

An Analysis to Examine the Productivity and Impact of Training in the Transdisciplinary Research on Energetics and Cancer (TREC) Initiative

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Introduction

In recent decades, there has been an increasing emphasis on large cross-disciplinary science teams to address important public health problems. As investments in team science continue to grow, so does the need to understand the impacts and challenges associated with effective team science approaches. Training is an important component of any team science initiative, as it helps investigators develop the competencies necessary for effective cross-disciplinary collaborations¹. However, little empirical work has been done to assess the impact of participating in a large cross-disciplinary center initiative on a trainee's future research career. Therefore, the goal of this study was to assess the scientific and career outcomes of a group of trainees who were part of a large transdisciplinary team science initiative.

Research Questions

1. How successful were the trainees in receiving funding for future grants?
2. What types of academic roles and in what departments did TREC trainees go on work in?
3. How did the bibliometric characteristics of the TREC trainees publications change over time?

Method

Sample

The sample included 83 trainees who were part of the Transdisciplinary Research on Energetics and Cancer (TREC) I Initiative. TREC I consisted of four geographically dispersed research centers that were funded from 2005-2010 with a focus on conducting transdisciplinary research on the intersection of obesity, diet, physical activity and cancer². The majority of trainees had PhDs (74.6%), followed by MDs (7.2%), and master's degrees (4.8%). A range of disciplines were represented including Public Health (26.5%), Basic Science (21.6%), Psychology (9.6%), Exercise Science (8.4%), Nutrition Science (8.4%), Genetics (7.2%), Medicine (3.6%) and Other (3.6%). The TREC initiative included trainees at multiple career stages including early career/junior investigators (37.3%), postdoctoral fellows (15.6%) and graduate students (33.7%).

Measures

Demographic information and career history were ascertained using information contained in CVs and online searches. Publication data was obtained through Medline and Web of Science. Analyses regarding career trajectory, publication history and future grant funding are presented.

References

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4. Wuchty S, Jones BF, Uzzi B. (2007). The Increasing Dominance of Teams in Production of Knowledge. *Science*, 316(5827): 1036-1039.

Results

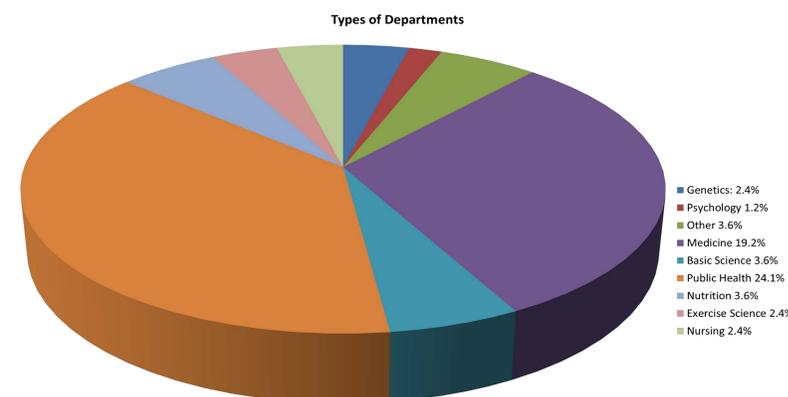
Table 1: Means for Total Number of Different Grant Types Awarded to TREC Trainees Across Research Career

Career Stage	Average number of R01s	Average number of R03s	Average number of R21s	Average number of K awards
Graduate Students	0	0.9	0.9	0
Postdoc Fellows	0	2	0	4.5
Junior Investigators	9.8	2.75	2	4.454

- 53% of TREC Trainees were awarded grants
- 69.4% R awards occurred post TREC
- 93% K awards occurred post TREC

Results

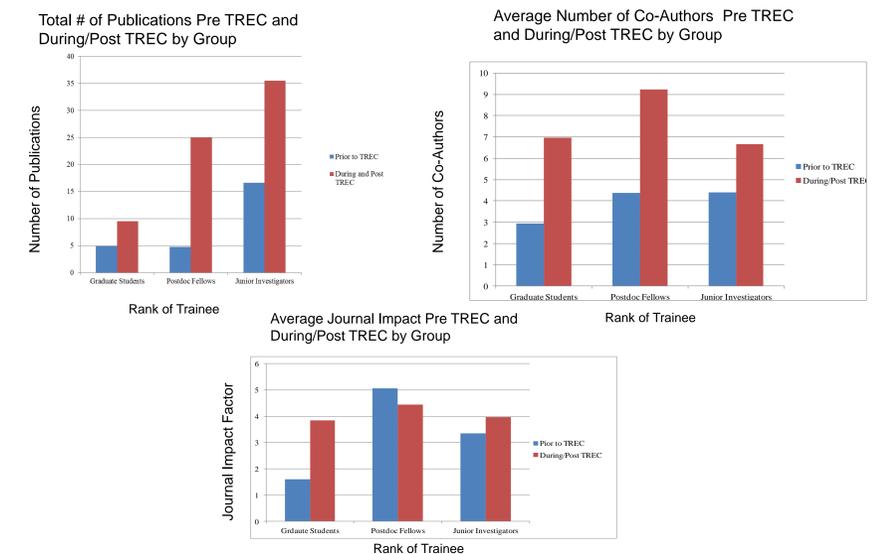
Table 2: Types of Academic Departments Represented Among TREC Trainees



- 71.1% of trainees remained in academia following their experience in TREC
- 69.2% of postdocs went on to faculty positions as assistant professors, instructors, or researchers
- 74.19% of junior investigators went on to become full professors

Results

Table 3: Means of Publication Data Represented Among the Three Sets of Career Stages of TREC Trainees



Conclusions

- Trainees were successful in obtaining grant funding, particularly post TREC.
- Majority of trainees (~70%) remained in academia following TREC and experienced career advancement.
 - Higher than the 52.1% of recent PhDs who completed the NIH/NSF Survey of earned doctorates and reported remaining in higher education³.
- TREC trainees went on to work in a diverse range of academic departments with Public Health (24.1%) and Medicine (19.2%) the most commonly represented.
- TREC trainees produced notably more publications their during/post TREC years compared to prior to TREC.
 - Not unexpected given that many of these individuals were still in training or early in their careers prior to TREC and had not yet fully developed their research identities.
- TREC trainees across all three groups tend to publish with more co-authors following their participation in the TREC initiative.
 - Suggests that the emphasis on cross-disciplinary collaboration in TREC may have long-lasting effects
 - Representative of general shift in science towards publishing in teams⁴.
- There is an increase in JIF for graduate students and junior investigators when comparing pre verses during/post TREC publications. The post doctoral fellows actually show the opposite effect which is due to one outlier publication. When that publication is removed from this group the differences across time disappear.
- Limitations of this study include:
 - Inconsistencies in reporting start and end dates for trainees.
 - Lack of a unified training program across each of the TREC centers.
- Future analyses should include a comparison group to better understand the unique effects of a transdisciplinary training program on an individual's scientific and professional career trajectories.