proposals, assist in the VBRN Award and reporting processes, help organize VBRN'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.

Institution	Coordinator
Castleton University	Dr. Andrew Vermilyea
Middlebury College	Dr. Rick Bunt
Northern Vermont University (Lyndon and Johnson campuses)	Dr. Gregory Petrics
Norwich University	Dr. Darlene Olsen
Saint Michael's College	Dr. Mark Lubkowitz

2022 VBRN FUNDED FACULTY

Name	Institution	Award Category	Title
Eleanor Beltz	Northern Vermont University - Johnson	Pilot Award	Assessing Completeness of Concussion Documentation using a novel Concussion Documentation Audit Tool
Natalie Cartwright	Norwich University	Pilot Award	Machine Learning for Prediction of Youth Gun Shot Wounds: imbalanced data and feature importance
Clinton Cave	Middlebury College	Project Award	The Role of GDE6 in Neural Progenitor Proliferation and Differentiation
Jennifer Crodelle	Middlebury College	Pilot Award	A computational modeling approach to investigating the role of inhibitory plasticity in the developing visual cortex.
Sarah Gallant	Norwich University	Pilot Award	Development of a Spectrophotometric Method for Detection of Uranium (VI) in Drinking Water
Connie Hassett-Walker	Norwich University	Project Award	What is the impact of COVID-19 on substance abusers' recovery, for individuals both involved and not involved with the justice system?
Andrew Korich	Saint Michael's College	Pilot Award	Continuing Adventure in Boron Trihalide Chemistry
Michael Linderman	Middlebury College	Pilot Award	Deep Learning Methods for genotyping Structural Variants in human genomes
Rachele Pojednic	Norwich University	Pilot Award	The Perceived Effects versus Biomarkers of Cannabidiol on Muscle Recovery in Active Adult Women
Lindsay Repka	Middlebury College	Project Award	Alkoxyamide Photoredox Crosslinking: A New Approach to Target Identification and Interactome Mapping
Helene Sisti	Norwich University	Project Award	The Role of Interhemispheric-Coupling in Learning a Visuomotor Bimanual Coordination Task
Zu Wei Zhai	Middlebury College	Pilot Award	Adolescent stress and substance use changes on white matter micro-structure.



CURRENTLY FUNDED AWARDEES

The following section contains information that applies only to **currently funded** VBRN faculty. If you are interested in obtaining VBRN funding, please visit <https://vbrn.org/funding-opportunities/>

VBRN AWARDS

VBRN has three funding mechanisms, described below, to support faculty research: Project Awards, Pilot Awards and Exploratory Awards. Faculty who receive VBRN funding are required to have a science mentor (see [page 20](#) for details).

Eligibility: Faculty members who are full-time tenure track at one of our Baccalaureate Partner Institutions are eligible to apply for VBRN funding. Note, full-time non-tenure track faculty are eligible to apply for VBRN Exploratory Awards for the 2023-2024 funding year. Priority will be given to early career faculty.

Funding Limits: There is a limit to the number of years of VBRN funding an investigator may receive. Eligible faculty may receive up to four years of funding (exclusive of the INBRE 3 Small Award category). VBRN recognizes that the BPIs are at different stages in developing and sustaining their cultures of research and will accept requests for a fifth year of funding for compliant faculty. These requests will be reviewed on an individual basis, and will involve input from the science mentor and the BPI coordinator, and supporting documentation that includes reviews from extramural grant proposals. Progress toward extramural funding must be demonstrated in order to be eligible for a fifth year of VBRN funding.

Review of VBRN Award Applications: VBRN applications now receive their initial review from a Third party service (AIBS) that contracts with experts in the specific areas of the application to produce high quality reviews that address the scientific merit of each of the submitted proposals. These experts deliver reviews organized around the NIH review criteria and exhibit the depth characteristic of the review of an R15 application. The NIH 9-point rating scale is used for individual criteria and overall merit.

When the third party reviews are returned to VBRN, they are reviewed by the VBRN Director and Program Coordinator to determine their suitability to funding, based on available resources, program strategic imperatives*, and BPI institutional impact. The applications along with external reviews and Director recommendations are forwarded to our External Advisory Committee, who make their funding recommendations. Applications recommended for funding by this three-stage process are then submitted to the NIH, who issues final approval. NIH does not typically conduct its own independent review of the scientific merit; they typically are more concerned with budget and regulatory compliance issues.

Policy on Sharing Grant Reviews: While VBRN has requested grant reviews from our funded faculty in the past, beginning with the INBRE 4 phase, we are formalizing this process. VBRN funded faculty are expected to share any extramural grant reviews with their science mentor, BPI Coordinator and VBRN's Professional Development and Education Core. These reviews will be kept confidential. This will facilitate the faculty mentoring process and allow VBRN funded faculty to receive useful feedback on their resubmission plans.

Request For Applications (RFA) – Award Year 2022–2023 (For the 2023–2024 award year [visit here](#))

Project Award

Project Duration: Two years

Eligibility: Faculty members who are full-time tenure track at Castleton University, Middlebury College, Northern Vermont University, Norwich University, or Saint Michael's College. Research must fit the mission of the NIH. Human subjects research is permissible, but clinical trials are no longer supported. To determine whether the proposed study is a clinical trial, use the [NIH decision tool](#).

NIH Mission: NIH is the steward of medical and behavioral research for the Nation. Its mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.

Funding Level and Allowable Expenses: Direct costs up to \$75,000 per year may be requested. NIH requires that a Project Award PI spend on average 50% effort in research over the award year, which can be 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.

Review of Applications: VBRN applications receive their initial review from a Third-party service (AIBS) that contracts with experts in the specific areas of the application to produce high quality reviews that address the scientific merit of each of the submitted proposals. These experts deliver reviews organized around the NIH review criteria and exhibit the depth characteristic of the review of an R15 application. The NIH 9-point rating scale is used for individual criteria and overall merit. When the third party reviews are returned to VBRN, they are reviewed by the VBRN Director and Program Coordinator to determine their suitability to funding, based on available resources, program strategic imperatives*, and BPI institutional impact. The applications along with external reviews and Director recommendations are forwarded to our External Advisory Committee, who make their funding recommendations. Applications recommended for funding by this three-stage process are then submitted to the NIH, who issues final approval.

Project Award Key Dates

Grant Writing Workshop Attendance

DATE: November 6, 2021

In order to be eligible for 2022–2024 Project Award funding, faculty must attend the VBRN Grant Writing Workshop.

Letter of Intent

DUE: December 1, 2021

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

Application Due Date

DUE: February 1, 2022

Project Award applications are submitted online via the VBRN application site, which will be accessible beginning in early December 2021. 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](#).

For the following application components, use the hyperlinked documents as provided. Please submit all documents in the PDF format, except for the Budget and Budget Justification, which should be submitted as Word documents.

All applicants must contact a federal Program Officer at an NIH Center or Institute to verify that the proposed research is fundable by the NIH. If this is a renewal application, the applicant's science mentor must review the proposal before submission.

Application components include:

- [Face Page](#)

(Face Page must be emailed to vbrn@uvm.edu by February 4, 2022)

- Must be signed by BPI Coordinator and institutional grants officials (boxes 12 and 13)
- List direct costs only (boxes 7a and 8b)
- List total costs (including Facilities and Administrative costs, boxes 7b and 8b)
- Include eRA Commons User Name (box 3h)
- Include NIH Center or Institute for the Research and the Name of a Program Officer

- [Project Summary and Relevance](#) (submit as PDF)

- eRA Commons ID required for all senior/key personnel

- [Budget](#) (submit one document for each year of the award, and both as Word documents)

(Not to exceed one page)

- List direct costs only
- Fill in total amount for Facilities and Administrative costs
- Must be reviewed by the institutional BPI Coordinator

- [Budget Justification](#) (submit one document for each year of the award, and both as Word documents)

(Not to exceed three pages)

- Must be reviewed by the institutional BPI Coordinator

- [Research Plan](#) (submit as PDF)

(Not to exceed 11 pages, or 13 pages if applying for a renewal)

- Specific Aims (not to exceed one page)
- Progress Report (not to exceed two pages; only for renewal applications)
- Research Strategy (not to exceed 10 pages)
- Literature Cited (as many pages as needed)

- [Research Resources and Environment](#) (submit as PDF)

- [Biosketch](#) (submit as PDF)

- Submit for all senior/key personnel and other significant contributors
- Not to exceed five pages per person

- For human subjects research, IRB approvals*
 - PHS Human Subjects and Clinical Trials Information Form (note, human subjects research is permitted, however clinical trials are no longer supported)
 - Institutional IRB approval letter (with specified dates for which the research is approved)
 - The approved IRB research protocol
 - Current Human Subjects Education Certification for all key personnel
- If applicable, IACUC approvals*
 - Institutional IACUC approval letter (with specified dates for which the research is approved)
 - A copy of the approved research protocol
 - [Vertebrate Animals Section](#)
- Supporting documents (as applicable; e.g. Letters of Support, Equipment Quotes, etc.)

*IRB and IACUC approvals must be submitted with the application by the due date. **A proposal will not be reviewed with a pending status.** If the institutional approval expires over the duration of the two year award, the PI is responsible for sending an updated approval letter.

Funding Period:

June 1, 2022 – May 31, 2024

Funding of awards is contingent upon NIH approval. Award funds must be spent in the award period; carryover of funds is not allowed.

Project Award Conditions

Year One (June 1, 2022–May 31, 2023)**

Completion of the following:

- Individual Development Plan (IDP) due September 15, 2022
- Two telephone discussions of the IDP with the VBRN Director, the Program Coordinator, and the BPI Coordinator, one in October 2022 and one in May 2023.
- Annual VBRN survey and periodic VBRN longitudinal surveys.
- Research Performance Progress Report (RPPR).
- Submit a manuscript based on VBRN-funded research to a peer-reviewed journal by June 1, 2024.

Attendance at the following:

- Annual VBRN Faculty Retreat in Summer 2022.
- VBRN Professional Development Seminar in Winter 2023.
- Annual VBRN Career Day for students in April 2023.
- Note that while attendance at the Grant Writing Workshop is not required, attendance is strongly encouraged.

****Funding for the second year is contingent upon meeting the requirements in Year One.**

Year Two (June 1, 2023–May 31, 2024)

Completion of the following:

- Individual Development Plan (IDP) due September 1, 2023.
- Two telephone discussions of the IDP with the VBRN Director, the Program Coordinator, and the BPI Coordinator, one in September 2023 and one in May 2024.
- Annual VBRN survey and periodic VBRN longitudinal surveys.
- Research Performance Progress Report (RPPR).
- Progress Report submitted to the Director indicating progress made on specific aims (including publications and presentations) and whether specific aims will remain the same in year two, and if not, what major changes are envisioned.
- Have a manuscript published OR have revised and resubmitted a manuscript based on VBRN-funded research to a peer-reviewed journal by June 1, 2025.
- Submit a second manuscript based on VBRN-funded research to a peer-reviewed journal OR submit an extramural grant proposal by June 1, 2025.***

Attendance at the following:

- Annual VBRN Faculty Retreat in Summer 2023 and 2024.
- VBRN Professional Development Seminar in Winter 2023.
- Annual VBRN Career Day for students in April 2024.

*****The decision to submit either a second manuscript or a grant proposal will be made by the PI, the BPI Research Coordinator and at least one member of VBRN's Professional Development Team.**

Any work resulting from this Award must acknowledge VBRN as a source of funding, details of which can be found on the VBRN website and in the faculty handbook. All publications from VBRN funded research are required to meet the NIH public access policy. (Details on this requirement can be found on [page 41](#).)

Request For Applications (RFA) – Award Year 2022–2023 (For the 2023–2024 award year [visit here](#))

Pilot Award

Project Duration: One year

Eligibility: Faculty members who are full-time tenure track at Castleton University, Middlebury College, Northern Vermont University, Norwich University, or Saint Michael's College. Research must fit the mission of NIH. Human subjects research is permissible, but clinical trials are no longer supported. To determine whether the proposed study is a clinical trial, use the [NIH decision tool](#).

NIH Mission: NIH is the steward of medical and behavioral research for the Nation. Its mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.

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.

Review of Applications: VBRN applications receive their initial review from a Third-party service (AIBS) that contracts with experts in the specific areas of the application to produce high quality reviews that address the scientific merit of each of the submitted proposals. These experts deliver reviews organized around the NIH review criteria and exhibit the depth characteristic of the review of an R15 application. The NIH 9–point rating scale is used for individual criteria and overall merit. When the third party reviews are returned to VBRN, they are reviewed by the VBRN Director and Program Coordinator to determine their suitability to funding, based on available resources, program strategic imperatives*, and BPI institutional impact. The applications along with external reviews and Director recommendations are forwarded to our External Advisory Committee, who make their funding recommendations. Applications recommended for funding by this three-stage process are then submitted to the NIH, who issues final approval.

Pilot Award Key Dates

Grant Writing Workshop Attendance

DATE: November 6, 2021

In order to be eligible for 2022–2023 Pilot Award funding, faculty must attend the VBRN Grant Writing Workshop.

Letter of Intent

DUE: December 1, 2021

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

Application Due Date

DUE: February 1, 2022

Pilot Award applications are submitted online via the VBRN application site, which will be accessible beginning in early December 2022. 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](#).

For the following application components, use the hyperlinked documents as provided. Please submit all documents in the PDF format, except for the Budget and Budget Justification, which should be submitted as Word documents.

All applicants must contact a federal Program Officer at an NIH Center or Institute to verify that the proposed research is fundable by the NIH. If this is a renewal application, the applicant's current science mentor must review the proposal before submission.

Application components include:

- [Face Page](#)

(Face Page must be emailed to vbrn@uvm.edu by February 4, 2022)

- Must be signed by BPI Coordinator and institutional grants officials (boxes 12 and 13)
- List direct costs only (boxes 7a and 8b)
- List total costs (including Facilities and Administrative costs, boxes 7b and 8b)
- Include eRA Commons User Name (box 3h)
- Include NIH Center or Institute for the Research and the Name of a Program Officer

- [Project Summary and Relevance](#) (submit as PDF)

- eRA Commons ID required for all senior/key personnel

- [Budget](#) (submit one document for each year of the award, and both as Word documents)

(Not to exceed one page)

- List direct costs only
- Fill in total amount for Facilities and Administrative costs
- Must be reviewed by the institutional BPI Coordinator

- [Budget Justification](#) (submit one document for each year of the award, and both as Word documents)

(Not to exceed three pages)

- Must be reviewed by the institutional BPI Coordinator

- [Research Plan](#) (submit as PDF)

(Not to exceed six pages, or eight pages if applying for a renewal)

- Specific Aims (not to exceed one page)
- Progress Report (not to exceed two pages; only for renewal applications)
- Research Strategy (not to exceed five pages)
- Literature Cited (as many pages as needed)

- [Research Resources and Environment](#) (submit as PDF)

- [Biosketch](#) (submit as PDF)

- Submit for all senior/key personnel and other significant contributors
- Not to exceed five pages per person

- For human subjects research, IRB approvals*

- PHS Human Subjects and Clinical Trials Information Form (note, human subjects research is permitted, however clinical trials are no longer supported)
- Institutional IRB approval letter (with specified dates for which the research is approved)
- The approved IRB research protocol
- Current Human Subjects Education Certification for all key personnel
- If applicable, IACUC approvals*
 - Institutional IACUC approval letter (with specified dates for which the research is approved)
 - A copy of the approved research protocol
 - [Vertebrate Animals Section](#)
- Supporting documents (as applicable; e.g. Letters of Support, Equipment Quotes, etc.)

*IRB and IACUC approvals must be submitted with the application by the due date. **A proposal will not be reviewed with a pending status.** If the institutional approval expires over the duration of the two year award, the PI is responsible for sending an updated approval letter.

Funding Period:

June 1, 2022–May 31, 2023

Funding of awards is contingent upon NIH approval. Award funds must be spent in the award period; carryover of funds is not allowed.

Pilot Award Conditions

Completion of the following:

- Individual Development Plan (IDP) due September 15, 2022.
- Two telephone discussions of the IDP with the VBRN Director, the Program Coordinator, and the BPI Coordinator
- Annual VBRN survey and periodic VBRN longitudinal surveys.
- Research Performance Progress Report (RPPR).
- For PIs with no previous VBRN Project or Pilot Award funding: Submit a draft manuscript (minimally Methods and Results sections) with revisions recommended by your science mentor based on VBRN-funded research by June 1, 2023.
- For PIs with one year of previous VBRN Pilot Award funding: Submit a manuscript based on VBRN-funded research to a peer-reviewed journal by June 1, 2023.
- For PIs with two or more years of previous VBRN Pilot Award funding: VBRN Director, the Program Coordinator, and the BPI Coordinator determine Award conditions.

Attendance at the following:

- Annual VBRN Faculty Retreat in Summer 2022 and 2023.
- VBRN Professional Development Seminar in Winter 2023.
- Annual VBRN Career Day for students in April 2023.

Any work resulting from this Award must acknowledge VBRN as a source of funding, details of which can be found on the VBRN website and in the faculty handbook. All publications from VBRN funded research are required to meet the NIH public access policy. (Details on this requirement can be found on [page 41](#).)

Request For Applications (RFA) – Award Year 2022–2023 (For the 2023–2024 award year [visit here](#))

Exploratory Award

Purpose: To establish feasibility of a research project and obtain preliminary data.

Project Duration: One year

Eligibility: Faculty members who are full-time tenure track at Castleton University, Middlebury College, Northern Vermont University, Norwich University, or Saint Michael's College. Research must fit the mission of NIH. Human subjects research is permissible, but clinical trials are no longer supported. To determine whether the proposed study is a clinical trial, use the [NIH decision tool](#).

NIH Mission: NIH is the steward of medical and behavioral research for the Nation. Its mission is to seek fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to enhance health, lengthen life, and reduce illness and disability.

Funding Level and Allowable Expenses: Direct costs up to \$10,000 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.

Review of Applications: VBRN applications receive their initial review from a Third-party service (AIBS) that contracts with experts in the specific areas of the application to produce high quality reviews that address the scientific merit of each of the submitted proposals. These experts deliver reviews organized around the NIH review criteria and exhibit the depth characteristic of the review of an R15 application. The NIH 9–point rating scale is used for individual criteria and overall merit. When the third part reviews are returned to VBRN, they are reviewed by the VBRN Director and Program Coordinator to determine their suitability to funding, based on available resources, program strategic imperatives*, and BPI institutional impact. The applications along with external reviews and Director recommendations are forwarded to our External Advisory Committee, who make their funding recommendations. Applications recommended for funding by this three–stage process are then submitted to the NIH, who issues final approval.

Exploratory Award Key Dates

Grant Writing Workshop Attendance

DATE: November 6, 2021

In order to be eligible for 2022–2023 Exploratory Award funding, faculty must attend the VBRN Grant Writing Workshop at the University of Vermont.

Letter of Intent

DUE: December 1, 2021

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

Application Due Date

DUE: February 1, 2022

Exploratory Award applications are submitted online via the VBRN application site, which will be accessible beginning in early December 2021. 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](#).

For the following application components, use the hyperlinked documents as provided. Please submit all documents in the PDF format, except for the Budget and Budget Justification, which should be submitted as Word documents.

All applicants must contact a federal Program Officer at an NIH Center or Institute to verify that the proposed research is fundable by the NIH. If this is a renewal application, the applicant's current science mentor must review the proposal before submission.

Application components include:

- [Face Page](#)

(Face Page must be emailed to vbrn@uvm.edu by February 4, 2022)

- Must be signed by BPI Coordinator and institutional grants officials (boxes 12 and 13)
- List direct costs only (boxes 7a and 8b)
- List total costs (including Facilities and Administrative costs, boxes 7b and 8b)
- Include eRA Commons User Name (box 3h)
- Include NIH Center or Institute for the Research and the Name of a Program Officer

- [Project Summary and Relevance](#) (submit as PDF)

- eRA Commons ID required for all senior/key personnel

- [Budget](#) (submit one document for each year of the award, and both as Word documents)

(Not to exceed one page)

- List direct costs only
- Fill in total amount for Facilities and Administrative costs
- Must be reviewed by the institutional BPI Coordinator

- [Budget Justification](#) (submit one document for each year of the award, and both as Word documents)

(Not to exceed three pages)

- Must be reviewed by the institutional BPI Coordinator

- [Research Plan](#) (submit as PDF)

(Not to exceed four pages, or six pages if applying for a renewal)

- Specific Aims (not to exceed one page)
- Progress Report (not to exceed two pages; only for renewal applications)
- Research Strategy (not to exceed three pages)
- Literature Cited (as many pages as needed)

- [Research Resources and Environment](#) (submit as PDF)

- [Biosketch](#) (submit as PDF)

- Submit for all senior/key personnel and other significant contributors
- Not to exceed five pages per person

- For human subjects research, IRB approvals*

- PHS Human Subjects and Clinical Trials Information Form (note, human subjects research is permitted, however clinical trials are no longer supported)
- Institutional IRB approval letter (with specified dates for which the research is approved)
- The approved IRB research protocol
- Current Human Subjects Education Certification for all key personnel
- If applicable, IACUC approvals*
 - Institutional IACUC approval letter (with specified dates for which the research is approved)
 - A copy of the approved research protocol
 - [Vertebrate Animals Section](#)
- Supporting documents (as applicable; e.g. Letters of Support, Equipment Quotes, etc.)

*IRB and IACUC approvals must be submitted with the application by the due date. **A proposal will not be reviewed with a pending status.** If the institutional approval expires over the duration of the two year award, the PI is responsible for sending an updated approval letter.

Funding Period:

June 1, 2022–May 31, 2023

Funding of awards is contingent upon NIH approval. Award funds must be spent in the award period; carryover of funds is not allowed.

Exploratory Award Conditions

Completion of the following:

- Individual Development Plan (IDP) due September 15, 2022.
- Two telephone discussions of the IDP with the VBRN Director, the Program Coordinator, and the BPI Coordinator.
- Annual VBRN survey and periodic VBRN longitudinal surveys.
- Research Performance Progress Report (RPPR).
- Submit a draft manuscript (minimally Methods and Results sections) with revisions recommended by your research advisor based on VBRN-funded research by June 1, 2023.

Attendance at the following:

- Annual VBRN Faculty Retreat in Summer 2022 and 2023.
- VBRN Professional Development Seminar in Winter 2023.
- Annual VBRN Career Day for students in April 2023.

Any work resulting from this Award must acknowledge VBRN as a source of funding, details of which can be found on the VBRN website and in the faculty handbook. All publications from VBRN funded research are required to meet the NIH public access policy. (Details on this requirement can be found on [page 41](#).)

VBRN SCIENCE MENTOR AND MENTEE EXPECTATIONS

Science mentors work with our faculty to ensure that their research plans and career development move forward. VBRN Awardees are required to have a science mentor that can be based anywhere in the United States.

VBRN science mentors agree to:

Send reports describing your interaction with your mentee to VBRN two times per year on November 1 and May 1

Communicate with your mentee throughout the year at the following intervals:

- Beginning of the award year
- End of the summer research period
- Beginning of the spring semester
- End of the award year

Provide feedback on draft manuscripts and grant proposals

Help your mentee complete the VBRN Individual Development Plan that outlines goals for their research progress by September 15, 2022

VBRN funded faculty mentees agree to:

Be proactive in initiating contact with your science mentor

Communicate with your science mentor throughout the year at the following intervals:

- Beginning of the award year
- End of the summer research period
- Beginning of the spring semester
- End of the award year

Send manuscripts and grant proposal drafts to your science mentor for review before submission

Work with your science mentor to complete the VBRN Individual Development Plan that outlines goals for your research progress by September 15, 2022

INDIVIDUAL DEVELOPMENT PLAN AND MENTORING NEEDS ASSESSMENT

Timing: to be completed or updated at the beginning of each academic year

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 VBRN science mentor.

In addition to your VBRN Science Mentor, the BPI Coordinator at your institution and leaders of VBRN are also available for mentoring and advice. The effectiveness of this mentoring team relies on alignment of expectations – what you expect from them, and what they expect of you. With that in mind, please incorporate references to your research and career support needs in the IDP. Think about the mentoring and advice that would be most helpful to you, from whom, and by when, and add that to your document. We are calling this your Mentoring Needs Assessment (MNA).

Please:

Communicate with your mentors early and often; take the lead in maintaining contact and take ownership of your professional development.

Set aside time to strategize on achieving your goals and to identify obstacles that may be hindering your progress.

Set clear expectations, of yourself and others.

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 VBRN Science Mentor. Discuss your draft with your mentor and reflect on their feedback before making revisions, then revisit (as needed) with your mentor before implementing your strategy.

Reach out to the BPI Coordinator at your institution and/or members of VBRN's leadership as needed. They are here to facilitate your work, including if you find yourself in a difficult or uncomfortable situation in your mentoring relationship.

The IDP and MNA are limited to your VBRN related research commitment.

Steps:

- I. 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 and remember to include the mentors you will reach out to for help or advice along the way. 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 VBRN deadlines into your timeline. The timeline categories below are divided into three periods and 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.)

- a. Immediate – within the next three months
- b. Intermediate – within the next three to six months
- c. Long-term – within the next six to twelve months

II.

Assign each goal to a category in the table 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
d. Assess research progress
e. Develop impactful and meaningful future research direction
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

III.

Use the example IDP (next page) as a guide. Please also include your answers to these questions:

1) How useful would it be if your VBRN Science Mentor visited your institution, in-person or virtually, to give a presentation or meet with you and your students?

- a) Not useful
- b) Slightly useful
- c) Moderately useful
- d) Very useful
- e) Extremely useful

2) How useful would it be if your BPI Coordinator did each of the following?

	Not useful	Slightly useful	Moderately useful	Very useful	Extremely useful
a) Advised you on preparing for promotion					
b) Advised you on navigating institutional policies and procedures					
c) Advised you on achieving key institutional milestones					
d) Notified you of relevant meetings, seminars, or conferences					
e) Advised you on opportunities for using Core services available at UVM and in the region					
f) Reviewed publication draft(s)					
g) Reviewed presentation draft(s)					

3) To what extent is your department chair actively engaged in your professional and career development plans and activities?

- a) Not at all
- b) Slightly
- c) Moderately
- d) Very
- e) Extremely
- f) Other answer (please elaborate):

EXAMPLE IDP (an investigator plans to write a grant)

(2) Grants and Funding			
Milestones	Timeline	Timetable	Mentoring needs
Sub-tasks		Months before submission	Who will you reach out to? How will they be most helpful to you?
1. Problem identification	Immediate	12 months	
a. Presentation of research interest			-
b. Read deeply to assess the state of the field & identify the most salient research questions			-
c. Narrowing down interest into testable hypotheses			Discuss with science mentor
d. Identification of funding sources that fit with hypotheses			Get input from science mentor & BPI Coordinator
e. Identification of target funding source(s)			Get feedback from science mentor
f. Obtain information from target funding sources of proposal formats			-
2. Operationalizing constructs presented in hypotheses	Immediate	10 months	
a. Present procedures to science mentor and get feedback			Get input from science mentor
b. Create foundation for Specific Aims page			-
c. Assess the current state of preliminary data			-
d. Identify those experiments that are needed to support the premise of the application			-
e. Assess overall feasibility of the Approach			Get input from science mentor
3. Writing the conceptualization and procedures	Intermediate	7-8 months	
a. Draft the Specific Aims and Significance sections			-
b. Draft the Methods/Procedures section			-
c. Share draft with mentor and get comments			Get input (draft back with comments) from science mentor
4. Conceptualization to operationalization to data analysis	Intermediate	6-7 months	
a. Draft Analysis section			-
b. Share draft with mentor and get comments			Get input (draft back with comments) from science mentor
5. Mechanics	Intermediate	3-5 months	
a. Complete IRB (human subjects research) and IACUC (research with vertebrate animals) forms			Discuss with science mentor
b. Draft budget			Discuss with science mentor
c. Draft budget justification			Get input from science mentor
d. Draft Prior Research and Preliminary Studies sections			Get input (draft back with comments) from science mentor
6. Full draft proposal circulated for review and comments	Long-term	0-3 months	
a. Share full draft for review and comment			Get input from science mentor and others (BPI coordinator, VBRN leaders, others)
b. Review feedback			-
c. Revise and finalize			Discuss with science mentor
d. Submit!			-

NIH AREA R15 REVIEW CRITERIA

NIH provides many resources for grant writing. Here is a good place to start: <https://grants.nih.gov/grants/how-to-apply-application-guide/write-application.htm>

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.

Overall Impact

Reviewers will provide an overall impact score to reflect their assessment of the likelihood for the project to make useful scientific contributions to the research field(s) involved, to provide research opportunities to undergraduate students by engaging them in primary research activities, and to strengthen the research environment of the institution, in consideration of the following review criteria and additional review criteria (as applicable for the project proposed).

Significance

Does the project address an important problem or a barrier to progress in the field? Is the prior research that serves as the key support for the proposed project rigorous? If the aims of the project are achieved, will the data be publishable and useful to the field? If funded, will the AREA grant have a substantial effect on the applicant institution in terms of strengthening the research environment and exposing undergraduate students to research?

Investigator(s)

Are the PD(s)/PI(s), collaborators, and other researchers well suited to the project? If investigators are in the early stages of independent careers, do they have appropriate scientific experience and training? If established, have they demonstrated an ongoing record of accomplishments that have advanced their scientific field(s)? Do the PD(s)/PI(s) have suitable experience in supervising and engaging undergraduate students in research? If the project is collaborative or multi-PD(s)/PI(s), do the investigators have complementary and integrated expertise; are their leadership approach, governance and organizational structure appropriate for the project?

Innovation

Does the application take advantage of, challenge or build on current research concepts and models or research techniques? Are innovative approaches to engaging undergraduate students in research proposed?

Approach

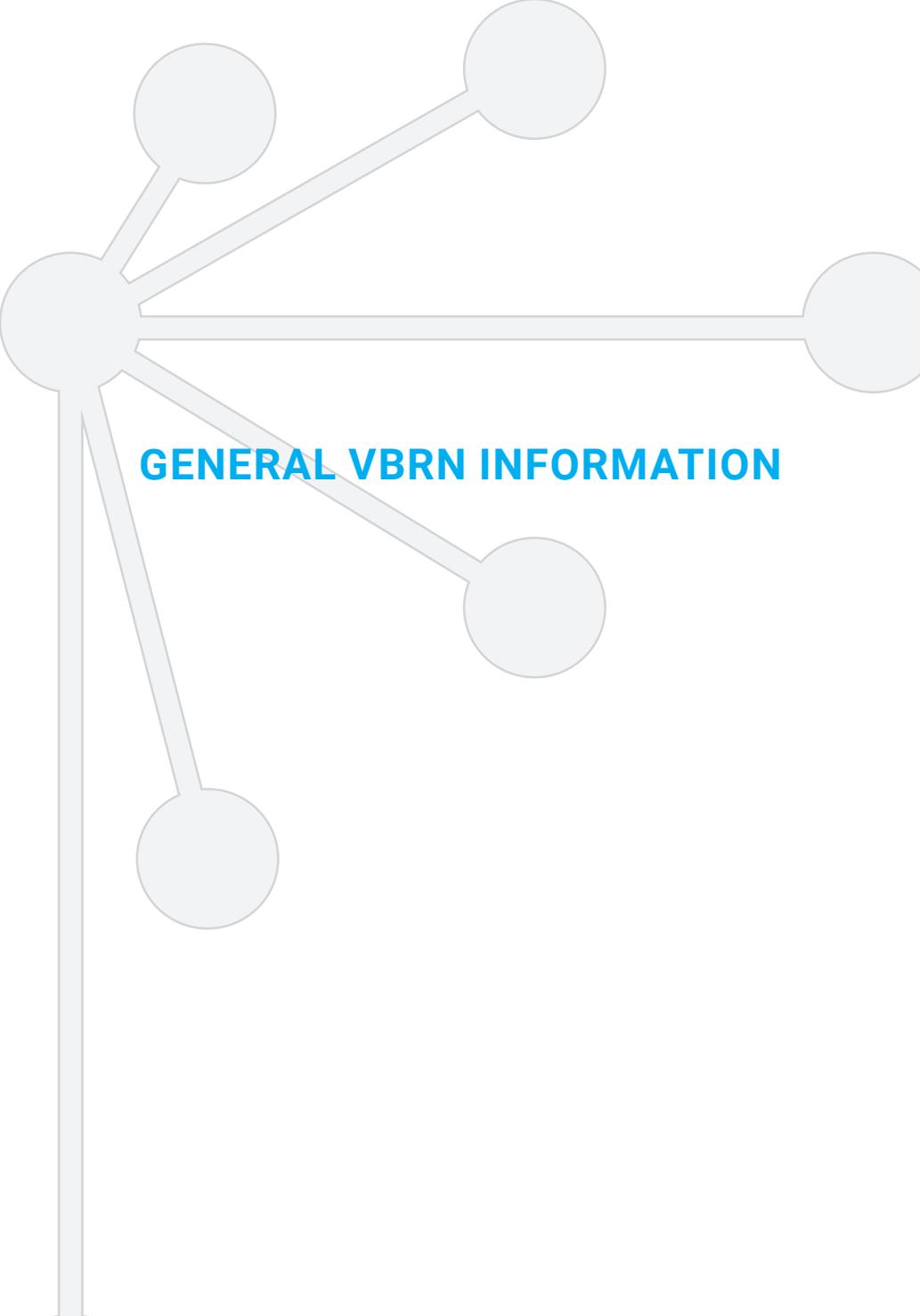
Are the overall strategy, methodology, and analyses well-reasoned and appropriate to accomplish the specific aims of the project? Have the investigators included plans to address weaknesses in the rigor of prior research that serves as the key support for the proposed project? Is the project appropriate for execution primarily by undergraduates? Have the investigators described appropriate plans for how undergraduates will be included as an integral part of the research project? Does

the application provide sufficient evidence that the project will likely stimulate the interests of students so that they can consider a career in the biomedical sciences? Are appropriate plans in place to recruit a diverse and inclusive team of undergraduate researchers. Have the investigators presented strategies to ensure a robust and unbiased scientific 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 and/or NIH-defined clinical research, 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 individuals of all ages (including children and older adults), justified in terms of the scientific goals and research strategy proposed?

Environment

Are the institutional support, equipment and other physical resources available to the investigators adequate for the project proposed? Does the application demonstrate the likely availability of well-qualified students to participate in the research project? Does the application demonstrate appropriate plans to recruit well-qualified undergraduate students from diverse backgrounds to participate in the research project? Does the application provide sufficient evidence that students at the applicant institution/academic component have in the past and/or are likely in the future to pursue careers in the biomedical sciences? Does the PD/PI(s) have sufficient time and institutional support to conduct the proposed project?



GENERAL VBRN INFORMATION

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>

Role	Responsibility	When to Contact	Where to find contact
Program Officials	Develop research and research training initiatives	To identify the right type of grant program and/or funding opportunity for you and your research	When exploring NIH: Look at organization charts of each NIH institute or center (IC)
	Write funding opportunity announcements	To verify that your idea fits within the mission and priorities of an NIH Institute or Center	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.
	Provide scientific guidance to investigators pre- and post-award	To discuss whether your research is considered a clinical trial	
	Monitor the programmatic, scientific, and/or technical aspects of a grant	For approval to submit an application with budget >\$500,000 direct costs for any single year or an R13 conference grant	After finding an FOA: Refer to section VII of the FOA for Scientific/ Research Contact(s)
	Work in partnership with grants management staff on post-award administration, including review of progress reports	To discuss the summary statement and outcome of review To talk about progress or scientific and administrative issues that arise with the grant after award	After application submission or award: Look in your eRA account for the assigned program staff contact for your application

Role	Responsibility	When to Contact	Where to find contact
Scientific Review Officers	Review applications for completeness and conformance with application requirements	Point of contact for applicants during the review process to: <ul style="list-style-type: none"> 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
	Ensure fair and unbiased evaluation of scientific and technical merit		
	Provide a summary of the evaluation in the form of summary statements for applicants		
Grants Management Officials	Evaluate applications for administrative content and compliance with policy	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)
	Negotiate Awards		
	Interpret grants administration policies		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	To identify institutes/centers at NIH or a Scientific Review Group (SRG) that might be appropriate for your application.	When Exploring NIH: 301-435-0715 csdrrr@mail.nih.gov
	Assign applications to institutes/centers or partner agencies for funding consideration	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 request reassignment or withdrawal of an application: Send an email to csdrr@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.
	Assign applications to appropriate group for initial peer review	To officially withdraw an application from funding consideration prior to review.	

NIH REPORTER AND MATCHMAKER TOOLS

Here's an 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=ainf>) 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:

Look at the bottom of the RePORTER search form and find the 'Matchmaker' box. Paste or type any text in the Matchmaker text box such as keywords or a scientific abstract.

Select either "Similar Projects" or "Similar Program Officials" to view the results.

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.

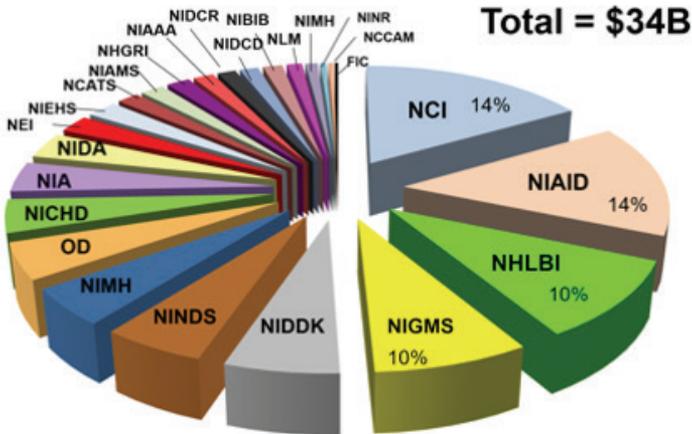
LIST OF NIH INSTITUTES, CENTERS, AND OFFICES

<https://www.nih.gov/institutes-nih/list-nih-institutes-centers-offices>

NIH is made up of 27 Institutes and Centers, each with a specific research agenda, often focusing on particular diseases or body systems.

NCI	NEI	NHLBI
NHGRI	NIA	NIAAA
NIAID	NIAMS	NIBIB
NICHD	NIDCD	NIDCR
NIDDK	NIDA	NIEHS
NIGMS	NIMH	NIMHD
NINDS	NINR	NLM
CC	CIT	CSR
FIC	NCATS	NCCIH
OD		

NIH FY18 Budget Allocation



NIH RESEARCH ENHANCEMENT AWARD (R15)

<https://grants.nih.gov/grants/funding/r15.htm>

NIH Sample Applications and Summary Statements: Some NIAID investigators have agreed to share their exceptional applications and summary statements as samples to help the research community. Two sample R15 applications and summary statements can be found at the following link: <https://www.niaid.nih.gov/grants-contracts/sample-applications#r15>

Definition of an R15

Supports small-scale research projects at educational institutions that provide baccalaureate or advanced degrees for a significant number of the Nation's research scientists but that have not been major recipients of NIH support.

The goals of the R15 are to:

- support meritorious research,
- expose students to research, and
- strengthen the research environment of the institution.

Awards provide limited Direct Costs, plus applicable F&A costs, for periods not to exceed 36 months. This activity code uses multi-year funding authority.

R15 Changes in 2019

The R15 activity code will be rebranded as "NIH Research Enhancement Award" and will include two programs:

1. Academic Research Enhancement Award (AREA) for Undergraduate-Focused Institutions
2. Research Enhancement Award Program (REAP) for Health Professional Schools and Graduate Schools

An institution letter verifying eligibility with the criteria listed in the funding opportunity announcement will be required with each application and the ineligible institution list will no longer be maintained.

We are no longer posting an AREA/R15 parent announcement. Instead, participating NIH institutes and centers work with a lead institute to post AREA and REAP opportunities.

See [NOT-OD-19-015](#) for additional information.

Eligibility

Each funding opportunity announcement includes detailed eligibility information that supersedes any general information listed here.

To assist in determining eligibility, organizations are encouraged to use the NIH RePORT website (see Need Help Determining Organization Funding Levels for R15 Eligibility?).

Organization Eligibility

Academic Research Enhancement Award (AREA) for Undergraduate-Focused Institutions

- The applicant institution must be an accredited public or non-profit private

school that grants baccalaureate degrees in biomedical sciences.

- At the time of application submission, all the non–health professional components of the institution together have not received support from the NIH totaling more than \$6 million per year (in both direct and F&A/indirect costs) in 4 of the last 7 fiscal years. Note that all activity codes are included in this calculation except the following: CO6, S10, and all activity codes starting with a G.
- A signed letter is required from the Provost or similar official with institution–wide responsibility verifying the eligibility of the applicant institution at the time of application submission.

Research Enhancement Award Program (REAP) for Health Professional Schools and Graduate Schools

- The applicant organization must be an accredited public or non–profit private school that grants baccalaureate or advanced degrees in health professions or advanced degrees in biomedical and behavioral sciences.
- At the time of application submission, the applicant institution may not have received support from the NIH totaling more than \$6 million per year (in both direct and F&A/indirect costs) in 4 of the last 7 fiscal years. Note that all activity codes are included in this calculation except the following: CO6, S10, and all activity codes starting with a G.
- A signed letter is required from the Provost or similar official with institution–wide responsibility verifying the eligibility of the applicant institution at the time of application submission.

R15 Principal Investigator Eligibility

- The PI must have a primary appointment at the R15–eligible institution.
- The PI may not be the PI of an active NIH research grant at the time of a R15 award, though he or she may be one of the Key Personnel for an active NIH grant held by another PD/PI.
 - Instrumentation awards (S10), conference grants (R13), and institutional training grants (T32) are examples of grants that are not considered research grants.
- The PI may not be awarded more than one R15 grant at a time.
- Eligibility applies only to the PI and Multiple PIs, not to collaborators, consultants, or sub awardees.

Application Characteristics

- Project period is limited to 3 years.
- Direct costs are limited to \$300,000 over the entire project period.
- R15 grants are multi–year funded awards. The entire budget, for all years of the award, must be requested in the first budget year.
 - Do not complete budget periods 2 or 3. They are not required and will not be accepted with the application.
- NIH's Modular Budget Policy apply
 - Applicants submitting an application with direct costs of \$250,000 or less (total for all years, excluding consortium Facilities and Administrative [F&A] costs) must use the Modular Budget.

- Applicants submitting an application with direct costs of \$250,001 – \$300,000 (total for all years, excluding consortium Facilities and Administrative [F&A] costs) must use the Research and Related (R&R) Budget form.
- Awards can be renewed by competing for an additional project period.
- The application should propose a research team, including undergraduate and/or graduate students, that is appropriate to accomplish the specific aims and to make an important scientific contribution.

Due Dates

Standard R15 receipt dates are February 25, June 25, and October 25. AIDS and AIDS-related grant application due dates are May 5, September 5, and January 5. For additional information, the receipt, review and award cycle schedules are posted on: <https://grants.nih.gov/grants/funding/submissionschedule.htm>.

SUPPORT FOR RESEARCH EXCELLENCE (SuRE) PROGRAM (R16)

This is a new funding mechanism under NIGMS' Division for Research Capacity Building. Currently, Castleton University, Northern Vermont University and Norwich University are eligible institutions. A recorded webinar and slides on this program can be found here: <https://www.nigms.nih.gov/about/overview/Pages/SuRE.aspx>.

Dr. Irina Krasnova is managing this funding opportunity and if faculty have specific questions they can reach out directly to her (irina.krasnova@nih.gov).

The SuRE program supports research capacity building at institutions that enroll significant numbers of students from backgrounds nationally underrepresented in biomedical research (see [NOT-OD-20-031](#)), award baccalaureate and/or graduate degrees in biomedical sciences, and receive limited NIH [Research Project Grant](#) funding. It seeks to develop and sustain research excellence of faculty investigators and provide students with research opportunities while catalyzing institutional research culture and enriching the research environment.

The SuRE program will support investigator-initiated research in the biomedical, clinical, behavioral and social sciences (collectively termed "biomedical" sciences) that falls in the mission areas of NIH Institutes, Centers, and Offices. Research activities funded by the SuRE program require participation by students. Two SuRE R16 Funding Opportunity Announcements (FOAs, [PAR-21-169](#) and [PAR-21-173](#)) have been published to support investigator-initiated research projects. A SuRE Resource Center ([PAR-21-227](#)) will enable broader participation in the SuRE program nationally, thus maximizing the program's impact in developing and sustaining research excellence at eligible institutions

HOW VBRN FUNDS UNDERGRADUATE STUDENTS

Students Funded by VBRN

In addition to funding students through faculty Project, Pilot, and Exploratory awards, VBRN supports three students per BPI for summer and/or academic year research with our funded faculty. There is a competitive process specific to the BPI for selecting these students.

Undergraduate Student Summer Research Support

VBRN 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), Bia Diagnostics, and Vernal Biosciences. The application deadline for this undergraduate research experience is in February of each year and more information can be found at the following link: <https://vbrn.org/funding-opportunities/#student-awards>. Applicants must be enrolled as an undergraduate student at any institution the following fall after the summer experience in order to be eligible to apply.

Student Requirements of VBRN Funding

All students receiving VBRN funding are required to present a poster at the annual Career Day event held in April of each year, and to provide contact information in order to participate in annual and long-term career tracking.

TEACHING RESOURCES

VBRN 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:

This is a four-session online bioinformatics short course that covers topics including: literature searches, sequence databases, sequence similarity searches using BLAST, multiple sequence alignment, phylogeny reconstruction, protein structure databases, and 3D viewers. Each session is designed to familiarize undergraduate students with online genetic sequence databases and tools for use in scientific research. The short course in its entirety is intended for mid- to upper-level undergraduates in a molecular biology, genetics, or biochemistry course. However, the modular design of the online course can be utilized to meet the needs of independent instructors and options are provided to adapt the materials for less advanced students. Although there are many data mining tutorials available, the unique strength of this educational module is the assignment of an independent project that necessitates the use of the data mining tools independently by each student, enhancing student familiarity and competence with the databases and tools that are introduced in the online tutorial (sessions 5 and 6). The resources for these projects are described and can be used separately from the online portion. The short course and independent research projects demonstrate the direct connection between genetic change, protein function, and human (clinical) phenotype.

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

<https://vbrn.org/education>

Then contact Heather Driscoll (hdriscol@norwich.edu) for enrollment in the public version of the course or to create a custom instance for your private use.

Additional bioinformatics teaching resources can be found in the following publication:

Murray, J., Driscoll, H. E., and Pivarski, K. (2018). Connecting human disease phenotype to genetic mutation and protein function: A modular data mining short course with an independent project sequence for lecture or lab. *Genetics Society of America Peer-Reviewed Education Portal (GSA PREP)*; 2018. 005; doi: 10.1534/gsaprep.2018.005.

<http://www.genetics-gsa.org/education/GSAPREP.2018.005.shtml>

Proteomics module: <https://vbrn.org/proteomics-outreach/>

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 VBRN Proteomics Core. Once the data are processed, students examine their results and use bioinformatics to understand the biological implications of their results.

VBRN CORE FACILITIES

BIOINFORMATICS CORE

<https://vbrn.org/bioinformatics>

OUR CORE

The VBRN Bioinformatics Core provides comprehensive support for investigators across our network whose research requires biological information data analysis.

OUR SERVICES

Genomics and Transcriptomics

- Experimental design, power analysis, differential expression analysis, linear mixed model, variance analysis, clustering, and hypothesis testing for microarray and RNA-Seq data
- RNA-Seq analysis (alignment, quantification & differential expression)
- Microarray data differential expression and copy number analysis
- ChIP-seq data analysis

Biological Interpretation

- Functional group enrichment analysis – enrichment analysis of genes, motifs, structural domains and post-translational modifications.

Grant Proposal and Publication Support

- Data publishing- data deposition into public repositories
- Grant proposal and manuscript support- bioinformatics methods and results text, figure, and table preparation

PROTEOMICS CORE

<https://vbrn.org/proteomics>

Hours

Monday – Friday
9 AM – 5 PM

Location

University of Vermont
Marsh Life Science Building
Rooms 333, 335, and 337

OUR CORE

The VBRN Proteomics Facility enables investigators to use an array of state-of-the-art mass spectrometry-based techniques for proteomics experiments, ranging from routine protein identification and characterization of post-translational modifications and protein interactions, to large-scale quantitative proteomic analyses using stable isotopes. Since its inception in 2006, the facility has analyzed close to 20,000 samples as well as supported 170+ publications and 50+ grants from NIH, NSF, DOD, USDA, UVM and various Foundations.

The facility is equipped with five mass spectrometers (Orbitrap Fusion Tribrid, Q-Exactive Plus, LTQ Orbitrap Discovery, LTQ, and LTQ-XL equipped with electron transfer dissociation) and a hydrogen deuterium exchange workflow station for conducting structural proteomics. Working closely with the VBRN 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
- Identification of post-translational modifications (e.g., phosphorylation, methylation, acetylation, trimethylation, S-nitrosylation, glutathionylation, ubiquitylation, S-sulfenylation, etc.)
- Peptide fractionation and enrichment from complex mixtures:
 - Off-line peptide separation (e.g., SCX and high pH fractionation)
- Enrichment of post-translationally modified peptides:
 - Phosphopeptide enrichment (e.g., IMAC, TiO₂, P-Tyr-100 Ab, 4G10 Ab, p-PKA substrate Ab)
 - Acetylated peptide enrichment (e.g., PTMScan Acetyl-Lys Motif (Ac-K))
- Large-scale quantitative proteomics using stable isotopes:
 - Stable Isotope Labeling by Amino acids in Cell culture (SILAC)
 - Dimethyl labeling
 - Tandem Mass Tags
- Absolute quantification of proteins using isotopically labeled standards
- Quantification of target peptides using Parallel Reaction Monitoring and Skyline
- Analysis of isotope-coded cross-linked peptides for structural proteomics

HOW TO CITE VBRN FUNDED RESEARCH

The NIGMS of the NIH, which funds the Vermont Biomedical Research 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 VBRN Funded Research from 1/1/2012–05/31/2023

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 VBRN Core Facilities (Proteomics, Bioinformatics) from 1/1/2012–05/31/2023

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 VBRN Proteomics Facility".**

NIH PUBLIC ACCESS POLICY

The NIH enforces a federal law requiring all NIH-funded research to meet the NIH public access policy upon acceptance for publication in a journal (<https://publicaccess.nih.gov>). Utilizing VBRN resources in your work and citing the VBRN grant number will trigger this requirement. Submitting the work to PubMed Central (PMC), either as the accepted, peer-reviewed manuscript or the final published article, meets this requirement.

If publications are not in compliance with the NIH public access policy, NIH can withhold funds from VBRN. Additionally, any of your grant applications containing citations of previous works that were in any way funded by the NIH must comply with the NIH public access policy or the grant budget will be withheld. Ensuring that your research publications comply with the public access policy at the time of publication will facilitate this part of your future grant applications.

Submissions can be made by a coauthor, a designee of an author, or the journal on behalf of an author. Note, NIH requires NIH-supported research articles be deposited in PMC even if the article is open access and freely available in another database. NIH maintains a list of journals that submit articles to PMC automatically on behalf of authors. For journals that do not automatically submit on behalf of authors, it is your responsibility to make certain this requirement is met.

To identify which of four method(s) to use for depositing your VBRN-supported manuscript into PMC follow this handy submission method identification wizard [available on the NIH public access policy page](#). The methods, briefly, are as follows:

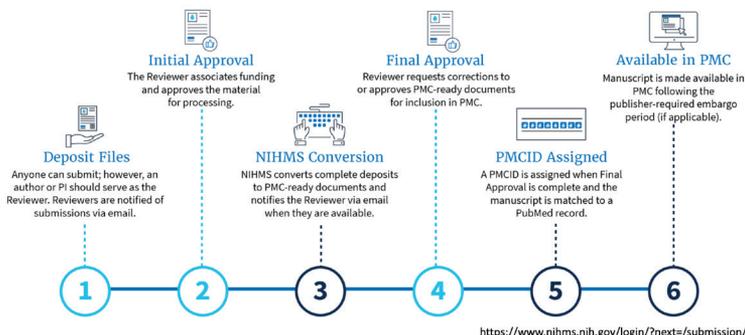
- For Method A, the journals post the final published version of all peer-reviewed NIH-funded articles to PMC no later than 12 months after publication without author involvement. For more information see <https://publicaccess.nih.gov/method-A-BP.htm>.
- For Method B, journals do not automatically deposit every NIH-funded paper in PMC. Rather, the author can choose to arrange with the journal for the deposit of a specific article. This usually involves choosing the journal's fee-based open access option for publishing that article. Please contact the respective journals directly for details on their programs. For more information on Method B see https://publicaccess.nih.gov/select_deposit_publishers.htm.
- For Methods C and D, your manuscript should be submitted to PMC through the National Health Manuscript Submission System (NIHMS). In Method C, the author or a delegate deposits the accepted, peer-reviewed manuscript into the NIHMS. In Method D, the publisher deposits the accepted peer-reviewed manuscript into the NIHMS. Regardless of who starts and manages the submission process, authors and awardees are responsible for ensuring that the accepted, peer-reviewed manuscript is deposited into the NIHMS upon acceptance for publication. Submissions need to be completed within 90 days of the article's official date of publication in order to be compliant with the NIH public access policy. For more information on Methods C and D see <https://publicaccess.nih.gov/Methods-C-D-BP>.

Methods C and D steps:

Step-by-step guidelines for submitting your manuscript via NIHMS (Method C and D submissions) are listed below and elaborated on in a [series of tutorials provided by NIHMS](#) as well as in their [FAQ page](#).

The NIHMS Process

Manuscript deposit via NIHMS is a multi-step process that takes approximately 2 to 3 weeks following initial approval of a complete submission. Processing times may vary depending on Reviewer responsiveness and the volume of submissions during a given period.



1) Deposit files: a manuscript may be submitted by the author, the PI, the publisher, or another third party. Third-party submitters must designate an author or PI to serve as the Reviewer for an NIHMS submission. In these cases, the Reviewer will receive notification of the deposit via e-mail. Note, an eRA Commons ID or myNCBI ID is needed for the submission.

2) Initial approval: the Reviewer reviews the submission, confirms or adds associated funding, and either rejects or approves the material for processing in NIHMS.

3) NIHMS conversion: NIHMS staff reviews the approved files for completeness, and complete submissions are converted to archival XML. The PMC-ready documents (Web and PDF versions) are checked to ensure they accurately reflect the submitted files. Processing time for this step is usually 2–3 weeks but may vary depending on the volume of submissions at a given time. An e-mail notification is sent to the Reviewer when the record is available for final review.

4) Final Approval: the Reviewer reviews the PMC-ready documents (Web and PDF versions) and either requests corrections or approves them for inclusion in PMC. Final Approval is required to complete manuscript processing in NIHMS.

5) PMCID assigned: a PMCID is assigned when Final Approval is complete and the manuscript is matched to a PubMed record with complete citation information.

6) Available in PMC: the manuscript is made available in PMC following the publisher-required embargo period (if applicable).

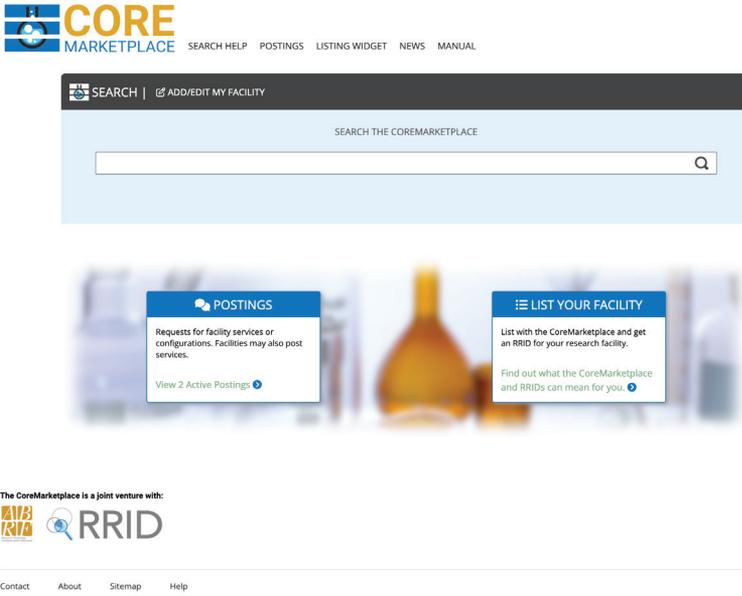
Please email VBRN (vbrn@uvm.edu) with any questions you may have about this policy or the process of depositing your manuscript into PMC. We are here to help!

* If publications are not in compliance with the NIH public access policy, NIH can withhold funds from VBRN. Additionally, any of your grant applications containing citations of previous works that were in any way funded by the NIH must comply with the NIH public access policy or the grant budget will be withheld. Ensuring that your research publications comply with the public access policy at the time of publication will facilitate this part of your future grant applications.

FREQUENTLY ASKED QUESTIONS

Can I use core facilities other than VBRN core facilities at UVM?

Yes, you can contact other UVM Core facilities directly to inquire about their services. Check out the Core Marketplace searchable database (<https://coremarketplace.org>) for other facilities. These facilities charge for their use and most have mechanisms to work with outside users. VBRN is working with UVM Larner College of Medicine to establish an arrangement to offer faculty at our BPIs UVM internal pricing on their cores' services; contact your VBRN Coordinator for more information.



Why can't VBRN 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.

VBRN CALENDAR OF EVENTS

The current funding cycle is from June 1, 2022- May 31, 2023.

July 21, 2022 – Annual Faculty Retreat

September 15, 2022 – IDP and Mentoring Needs Assessment (MNA) due

September 30, 2022 – Grant Writing Workshop

October, 2022 – Funded Faculty IDP phone call

November 1, 2022 – Science Mentor Report due

December 1, 2022 – VBRN Award Letter of Intent due

December 1, 2022 – VBRN Award application site open

January 15, 2023 – VBRN Award applications due

February 15 2023 – RPPR due

February 21, 2023 – Undergraduate Student Summer Research Support application due

April 12, 2023 – Career Day

May 1, 2022 – Science Mentor Report due

June 1, 2022 – VBRN Award compliance (e.g. extramural proposal/manuscript submission) due

Summer 2022 – Faculty Retreat

Winter 2023 – Professional Development Workshop

NOTES

This is version 1.0 of the VBRN 2022 Faculty Handbook. Updated versions may be online. Visit <https://vbrn.org> and look under BPI Information menu for details

Cover Photo by [@chuttersnap](#) on [Unsplash](#)

