The Impact of Small and Philanthropic Grants on the Medical Education and Careers of Lab Trainees

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Objective

The objective of this study was to determine the impact of small and philanthropic funds on the research productivity and careers of trainees that researched in the Molecular Oncology Program (MOP).

Background

- **Decline in number of surgeon-scientists with efforts to increase pool**
  - Causes include instability of research funds which create barriers
  - Efforts such as the Physician-Scientist Training Programs (PSTP) have been successful but have limited cohort sizes and funding
- **MOP at the University of Minnesota has trained students for 25 years**
  - Undergrads through fellows in otolaryngology cancer research
  - **Small (<100,000K) and philanthropic (from non-profits) grants are a major contributor to projects completed by trainees**

Materials & Methods

- **Trainee Data Collection**
  - Generated lists of all trainees in our laboratory over the 25+ years
  - Collected information regarding trainee's role, training period, project(s) and project funding (i.e. small vs large, specific grants)
  - Determined publications, co-authorships, and estimated man-hours (10hr/week for undergrads, 40hr/week for med student rotation, 32hr/week for resident rotation, 135hr/fellow)
- **Grant Data Collection**
  - Determined total number, source, and amount of grants used
  - Compared these amounts to training and career outcomes of students who were supported by small grants

References

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Results

In 25 years, the Molecular Oncology Program raised

$761,273.00

from 27 small and philanthropic grants.

These grants were from a variety of institutional, local, and national organizations. **Table 1**

Research Productivity

≈80,000 human-hours across 105 Trainee rotations

20 Undergrad | 52 Med Students | 31 Residents | 2 Fellows

81 written publications
- 55 peer-reviewed research articles
  - 44 first authors
  - 49 co-authors
- 36 published abstracts
  - 31 first authors
  - 22 co-authors

58 presentations at national conferences
- 27 Presentations
  - 21 first authors
  - 14 co-authors
- 31 Poster abstracts
  - 27 first authors
  - 16 co-authors

Career Outcomes

Of trainees until 2020 who have completed training and were supported by a small grant:

100%
-Medical school matriculation (10/10)
-Match into otolaryngology (21/21)
-Match into desired specialty (24/24)
-Match into desired fellowship (11/11)

12 MS and PhD (residents)
13 Primary NIH Grants
46 Cancer Care (med stud + res)
55 ENT Doctors

Table 1. Grants received by the MOP since 1999.

Philanthropic or Small Grant	Amount per Grant	# of Grants	Total per Grant	Trainee per Grant
Fanconi Anemia Grant	$248,000.00	1	$248,000.00	7
Cancer Research Prevention Foundation	$70,000.00	1	$70,000.00	1
National Organization of Rare Disorders Grant	$30,000.00	1	$30,000.00	1
American Medical Association	$2,000.00	1	$2,000.00	1
University of Minnesota Medical School Scholar	$3,000.00	1	$3,000.00	1
American Head and Neck Society/American Academy of Otolaryngology	$9,091.00	3	$27,273.00	3
Lions Foundation Startup Grant	$60,000	1	$60,000	104
Translational Biomarkers Initiative (with Lions)	$12,000.00	13	$156,000.00	
UMN New Faculty	$15,000.00	2	$30,000.00	2
Local American Cancer Society	$15,000.00	1	$15,000.00	1
NIH T32 Fellow Grant	$60,000.00	2	$120,000.00	2
Totals		**27**	**$761,273.00**	

Conclusions

- Average R01 grant in 2023 was $601K and produces approximately 8 publications per grant
- Funding successfully supported trainees in early-career research as seen by the high matriculation and match rates
- From this study, it is difficult to assess the creation of lifelong surgeon scientists, but this analysis provides the foundation for additional study
- High numbers of advanced degrees, NIH grants, and cancer care involvement suggest positive downstream effects from these grants
- **Small and philanthropic grants are vital to the MOP and contribute to high research productivity and successful career outcomes**