

**Annual Report for the Office of  
Undergraduate Research & Creative Activities  
2017-18**

Richard Ignace

*Director of Undergraduate Research & Creative Activities*

**Honors College**

**EAST TENNESSEE STATE UNIVERSITY**

2018 May

◇ *MOTTO:*

**Pursue your passion.**

◇ *MISSION:*

**To promote and advance the sciences, humanities, and arts by engaging and supporting undergraduates in research.**

◇ *VISION:*

**To make undergraduate research an integral part of the university experience at ETSU.**

## I. Introduction

The Director of Undergraduate Research & Creative Activities performs a number of functions and oversees several activities. These include:

### *Programs:*

- Student-Faculty Collaborative Grants (SFCCGs)
- Summer Fellowships Awards (SFAs)
- Research Discovery Grants (RDGs)
- Travel Grant Awards (TGAs)

### *Events:*

- Boland Symposium
- Lab Safety Workshop
- Oral Presentation Workshop
- Tennessee Posters-at-the-Capitol

### *Service:*

- Member of the Honors College
- Research Advisory Committee
- Member of the Council for Undergraduate Research (CUR)
- Other committee service or advisory roles

### *Purpose of the Office:*

The Office is charged with supporting and/or providing educationally enriching activities for undergraduate students in the area of scholarly engagement. In terms of scope, the Office has adopted a definition of “research” as taken from the Council of Undergraduate Research ([www.cur.org](http://www.cur.org)):

*An inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline.*

### *The Annual Report*

The annual report details the activities of the Office from fall through summer. This report covers the period of July 2017 through June 2018.

## Office of Undergraduate Research & Creative Activities

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### Honors College

Note: Stated funding values come from records kept by the Director. The funds represent commitments made by the Director for the various programs. It is possible that some funds went unspent, or that some funds were expended outside the reporting year (e.g., some funds associated with summer fellowships may be spent after July 1<sup>st</sup>). Therefore, reported values represent good-faith commitments for funds and student participation within the stated period of the report. Further, the Honors College commits additional funds toward Undergraduate scholarship that are not reported herein, such as the Boland Symposium, professional development for the Director, or support for students to attend SURF, Posters-at-the-Capitol, and NCHC meetings. Combined, the financial support for these activities are annually in the neighborhood of \$10K.

Note: In an effort both to celebrate ETSU student scholars and to make programs as transparent as possible, basic information about Travel Grant awards, Student Faculty Collaborative Grant awards, Summer Fellowship awards, participants for Tennessee's Posters-at-the-Capitol event, and participants for the SoCon Undergraduate Research Forum (SURF) can be found at the following website:

[www.etsu.edu/honors/ug\\_research/achievements.php](http://www.etsu.edu/honors/ug_research/achievements.php)

**Please direct all questions/suggestions/corrections to:**

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## II. Travel Grant Awards

Summary:

Category	Value
Requests:	20
Grants:	16
Students served:	30
Faculty advisors:	16
Colleges:	3
Departments:	11
Funds committed:	\$8,157

Comments:

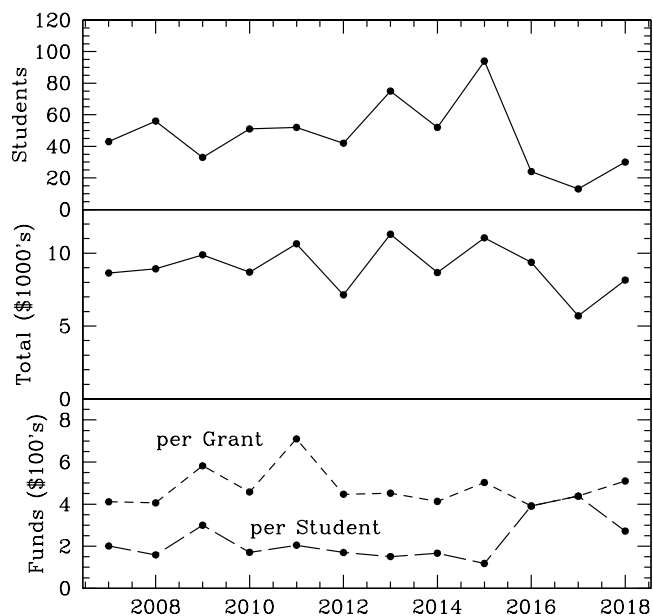
1. The majority of travel grant awards were requested by and provided to students in the College of A&S.
2. This year travel grant funds were exhausted before end of January

owing to a large number of early requests, so several requests had to be denied (after which, requests stop coming).

3. Average expenditure per student: \$272.
4. Average expenditure per award: \$510. The maximum award per individual is \$500. Some requests can involve groups, and so awards can exceed \$500 in such cases. There were two travel award requests by groups in 2017-18, driving the expenditure per student down relative to recent years (see graph below).

Long-Term Trends:

- The figure at right displays the number of students served with travel grants for each year (top panel), the total funding for travel grants each year (middle panel), and funds spent per grant and per student each year (bottom panel).
- For the latter the amount per grant is the short dashed line, and the amount per student is the long dashed line. Although the majority of grants support travel for individual students, some grants support travel for groups, thereby explaining the difference between these two curves.



### III. Student-Faculty Collaborative Grant Awards (SFCGs)

*Summary:*

#### Fall Cycle

Category	Value
Proposals:	20
Awards:	16
Colleges:	3
Departments:	9
Requested:	\$24,420
Awarded:	\$15,587

#### Spring Cycle

Category	Value
Proposals:	8
Awards:	8
Colleges:	3
Departments:	7
Requested:	\$10,406
Awarded:	\$9,525

*Comments:*

1. The majority of student-faculty collaborative grant awards were requested by and provided to students in the College of A&S.
2. Maximum possible award: \$1,200.
3. Average funding request (combined cycles): \$1,244.
4. Average funding award (combined cycles): \$1,046.

*Long-Term Trends:*

Refer to the figure in the following section for Summer Fellowships, where Long-Term Trends for all research grants are summarized.

#### IV. ETSU Summer Fellowships and Society Fellowship Awards

Summary:

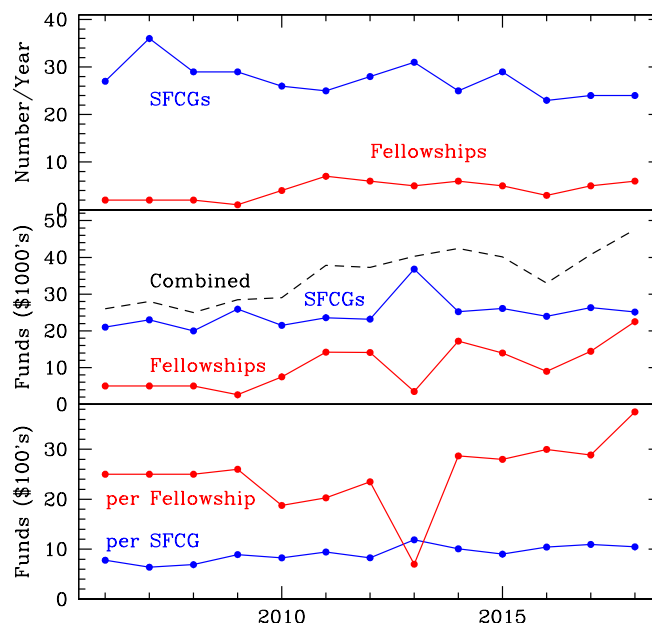
Category	Value
Proposals:	7
Awards:	6
Colleges:	3
Departments:	5
Requested:	\$25,023
Awarded:	\$22,493

Comments:

1. Maximum possible award: \$2,500 (scholarship) + \$500 (research expenses) for ETSU; \$4000 (student) + \$500 (faculty honorarium) for Society.
2. Average funding request (combined cycles): \$3,575.
3. Average funding award (combined cycles): \$3,749.

#### Long-Term Trends

- The Figure displays the number of proposals awarded each year (top panel), the funds committed each year (middle panel), and the funds committed per grant each year (bottom panel). Blue is for the SFCG program; red is for ETSU Fellowships and Society Fellowships combined.
- Note that for the middle panel, the dashed line (black) indicates the combined funds for both the SFCG and Fellowship grants.



## **V. External Funding (Grants/Donations)**

### *Society Fellowships:*

In 2017, Ignace won an award from the Charles Koch Foundation. The award for 1 year provides for 3 summer fellowships (dubbed “Society Fellowships”) in the amount of \$4000 per student to conduct research in areas that relate to free societies and/or societal well-being.

### *Victory Cooper Awards:*

Due to the generosity of Victory Cooper, a fund of \$2000 was provided in support of undergraduate research. Two awards were granted in the amounts \$500 (to assist a student attendance of a conference in spring 2018) and \$1200 (to assist a student in a research-abroad activity in Brazil during summer 2018).

## **VI. Laboratory Safety Class**

### *Summary:*

Two courses were provided: one early in the fall semester, and one early in the spring semester. Lab Safety is also offered to Summer Fellowship awardees via online course content.

## **VII. Workshops**

### *Summary:*

The oral presentation workshop was offered to students prior to the Boland Symposium. Around 30 students were in attendance. (Around 80 students presented at the Boland.)

A poster presentation workshop was offered to students in the fall semester. The turnout was very low; however, this was the first year of its offering.

## **VIII. Posters at the Capitol**

### *Summary:*

Seven students were in attendance for the annual Posters at the Capitol event. The event includes universities from across the state. Students met with their legislators and interacted with peers.



## IX. Undergraduate Research Symposium, or Boland Symposium

### *Summary:*

The breakdown for symposium contributions is:

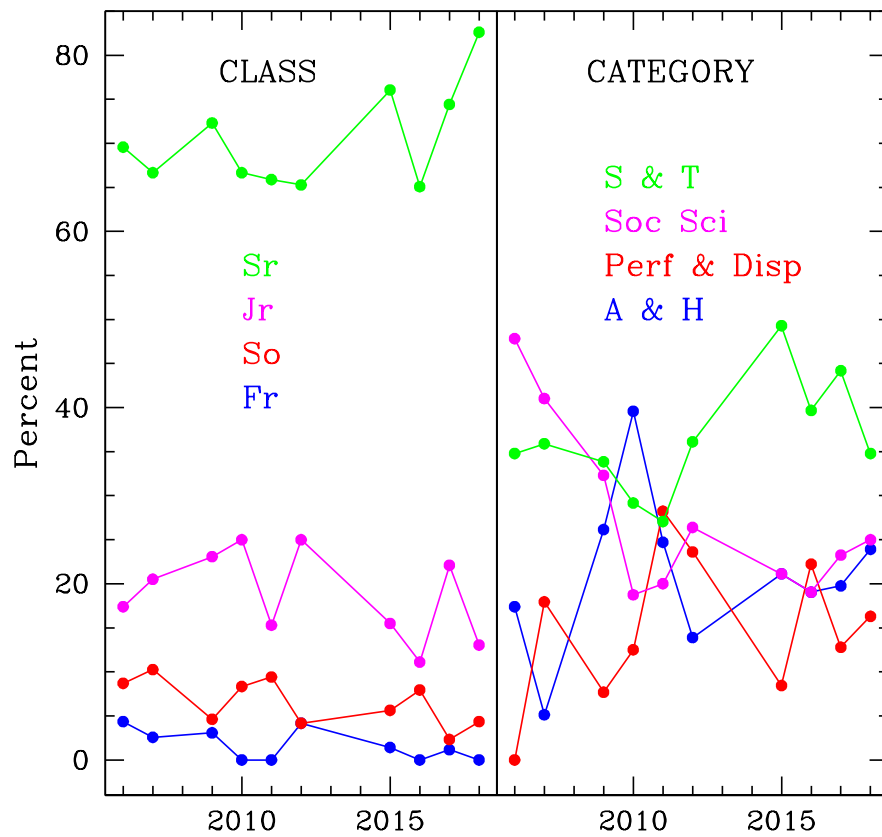
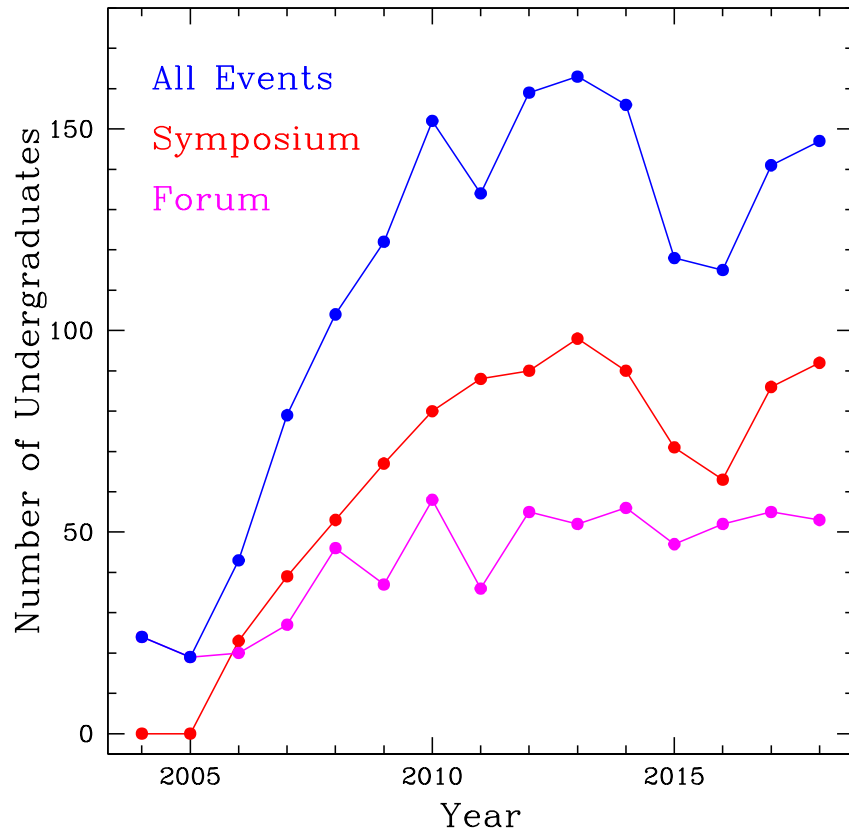
- 86 presentations in total with 92 presenters (some had multiple presenters)
- 83% of presenters were seniors; 17% were not. None were freshmen.
- 48% of presentations were for thesis; 52% were not.
- Categories: (count for presenters)
  - 22 (24%) in Arts & Humanities
  - 15 (16%) in Performance/Visual Art Display
  - 23 (25%) in Social Sciences
  - 32 (35%) in Science & Technology

### *Comments:*

The majority of presentations came from the College of Arts & Sciences. Participation in Performance was substantial, owing in part to a continuation of a program on performance that was initiated last year, occurring after the lunch break, and in parallel with Visual Arts Display.

### *Long-Term Trends:*

- The top figure (next page) shows the number of undergraduate presenters at ETSU meetings. Chief among these meetings are the Boland Symposium (specifically for undergrads; oral-only presentations) and the Appalachian Forum (where undergrads can present posters).
- The lower figure (next page) is double-paneled showing a demographic breakdown for the Boland Symposium. The upper panel shows participation by student class (Sr=seniors, Jr=juniors, So=sophomores, Fr=freshmen). The lower panel indicates the distribution of presentations among the major categories of Science & Technology (S&T), Performance or Visual Display, Social Sciences, and Arts & Humanities (A&H). Naturally, Seniors dominate participation, with Juniors comprising most of what remains. Science & Technology accounts for about a third of the presentations.



## X. Research Discovery Program

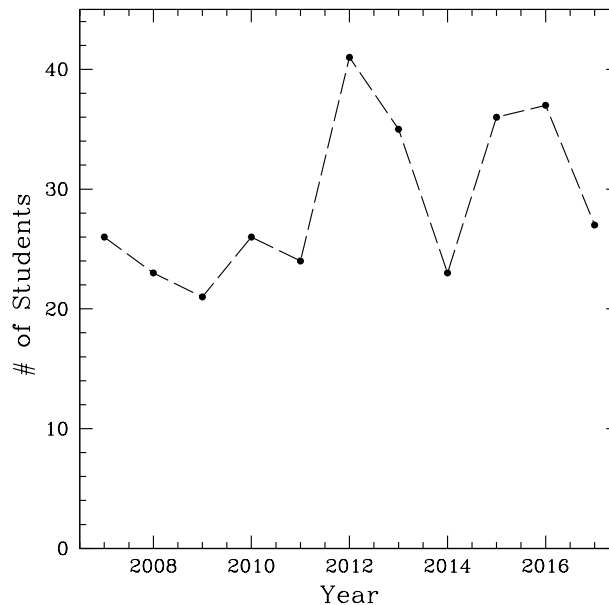
### Comments:

A typical federal work-study (FWS) student works about 10 hours a week for 15 weeks in each semester. That is 300 hours for the year. With a minimum wage of \$7.25 per hour, the value of the work, per student, is \$2,175. Students with Appalachian performance scholarships (APS) in the Research Discovery Program are expected to serve about half that number of hours. Although the APS students are not paid for their time, they do receive a scholarship, and they are required to work a certain number of hours as a requirement of receiving those funds. Consequently, the time served by APS students, evaluated at minimum wage, has a wage-equivalent value that can be calculated.

With roughly equal numbers of FWS and APS students, the average cost equivalent value of the work per student is about \$1600 in time for the academic year. Less funds are available for summer students, of which there are typically only a few involved with the program. Given that the program historically averages 30 students, the annual funding-equivalent value of the Research Discovery Program is roughly  $30 \times \$1,600 \approx \$48,000$ .

### Long-Term Trends:

Note that in the plot, “Year” refers to start of the academic year and through following summer.



## XI. Summary Remarks

This was a year of many notables, particularly several “firsts”:

- This was the first year for the new Society Fellowships to support summer research. Funds for the 3 fellowships were made possible by a grant from the Charles Koch Foundation.
- This was the first year for Victory Cooper Awards. Funds for 2 awards were made possible by the generosity of Victory Cooper.
- A new undergraduate research club was formed and approved in April 2018: Undergraduate Research and Scholars Organization. The objective of the club is (taken from Buc-Hub):

The purpose of this organization is to promote the excitement of pursuing research, the learning of best practices in scholarship, the networking of undergraduates who are seeking and conducting research, and the growth of undergraduate engagement in research at ETSU. The goal is to promote an open, inclusive, diverse, audacious, and intellectually stimulating atmosphere that assists, supports, and encourages undergraduates involved in research, to make their scholarly experiences as educationally enriching and productive as possible.

- Crowdfunding was officially made available through ETSU and allows for undergraduate researchers to be involved as well.
- The new Advisory Board for the Office of Undergraduate Research & Creative Activities completed its first year of service. Board member Dr. Joe Mason and student representative Kristina Lim rotated off. Board members for 2018-19 are:

P. J. Bailey	<i>Mortgage Loan Originator, Regions Bank</i>
Matthew Cleek	<i>President, Intellithought</i>
Rachael Horn	<i>Teacher, Daniel Boone High School</i>
Richard Ignace	<i>Director of Undergraduate Research (ex officio)</i>
Paul Montgomery	<i>Vice President of Access &amp; Development, NeSCC</i>
Catherine Pearson	<i>Honors-In-Discipline, ETSU</i>
Leah Ross	<i>Executive Director, Birthplace of Country Music</i>
Judith Slagle	<i>Dean of the Honors College, ETSU (ex officio)</i>
William Stone	<i>Director of Pediatric Research, ETSU</i>
Marcy Walker	<i>Attorney, Hunter-Smith-Davis</i>
Ryan Whitney	<i>Senior Mechanical Engineer, Eastman Chemical</i>
Craig Young	<i>Structural Engineer, PROSIM Engineering</i>

The Board meets in September and April of the academic year. Members are invited to attend the annual Boland Symposium. The

Board is asked to help in some other supporting way with at least one event a year. For 2017-18, the Board was involved with a rehearsal for students presenting at the 2018 Posters-at-the-Capital event. The April 2018 meeting led to decisions for the Board to (a) hold a rehearsal for students presenting at the 2018 SURF in November and (b) be “on call” to aid a student or student group that pursues a crowdfunding campaign in 2018-19.

- The Sherrod Library completed the development of a Faculty Mentor Gallery and a Student Researcher Gallery, with web links to be found at:

[www.etsu.edu/honors/ug\\_research/start.php](http://www.etsu.edu/honors/ug_research/start.php)

When faculty are added to the Researcher Gallery (profiles of faculty researcher), they are invited to be part of the Mentor Gallery. However, the Student Gallery is largely unpopulated and unknown, to either students or faculty. The goal is to create online interfaces for faculty researchers and student researchers to identify each other. It may take some time for the Student Gallery to grow and be of broad use.

Another notable was that Ignace submitted a paper entitled “Quantifying Undergraduate Participation in Scholarly Activities” to the journal, *Scholarship and Practice of Undergraduate Research* (SPUR). The journal is run through the *Council of Undergraduate Research* (CUR), for which ETSU is a member.

Finally, Ignace undertook an analysis of demographics for several programs administrated through the Office. The Appendix provides the details of the analysis. The overall summary is that:

- SFCGs are generally awarded to students with majors in areas involving lab or field work. Since SFCGs are typically used to defray the costs of supplies in support of research, the analysis essentially quantifies our expected outcome.
- Summer Fellowships are geared more toward supporting the student, as opposed to offsetting costs of supplies. Student awardees are notably more diverse in discipline as compared to SFCGs. Again, the analysis quantifies the expectation.
- Drawing on awards for SFCGs, Fellowships, and Travel Awards, faculty mentors for students fall into two groups. About half of the students had mentors who appear in the records 1, 2, or 3 times. For the other half of student researchers, the mentors appear frequently in the records, at more than 4 times, in one case up to 15 times.

## **XII. Appendix**

In what follows the Director undertook a review of approximately 13 years of awards in the areas of Travel Awards, Student-Faculty Collaborative Grants (SFCGs), and Summer Fellowships. The objective was to consider:

- The distribution of majors among SFCG awardees.
- The distribution of majors among Fellowship awardees.
- The distribution of faculty mentors among the aggregate of SFCG, Fellowship, and Travel awardees.

Several clarifying remarks are needed here. First, the majors of student awardees are self-reported. This could mean that students have sometimes reported the department of the faculty mentor hosting the project. For example, 3 SFCG awardees identified with Internal Medicine, but that unit does not offer an undergraduate degree. Related, while the database of awards contains faculty mentor names, faculty mentor departments may not have been recorded. Consequently, a lot of students conducting research in the College of Medicine may have identified as chemistry or biology majors.

### **Summary of results:**

#### Mentors

Names of faculty mentors for awardees of collaborative, fellowship, and travel grants, through spring of 2016 were collected. The list shows how many times a faculty name appears in the data. The plot is a histogram for the frequency at which a name occurs. For example, Dr. Franklin is a mentor 15 times in this period. There is only one instance in which 15 times occurs. A line is shown for the median value at 3.5. Names appearing 1, 2, or 3 times amount to half of the instances; 4 and above is the other half. Of the 113 different faculty appearing in the records, approximately 25 faculty account for half of the mentors for grant awardees.

#### Student Majors for Fellowships

The list and plot are similar as for the mentors, and it happens that the median is the same. Of the 22 majors/departments for Summer Fellowship awardees, 5 account for half of the awards.

#### Student Majors for SFCGs

List and plot follow the approach of the other figures. Of the 43 majors/departments self-identified by fellowship awardees, half of the awards went to only 4 majors.

#### Caveats/Notes

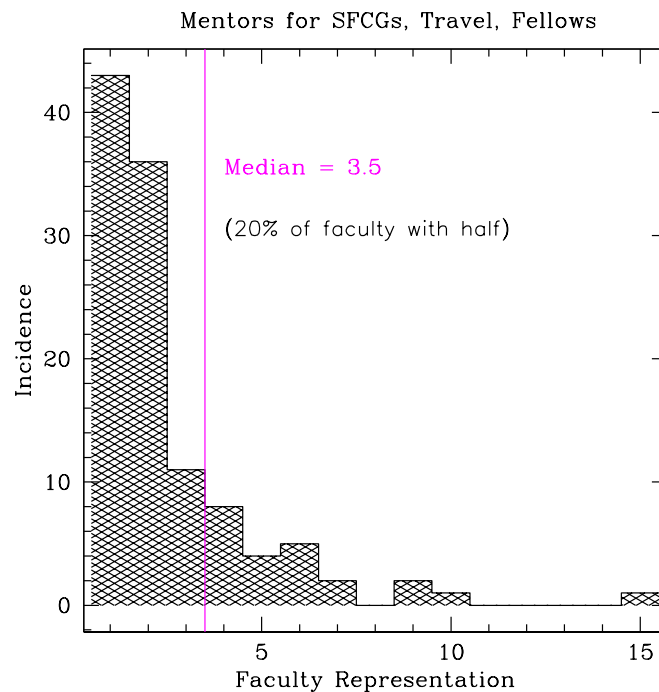
Mentor distribution can suffer some error when multiple faculty share the same last name. For example, there are at least two different Browns and two different Smiths in the

database (i.e., Mike Smith and Beverly Smith), and the list was not controlled for first names. Records may suffer from the occasional typo (e.g., could Hirsch and Hirsh be the same person?). These effects are minor biases on the distributions.

An important outcome is that SFCG awardees are quite concentrated in a few majors, but fellowship awardees are significantly more diverse. The former are awards for supplies and therefore biased toward units with labs and fieldwork that involve significant overhead costs to support undergraduate engagement in projects. The latter supports students directly, so the greater diversity seems a natural result of removing supplies as a major consideration for eligibility to the program. These effects are not surprising; here the effect (for ETSU and the history of the programs) is quantified from a median analysis.

**MENTORS** (for SFCG, Fellowship, or Travel awardees: 113 names thru Spring 2016)

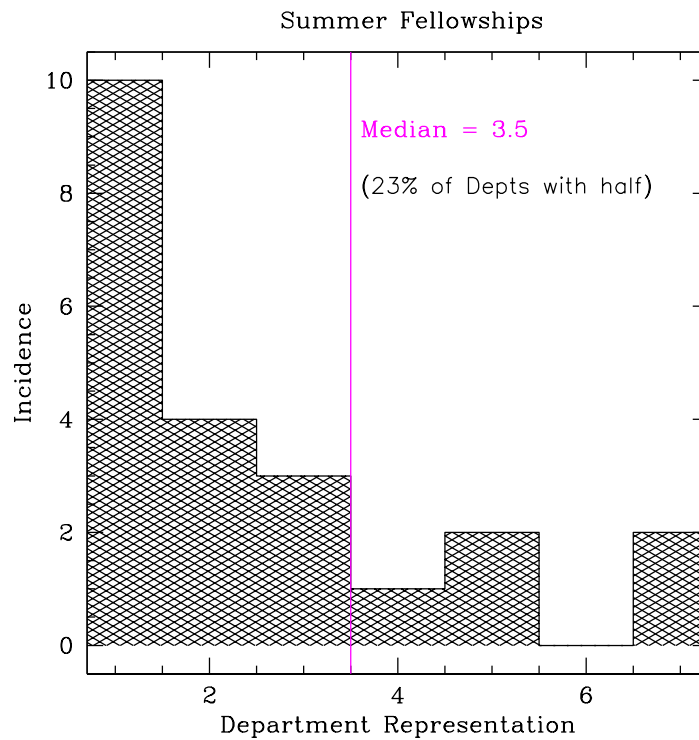
1 Baharestani	1 Sawyer	2 Hirsch	3 Reiley
1 Baker	1 Schborg	2 Hirsh	3 Rice
1 Bidgood	1 Scheurerman	2 Hoover	3 Thewke
1 Biship	1 Shafer	2 Ignace	4 Eagle
1 Blanton	1 Sharp	2 Kady	4 Ecay
1 Cajka	1 Shields	2 Kinser	4 Graves
1 Champouillon	1 Trainor	2 Koterbay	4 King
1 Chen	1 Tudico	2 Lange	4 Kortum
1 Close	1 Vasiliev	2 Marshall	4 Kumar
1 Cutspec	1 Wachs	2 McBee	4 Webb
1 Davis	1 Willaims	2 Mink	4 Williams
1 Harirforoosh	1 Yampolsky	2 Murray	5 Allen
1 Hillhouse	1 Zavada	2 Ordway	5 Chambers
1 Hiortdahl	1 Zimmerman	2 Pond	5 Levy
1 Hu	2 Beeler	2 Ross-Sheehy	5 Luffman
1 Johnson	2 Buerkle	2 Sandefur	6 Blackhart
1 Kridler	2 Chakraborty	2 Silver	6 Gold
1 Lakey	2 Cherry	2 Steadman	6 Nandi
1 Laughlin	2 Clements	2 Stevens	6 Schrift
1 Luttermoser	2 Dalton	2 Stewart	6 Sellers
1 Macavoy	2 Elangovan	2 Weiss	7 Crumley
1 McGarry	2 Elgazzar	3 Bartoszuk	7 Harker
1 McIntosh	2 Ferguson	3 Cantrell	9 Dula
1 Mei	2 Ferslew	3 Dixon	9 Smith
1 Negrisanu	2 Fitzgerald	3 Gao	10 Brown
1 Palmatier	2 Godbole	3 Greer	15 Franklin
1 Polaha	2 Greene	3 Joplin	
1 Potterton	2 Hall	3 Joyner	
1 Reddick	2 Harley	3 Karsai	





**DEPARTMENTS** (for Fellowships Awardees: 22 depts through Summer 2018)

- 1 Eng. Tech., Surv., and Digital Media
- 1 Environ Health
- 1 Geosciences
- 1 History
- 1 Human Development
- 1 Internal Medicine
- 1 Mathematics
- 1 Nursing
- 1 Pharmacy
- 1 Social Work
- 2 Audiology and Speech-Language Pathology
- 2 Literature and Language
- 2 Pharmacology
- 2 Philosophy and Humanities
- 3 Biomedical Sciences
- 3 Chemistry
- 3 Health Sciences
- 4 Biological Sciences
- 5 Political Science
- 5 Sociology and Anthropology
- 7 Art and Design
- 7 Psychology



**DEPARTMENTS** (for SFCG Awardees: 43 depts through Summer 2018)

- |  |   |
|--|---|
| 1 Anatomy and Cell Biological Sciences | 3 Pharmacology                          |
| 1 Audiology                            | 3 Surgery                               |
| 1 Biostatistics and Epidemiology       | 4 Pharm Sciences                        |
| 1 Cardio Sciences                      | 4 Philosophy                            |
| 1 Early Child Education                | 4 Sport, Exercise, Rec, and Kinesiology |
| 1 Educational Foundations/Special Ed   | 5 Human Development and Learning        |
| 1 Environmental Health                 | 5 Political Science                     |
| 1 Music                                | 5 Public Health                         |
| 1 Physical Therapy                     | 6 Literature and Language               |
| 1 Social Work                          | 6 Mathematics                           |
| 1 Teaching and Learning                | 7 Allied Health                         |
| 2 Bluegrass                            | 7 Biomedical Sciences                   |
| 2 Communication                        | 10 Geosciences                          |
| 2 Computer Sciences                    | 11 Biochemistry                         |
| 2 Criminal Justice                     | 16 Nursing                              |
| 2 Economics                            | 17 Sociology and Anthropology           |
| 2 Media and Communication              | 24 Art and Design                       |
| 2 Physics and Astronomy                | 32 Health Sciences                      |
| 2 Physiology                           | 38 Psychology                           |
| 3 Engineering Technology               | 46 Chemistry                            |
| 3 Honors                               | 70 Biological Sciences                  |
| 3 Internal Medicine                    |   |

