

Dermatology Residency Program Characteristics That Correlate With Graduates Selecting an Academic Dermatology Career

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Objective: To examine the characteristics of 107 dermatology residency programs to determine which factors are correlated with producing academic dermatologists to help reverse the trend of a growing shortage of academic dermatologists.

Design: We collected data ranging from total publications to grant funding. Extensive Internet searches were completed to obtain most of the data. Individual programs were contacted as needed to obtain any missing data that were not found on the program's Web site.

Setting: Dermatology residency programs (departments and divisions) in the United States.

Main Outcome Measures: Factors that correlated with producing full-time academic dermatologists.

Results: We tabulated and analyzed characteristics of 107 dermatology residency programs. Total full-time fac-

ulty members in 2004, total publications in 2004, and total publications from January 1, 2001, to December 31, 2004, were the 3 factors most strongly correlated with producing full-time faculty. National Institutes of Health and Dermatology Foundation grants and American Skin Association grant recipients were the 3 characteristics most strongly inversely correlated with producing full-time faculty. Those who entered academic dermatology tended to stay at the same program where they completed a dermatology residency, especially if this program was considered a "smaller" program.

Conclusions: The programs' characteristics of total publications in 2004 and from 2001 to 2004 were 2 of the 3 factors most strongly positively correlated with dermatology residents entering academic dermatology. Encouraging residents to publish may be a window to motivate them toward a career in academic dermatology.

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DERMATOLOGY CONTINUES to be the most competitive residency to enter for several years and, each year, all dermatology residency positions are quickly filled. With the constant increase of applicants to dermatology and the other "controllable lifestyle" residencies, such as radiology and anesthesiology, and away from the primary care fields, there are more dermatology residents than ever.¹ With the strong academic background of dermatology residency applicants,² there should be no lack of intellectual curiosity among the dermatology residents, which should translate into more residents entering academic dermatology. Unfortunately, this is not the case.

There is a general shortage of dermatologists in the workforce.³⁻⁵ Furthermore, it is well known that there is a marked shortage of academic dermatologists, and it has existed for more than 30 years.^{6,7} In a 1977 report,⁸ there were only 338 full-time academic dermatologists in the United States,

and in 2004, there were 982 full-time faculty. With fewer and fewer residents entering academic dermatology, there would be fewer academicians to train new medical students and residents and further advance the field with research.

*See also pages
855, 911, and 930*

We sought to determine what characteristics of the 107 dermatology residency programs are correlated with their graduating residents becoming full-time faculty. To our knowledge, this is the first study of its kind, especially with this large of a scope.

METHODS

First, we determined the names of all the dermatology residency programs that were active as of December 31, 2004. All data measured up to and included December 2004 (data not shown). A primary end point was the ra-

tio of graduating full-time faculty to estimated total graduates. A secondary end point was the ratio of graduating full-time chairs or chiefs to estimated total graduates. The number of graduates who became full-time faculty members and the number of graduates who became chairs or chiefs were counted. The estimated total graduates since 1970 or the inception of the program (whichever is more recent) was calculated.

The variables that we believed might be correlated with the programs' residents entering academic dermatology were as follows: total number of full-time faculty members at that program; dermatology department vs dermatology division within the internal medicine department; total number of residents; research requirement for residents to graduate; level of input residents had in selecting future residents; total number of official postresidency fellowships (dermatopathology fellowships, regardless of whether they are based from the dermatology department or the pathology department; dermatologic surgery; Mohs surgery; procedural; immunodermatology; pediatric dermatology; and cosmetics) (data available at: <http://www.acgme.org/adspublic/>); if a laboratory was assigned to and funded by the dermatology program (does not count if the laboratory was assigned to another department and the dermatology program used it); amount of 2004 National Institutes of Health (NIH) funding in dollars (<http://grants2.nih.gov/grants/award/rank/dermatology04.htm>) or number of 2004 NIH grants by a dermatology division (http://crisp.cit.nih.gov/crisp/crisp_query.generate_screen); total number of Dermatology Foundation (DF) grants from 2001 to 2004 (<http://dermatologyfoundation.org/rap/>); total number of American Skin Association grant recipients from 1987 to 2004 (<http://www.americanskin.org/frameset.htm>); number of total publications in 2004 of the full-time faculty members (<http://www.pubmed.org>); number of total publications from 2001 to 2004 of the full-time faculty members; number of 2004 faculty lectures given at the 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 of Dermatologic Surgery/American College of Mohs Micrographic Surgery and Cutaneous Oncology; number of full-time faculty members who were members of the Society for Investigative Dermatology; number of full-time faculty members who were members of the DF; number of faculty members who were members of the Annenberg Circle (those in the DF who have donated >\$25 000 to the DF); and the individual and combined totals of faculty members who were editors from 7 journals (*The Journal of Investigative Dermatology*, *Archives of Dermatology*, *Journal of the American Academy of Dermatology*, *Dermatologic Surgery*, *Journal of Cutaneous Pathology*, *Pediatric Dermatology*, and *Cosmetic Dermatology*).

We counted each faculty member's totals and summed all of the program's faculty members' articles together. However, in many programs, faculty members collaborated on the same article, so we ended up double counting (or even triple counting) some of these PubMed publications. The alternative of subtracting each article the appropriate number of times when there are multiple authors proved to be too difficult. Anyway, if there were 5 authors from the same program listed on the article instead of just 1, that means that all 5 were involved to some extent in drafting the article, and that amount of academic work should be recognized.

To determine how many full-time faculty members and chairs or chiefs were produced by each program, we had a separate spreadsheet (Excel) (data not shown) that listed all of the full-time faculty members, where they completed dermatology residency, and the number of articles they authored from 2001 to 2004. Some of the residency information can be found at the following: <http://dbapps.ama-assn.org/aps/amahg.htm>.

Our algorithm of obtaining the data was first to search each program's Web site. We also searched various Web sites as listed earlier for more specialized information. If we were not able to find missing data at this point, we e-mailed and called the program coordinators, individual faculty members, program directors, and chairs or chiefs. Occasionally, we would also search for faculty members at national conferences to ask them about our missing data points.

Statistical software was used (Stata 8; StataCorp LP, College Station, Tex). Descriptive exploratory statistical analysis in the form of a correlation matrix was completed to determine the most strongly positive and negative factors correlated with the ratio of graduating full-time faculty to estimated total graduates. These factors were the main outcome measures.

According to the guidelines on their Web site, this study did not require review by the institutional review board of the University of California, Irvine.

RESULTS

CHARACTERISTICS OF THE PROGRAMS

Our analyses were based on data not shown. Data about the characteristics of US dermatology residency programs are available from the authors. The inception of 58% of the programs was before 1970, and since 1991, 17 new programs have been created.

Nearly 8% (7.89%) of all graduating residents become a full-time faculty member, and 0.0096% of all graduating residents become a chair/chief.

Of the dermatology programs, 37% had fewer than 5 residents who became full-time faculty members and 34% had 6 to 10 residents who became full-time faculty members. Of the residency programs, 44% had at least 1 resident from their own program who became a chair or chief. Of the programs, 37% had between 1 and 5 faculty members, 29% had between 6 and 10 faculty members, and 34% had more than 10 faculty members. Men composed 61.5% and women composed 38.5% of the full-time faculty.

Most programs had 6 residents; 17% had fewer than 6 residents, and 31% had more than 10 residents.

A research project was not a prerequisite for most (53%) residency programs; 20% of the programs required at least 1 publication at the end of the residency program or yearly until graduation. A full resident vote (either individually or as a group) was taken into account for the selection of new residents in 38% of the programs. Only 5 programs allowed each resident to have a full-vote equal to that of a faculty member when selecting new residents.

Less than half of the programs (46%) lacked a postresidency fellowship training position; 48% had 1 or 2 fellowship programs, and 6% had more than 2 fellowship programs. Of the programs, 68% were assigned and funded their own laboratories.

Regarding grant support, 42% had NIH grants, 49% had DF grants, and 33% had grants from the American Skin Association.

In regard to publications listed in PubMed, 13% of the programs had no publications in 2004 and 5% of the programs had no publications from 2001 through 2004. In 2004, most programs published between 1 and 5 ar-

ticles; 13% had between 11 and 15 publications. Of residency programs, 13% published more than 50 articles in 2004.

Giving lectures at national dermatology conferences and symposia is an important aspect of academics. The conferences included the annual meetings for the following organizations: American Academy of Dermatology, Society for Investigative Dermatology, American Society of Dermatopathology, Society for Pediatric Dermatology, and American Society of Dermatologic Surgery/American College of Mohs Micrographic Surgery and Cutaneous Oncology. About a quarter (24%) of the programs did not deliver any lectures at national dermatology conferences in 2004. Of the programs, 32% delivered between 1 and 5 lectures in 2004; 22%, between 6 and 10 lectures; and 22%, more than 10 lectures.

Full-time faculty members also served on the editorial boards of the top 3 US dermatology journals (*The Journal of Investigative Dermatology*, *Archives of Dermatology*, and the *Journal of the American Academy of Dermatology*) and the top subspecialty journals (*Dermatologic Surgery*, *Journal of Cutaneous Pathology*, *Pediatric Dermatology*, and *Cosmetic Dermatology*) (as based on 2004 impact factors, if available). Almost half (45%) of the dermatology programs had no full-time faculty who served on the editorial boards of these 7 journals. More than half (55%) of the programs had at least 1 full-time faculty member who served on the editorial board of 1 of these 7 journals; 34% had at least 2, and less than 1% had 5 or more.

Of the programs, 11% had faculty members on the editorial board of *The Journal of Investigative Dermatology*; 11%, *Archives of Dermatology*; 16%, the *Journal of the American Academy of Dermatology*; 10%, *Cosmetic Dermatology* and *Dermatologic Surgery*; and less than 5%, *Journal of Cutaneous Pathology* and *Pediatric Dermatology*.

FACTORS CORRELATED WITH PRODUCING FULL-TIME FACULTY

The correlation matrix showed the most strongly positive and negative factors correlated with the ratio of graduating full-time faculty to estimated total graduates (**Table 1**). A positive value means a positive correlation, and a negative value means an inverse correlation. When the value is closer to 1 or -1, the correlation is stronger. Total full-time faculty members in 2004, total publications in 2004, and total publications from January 1, 2001, to December 31, 2004, were the 3 factors most strongly correlated with producing full-time faculty. Grants from the NIH and DF and American Skin Association grant recipients were the 3 characteristics most strongly inversely correlated with producing full-time faculty.

STAYING AT THE SAME PROGRAM

The percentage of full-time faculty members who completed dermatology residency at the same program is shown in **Table 2**. Of the 107 programs, 36% had half or more of their full-time faculty graduate from their own program and 24% had no full-time faculty who graduated from their own program.

Table 1. Correlation Matrix of the Most Strongly Positive and Negative Factors Correlated With the Ratio of Graduating Full-time Faculty Members to Estimated Total Graduates

Factor	Correlation
Total full-time faculty in 2004	0.50*
Publications in 2004	0.49*
Publications from 2001 to 2004	0.48*
Members of DF	0.45*
National dermatology lectures in 2004	0.45*
Members of SID	0.41*
Members of the Annenberg Circle	0.38*
Editorial members of <i>JAAD</i>	0.32
Totals of editors from 7 journals	0.28
Editorial members of <i>Dermatologic Surgery</i>	0.21
Total number of postresidency fellowships	0.18
Editorial members of <i>Archives of Dermatology</i>	0.15
Total number of current residents	0.14
Research requirement for residents	0.11
Editorial members of <i>JID</i>	0.09
Editorial members of <i>Pediatric Dermatology</i>	0.05
Editorial members of <i>Journal of Cutaneous Pathology</i>	-0.02
Level of input of current residents	-0.03
Editorial members of <i>Cosmetic Dermatology</i>	-0.06
Laboratory assigned to and funded by a dermatology program	-0.16
Department (vs division)	-0.17
ASA grant recipients from 1987 to 2004	-0.19†
DF grants from 2001 to 2004	-0.27†
NIH grants in 2004	-0.28†

Abbreviations: ASA, American Skin Association; DF, Dermatology Foundation; *JAAD*, *Journal of the American Academy of Dermatology*; *JID*, *The Journal of Investigative Dermatology*; NIH, National Institutes of Health; SID, Society for Investigative Dermatology.

*Strongly positive factor.

†Strongly negative factor.

RANKINGS ON VARIOUS MEASUREMENTS

Table 3 shows the programs with the highest ratio of graduating full-time faculty members to estimated total graduates (minimum of 5 full-time faculty members). Several well-known academic programs are on this list.

Table 4 shows the programs with the highest ratio of graduating full-time chairs or chiefs to estimated total graduates (minimum of 2 chairs or chiefs). Similarly, several well-known academic programs are also on this list.

COMMENT

Not only is there a workforce shortage of dermatologists, there is a shortage of academic dermatologists, which would adversely affect the overall deficiency. Even since 1973, there has been an academic dermatology shortage,⁶ which continues today. In 1977, there were only 338 full-time faculty,⁸ but 155 more positions were urgently needed.⁷ In our study, there were 982 full-time faculty members (including doctoral-level investigators, dermatologists who completed residency overseas, dermatopathologists who completed a pathology residency, and doctors of osteopathy) in 2004, and it seems

Table 2. Full-time Faculty Members Who Completed a US Dermatology Residency at the Same Program*

Dermatology Program	Full-time Faculty Members Who Completed a US Dermatology Residency at the Same Program, %
Howard University, Washington, DC	100.00
Loma Linda University, Loma Linda, Calif	100.00
New York Medical College at Westchester Medical, Valhalla	100.00
University of Puerto Rico, San Juan	100.00
Texas Tech University, Lubbock	100.00
Medical College of Virginia, Richmond	100.00
University of Missouri—Columbia	83.33
Medical College of Georgia, Augusta	75.00
University of Oklahoma, Oklahoma City	75.00
University of Virginia, Charlottesville	75.00
Harvard University, Boston, Mass	72.22
Mayo Clinic, Rochester, Minn	71.43
University of Michigan, Ann Arbor	70.00
Mount Sinai School of Medicine, New York, NY	66.67
Ohio State University, Columbus	66.67
The University of Texas Southwestern Medical Center at Dallas	66.67
West Virginia University, Morgantown	66.67
Duke University, Durham, NC	63.64
Henry Ford Hospital, Detroit, Mich	63.64
New York University, New York	61.11
Louisiana State University, New Orleans	60.00
University of New Mexico, Albuquerque	60.00
Wake Forest University School of Medicine, Winston-Salem, NC	60.00
Geisinger Medical Center, Danville, Pa	57.14
The University of North Carolina at Chapel Hill	57.14
Yale—New Haven Medical Center, New Haven, Conn	57.14
University of Colorado, Aurora	55.56
University of Illinois at Chicago	55.56
University of Miami/Jackson Memorial Hospital, Miami, Fla	54.55
University of Pennsylvania, Philadelphia	53.85
University of Alabama, Birmingham	50.00
Charles R. Drew University of Medicine and Science, Los Angeles, Calif	50.00
Cleveland Clinic Foundation, Cleveland, Ohio	50.00
Georgetown University, Washington, DC	50.00
University of California, Los Angeles	50.00
MCP Hahnemann University, Philadelphia	50.00
Stanford University, Stanford, Calif	50.00
Thomas Jefferson University, Philadelphia	50.00
Boston University/Tufts University, Boston	47.37
University Health Center of Pittsburgh, Pittsburgh, Pa	47.06
Dartmouth-Hitchcock Medical Center, Lebanon, NH	44.44
University of California, San Francisco	43.48
University of California, Irvine	42.86
University of Cincinnati, Cincinnati, Ohio	40.00
Oregon Health Sciences University, Portland	40.00
Medical University of South Carolina, Charleston	40.00
Baylor College of Medicine, Houston, Tex	37.50
Case Western Reserve University, Cleveland	37.50
Penn State University/Milton S. Hershey Medical Center, Hershey, Pa	36.36
Washington University, St Louis, Mo	36.36
University of Arizona, Tucson	33.33
The University of Iowa, Iowa City	33.33
Rush-Presbyterian-St Luke's Medical Center, Chicago	33.33
Medical College of Wisconsin, Milwaukee	33.33
Wright State University, Dayton, Ohio	33.33
University of Utah, Salt Lake City	31.25

(continued)

Table 2. Full-time Faculty Members Who Completed a US Dermatology Residency at the Same Program* (cont)

Dermatology Program	Full-time Faculty Members Who Completed a US Dermatology Residency at the Same Program, %
University of Minnesota, Minneapolis	30.00
University of Wisconsin, Madison	30.00
University of Chicago, Chicago	28.57
Emory University, Atlanta, Ga	28.57
Robert Wood Johnson Medical School, Camden, NJ	25.00
Cook County Hospital, Chicago	25.00
The Johns Hopkins University, Baltimore, Md	25.00
University of South Florida, Tampa	25.00
State University of New York at Stony Brook	25.00
Vanderbilt University, Nashville, Tenn	21.43
New York—Presbyterian Hospital/Columbia University Medical Center, New York	20.00
New York—Presbyterian Hospital/Weill Cornell Medical Center, New York	20.00
University of Rochester, Rochester, NY	20.00
University of Southern California, Los Angeles	20.00
Tulane University, New Orleans, La	20.00
University of Washington, Seattle	20.00
The University of Texas Health Science Center at Houston	18.18
State University of New York Health Science Center at Brooklyn	16.67
Mayo Clinic, Jacksonville, Fla	14.29
Saint Louis University School of Medicine, St Louis	14.29
Roger Williams Medical Center, Providence, RI	12.50
St Luke's—Roosevelt Hospital Center, New York	12.50
University of Massachusetts, Worcester	11.11
Northwestern University, Chicago	9.09
Brown University, Providence	8.33

*The percentage was 0 for the following dermatology programs: Albert Einstein College of Medicine of Yeshiva University, Bronx, NY; University of Arkansas, Little Rock; State University of New York at Buffalo; University of California, Davis; East Carolina University, Greenville, NC; Eastern Virginia Medical School, Norfolk; University of Florida, Gainesville; George Washington University, Washington, DC; Indiana University School of Medicine, Indianapolis; University of Kansas, Kansas City; University of Louisville, Louisville, Ky; Loyola University, Maywood, Ill; Marshfield Clinic—St Joseph's Hospital, Marshfield, Wis; University of Maryland, Baltimore; The University of Texas Medical Branch, Galveston; UMDNJ—Robert Wood Johnson Medical School, New Brunswick, NJ; New Jersey Medical School, Newark; The University of Texas, San Antonio; University of California, San Diego; Scott and White Clinic, Texas A&M University System, Temple; Mayo Clinic, Scottsdale, Ariz; Southern Illinois University, Springfield; University of Tennessee Program, Nashville; University of Vermont, Burlington; Washington Hospital Center, Washington, DC; and Wayne State University, Detroit, Mich.

that most programs are searching to fill full-time faculty or chair or chief positions.

With the hope to reverse this alarming trend, we created this study to discover which characteristics of dermatology residency programs correlated with producing academicians. The characteristic most strongly correlated with producing full-time faculty was the total number of full-time faculty in 2004. We presume that faculty sizes at each program may have slightly fluctuated during the past 30 years, but in general remained small, medium, or large over time. More faculty may have allowed greater mentorship of residents. Residents may have had broader experiences in basic and clinical re-

Table 3. Programs With the Highest Ratio of Graduating Full-time Faculty Members to Estimated Total Graduates*

Dermatology Program	Ratio of Graduating Full-time Faculty Members to Estimated Total Graduates, %
Harvard University	26.52
University of California, San Francisco	21.98
Boston University/Tufts University	20.63
University of Missouri–Columbia	20.00
Yale–New Haven Medical Center	19.48
University of Utah	19.48
New York–Presbyterian Hospital/ Columbia University Medical Center	17.71
Duke University	17.62
University of Pennsylvania	17.14
University of Michigan	16.90
University Health Center of Pittsburgh	15.56
Mayo Clinic, Rochester	15.24
New York University	15.11
University of Massachusetts	15.00
State University of New York at Buffalo	14.73

*There were a minimum of 5 full-time faculty members who graduated from these programs. The locations of the programs are given in Table 2, unless the location is part of the formal name or there is more than 1 location for an institution name.

search, specialty clinics, and academic philosophies that may have been appealing. However, the number of full-time faculty members is a “catch-22”: perhaps more academicians are needed to influence more residents to enter academics. But who will mentor these residents if the shortage of academic dermatologists continues? This program characteristic is interesting but may not help in creating a solution. Nevertheless, it does highlight one of the dilemmas facing dermatology.

The total publications in 2004 and from 2001 through 2004 were the next 2 factors most strongly correlated with producing full-time faculty. We presume that these programs have published extensively before 2001 as well, and this may have positively influenced the programs’ residents toward academics. This finding is fortuitous, because this could be used within residency programs to booster academic interest. Faculty members could encourage their residents to publish more high-quality manuscripts.

The total number of 2004 lectures at national dermatology conferences was also strongly correlated with producing full-time faculty. Residents often attend national conferences as well, and perhaps seeing and hearing their faculty lecture outside of their own university positively influence the resident. The natural outcome could be that the faculty member becomes an academic role model.

Memberships in the DF, the Society for Investigative Dermatology, and the Annenberg Circle were also strongly correlated with producing full-time faculty. All of these memberships reflect an academic background and philosophy to promote research. Faculty members with these memberships may be more inclined to mentor a resident toward academics.

It is difficult to explain why NIH and DF grants and American Skin Association grant recipients were the 3

Table 4. Programs With the Highest Ratio of Graduating Full-time Chairs or Chiefs to Estimated Total Graduates*

Dermatology Program	Ratio of Graduating Full-time Chairs or Chiefs to Estimated Total Graduates, %
Harvard University	6.43
State University of New York at Buffalo	4.90
University of Minnesota	2.86
Ohio State University	2.86
University of Colorado	2.57
Dartmouth-Hitchcock Medical Center	2.45
University of Michigan	2.38
University of North Carolina	2.34
New York University	2.26
University of Arkansas	2.14
The Johns Hopkins University	2.14
Albert Einstein College of Medicine of Yeshiva University	1.94
Medical College of Georgia	1.90
The University of Iowa	1.32

*There were a minimum of 2 chairs or chiefs who graduated from these programs. The locations of the programs are given in Table 2, unless the location is part of the formal name.

characteristics most strongly inversely correlated with producing full-time faculty. We can only speculate different theories. One hypothesis is that faculty with grants (with NIH grants in particular) give a realistic and non-favorable view of their lifestyle to the residents. They may work countless numbers of hours on grant proposals, yet make a fraction of salary compared with their private practice counterparts. A second hypothesis is that because many graduates take faculty positions at their own program, it may be difficult for the young scientists to compete for grants and establish themselves compared with the veteran scientists who had trained them. Another possible explanation is that securing these grants took time away from mentoring residents. Finally, the programs’ residents may not have been exposed to or involved in these grants during residency.

Only 4 dermatology programs had American Cancer Society funding in 2004 (University of Wisconsin, Madison, \$187 500; Harvard University, Boston, Mass, \$180 200; University of California, San Francisco, \$180 000; and Boston University/Tufts University, Boston, \$103 250). Because there were only these 4 data points, no correlation could be found.

The paradox of publications having a positive correlation and grants having a negative correlation is intriguing and also difficult to explain. Residents and faculty who are inclined to write research papers would be able to publish several case reports, case series, letters to the editor, and review articles in a shorter period. Furthermore, a resident who wrote a case report may also be able to present the case at a national dermatology conference and realize how exciting academics can be. However, those who secure grants may only be able to publish 1 to 3 manuscripts per grant. Furthermore, securing grants may be more difficult compared with publishing manuscripts. It may be too frustrating to revise and resubmit

a rejected grant proposal, whereas a rejected manuscript may be published in a lower-tier journal with minimal revisions.

Interestingly, the characteristic of allowing residents greater input in selecting future residents was negatively correlated with producing full-time faculty. Residents may pick applicants based more on social characteristics rather than academic achievements. Furthermore, residents may not be as likely to favor applicants whose academic achievements rival or surpass their own.

Another finding is that most full-time faculty stayed at the same program where they graduated, especially if it was a "smaller" program. This may be a result of family considerations or strong mentorship at that program. However, larger academic powerhouses with strong pedigrees, such as Harvard University, Yale–New Haven Medical Center, New Haven, Conn, and the University of California, San Francisco, produced academic dermatologists within their own program and across the country.

There are many limitations to this study. We did not examine the characteristics of military dermatology programs, which included the National Naval Medical Center in Bethesda, Md; the Walter Reed Army Medical Center in Washington, DC; the Fitzsimmons Army Medical Center in Denver, Colo; the San Antonio Uniformed Services Health Education Consortium in San Antonio, Tex; the Naval Medical Center in San Diego, Calif; and the Letterman Army Medical Center in San Francisco, Calif (which was deactivated in 1995).⁹ Indeed, these programs have produced many full-time faculty and chairs or chiefs.

Another limitation is that this study does not differentiate the total numbers of new faculty members who join a residency program and those who are retained for many years, which seems to be a major problem for academic dermatology.⁵ A survey of recent graduates showed that in 1999, 2000, and 2002, 22 (10%), 24 (14%), and 35 (18%) of graduates entered academics, respectively.⁵ Even though more recent graduates are entering academics, they are not staying for long periods, and further studies should be done to determine why the retention rate is so low.

The total publications in 2004 and from 2001 to 2004 were the 2 of the 3 strongest factors correlated with producing full-time faculty. However, we did not examine the impact factor of the journals in which these publications appeared. Ten publications in a journal with an impact factor of 1.0 are not as relevant to an academic career as 2 in a journal with an impact factor of 5.0. Furthermore, we did not differentiate the type of publication or whether the coauthors were residents who became involved in the publications.

Academic salaries were not taken into account with respect to their influence in the final decision to become a full-time faculty member. We did not count the number of endowed positions within dermatology programs, which may be difficult to ascertain because they are not always readily advertised.

This is an observation study examining primarily 2004 data that could or could not be representative of the 107

programs. Choosing any other time point may have changed the data and subsequent analysis. This study may not be representative of the lifetime of each program. Finally, there is data dispersion, because each program's philosophy for faculty recruitment is unique in respect to vision and need.

Our conclusion is that 2 of the 3 characteristics most strongly correlated with producing full-time academic dermatologists were the total publications in 2004 and total publications from January 1, 2001, to December 31, 2004. We infer that early exposure to research writing likely interests a dermatology resident to enter academics. This may be one strategy to encourage residents toward academic dermatology. The early academician will most likely stay at that same program as full-time faculty, especially if it is a "smaller" residency program.

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