

Bisbee Elizabeth (Orcid ID: 0000-0002-6585-3093)
PATEL Rajiv (Orcid ID: 0000-0002-1521-4947)
Tse Julie (Orcid ID: 0000-0001-8648-5288)
Plaza Jose (Orcid ID: 0000-0003-1123-5078)
Motaparathi Kiran (Orcid ID: 0000-0003-0562-0826)

2

Impact of the American Society of Dermatopathology mentorship awards program

Kala Hurst, BA², Elizabeth L. Bisbee, MD¹, Amy C. Parsons⁸, MD, Rajiv M. Patel⁷, MD, Jeffrey P. North⁴, MD, Julie Y. Tse³, MD, Matthew Kuhar⁵, MD, Jose A. Plaza⁶, MD, Kiran Motaparathi, MD¹

1 Department of Dermatology, University of Florida College of Medicine

2 Philadelphia College of Osteopathic Medicine-Georgia Campus

3 Foundation Medicine, Inc.

4 Department of Dermatopathology and Oral Pathology Service, University of California San Francisco School of Medicine,

5 Departments of Pathology and Laboratory Medicine and Dermatology, Indiana University School of Medicine

6 Departments of Pathology and Dermatology, The Ohio State University Medical Center,

7 Departments of Pathology and Dermatology, Michigan Medicine, University of Michigan

8 Associated Pathologists, LLC dba Pathgroup, Nashville, TN

Corresponding author:

Kiran Motaparathi, MD

Department of Dermatology

University of Florida College of Medicine

4037 NW 86 Terrace, 4th Floor

Room 4123 Springhill

Gainesville, FL 32606

kmotaparathi@dermatology.med.ufl.edu

Key words: Mentorship, fellowships, scholarship, dermatopathologist, American Society of Dermatopathology

Funding sources: There are no funding sources for this work.

Conflict of interest: The authors have no conflicts of interest to declare.

Word count: 1000

Number of references: 4

Tables: 2

Acknowledgment: The authors would like to thank Karen Zader, for supplying the data on ASDP applicants and award recipients for this project. We also thank Xinyang Liu for statistical analysis.

Introduction

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/cup.14120

Through the American Society of Dermatopathology (ASDP) mentorship awards program, dermatology and pathology residents across the country work with a mentor in order to obtain the knowledge, research experience, and confidence to succeed in their dermatopathology careers.² Mentorship can increase residency and job satisfaction for mentees.^{2,3} A research component within mentorship increases the likelihood that mentees will incorporate evidence-based medicine in their own practice.³ We aimed to determine whether acceptance of the ASDP mentorship award and subsequent mentorship program completion amongst residents was associated with a higher likelihood of completing a dermatopathology fellowship and increased academic productivity, as measured by number of publications, h-index, m-index, and practice setting.

Materials and Methods

The names of all applicants between 2005 and 2018 were provided by the ASDP mentorship awards committee. The applications were not shared outside of the committee; only names and application outcomes were shared with the authors for research purposes and are not disclosed here. Applicants between the years 2005 and 2018 were first searched through Doximity to determine if they had completed a dermatopathology fellowship. Names not found on Doximity were searched on Google and verified using affiliated institutions.

Applicants were then searched through Scopus by using their full applicant name to obtain h-indices, number of publications, and years active to calculate m-indices. Best attempts at identifying the most accurate profiles were made through identifying affiliation and profiles with articles of relevance to dermatology and pathology. If similar profiles were present on Scopus,

the profile with the highest h-index was chosen for standardization. For applicants without Scopus profiles, an author search on PubMed was performed. Number of years active and number of publications were then collected in order to calculate the m-index. The m-index is calculated by dividing the h-index by number of years since first publication. This allows comparison between researchers with differing career lengths.

One-hundred and ninety-seven applicant names were initially provided by the ASDP mentorship awards committee. Forty-seven applicants were excluded so that physicians currently in training were not included in data analysis. Eighteen applicants did not have Scopus profiles and were subsequently searched on Pubmed. Of these, 8 applicants without an author profile were excluded from data analysis. Three of these 8 excluded applicants were award winners. Three of 4 repeat applicants were award winners and were included only once as award winners in the analysis. Six award recipients did not complete the mentorship program: these applicants were included in the non-mentorship category. Ultimately, a total of 137 applicants were included for data analysis.

A statistical analysis was performed to show how 5 variables - successful completion of dermatopathology fellowship, number of publications, scholarly productivity as measured by h- and m-indices, and practice setting (private vs academic practice) - were related to completion of the ASDP mentorship awards program. A chi-squared test of independence was performed to evaluate the association with completion of dermatopathology fellowship and with practice setting. Chi-squared test compares the expected number of observations to the observed number of observations based on the null hypothesis, which assumes independence between variables.

The expected number of observations is equal to the product of the number residents of a given group (pathology or dermatology) who completed the mentorship awards program and the number of residents with the outcome of interest (such as dermatopathology fellowship completion), divided by the sample size. Given that number of publications, h-index, and m-index are continuous variables in a non-normal distribution, a Mann-Whitney U test examined the relationship between these variables and completion of the mentorship awards program.

Results

There was a significant association between mentorship awards program completion and completion of dermatopathology fellowship ($\chi^2 = 3.872$, p -value=0.049, OR 2 (95% CI [1-4]) (Table 1). After separating pathology-trained residents from dermatology-trained residents, this relationship remained significant for pathology-trained applicants ($\chi^2 = 7.103$, $p = 0.008$).

However, this relationship was statistically insignificant for dermatology-trained applicants ($\chi^2 = 0.018$, $p = 0.895$) (Table 1).

There was no significant association between mentorship awards program completion and h-index (p -value 0.235), number of publications (p -value 0.194), or practice setting (private vs academic) (p -value 0.194). However, there was a significant association between mentorship award receipt and m-index (p -value 0.02). The average m-index for residents who completed the mentorship program was 0.12 higher than those who did not. After stratifying pathology and dermatology trained residents, the difference in m-index remained statistically significant for pathology residents, with the m-index 0.22 higher for pathology-trained applicants who

completed the mentorship program compared to those that did not (p-value 0.008). However, this difference did not retain statistical significance among dermatology residents (Table 2).

Discussion

Effective mentorship for residents is associated with mentee satisfaction, productivity, and self-assurance. A randomized controlled trial that studied the effects of a structured research mentorship curriculum also demonstrated improved communication and professional development among mentors who completed the program.⁴ This study highlights the impact of the ASDP mentorship awards program on pathology-trained fellowship applicants. The increased likelihood of successful fellowship completion may be potentially attributed to greater exposure to the field, networking, or improved credentials for fellowship application.

Physicians in training who have mentors previously demonstrated increased participation in scholarly activities and publication productivity, particularly in dermatology.² Our findings demonstrate a significant relationship between publication productivity (m-index) and the mentorship awards program. However, applicants may have also contributed to scholarly work through education, grants, lectures, and abstracts not measured in this study. While candidates selected for the award demonstrated higher publication productivity, they may have already possessed writing skills reflective in outstanding applications. Another limitation reflects the inability to confirm all author profiles on Scopus and Pubmed, potentially leading to underestimation of publication numbers by applicants. Also, we were not able to control for academic productivity preceding award application, which is a metric considered by the ASDP mentorship awards committee. Thus, it is possible that the greater success in completing a

dermatopathology fellowship among pathology resident award recipients represents selection bias towards residents who would have been successful in completing dermatopathology fellowship without mentorship award receipt. Given this limitation, the type of awards provided for mentorship through the ASDP may be reconsidered. The addition of need-based scholarships could potentially bolster the productivity of mentees without the same access and resources to produce scholarly work. Based on this data, awarding applicants without local mentors, from institutions without dermatopathology divisions, or with a pathology background may enhance the impact of this program. Additionally, the potential influence of practice environment was not evaluated; a greater publication productivity would be anticipated for academicians. Award recipients who enter academic or private practice after fellowship completion may contribute to the field and to the ASDP through efforts outside of scholarly work, including service on committees and donation. Lastly, we did not identify how many awardees held positions within the ASDP upon completion of their mentorship program.

References

1. Hinshaw MA. Dermatopathology education: an update. *Dermatol Clin*. 2012;30(4):815-826, vii.
2. Blattner CM, Johnson K, Young J. Mentorship in dermatology. *J Am Acad Dermatol*. 2015;73(6):1067-1071.
3. Ingram JR, Paul C. Academic mentorship in dermatology. *Br J Dermatol*. 2015;173(5):1113-1114.
4. Pfund C, House SC, Asquith P, et al. Training mentors of clinical and translational research scholars: a randomized controlled trial. *Acad Med*. 2014;89(5):774-782.

Table 1

Association between mentorship program and dermatopathology fellowship completion

| Resident group | DP fellowship completed | Award | No award | Percent with award | χ^2 statistics (p-value) |
|-----------------------|--------------------------------|--------------|-----------------|---------------------------|---|
| Dermatology | Y | 15 | 15 | 50% | 0.018 |
| | N | 14 | 15 | 48.3% | (0.895) |
| Pathology | Y | 22 | 22 | 50% | 7.103 |
| | N | 7 | 27 | 20.6% | (0.008*) |
| Combined | Y | 37 | 37 | 50% | 3.872 |
| | N | 21 | 42 | 33.3% | (0.049*) |

Note. For the pathology group, $\chi^2 = 7.1034$, $p = 0.008$; for the dermatology group, $\chi^2 = 0.018$, $p = 0.895$.

*Statistically significant based on p-value < 0.05

DP: dermatopathology

Table 2

Association between mentorship program completion and h-index, m-index, and practice setting

| Metric | Award | No Award | p-value |
|-----------------------|--------------|-----------------|----------------|
| h-index | 5.5 | 5.2 | .235 |
| Number of documents | 17 | 13 | .194 |
| m-index (Combined) | 0.58 | 0.46 | .02* |
| m-index (Dermatology) | 0.50 | 0.49 | .469 |
| m-index (Pathology) | 0.66 | 0.44 | .008* |
| Private practice | 67.2% | 22.8% | 0.194 |

*Statistically significant based on p-value < 0.05

Impact of the American Society of Dermatopathology mentorship awards program

Kala Hurst, BA², Elizabeth L. Bisbee, MD¹, Amy C. Parsons⁸, MD, Rajiv M. Patel⁷, MD, Jeffrey P. North⁴, MD, Julie Y. Tse³, MD, Matthew Kuhar⁵, MD, Jose A. Plaza⁶, MD, Kiran Motaparathi, MD¹

1 Department of Dermatology, University of Florida College of Medicine

2 Philadelphia College of Osteopathic Medicine-Georgia Campus

3 Foundation Medicine, Inc.

4 Department of Dermatopathology and Oral Pathology Service, University of California San Francisco School of Medicine,

5 Departments of Pathology and Laboratory Medicine and Dermatology, Indiana University School of Medicine

6 Departments of Pathology and Dermatology, The Ohio State University Medical Center,

7 Departments of Pathology and Dermatology, Michigan Medicine, University of Michigan

8 Associated Pathologists, LLC dba Pathgroup, Nashville, TN

Corresponding author:

Kiran Motaparathi, MD

Department of Dermatology

University of Florida College of Medicine

4037 NW 86 Terrace, 4th Floor

Room 4123 Springhill

Gainesville, FL 32606

kmotaparathi@dermatology.med.ufl.edu

Key words: Mentorship, fellowships, scholarship, dermatopathologist, American Society of Dermatopathology

Funding sources: There are no funding sources for this work.

Conflict of interest: The authors have no conflicts of interest to declare.

Word count: 1000

Number of references: 4

Tables: 2

Acknowledgment: The authors would like to thank Karen Zader, for supplying the data on ASDP applicants and award recipients for this project. We also thank Xinyang Liu for statistical analysis.