

# US Dermatology Residency Program Rankings

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## Practice Points

- Dermatology is not among the many hospital-based adult specialties that are routinely ranked annually by *US News & World Report*.
- US dermatology residency programs were ranked based on various academic factors, including annual amount of National Institutes of Health and Dermatology Foundation funding received; number of publications from full-time faculty members; number of faculty lectures given at 5 annual society meetings; and number of full-time faculty members who were on the editorial boards of 6 dermatology journals with the highest impact factors.

*Unlike many other adult specialties, US News & World Report does not rank dermatology residency programs annually. We conducted a study to rank individual US dermatology residency programs based on set criteria. For each residency program, data from 2008 related to a number of factors were collected, including annual amount of National Institutes of Health (NIH) and Dermatology Foundation (DF) funding received; number of publications from full-time faculty members; number of faculty lectures given at 5 annual society meetings; and number of full-time faculty members who were on the editorial boards of 6 dermatology journals with the highest impact factors. Most of the data were obtained through extensive Internet searches, and missing data were obtained by contacting individual residency programs. The programs were ranked based on the prior factors according to a weighted ranking algorithm. A list of overall rankings also was created.*

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Many hospital-based adult specialties are routinely ranked annually by *US News & World Report*. Its 2014-2015 rankings included cancer; cardiology and heart surgery; diabetes and endocrinology; ear, nose, and throat; gastroenterology and gastrointestinal surgery; geriatrics; gynecology; nephrology; neurology and neurosurgery; ophthalmology; orthopedics; pulmonology; psychiatry; rehabilitation; rheumatology; and urology.<sup>1</sup> Only teaching hospitals that saw a high volume of patients were included in the rankings. Ophthalmology, psychiatry, rehabilitation, and rheumatology were ranked based on reputation among specialists; the others were ranked based on objective data (eg, hospital mortality rates, nursing ratios) in addition to a reputation score from a survey of physicians.<sup>1</sup>

Dermatology has never been included in the annual *US News & World Report* rankings. In the past, dermatology residency programs have been ranked solely according to the amount of annual funding received from the National Institutes of Health (NIH).<sup>2</sup> Wu et al<sup>3</sup> expanded the scope by creating an algorithm used to rank dermatology residency programs based on scholarly achievement. Included were a number of NIH grants as well as 4 other factors—publications in 2001-2004, Dermatology Foundation (DF) grants from 2001-2004, faculty lectures in 2004 delivered at national conferences, and number of full-time faculty members who were on the editorial boards of the top

3 US dermatology journals and the top 4 subspecialty journals—deemed important by the authors.<sup>3</sup>

The current study refines the prior algorithm by creating a weighted ranking algorithm and using criteria that the authors considered to be more meaningful than the original criteria used.<sup>3</sup> Specifically, the current study considered the amount of NIH and DF funding received versus the number of grants received, and less importance was given to the number of faculty members on editorial boards and DF funding relative to other criteria. We used publicly available data from Web searches to conduct this study.

### Methods

The overall ranking algorithm was designed based on the methodology used by the Institute of Higher Education, Shanghai Jiao Tong University, to rank universities in the annual Academic Ranking of World Universities, which is published annually and uses a weighted ranking algorithm that includes academic and research performance factors to evaluate universities worldwide.<sup>4</sup>

The names of all dermatology residency programs in the United States were obtained as of December 31, 2008, from FREIDA Online using the search term *dermatology*; the names of all full-time faculty members at these residency programs and number of residents also were obtained by searching the programs' Web sites.

For another related study investigating the relationship between residency program characteristics and residents pursuing a career in dermatology, the following data were obtained: total number of full-time faculty members at the program; total number of residents; amount of NIH funding received in 2008 (<http://report.nih.gov/award/index.cfm>); amount of DF funding received in 2008 ([http://dermatologyfoundation.org/pdf/pubs/DF\\_2008\\_Annual\\_Report.pdf](http://dermatologyfoundation.org/pdf/pubs/DF_2008_Annual_Report.pdf)); number of publications by full-time faculty members in 2008 (<http://www.ncbi.nlm.nih.gov/pubmed/>); number of faculty lectures given at annual meetings of 5 societies in 2008 (American Academy of Dermatology, the Society for Investigative Dermatology, the American Society of Dermatopathology, the Society for Pediatric Dermatology, and the American Society for Dermatologic Surgery); the number of full-time faculty members who were on the editorial boards of 6 dermatology journals (*Journal of Investigative Dermatology*, *Archives of Dermatology* [currently known as *JAMA Dermatology*], *Journal of the American Academy of Dermatology*, *Dermatologic Surgery*, *Journal of Cutaneous Pathology*, and *Pediatric Dermatology*); and whether a program was housed

within an institution's department of dermatology or division of internal medicine.

The data were summed for all faculty members at a given program. To avoid duplicate faculty publications, collections for each residency program were created within PubMed (ie, if 2 authors from the same program coauthored an article, it was only counted once toward the total number of faculty publications from that program).

The dermatology residency programs that were excluded from this analysis included University of Texas at Austin, University of Texas Medical Branch, and the University of Connecticut, which were started in 2008, as well as Kaiser Permanente Southern California, which was started in 2010. The combined Boston University and Tufts University dermatology residency program was established prior to 2008 and therefore was counted as such in the analysis. The program at Harbor-UCLA Medical Center was not included in the analysis because the program was reestablished in 2004 and we could not assume that the prior program had similar attributes. Military residency programs also were excluded from the analysis, as residents are assigned to faculty positions upon graduation. The NIH residency program also was excluded because it is not a traditional 3-year residency program.

There were 5 factors that were deemed by the authors to be the most reflective of academic achievement among dermatology residency programs: number of faculty publications in 2008; amount of NIH funding received in 2008; number of faculty lectures given at 5 society meetings in 2008; amount of DF funding received in 2008; and the number of faculty members who were on the editorial boards of 6 dermatology journals in 2008. We wished to get a broad range of subspecialties of dermatology (eg, medical, surgical) for the journals. Further, the 6 journals selected were chosen because they had the highest impact factors at the time for general dermatology and dermatopathology.

Each residency program was assigned a score from 0 to 1 for each of these factors. The program with the highest number of faculty publications was assigned a score of 1 and the program with the lowest number of publications was assigned a score of 0. The programs in between were subsequently assigned scores from 0 to 1 based on the number of publications as a percentage of the number of publications from the program with the most publications.

A weighted ranking scheme was used to rank programs based on the relative importance of each factor. The authors decided that NIH funding, number of faculty publications, and number of lectures at society meetings were relatively more important

than the other factors; thus these factors were given a weight of 1.0. The remaining factors—DF funding and number of faculty members on editorial boards of journals—were given a weight of 0.5. Values were totaled and programs were ranked based on the sum of these values.

Data were analyzed using SAS 9.2 software. This study was approved by the institutional review board at Kaiser Permanente Southern California.

## Results

The overall ranking of the top 20 US dermatology residency programs in 2008 is presented in Table 1. The top 5 programs based on each of the 5 factors used in the weighted ranking algorithm are presented in Tables 2 through 6.

A separate analysis was performed to evaluate the relationship between the ranking factors and the size of the residency programs, as the data seemed to favor larger programs. Table 7 demonstrates that the amount of NIH and DF funding was positively correlated with the number of faculty members in a residency program. The remaining factors were not correlated with the number of faculty in the program.

Due to space considerations, analyses are based on data not shown in this manuscript. Data about the characteristics of each residency program are available from the authors.

## Comment

There previously have been few attempts to rank US dermatology residency programs based on factors related to academic achievement. Individual faculty and programs have been ranked based on the number of publications in the literature.<sup>5-7</sup> Dermatology institutions/organizations (eg, departments, hospitals, medical schools) have been ranked based on amount of NIH funding received and number of journal citations.<sup>8</sup>

Dermatology residency programs have been ranked based on amount of NIH funding received annually.<sup>2</sup> Based on the prior Wu et al<sup>3</sup> ranking algorithm for 2004 data, the institutions with the top 5 residency programs were the University of Pennsylvania, University of California, San Francisco; Yale University; New York University; and the University of Michigan.

The current study refined this ranking algorithm by including residency programs housed within the institution's division of dermatology of a department of internal medicine, which were previously excluded from NIH funding data, as opposed to just the department of dermatology. The authors also did not count publications coauthored by faculty members at the same institution more than once.

Table 1.

### Overall Ranking of the Top 20 US Dermatology Residency Programs in 2008

Ranking	Institution (Location)
1	University of California, San Francisco (San Francisco, California)
2	Northwestern University (Evanston, Illinois)
3	University of Pennsylvania (Philadelphia, Pennsylvania)
4	Yale University (New Haven, Connecticut)
5	Stanford University (Stanford, California)
6	University of Colorado (Denver, Colorado)
7	University of Michigan (Ann Arbor, Michigan)
8	Case Western Reserve University (Cleveland, Ohio)
9	Johns Hopkins University (Baltimore, Maryland)
10	Oregon Health & Science University (Portland, Oregon)
11	Harvard University (Cambridge, Massachusetts)
12	Emory University (Atlanta, Georgia)
13	Thomas Jefferson University (Philadelphia, Pennsylvania)
14	Wake Forest University (Winston-Salem, North Carolina)
15	Columbia University (New York, New York)
16	University of Pittsburgh (Pittsburgh, Pennsylvania)
17	New York University (New York, New York)
18	Geisinger Medical Center (Danville, Pennsylvania)
19	University of Utah (Salt Lake City, Utah)
20	Boston University and Tufts University (Boston, Massachusetts)

Table 2.

**Top 5 US Dermatology Residency Programs Based on Amount of NIH Funding Received in 2008**

Ranking	Institution (Location)
1	Yale University (New Haven, Connecticut)
2	Northwestern University (Evanston, Illinois)
3	University of Pennsylvania (Philadelphia, Pennsylvania)
4	Columbia University (New York, New York)
5	University of Michigan (Ann Arbor, Michigan)

Abbreviation: NIH, National Institutes of Health.

Table 3.

**Top 5 US Dermatology Residency Programs Based on Amount of DF Funding Received in 2008**

Ranking	Institution (Location)
1	Stanford University (Stanford, California)
2	University of California, San Francisco (San Francisco, California)
3	University of Michigan (Ann Arbor, Michigan)
4	Case Western Reserve University (Cleveland, Ohio)
5	University of Texas Southwestern Medical Center (Dallas, Texas)

Abbreviation: DF, Dermatology Foundation.

The annual amount of DF funding received was considered rather than number of grants, as this factor was thought to better reflect the scale of research being conducted. Additionally, relatively more weight was given to annual NIH funding, annual number of faculty publications, and number of faculty lectures at annual society meetings than to annual amount of DF funding and number of faculty on journal editorial boards. The University of Pennsylvania; the University of California, San Francisco; and Yale University were in the top 5 based on data from 2004 in the prior study<sup>3</sup> and 2008 in the current study.

Distribution of grant funding and number of faculty publications in the literature often are used as a measure of scholarly achievement. Within the specialty of dermatology, the amount of NIH and DF funding received could be considered the most prestigious achievement for a residency program. Faculty members are encouraged to develop expertise in a specialized area of dermatology as well as to conduct research and publish articles in the area of their choosing. One of the most common ways to attain tenure and achieve academic recognition is by publishing articles in peer-reviewed journals with high impact factors. Other factors that demonstrate expertise and accomplishment in one's field include giving lectures at national society meetings and sitting on editorial boards of prestigious journals.

Table 4.

**Top 5 US Dermatology Residency Programs Based on No. of Faculty Publications in 2008**

Ranking	Institution (Location)
1	University of California, San Francisco (San Francisco, California)
2	University of Pennsylvania (Philadelphia, Pennsylvania)
3	New York University (New York, New York)
4	Harvard University (Cambridge, Massachusetts)
5	Wake Forest University (Winston-Salem, North Carolina)

The authors deemed these factors to be the most reflective of academic achievement in a dermatology residency program. It should come as no surprise that the top programs according to our algorithm generally are regarded as the most prestigious programs in the country.

The current study did have some limitations. For instance, residency programs were ranked solely



Table 5.

### Top 5 US Dermatology Residency Programs Based on No. of Faculty Lectures at National Society Meetings<sup>a</sup> in 2008

Ranking	Institution (Location)
1	University of California, San Francisco (San Francisco, California)
2	Northwestern University (Evanston, Illinois)
3	University of Colorado (Denver, Colorado)
4	Geisinger Medical Center (Danville, Pennsylvania)
5	Johns Hopkins University (Baltimore, Maryland)

<sup>a</sup>Annual meetings of the American Academy of Dermatology, the Society for Investigative Dermatology, the American Society of Dermatopathology, the Society for Pediatric Dermatology, and the American Society for Dermatologic Surgery.

Table 6.

### Top 5 US Dermatology Residency Programs Based on No. of Faculty Members on Journal Editorial Boards<sup>a</sup> in 2008

Ranking	Institution (Location)
1	Northwestern University (Evanston, Illinois)
2	University of Pennsylvania (Philadelphia, Pennsylvania)
3	Emory University (Atlanta, Georgia)
4	Yale University (New Haven, Connecticut)
5	Stanford University (Stanford, California)

<sup>a</sup>Six dermatology journals were included: *Journal of Investigative Dermatology*, *Archives of Dermatology* (currently known as *JAMA Dermatology*), *Journal of the American Academy of Dermatology*, *Dermatologic Surgery*, *Journal of Cutaneous Pathology*, and *Pediatric Dermatology*.

Table 7.

### Correlation Between Program Factors and No. of Faculty for US Dermatology Residency Programs in 2008

Factor	Spearman Correlation Coefficient	P Value
Amount of annual NIH funding	0.38	<.01
Amount of annual DF funding	0.39	<.01
No. of faculty publications	-0.15	.14
No. of faculty lectures at society meetings <sup>a</sup>	-0.01	.93
No. of faculty members on journal editorial boards <sup>b</sup>	-0.09	.38

Abbreviations: NIH, National Institutes of Health; DF, Dermatology Foundation.

<sup>a</sup>Annual meetings of the American Academy of Dermatology, the Society for Investigative Dermatology, the American Society of Dermatopathology, the Society for Pediatric Dermatology, and the American Society for Dermatologic Surgery.

<sup>b</sup>Six dermatology journals were included: *Journal of Investigative Dermatology*, *Archives of Dermatology* (currently known as *JAMA Dermatology*), *Journal of the American Academy of Dermatology*, *Dermatologic Surgery*, *Journal of Cutaneous Pathology*, and *Pediatric Dermatology*.

based on academic achievements. Although academic achievement is an important aspect of the reputation of a dermatology residency program, it does not account for other important aspects of a program such as commitment to teaching and patient care. These aspects are difficult to measure and were not included in our ranking algorithm. For this reason, there are many excellent residency programs that may not be listed in this article as top programs but still provide outstanding clinical training and patient care. Our ranking algorithm is more indicative of a program's commitment to research and scholarship and does not necessarily reflect how well a program trains its residents.

The factors included in our ranking algorithm also were somewhat arbitrary. The 5 factors that were

chosen by the authors were considered to be most reflective of academic achievement and also will be easy to obtain in future years to replicate these rankings; however, there are other important factors that could have been used instead or in addition to the factors we chose. Some of the chosen factors were more important than others, so a decision was made to weight the factors. In-training examination scores from the American Board of Dermatology, boards passing rate, or percentage of residents who received fellowships or academic appointments were not used because this information is not publicly available. The current study also appeared to favor larger residency programs. Programs with fewer faculty members generally receive less research funding and have fewer publications, fewer faculty members on journal editorial boards, and fewer lecturers at national society meetings. This factor was not controlled for in the original analysis, as larger programs generally are thought to be more prestigious; therefore, this bias should be accounted for in the rankings.

### Conclusion

Based on our weighted ranking algorithm, the top 5 dermatology residency programs in 2008 were University of California, San Francisco; Northwestern University; University of Pennsylvania; Yale University; and Stanford University.

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