



Clarkson™

Clarkson 2020 Ignite Graduate Research Fellowships (IGRF) Research Collaboration Pilot Grant Program

Context. Clarkson University [research clusters](#) maximize our historic strengths and represent opportunities for national and international recognition. The Ignite Graduate Research Fellowship (IGRF) program is a strategic investment in research, with a goal of supporting innovation research, supporting emerging and established researchers, developing preeminent lead investigators, and enhancing our reputation as leaders in solutions-focused research and technology development. Meaningful, prioritized investments such as IGRF will foster collaborations across campus, positively impact research productivity, and spur innovation and entrepreneurship.

Purpose: To catalyze the development, submission, and successful receipt of external research funding. The funds, under IGRF, will be exclusively used to support graduate research fellows with the expectation that the addition of new talent to a faculty member's research team will result in (1) procurement of rigorous, foundational data, (2) successful, new research collaborations, (3) successful pilot testing of new methods, techniques, instrumentation, equipment, etc. and/or (4) strengthen the research teams overall proposal competitiveness.

Description. IGRF funding supports a newly recruited doctoral student. Faculty who receive IGRF funding are expected to leverage the IGRF in recruiting a new doctoral student and, where appropriate, to reach into our Honors Program students for ideal candidates. IGRFs provide stipend support (\$25,000 per year) and tuition for a doctoral student enrolled in (or expected to enroll in) a doctoral program. The recruitment and selection of the fellow will be the responsibility of the faculty proposing the IGRF research. Acquisition of any additional resources necessary to achieve research goals (e.g., supplies, consumables, travel, etc.) is the responsibility of the faculty research team.

Faculty research teams who are awarded IGRF funding will leverage the successful, early outcomes of the IGRF to develop and submit a research proposal (which explicitly includes research assistantship funding to support the IGRF student) to an external agency/organization within the first 2 years of IGRF funding. Therefore, IGRF funds are allocated for an initiation period of 24 months. Continuation of funding, on an annual basis thereafter, is contingent on the fellows satisfactory progress towards a doctorate (e.g. achievement of candidacy, passing of written exams, etc.), annual evaluation of research outcomes, and progress towards sustained external funding. If, at any time, external funds are secured we expect that the IGRF student will be moved to these funds thus freeing IGRF funding to be returned to Ignite for solicitation of new IGRF proposals. It is essential that faculty researchers who proposed and secure IGRF funding understand that it is expected that IGRFs will transition from internal Ignite funds to an external award at some point within the 5-year award period.

Eligibility. All full-time Clarkson faculty members, regardless of rank, are eligible to apply and serve as a Principal Investigator (PI). The PIs and co-PIs of IGRF awards received within the past 2 years are not eligible to apply.

We encourage submissions that initiate new collaborations, that engage junior faculty, and that cross disciplinary boundaries. We are particularly interested in submissions that are non-traditional, high-risk/high-payoff efforts that may lead to the development of intellectual property and/or commercialization, or that support and advance faculty-student entrepreneurship.

Each application requires at least two faculty PIs, one of whom must be from a doctorate-granting department. We are particularly interested in proposals from teams with membership from multiple academic units. Up to three other faculty members may participate as PI/Co-PI.

Funding Level. Clarkson anticipates supporting six Ignite Graduate Research Fellowships in this funding cycle.

Timeline

Call for Proposals	November 18, 2019
Faculty Q&A	December 3, 2019 at 12:00–2 pm December 4, 2019 at 4:00-6 pm
Submission Deadline	January 7, 2020 at 5 pm
External Reviewer Feedback	February 4, 2020
Invitation Extended	February 7, 2020
Presentations (<i>invited</i>)	March 23, 2020
Selection Results Reception	March 23, 2020

Application: All interested research teams must submit a short research application that follows the enclosed Proposal Preparation Guidelines. ***Applications that do not adhere to the guidelines will be returned without review.*** Additionally, as part of the final selection process, the PIs of the most meritorious applications will give a short presentation ('pitch') to the selection committee at an open forum. Instructions for presentations will be provided to those invited.

Selection Process and Criteria

Selection Process: A three-stage process will be used, incorporating merit review and an oral presentation from the PIs delivered directly to the selection committee.

- **Stage one:** All proposals will be evaluated by non-conflicted reviewers for scientific and technical merit including the team's qualifications and capabilities, significance, and potential impact.
- **Stage two:** An internal panel comprised of representatives of University administration and selected current IGRF PIs/co-PIs will evaluate proposals deemed meritorious by external review for programmatic considerations: institutional balance and indicators of potential research productivity including PI's publications, training record (graduate students), and external funding relative to academic rank. Based upon these considerations, the internal panel will recommend a slate of 12 meritorious proposals to advance in the competition. If more than 12 proposals are identified, the

Provost will select the final 12 proposal teams to advance to the final stage considering institutional priorities.

- **Stage three:** PIs of proposals selected at Stage two will be invited to give a five-minute ‘shark tank’ presentation to the selection committee followed by a brief question and answer period. The selection committee comprises members of the Clarkson University Scientific Advisory Board and other external leaders.

Stage one review criteria:

Merit will be determined from considerations of

- 1) the importance and innovation of the project’s stated goal;
- 2) the feasibility of the proposed approaches to achieve the project’s goal and objectives;
- 3) the team’s qualifications and capabilities to address the project’s objectives as proposed;
- 4) any potentially non-routine matters associated with the health, welfare, and safety of research participants (animals / humans) and the environment, that may impact the performance of the product; and
- 5) the potential of the project to secure external funding within two years.

Reviewers will rate their assigned applications (each application according to its own merit) using a scale of 1 to 9, as used by the NIH, for the following two factors.

- 1) *the potential impact of the project*—considering factors 1 through 4, the ability to transform the field/discipline or problem space or exert a sustained powerful influence on the research fields involved, and
- 2) *potential to secure external funding*—if the proposed foundational research is successfully conducted as described, the likelihood the project would be successful in securing external funding from the sponsors identified.

Stage two review criteria:

The internal panel will be provided with: a list of applications submitted ranked by project impact score and external funding potential, executive summaries, and external reviews. Depending upon the number of applications submitted and those considered by external review to be meritorious (based upon the distribution of scores), the internal panel may make elect to discuss a subset of applications.

Programmatic factors that will be considered are: (order presented alphabetically)

- 1) *collaboration history:* balance of new collaborations (those whose members have no track record), existing collaborations with a new project, and existing collaborations with variation on an existing project that has high potential to benefit from pilot funding;
- 2) *institutional balance:* distribution across schools and colleges or departments; distribution to PI level (assistant, associate, full)
- 3) *Productivity:* indicators of potential productivity including PI’s publications, and external funding (relative to academic rank);
- 4) *student training:* track record of successfully training graduate students; and
- 5) *thematic balance:* distribution across Clarkson’s four strategic research topics;

The purpose of the stage-two review is to recommend a portfolio of meritorious applications with highest potential to achieve the IGRF goals.

Stage three review criteria:

Proposals selected to be pitched to the selection committee will be evaluated for the transformative potential and impact of the proposed project; the project's potential to advance knowledge within and across disciplines and/or creation of intellectual property and/or applying knowledge to critical challenge in or across disciplines; and the quality of the public presentation including the ability to field questions. The selection committee will select up to six awards.

Selection:

Award decision: Presenters will be notified of funding decisions shortly after the oral presentations. The panel may recommend modifications to the proposed research strategy or team composition.

Negotiation and acceptance. The project team will be provided the opportunity to clarify or otherwise negotiate the proposed modifications. The final research strategy, team, and budget will be incorporated into the award documentation. The PI's will affirm their understanding of the reporting requirements and expected outcomes for continuation of support for the graduate fellow, including that fellows are to be moved from institutional support to external grant or contracts upon receipt of external award and that said award is ideally secured within the first 2-3 years of internal funding.

Pre-award Requirements:

- All applicable institutional regulatory requirements must be addressed prior to project initiation and appointment of Ignite Graduate Research Fellow, e.g., human or animal subjects' protections, environmental health requirements, etc.
- All team members will be asked to sign an acknowledgement that acceptance of the funds comes with the expectation that within 24 months of project award, an external funding proposal will be prepared and submitted.

Post Award Reporting Requirements

An annual progress report will be required 12-months after the award start date. Failure to submit the required progress report by the deadline specified will result in funds being frozen until this requirement is met. Annual progress reports with project results, evidence of pursuit of externally funding including declined proposal review results (if available), and the status of the *Fellow's* progress toward degree completion. If, upon review of the annual report by the Provost, progress is deemed unsatisfactory, funding will not be renewed.

Appendix: Clarkson's Research Focus Areas

- 1. Computational and Data-Enabled Discovery (CDED)** Cross cutting discipline that allows for the analysis and understanding associated with the massively complex multi-modal data sets from modern sensor rich, computational rich engineering, scientific, and social media settings. Strengths in data analytics and complex systems modeling spans the three schools and includes dynamical systems as learned from data, sensors and controls, business intelligence and financial technology, and artificial intelligence.
- 2. Healthy Global Solutions (HGS)** Interdisciplinary faculty teams from across campus create healthy environment solutions that ultimately protect air, water and habitat resources; reduce public health threats from environmental contamination or lack of access to medical care; develop and implement new energy policies and technologies; create sustainable infrastructure and communities; integrate environmental concerns into management practices; and, ensure the security of our societies.
- 3. Advanced Materials Development (AMD)** Advanced materials experts work collaboratively to design and develop next generation materials and integrated material systems to solve real world challenges in fields of electronics, aeronautics, biotechnology, health, safety and security, mechanical systems, energy generation and storage, and manufacturing technology. Strengths include tailored material design, synthesis and modeling, functional materials and devices, sensors and sensing systems, drug delivery and diagnostic tools for a healthy and sustainable environment, material sourcing and supply chain management, healthy people and an improved quality of life.
- 4. Next Generation Medicine and Healthcare (NGMH)** Emerging approaches to addressing critical challenges to human health include innovative technologies for preventing, detecting, and treating disease including therapeutic strategies as well as economic, entrepreneurship, social and ethical challenges to health care innovation, management, and access.

Proposal Preparation Guidelines

Formatting requirements. Unless otherwise specified, the font style and size must be 11.5 point Times New Roman, paragraph 1.07 line spacing, margins of 0.5" all sides, and paginated continuously. Figure captions and tables are excluded from font requirements, but must be legible when printed.

Header: PIs' last names, and IGRF Application -Year

Footer: Short title and page number

Application Components (PDF template enclosed)

1. **Cover Page**
2. **Executive Summary**
3. **Research Strategy**
4. **Graduate Fellow Recruitment and Mentoring Plan**
5. **References Cited**
6. **Biographical Sketches**

A complete application comprises the above six components.

Submission, certification and assurances

Proposals will be submitted electronically via email, as PDF, to vpr@clarkson.edu by 5:00 pm, Tuesday January 7, 2020.

All key personnel (PI, Co-PI, senior personnel, external collaborators/partners) must be copied on the transmittal to vpr@clarkson.edu; this signifies their awareness of their participation in the project, their certification and assurance of all application information, and agreement with award requirements. Transmittals that do not include all key personnel will not be advanced to review.

2020 Ignite Graduate Research Fellowship (IGRF) Cover Sheet

Key Personnel:

Role	Corresponding PI	Co-PI
Name		
Primary Discipline		
Title		
Dept ¹		
Email		
Phone		

Role	Senior Personnel	Senior Personnel	Senior Personnel
Name			
Title			
Dept			
Email			
Phone			

Project Focus area(s): Put an X before all that apply; Put #1 for primary if more than one area is selected.

<input type="checkbox"/> Computational and Data-Enabled Discovery	<input type="checkbox"/> Healthy Global Solutions
<input type="checkbox"/> Advanced Materials Development	<input type="checkbox"/> Next Generation Medicine and Healthcare

Key Words: Provide three descriptive terms for your project topic area and methodologies to be used.

Topic Area			
Methodologies			

This project involves (underline applicable response):

Human subjects	Yes	No
Animal subjects	Yes	No
Hazardous materials	Yes	No
Existing (protected) IP	Yes	No
Potentially non-routine data management (HIPAA etc.)	Yes	No

Assurances, Certifications and Approvals of PIs and the Sponsored Research Services (SRS):

- We attest that the information contained is complete, accurate and truthful to the best of our knowledge and do not infringe on the intellectual property rights of others.
- We agree to submit an application for external funding within 9 months of project completion based upon the research results.
- We will adhere to all institutional, state and federal regulations applicable to the project work.
- We will submit required progress reports annually in accordance to instructions to be provided.

Title/Role	Printed Name	Date
PI	_____	_____
Co-PI	_____	_____
Senior Personnel	_____	_____
Senior Personnel	_____	_____
Senior Personnel	_____	_____

¹ At least one PI must be from a doctoral-granting department

Executive Summary

[One page limit. – Replace instructions in red or blue text with responses that completely address information requested.]

- A. Project Title:** Concisely describe the project's purpose or outcomes. Start the title with an abbreviation of the research theme to which the project is most closely aligned followed by a colon. Up to two themes may be included and the first shall be relevant priority. For example: *CDED and NGMH: Creating a data warehouse for analysis of nutritional status.*
- Computational and Data-Enabled Discovery: **CDED**
 - Healthy Global Solutions: **HGS**
 - Advanced Materials Development: **AMD**
 - Next Generation Medicine and Healthcare: **NGMH**
- B. Summary:** [Provide a one-two sentence summary of your effort: what you are trying to do and why does it matter. Do not use technical jargon. (1-2 sentences)]
- C. Intro/Background:** In everyday language, describe the context of the problem of study. (One paragraph)
- a. What is the problem you are trying to solve and why is it important?
 - b. What is/are the current state of the art and what are the limitations to current approaches?
- D. Impact:** Describe the impact of successfully completing your project within the field, community, and wider audience. (One short paragraph)
- a. If you succeed, what difference do you think it will make within the thematic area(s)?
 - b. Who is the targeted external funding source(s)?
 - c. Why is IGRF support needed?
- E. Research plan:** Outline your research plan and summarize the general methodologies you will use. The research plan should include both pilot grant and to be externally funded activities.
- a. What is objective of your pilot grant and of your follow-on project?
 - b. What are the advantages of your proposed methodologies over existing ones?
 - c. Discuss why the proposed approach is required and how your team's qualifications and capabilities promote project success.
 - d. Discuss what is innovative or what makes the project a high-risk/high-payoff investment.
 - e. Describe any intellectual property or commercialization potential, if any.
 - f. Why is PhD student engagement essential for successful completion of the project?
 - g. What is the expected outcome from preliminary work that will lead to securing external funding?
 - h. What is the comprehensive five-year plan for this research [assume external funding is obtained.]
- F. Overlap:** Is the project team currently or recently funded for similar work? Is yes, how does the proposed work differ in approach, scope or outcomes.

Detailed Description

[Three page limit.]

Research Strategy. In addition to the Executive Summary, the written proposal may include up to three additional pages describing the significant aspects of the intended research project, providing more detailed information regarding both the technical aspects of research activities, and the research and external funding plan to be pursued. Present the rationale and approaches for your research design and experiments, and describe expected results of project experiments and objective(s). Distinguish work to be completed within the first two years and the five-year follow-on project to be supported by external sponsors. Note any challenges and alternative approaches. Include a timeline for completion of specific objectives/aim(s) with milestones as applicable, and identify the activities / tasks for which each PI /investigator is responsible.

[Additional Required Sections]

Graduate Fellow Recruitment and Mentoring Plan. [1 page limit]. Describe how the IGRF will be recruited and mentored. Include a description of the mentoring activities that will be provided for the IGRF and how they will be supported intellectually and professionally by the research team.

References Cited. Present the references cited. Include all authors and citation title. Where appropriate identify PI/co-PI and student authors.

Biographical Sketch. [3 page limit each] Provide a biographical sketch for all key personnel, using the enclosed template.

NAME

PROFESSIONAL PREPARATION

Institution	Location	Field/major	Degree, Year
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Include postdoc training

APPOINTMENTS – reverse chronological order

Year - present *Title, Affiliation, location*

TOTAL NUMBER OF PEER-REVIEWED PUBLICATIONS (#) AND IN LAST FIVE YEARS (#):

(UP TO FIVE) MOST CLOSELY RELATED PUBLICATIONS/PRODUCTS

1. Acceptable products must be citable and accessible including but not limited to publications, data sets, software, patents, and copyrights.
2. Unacceptable products are unpublished documents not yet submitted for publication, invited lectures, and additional lists of products.
3. Each product **must include full citation information including** (where applicable and practicable) names of all authors, date of publication or release, title, title of enclosing work such as journal or book, volume, issue, pages, **website and URL, or other Persistent Identifier.**

(UP TO FIVE) OTHER RELEVANT PUBLICATIONS/PRODUCTS

SYNERGISTIC ACTIVITIES

Graduate Student Training

- Number of graduate students currently in the laboratory: #
- Number of graduate students (MS, PhD) completed (as primary advisor) in last five years: #

Undergraduate training

- Number of undergraduate students currently in the laboratory: #
- Number of undergraduates in the lab who are women, disadvantaged, or underrepresented: : #

Current and Pending Support.

Current Awards: Sponsor name, award number, project title, your role, relation to proposed project

Pending Awards: Sponsor name, award number, project title, your role, relation to proposed project