Policy on the Awarding of Research Fellowships to Student-Faculty Teams in the Science Division

Science Division Research and Grants Committee
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A. Executive Summary
Recognizing the various roles and models for undergraduate research, the Science Division Research & Grants Committee (SDRGC) must oversee an increasingly complex process of selecting students for a limited number of summer research fellowships in the Science Division (SD). This policy attempts to balance egalitarian and representative approaches to awarding those fellowships. With input from faculty researchers and project rankings based on departmental goals, the dynamic process outlined in this policy strives to promote communal deliberation and collegiality in SD student-faculty research efforts. Over the ten years since this document was produced this process has been refined and clarified. This update seeks to clarify the current selection process for better communication with Science Division faculty engaging in summer research.

B. Policy Rationale
Most – if not all – SD students would benefit from investigative research experience. However, funding for SD student research positions will likely always fall short of demand. Thus, the SDRGC must oversee a selection process that awards a limited number of fellowships to selected SD students. Two approaches are possible. An egalitarian approach awards at least one fellowship to each department. While seemingly fair to departments, it denies equal access to students in large-population majors (Biology & Biochemistry). On the other hand, a representative funding approach or lottery awards fellowships based on the number of students applying per major, but denies equal access to students in small-population majors – notably Geology, Mathematics, and Physics. Exclusive adherence to either approach means that a significant proportion of the students in one or more departments face dauntingly low prospects of receiving a fellowship. Further, both approaches fail to recognize that research experiences will benefit the future careers of some students more than others. Finally, some disciplines allow for external funding (Federal, State, & private) for student research. This funding provides more students a research opportunity than if this funding was not found by SD Faculty. In the past ten years, an investment model has been used as an additional “lens” in order to provide more Student-Faculty projects with external funding. From the SDRGC’s perspective, a fair approach to awarding fellowships must exhibit a “creative tension” between these two approaches, investment in future grant funding, and recognition of student benefit.

C. Policy Objectives
Our primary objective is to clarify for faculty and students the purpose and process of awarding these fellowships, especially those that are not earmarked for any specific category of research. In this way, the SDRGC desires to alleviate concerns about the fairness and integrity of the selection process. We also hope that the policy will encourage departments to seek additional
external funding sources (including grants and gifts) while holding to the primary mission of the college (educating students).

D. The Purpose of Research Fellowships
These fellowships are awarded to Calvin students who have declared or intend to declare a major in the SD. They are intended to enhance students’ prospects for research careers in SD fields. While they contribute to the research goals of SD faculty, they should not be considered a primary means of support for faculty research. External grants and other internal funds (such as CRFs and Alumni Grants) are recommended to fit that purpose.

E. Guiding Principles for Awarding Research Fellowships. [Items 2 & 3 are not new, just separated from list of two previously]
Funds to support research fellowships are derived from three generic sources: (1) earmarked Calvin funds from granting agencies, endowments, or donations that specify a SD-student recipient and some peculiar requirement(s), e.g., major, research area, student career choice, research location; (2) non-earmarked Calvin funds (endowments or donations) that have no particular restrictions other than the requirement for a SD-student recipient; and (3) funds from granting agencies (earmarked and “non-earmarked”). The principles for awarding fellowships supported by these two funding sources are outlined below:

1. Earmarked Calvin Funds
   a. *Fellowship awards must conform to the priorities of the funding agency.* Normally, these establish boundaries on the area of SD investigation supported and on the characteristics of students (diversity, career plans, etc.) involved in the research. They also may mandate certain requirements, e.g., GPA, summary reports, long-term tracking of students.
   b. *Fellowships should advance student prospects for careers in research.* In most cases, this expectation conforms to the stipulations of the donors, where Development will provide oversight. Factors to consider include a student’s research acumen (performance in courses and laboratories relevant to the projects, faculty recommendations, GPA, and other measures of competitiveness).
   c. *Where ever possible, funds are to be used to encourage funding of future Student-Faculty Projects.* Financial resources for student research have become increasingly limited since this document was initially created. Earmarked Calvin funds are also a funding source that can provide additional funding, in some areas of scholarship, for more Student-Faculty projects in future years.

2. Non-Earmarked Calvin Funds
   a. *Fellowships should advance student prospects for research careers.* Arguably, students pursuing research-related careers have the most need for research experience. Factors to consider include a student’s research acumen (performance in courses and laboratories relevant to the projects, faculty recommendations, GPA, and other measures of competitiveness).
b. **Fellowship awards should consider student diversity as a factor.** This is in keeping with the stated goals of scientific societies, governmental organizations, and the comprehensive plan of Calvin College (From Every Nation) to improve participation of minorities in SD disciplines.

c. **Fellowship awards should consider departmental project rankings based on departmental goals for student research and other justifications in awarding fellowships.** To meet this objective, the SDRGC will solicit departmental input from each department’s research committee.

3. **External Funding**

   a. **Faculty obtaining external funds are expected to be part of the Science Division summer research management process.** The faculty and student application processes provide the best means to manage payroll, student training (safety, ethics, etc.), record keeping for Development and programmatic grant applications, and liability of Calvin College. This management is currently provided by the Science Division administrative assistant and Student-Faculty projects not under this umbrella of administrative support will need their departmental to provide this support (see G, below).

   b. **Fellowships should advance student prospects for research careers.** Faculty are given “free agency” in student selection but are expected to follow selection guidelines in Calvin supported projects. Students pursuing research-related careers have the most need for research experience. Factors to consider include a student’s research acumen (performance in courses and laboratories relevant to the projects, faculty recommendations, GPA, and other measures of competitiveness).

   c. **SDRGC is willing to work with SD faculty obtaining large funding for Student-Faculty projects (e.g. HHMI).** Funding for student research across disciplines can be managed by SDRGC, if desired, in consultation with SD faculty that are the principle and co-investigators for the funding. Smaller funding sources (e.g. Beckman Foundation) can be managed by the SD faculty and reported through departmental SDRGC representatives.

F. **Application & Awarding Process**

The SDRGC is solely responsible for administering the entire process:

1. Soliciting project descriptions from faculty (late January)
2. Preparing a comprehensive list of projects; distributing that list to students (early February)
3. Soliciting student applications and project preferences (mid February)
4. Seeking input from faculty in matching students to projects (late February)
5. Receiving from departmental research committees a written ranking of student-faculty teams within that department justified within the context of departmental research goals; verifying which projects are eligible for earmarked funding (early March)
6. Determining how many fellowships will be awarded (in consultation with the academic dean), and awarding those fellowships (mid March)
G. Expectations re the Submitting of Project Proposals
All SD faculty are eligible to submit project proposals requesting students as solicited by the SDRGC. Those who do so must clearly identify all sources of support for the requested student(s) and identify the number of students involved in other projects, even if they are not requesting students for those projects. If the project is targeted for a specific earmarked fund (e.g., Merck funds support specific projects as stipulated in the original grant proposal), that too must be made clear up front. This is akin to the Current and Pending Support section of a grant proposal.

In addition to promoting mutual trust within and between departments, full disclosure of funding sources greatly aids the summer research process. Student-Faculty projects that leverage external funding to collect preliminary data to be included in applications for additional funding cycles will be viewed as having a synergistic effect. Furthermore, full disclosure can help us to avoid “mentoring overload,” keeping the number students per faculty to a manageable level. It can also help us to advise students towards externally-funded research projects that might offer additional support during the academic year. Furthermore, management of student requirements and reporting has grown in the last twenty years which the Science Division administrative assistant manages. Disclosure of faculty projects and student(s) working on each project ensures proper training (payroll reporting, safety, ethics, etc.), record keeping for Development and programmatic grant applications, and manages liability of Calvin College. Student-Faculty projects that are not disclosed through the faculty and student application process will need to have their department provide this support without help from the Science Division administrative assistant.

H. Departmental Input on Funding of Student-Faculty Projects
After collating a table of project proposals and the complete set of student applications, the SDRGC will ask faculty to identify student(s) with whom they would like to work on their specific project(s). The resulting list of student-faculty teams will then be forwarded to the departmental research committees so that they can be weighed against departmental priorities. The departmental research committees will rank the projects, provide a brief rationale based on departmental priorities for student research, and identify expected eligibilities for earmarked vs non-earmarked funding. The SDRGC will establish the number of projects (currently ≤ 3) that departments may posit for non-earmarked funding.

I. Awarding Fellowships
After carefully considering potential conflicts of interest and agreeing to mechanisms for avoiding them, the SDRGC will award fellowships, normally proceeding in this order:

1. Fellowships will be awarded to students selected for projects with external support. This will be done in accordance with the stipulations of the funding agency.

2. Fellowship awards will be decided for the earmarked Calvin funds. This will be done in accordance with the stipulations of the donor with consideration of the criteria in I.3.a-e
Before these fellowships are awarded, the SDRGC will consult with those who administer these funds (Development Office) to verify student/project eligibility.

3. Fellowship awards will be decided for the non-earmarked funds based on three orthogonal sets of criteria, requiring review provided by SDRGC:
   a. Student preparation and opportunity:
      i. intention to pursue graduate education or research careers.
      ii. status as a minority.
      iii. preparedness – Items that may be considered include: faculty recommendations, performance in courses relevant to the project, and GPA (e.g., as an indicator of competitiveness for a Goldwater scholarship or for acceptance into graduate school or research-related jobs).
      iv. year at Calvin – Students who have one more year at Calvin will normally have priority over second- or first-year students. Exceptions include potential Goldwater scholars and those preparing for very competitive internship positions. Students who graduate before the summer research period will be ineligible.
   b. Proposed Student-Faculty project viability based on ability to garner external funds, if possible. Below is a list to provide priorities of a representative list of scenarios. Ultimately this list will be weighed with the other two priority lists:
      i. Beginning/new faculty
      ii. Data collection for “renewal” grant or previously submitted application
      iii. Data collection with concrete plans for grant submission
      iv. Funding for additional students on the same project as external grant
      v. Data collection for publication with no mention of grant submission
   c. Number of Student-Faculty projects supported for one SD faculty. It is a priority to fund as many students and faculty in Student-Faculty projects, so SDRGC will try to have one Student-Faculty project for every SD faculty who applies and has student(s) apply to their Student-Faculty project. The priorities from this “axis” of consideration are:
      i. Every faculty with a viable Student-Faculty project should be supported
      ii. Faculty with two Student-Faculty projects supported by Calvin funds are lower priority. Projects requiring two students on a Student-Faculty project should be recognized as coming at a cost to other Student-faculty projects without external or private support.
      iii. In exceptional circumstances, SDRGC will consider three Student-faculty projects funded by Calvin with one SD faculty.

Each departmental representative will provide rankings & justifications to the SDRGC meeting where recommendations for funding Student-Faculty projects are made. The SDRGC will consider each departmental research committee’s formal ranking of departmental projects, which include stated departmental priorities for student research and other justifications (e.g., limited accessibility to research funds in a given subdiscipline). Justification is needed even if there is only one proposal from the department.
With special attention to student benefits, the SDRGC must strive to balance egalitarian, representative, and investment approaches in awarding fellowships (see B, p. 1). Distribution across SD departments is an option but not a requirement. As can be seen in I.3.a-c the decision making is multifaceted requiring representation from all SD departments and committee conversation similar to a grant review panel. The SDRGC will strive to make balance these metrics to provide the largest impact for student research at Calvin College.

Once a priority level is assigned to each Student-Faculty Project, the SDRGC will make a list of top choices for fellowships and a list of alternates. The SDRGC will notify all students of their status. Students who receive an award notification will be asked to accept or decline within 14 days.

J. Some Important Caveats

1. Throughout the process, the SDRGC must be mindful of potential conflicts of interest and agree to mechanisms for avoiding them. For this reason, we will confer with NSM dean anytime one or more projects from members of the committee are recommended for Science Division funding. The dean may deny funding if there is reasonable evidence that a conflict of interest exists.

2. For his or her own project, faculty may request support for a specific student, even if that student was awarded a fellowship for that same project in a previous year. In such cases the faculty must present rationale for specifying a specific student. In its deliberations, the SDRGC may consider the disadvantages of supporting the same student against the advantages of sustaining student research efforts. We may also consider using this means to add a student to a CRF-funded project; however, CRF-funding does not guarantee a student fellowship award for the project. The best means of securing sustained support for student researchers is to request it in the budgets of external grant proposals.

3. In the initial selection process in which a faculty member chooses a single student from a set of students interested in the project, it is a common courtesy to consult with other faculty regarding students who have greater interests in their projects. The SDRGC normally awards fellowships to students to work on projects in which they have indicated the greatest interest.

4. Departments and faculty must refrain from leveraging their requests for students by aligning or coaching certain Student-Faculty combinations to increase the number of Student-Faculty projects for one department at the cost of another department. For example, students with lower GPAs into projects eligible for earmarked funds and those with higher GPAs into projects for non-earmarked funds. Such gerrymandering violates the spirit of this policy and threatens collegial relationships in the division. To alleviate suspicion, departments seeking earmarked fellowships for students with lower GPAs and non-earmarked fellowships for students with higher GPAs should be prepared to justify their requests.

5. In the event that a project is withdrawn or a student declines, the SDRGC at its discretion will reassign that fellowship award to another Student-Faculty Project in the division, as appropriate.
6. Each faculty researcher is expected to mentor and closely monitor student(s) for the duration of the 10-week project, and to support students in presenting their research results at appropriate regional and/or national professional conferences, annual West Michigan Research with Undergraduates and Graduate Students, and at the annual SD Student Research Fair. Publications stemming from the research should be student co-authored whenever appropriate. Presentations and manuscripts should include an acknowledgement of funding support from the division and/or the external agency (HHMI, Merck/AAAS, etc.).