



Women in Academic Pathology: Pathways to Department Chair

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Abstract

The Association of Pathology Chairs, an organization of American and Canadian academic pathology departments, has a record percent of women department chairs in its ranks (31%), although still not representative of the percent of women pathology faculty (43%). These women chairs were surveyed to determine what had impeded and what had facilitated their academic advancement before becoming chairs. The 2 most frequently identified impediments to their career advancement were heavy clinical loads and the lack of time, training, and/or funding to pursue research. Related to the second impediment, only one respondent became chair of a department which was in a top 25 National Institutes of Health–sponsored research medical school. Eighty-nine percent of respondents said that they had experienced gender bias during their careers in pathology, and 31% identified gender bias as an important impediment to advancement. The top facilitator of career advancement before becoming chairs was a supportive family. Strikingly, 98% of respondents have a spouse or partner, 75% have children, and 38% had children younger than 18 when becoming chairs. Additional top facilitators were opportunities to attend national meetings and opportunities to participate in leadership. Previous leadership experiences included directing a clinical service, a residency training program, and/or a medical student education program. These results suggest important ways to increase the success of women in academic pathology and increasing the percent of women department chairs, including supporting a family life and providing time, encouragement and resources for research, attending national meetings, and taking on departmental leadership positions.

Keywords

advancement in academic medicine, gender bias, gender diversity, leadership development in academic medicine, women pathology department chairs

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Introduction

Academic medicine continues to voice the need for increasing the numbers of women and underrepresented minorities in senior leadership positions.¹⁻³ The Association of American Medical Colleges (AAMC) annually tracks and generates reports on the number of women in medical schools, clinical training programs, faculty ranks, and leadership positions from data it collects from all member Liaison Committee on Medical Education (LCME)-accredited medical schools.^{4,5} Although the number of women has been steadily increasing at all of these career stages, progress has been the slowest in increasing the number of women department chairs and deans. According to AAMC data in 1989, 4% of chairs of medical school departments were women,⁴ while 40 years later, in 2019, only 19% were women despite significantly more women (42%) in all academic faculty ranks.⁵ Of the 135 basic science and clinical departments of pathology in US and Canadian medical schools, 2019 AAMC data indicate that although women were 43% of total pathology faculty ranks, 44% of associate professors, and 30% of full professors, only 27% of pathology chairs were women.⁵ Because chairs of departments are typically appointed from among the ranks of more senior associate professors and full professors, it might be expected that there would be a greater percent of women chairs of pathology.

The Association of Pathology Chairs (APC) is comprised of leaders in academic departments of pathology at medical schools in the United States and Canada. Association of Pathology Chairs is committed to developing a more diverse leadership within its ranks, including increasing gender diversity. The 2020 APC data show that there are 31% women chairs within its member departments, an encouraging trend considering that in 2014, only 20% of APC department chairs were women. The 2020 APC data differ from 2019 AAMC data at least partly because APC data include an additional 32 nonmedical school-based departments that have residency and/or fellowship training programs.

The authors conducted a survey of current women chairs of APC-member departments asking what had impeded and what had facilitated their academic advancement before becoming chairs. We also asked what was satisfying about their roles as chairs and what might enhance their satisfaction if the structure of chair positions was modified. A better understanding of these issues should help in developing strategies to increase the academic success of women and stimulate their interest in aspiring to becoming chairs, thereby increasing the numbers of women department chairs. We are not aware of a similar survey of current women chairs for any other medical subspecialty.

Methods

A 49-question survey was developed by the authors and administered by APC staff using a Survey Monkey tool. Data identifying the gender of chairs and types of membership of their respective departments were provided from membership data by APC staff. The survey was deemed an exempt study by

the University of New Mexico Human Research and Review Committee with data collected and stored devoid of identifiers. At the time the survey was sent in August 2020, APC had 167-member departments of the APC. Of the member departments, 135 were “regular” members (departments in LCME-accredited medical schools) and 32 were “affiliate” members (departments not in a medical school but that have pathology graduate medical education programs). Two regular departments are chaired by the same person, so there are 166 chairs of member departments. Of the 166 chairs (permanent plus interim), 52 are women (31%). Of the 134 regular department chairs, 41 (30%) are women; and of the 32 affiliate department chairs, 12 (38%) are women. Of 149 permanent chairs, 41 (28%) are women; and of 18 interim chairs, 11 (65%) are women. Surveys were sent to all 52 women chairs.

The survey respondents were allowed to skip any question. For ease of data analysis, questions with open-text responses were minimized. For some questions, the respondent was asked to choose all relevant answers from a list of options and was also asked to list any choices that were important to them and not found among those options. Although 38 (73%) of the 52 women chairs surveyed responded, questions were answered by differing numbers of respondents and this number is shown in the data tables. The number of respondents to a particular question is the denominator used for determining percent.

Results

Demographics

Thirty-eight (73%) of the 52 women chairs whose departments are members of APC responded to the survey with 73% of permanent chairs and 73% of interim chairs responding. The response rate of the combined permanent and interim women chairs of regular departments was 83%, while the response rate of women chairs of affiliate departments was 25%. We did not explore this latter low response rate, but we speculate that many of the questions posed might feel irrelevant to a nonmedical school-based department.

Table 1 indicates the demographics of survey respondents. The responding chairs are predominantly in departments associated with medical schools and hold permanent positions. Of particular interest was that of permanent chairs, 35% were previously interim chairs at their current institution, nearly all have a partner or spouse, three-quarters have children, and 38% had children who were 18 years old or younger when they became chairs.

Decision to Become a Chair

Table 2 summarizes responses from questions addressing timing and influences that related to the respondent’s decision to become a chair. The majority of chairs had decided they wanted to become a chair within 5 years of becoming a chair. The chairs were asked to choose among a list of options all of

Table 1. Demographics of 2020 Pathology Department Women Chairs.*

Demographic	Percent
Years of service as chairs (36)	
Range <1-27 years	
Mean: 6.8 years	
Median: 4 years	
Chair of department within an LCME-accredited medical school (37)	92
Permanent chair (38)	79
If permanent chair, formerly interim chair at current institution (31)	35
Formerly chair (interim or permanent) at another institution (38)	11
Moved from another institution to assume chair in current institution (38)	39
Identify as white/Caucasian (36)	89
Identify as underrepresented-in-medicine racial/ethnic minority (36)	11
Full professor at time applied for current chair position (34)	71
Associate professor at time applied for current chair position (34)	24
Full professor achieved before 50 years of age (32)	72
Assumed chair before 50 years of age (38)	45
Assumed chair between 50 and 60 years of age (38)	47
Completed fellowship training post residency (32) [†]	84
In addition to medical school degree, have a PhD (37)	32
In addition to medical school degree, have a master's degree (37)	19
Currently married/living with a partner who works from home (38)	37
Currently married/living with a partner who works outside the home (38)	61
Have children (38)	76
At time became chair, had children 18 years or younger (34)	38

Abbreviation: LCME, Liaison Committee on Medical Education.

*Number in parenthesis indicates number of respondents to question. The percent is calculated with the number of those responding to the specific question as the denominator.

[†]Sixteen percent indicated they had done a basic science fellowship; other fellowships were clinically oriented pathology fellowships.

the important reasons for their decision to seek becoming a chair. The majority identified that making a greater contribution to a pathology department and/or medical institution as a chair was a very important reason. Asked whether they had specific experiences that might have had some influence in their decision to become a chair, the majority of respondents had 2 common experiences: they had been told they would make good department chairs and/or leaders and had a mentor or mentors as junior faculty.

Experiences and Preparations Relevant to Becoming a Chair

Table 3 summarizes responses to questions related to leadership experiences before becoming a chair. All but one respondent held at least one leadership position before becoming a

Table 2. Deciding to Become a Chair.*

Question category and options	Percent
Time before becoming a chair that a decision was made to pursue the role (33)	
5 years or less before becoming a chair	64
Didn't consider becoming a chair until job was offered	27
6-10 years before becoming a chair	9
Reasons for deciding to become a chair [†] (35)	
Could make a greater contribution to pathology and institution as a chair	77
Ready for a new challenge	71
Had held other leadership positions and becoming a chair seemed a natural progression	49
Was asked to apply	31
Believed would enjoy the administrative and financial responsibilities	31
Was asked to serve in a noncompetitive search	20
Pay was attractive	11
Was ready to move and accepting a chair position in another institution made a move possible	6
Career experiences with possible influence on decision to become a chair [‡] (37)	
Had someone or others tell you that you would make a good department chair/leader [†]	68
Had mentor or mentors when you were a junior faculty	68
Knew other women chairs who served as role models	43
Had a woman chair	27
Had mentor or mentors as a senior faculty	19
None of the above 5 experiences pertain	11

*Number in parenthesis indicates number of respondents to question. The percent is calculated with the number of those responding to the specific question as the denominator.

[†]The percents in this category add up to more than 100% because the respondent was asked to check all answers that apply.

[‡]Gender of person(s) who told the respondent they would make a good leader: both men and women (9), men (3), and women (3).

chair. Most commonly, they had served as a director of an anatomic or clinical pathology unit, but many had served as a vice chair, training program director, and/or a medical student course director.

The survey asked what direct preparation for a leadership position the respondents made before applying for or before being asked to serve in a chair position (Table 3). Half indicated they had talked to one or more pathology chairs, about one-third indicated they had talked with knowledgeable peers and experts, and another one-third said that they had read about aspects of administration.

The survey also asked about preparation for the chair position after applying for their current position (or after being asked to serve) but before assuming the position (Table 3). Most commonly, they spoke to other pathology chairs but also commonly spoke with knowledgeable peers and experts, talked with one or more chairs of nonpathology departments, and read about aspects of administration.

The survey also determined whether any of the chairs had previous experience in applying for department chair positions before being appointed to their current position (Table 3). At

Table 3. Prior Experiences and Preparations Relevant to Becoming a Department Chair.*

Question category and options	Percent
Institutional Leadership Roles Prior to Becoming a Chair (38)[†]	
Chief or director of an anatomic or clinical pathology unit	63
Training program director (fellowship or residency)	42
Vice chair	39
Medical student course director	26
Other	21
Assistant or Associate Dean	5
None	3
Preparations before applying for chair or before being asked to serve as a chair (37)[†]	
Talked to one or more pathology chairs	49
Talked with knowledgeable leaders/experts	35
Read about aspects of administration	35
Identified a mentor(s) or coach(es) to work with	24
Talked to one or more chairs of nonpathology departments	24
No specific preparation	24
Participated in ELAM	16
Took one or more offsite courses	14
Took one or more online courses	11
Preparations after applying for or being appointed, but before assuming chair position (37)[†]	
Talked to one or more pathology chairs	59
Talked with knowledgeable leaders/experts	49
Talked to one or more chairs of nonpathology departments	49
Read about aspects of administration	49
Identified a mentor(s) or coach(es) to work with	27
Took one or more offsite courses	14
Took one or more online courses	14
No specific preparation	14
Negotiated with Dean for additional education opportunities after assuming chair	5
Application for other chair positions(s) before being appointed to current position (37)	
None	65
Applied for 1-2	13
Applied for 3-5	22
Outcomes for applicants who applied for chair positions before current position accepted (13)	
Invited for 1 or more interviews	100
Received a final offer	46

*Number in parenthesis indicates number of respondents to question. The percent is calculated with the number of those responding to the specific question as the denominator.

[†]For these questions, the percent is greater than 100%, because the respondent was asked to check all that applied.

least 35% had applied for one or more positions previous to applying for the one they were in.

Role of Research in Obtaining a Chair Position

The survey assessed the possible value of having had research experience in becoming a pathology department chair. Thirty-six percent of respondents had previous national

Table 4. Role for Research in Obtaining Chair Position.*

Question category and options	Percent
NIH or other national research funding as PI or co-PI before becoming chair (36)	36
NIH-sponsored research rank of medical school where became chair (36)	
Ranked at greater than 50	44
Unranked	25
Ranked in top 26-50	17
Uncertain	11
Ranked in top 25	3
Requirement for prior research funding in advertisement for chair position (37)[†]	
Not sure or advertisement not relevant to chair position (as for an interim chair)	38
Position advertisement preferred prior research funding, but was not required	30
Not mentioned in the advertisement	30
Required	3

Abbreviations: co-PI, coprincipal investigator; NIH, National Institutes of Health; PI, principal investigator.

*Number in parenthesis indicates number of respondents to question. The percent is calculated with the number of those responding to the specific question as the denominator.

[†] Rounding of the percents caused the percents in this category to exceed 100%.

research funding as either a principal investigator (PI) or coprincipal investigator (Co-PI) before becoming a chair (Table 4). We assumed that pathology departments that were in research intensive institutions might choose chairs with significant research experience as indicated by previous research funding. We used the National Institutes of Health (NIH)-sponsored research rank as a surrogate for indicating the level of research intensity of a medical school, acknowledging that significant research is also accomplished with funds from agencies other than the NIH. As shown in Table 4, for the 36 women chairs who responded to being asked to identify their medical school's NIH-sponsored research rank at the time they became a chair, only 1 (3%) chair responded that her medical school ranked between 1 and 25.

Impediments and Facilitators of Career Success

A major purpose of the survey was to identify factors that the women chairs of pathology departments believed impeded or facilitated their overall career advancement prior to becoming a chair. For impediments and facilitators, respondents indicated all provided options that were very important to them with an "other" option for open-text responses. In regard to impediments (Table 5), half indicated that lack of time, training, and/or funding for doing research coupled with a heavy clinical load were very important issues. The third most common impediment was a general lack of support from their chairs and/or other leadership. Almost a third indicated gender bias was an important challenge.

Table 5. Impediments/Challenges to Career Advancement.*

Impediment/challenge (37)	Percent [†]
Lack of time, training, and/or funding for doing research	51
Heavy clinical load	49
General lack of support from chair/other leadership (financial, helping balance time commitments)	38
Family issues	32
Gender bias, either overt or subconscious	30
A lack of mentoring	30
Failure of supervisors to provide opportunities to demonstrate leadership ability	24
Lack of recognition or financial incentives for more involvement in medical student and/or resident teaching	14
Racial/ethnic bias	8
Sexual harassment	5
Lack of peer support (sharing workload, providing support, and intellectual stimulation)	3
Age bias [‡]	3
None [‡]	3

*Number in parenthesis indicates number of respondents to question. The percent is calculated with the number of those responding to the specific question as the denominator.

[†]The percent adds up to more than 100% because the question asked the respondent to choose all impediments/challenges that applied to them.

[‡]These items were not offered as choices, but rather reported by one respondent each under the "other" category as open text.

In reporting what facilitated overall career success, the great majority indicated that a supportive family was very important to them (Table 6). But almost as important in advancement were the ability to attend national meetings and opportunities to participate in leadership.

Gender, Racial and Ethnic Bias, and Sexual Harassment

In addition to asking whether gender, racial and ethnic biases and sexual harassment might have been an important impediment to career advancement as discussed above and shown in Table 5, the survey asked how many respondents experienced these issues, and, if so, at what stage of their careers, regardless of whether they felt these issues hindered their career advancement or not.

We defined "bias" broadly to also include what are considered microaggressions as "having abilities and opinions underestimated, relegated to mundane task, feeling excluded and/or marginalized and (for gender bias) encountering pregnancy/childcare-related issues." Nearly all women chairs who answered this question experienced gender bias throughout their professional careers, most commonly as a faculty member (Table 7). Seven respondents experienced racial/ethnic bias, equally commonly as a faculty member and as a chair (Table 7).

Separate from gender bias, the survey queried the respondents about sexual harassment, which the survey defined as "being exposed to sexually explicit jokes or general comments; receiving verbal or physical sexual advances that were

Table 6. Facilitators of Career Success.*

Facilitator of career success (37):	Percent [†]
Supportive family	86
Opportunities to attend national meetings	76
Opportunities to participate in leadership	73
Support of chair/leadership (financial, help in balancing work commitments)	35
Able to participate in research	27
Peers and supervisors who helped balance clinical load with other responsibilities	22
Effective mentoring	22
Peer support (sharing workload, providing emotional support, and intellectual stimulation)	22
Recognition or financial incentives to more actively participate in resident and/or medical student education	16
Recognition or financial incentives to further develop clinical skills	8
Performed well at her job [‡]	3
Undertook project management [‡]	3

*Number in parenthesis indicates number of respondents to question. The percent is calculated with the number of those responding to the specific question as the denominator.

[†]The percent adds up to more than 100% because the question asked the respondent to check all choices that applied.

[‡]These items were not offered as choices, but rather reported by one respondent each as open text.

uninvited, etc." Of the 36 respondents, 58% had experienced sexual harassment (Table 7), most commonly as faculty members.

Asked whether in their roles as chairs, the respondents had to address bias and/or harassment with faculty members, staff, or trainees (Table 7), one-third reported addressing gender bias, one-third racial/ethnic bias, and a little over one-third sexual harassment. One-third had not confronted these issues, and an analysis showed that this group on average had not been chairs for a shorter period of time.

Finally, we asked about the chair's evaluation of her current work environment in terms of feeling safe to express all perspectives by using a scale of 1 to 10 with 10 being the safest and 1 being the least safe. The average for all evaluations on this scale was 7.2. Almost half of women chairs considered the work environment safer for men to express all perspectives than for women, and a little over half considered the work environment safer for individuals of a majority racial/ethnic group than for those from nonmajority groups.

Satisfaction in Serving as a Chair

The respondents were asked to indicate their satisfaction as chairs on a scale of 1 to 10 with 10 being extremely satisfied and 1 being dissatisfied. The overall average satisfaction was 7.8. As shown in Table 8, the majority gave ratings at 8 to 10. One possible parameter that might lead to higher levels of satisfaction as a chair is having connections to supportive peers or mentors. Table 8 shows that almost one-third of women

Table 7. Experience of Gender, Ethnic and Racial Bias, and Sexual Harassment.*

Issue and options	Percent
Gender bias[†]	
Experienced gender bias during career in medicine (36)	89
Career period when experienced gender bias (29) [‡] :	
Residency and/or fellowship	59
During years as faculty	79
As a chair	48
Racial/ethnic bias[†]	
Experienced racial/ethnic bias during career in medicine (36)	19
Career period when experienced racial/ethnic bias [‡] (7):	
Residency and/or fellowship	57
During years as faculty	86
As a chair	86
Sexual harassment[§]	
Experienced sexual harassment during career in medicine (36)	58
Career period when experienced sexual harassment [‡] (20):	
Residency and/or fellowship	85
During years as faculty	45
As a chair	20
As a chair, had to address with faculty, staff, or trainees issues regarding (35) [‡] :	
Gender bias	34
Racial/ethnic bias	34
Sexual harassment	37
Sexual orientation bias	3
None of the above 4 issues	37
Evaluation of current work environment	
Work environment feels safe for expression of all perspectives on a 1-10 scale (36):	
8-10 with 10 very safe	56
5-7	36
1-4 with 1 being the least safe	8
Believe work environment safer for men than women (36)	42
Believe work environment safer for racial/ethnic majorities than for minorities (36)	53

*Number in parenthesis indicates number of respondents to question. The percent is calculated with the number of those responding to the specific question as the denominator.

[†]Gender and racial/ethnic bias defined for the respondents as having abilities and opinions underestimated, relegated to mundane tasks, feeling excluded/marginalized, and (for gender bias) encountering pregnancy/childcare-related issues.

[‡]The percent in the category adds up to more than 100% because the question asked for checking all choices that applied.

[§]Sexual harassment was defined for the respondents as being exposed to sexually explicit jokes or general comments; receiving verbal or physical sexual advances that were uninvited.

chairs have a mentor or mentors and two-thirds one or more close colleagues as advisors.

When asked to identify from a list what were sources of greatest satisfaction in their roles as chairs, most identified both a sense of contribution to the success of the faculty members and having the opportunity to advance goals for making their department better, although a number of other sources of satisfaction were frequently identified (Table 8).

Table 8. Satisfaction in Chair Position.*

Question category and options	Percent
Level of satisfaction with role as chair on a scale of 1 (dissatisfied)-10 (extremely satisfied) (36)	
8-10	58
5-7	39
1-4	3
Mentoring/advising status (37)[†]	
Have one or more close colleagues as advisors	68
Have mentor or mentors	30
Have neither a mentor nor a close colleague as an advisor	24
Aspects of chair role that give greatest satisfaction (37)[†]	
Sense of contribution to the success of the faculty members	86
Opportunity to advance goals for making my department better	86
Opportunities to interact with other leaders in my organization to build institutional programs	68
Playing a critical role in hiring and retaining new faculty	57
Working through crises that inevitably occur	43
Finding pleasure in the requisite day-to-day administrative matters	35
Opportunity to interact with more trainees, staff, and faculty within the department than before	30
Greater opportunity to use their research, clinical service, and/or teaching talents in cross-departmental and interinstitutional ways	24

*Number in parenthesis indicates number of respondents to question. The percent is calculated with the number of those responding to the specific question as the denominator.

[†]The percent in the category adds up to more than 100% because the question asked for checking all choices that applied.

Least Satisfying Aspects of Chair Role and Making the Role More Satisfying

Women chairs said the 2 least satisfying aspects of their leadership roles were interacting with difficult faculty and finding enough time for family and outside interests (Table 9). But almost as frequently they cited the dissatisfaction of finding enough time for their own research and clinical practice, managing in a tight economic environment, and interacting with difficult hospital and health care system leadership.

An open-text question asked, "If you could improve the position of department chair at your institution, what changes would you make that might make it more appealing for yourself and for others who might follow you?" Answers were condensed for purposes of reporting and placed into general categories. The most common category was that the position needed more power and/or autonomy to handle their own finances and make changes within their departments (Table 9).

Transitioning From Serving as a Chair

The respondents were asked if they had considered when they might transition from being a chair, recognizing that those who were interim chairs were likely anticipating that this might occur within a year or 2. Sixty-four percent acknowledged they

Table 9. Dissatisfaction With Chair Role and Making the Position More Satisfying.*

Question category and options	Percent
Aspects of chair role that give the least satisfaction (36) [†]	
Interacting with difficult faculty	64
Finding enough time for family/outside interests	47
Finding enough time for their research	39
Finding enough time to adequately maintain clinical expertise	39
Managing in a tight economic environment	39
Interacting with difficult hospital and health care system leadership	31
Interacting with difficult staff	19
Interacting with difficult peers and other medical school leadership in the institution	17
The routine day-to-day management, which is often boring	3
Changes that would make current chair position more appealing (29) [†]	
More power/autonomy to handle finances and make changes within department	28
Fair, transparent, and more supportive medical school leadership, including appreciation of role the lab plays in the institution	17
More say in hospital interactions and administration; increased hospital support for clinical activities	14
Enhanced capacity for department to build a research program	14
Greater opportunities for chair to participate in making broader institutional policy	14
Increased administrative support	10
More collegial work environment	7
Consolidated clinical labs across the institution	3
Succession planning so gains won't be lost	3

*Number in parenthesis indicates number of respondents to question. The percent is calculated with the number of those responding to the specific question as the denominator.

[†]The percent in these categories adds up to more than 100% because the question allowed more than one choice to be checked in the first category or more than one change to be suggested in the second category.

were considering when they would transition (Table 10). Of this subgroup, about half anticipated a transition from the chair in 2 to 5 years and only a quarter indicated they were considering a longer term. An open-text question asked women chairs who had decided on when they would step down as chairs the reasons for this timing, and the answers were collected into general categories. The 2 most common categories chosen were that (1) age was a factor and/or their spouses were already retired or (2) that the chair role was tiresome, stressful, time-consuming, and they wanted to enjoy life more.

Discussion

Academic departments of pathology have been integral to medical schools since before the turn of the 19th century, but there were no women chairs of these departments in a coeducational medical school until 1972 when Dr Nancy Warner became chair of pathology at the University of Southern California's

Table 10. Transitioning From Chair Position.*

Question category and options	Percent
Are considering when might step down as chair (36)	64
If yes, to above, when? (23)	
2-5 years	52
<2 years	22
6-10 years	22
>10 years	4
Reasons to consider retiring at time indicated [†] (23)	
Age-ready for retirement, spouse already retired	35
Tired, too-much stress, takes too much time, want to enjoy life more	30
Need to give others opportunity to lead, believe chair position should turn over	17
Interim chair, "retiring" when permanent chair appointed	13
Want to return to my specialty, want to serve in other ways	9
Advancing to more senior level position	4

*Number in parenthesis indicates number of respondents to question. The percent is calculated with the number of those responding to the specific question as the denominator.

[†]The percent each category adds up to more than 100% because the question allowed more than one choice.

Keck School of Medicine.⁶ Dr Vivian Pinn became the first black woman to chair a Department of Pathology in 1982 at Howard University,⁶ and at that time Dr Pinn was only the third woman to have chaired a department of pathology in a coeducational medical school, 10 years after Dr Warner's appointment.⁶ Initially, the large gender gap among pathology department chairs could be readily explained by the absence of significant numbers of women who became physicians and then specialized in pathology. However, despite an increased number of women who have entered and finished medical school, chosen pathology residencies and then entered academic pathology over the last 40 years, pathology continues to have inequitable gender representation among department chairs.

In 2020, the APC recorded within its membership the largest percent of women chairs to date, 31%. The current survey was developed to try to understand what these women pathology chairs believed was important to their career success and what presented important challenges to their progress. The survey also asked, among other questions, how long they thought about taking on the role before applying for it, what made the chair role initially seem attractive, and what they have found satisfying and dissatisfying about the role, in an effort better understand the career trajectory of women chairs. Answers to all questions have been captured in 10 tables and provided a wealth of information about the experiences of women pathology chairs. Only a portion of this information can be adequately discussed here and placed in the abstract. We provide a Summary Table of the survey highlights in Table 11 in the order of the findings to be discussed below.

The authors were gratified by the high response rate to the survey, with 73% of those surveyed responding, including 73%

Table 11. Summary of Important Findings in the Women Chair Survey.

Categories and specific finding	Percent*
Top 3 facilitators of career advancement (from Table 6)	
Supportive family	86
Opportunities to attend national meetings	76
Opportunities to participate in leadership	73
Top 3 impediments to career advancement (from Table 5)	
Lack of time, training, and/or funding for doing research	51
Heavy clinical load	49
General lack of support from chair/other leadership	38
Role of women as interim chairs	
Percent of all interim chairs who are women (APC membership data, 2020)	65
Previously served as an interim chair (from Table 1)	35
Women chairs and family (from Table 1)	
Live with partner or spouse	98
Have children	76
Had children when became a chair	38
Prior leadership experience of women chairs (from Table 3)	
Director of an anatomic or clinic pathology unit	63
Residency or fellowship program director	42
Vice chair	39
Medical student course director	26
Research and women chairs (from Table 4)	
Prior NIH or other national research funding as PI or co-PI	36
Chair of department in top 25 of NIH-sponsored research	3
Gender bias and sexual harassment (from Table 7)	
Have experienced gender bias	89
Gender bias, either overt or subconscious, impeded advancement	30
Have experienced sexual harassment	58

Abbreviations: APC, Association of Pathology Chairs; co-PI, coprincipal investigator; NIH, National Institutes of Health; PI, principal investigator.

*The percent represents the number of women chairs choosing the option over the number of women who answered the particular question. See the indicated Table for this information.

of both interim and permanent chairs. The major findings were that a very high percentage of these women chairs indicated that family support, opportunities to attend national meetings, and opportunities to participate in leadership were very important for their success, and the 2 most common challenges were heavy clinical loads and a lack of time, money, and/or training to do research (Table 11). They were inspired to take on the role because of a desire to make a greater contribution to their department and school, and because others encouraged them to apply by noting that they would be a good chair. Nearly all respondents felt at least some level of satisfaction with being chairs, and the vast majority chose as the most satisfying aspects being able to facilitate the careers of their faculty members and being able to advance goals to make their departments better.

A striking finding in the data provided from the total APC 2020 membership data was that while 28% of permanent chairs

were women, 65% of interim chairs were women. A further surprise was that one-third of responding permanent chairs said they had been interim chairs before they became permanent chairs (Tables 1 and 11). One conclusion might be that the initial interim chair experience gave these women the credentials, requisite experience, and confidence to take on the permanent role. In view of the very high percent of current interim chairs who are women and the predominance of women serving as service chiefs or in other leadership roles in academic pathology departments,⁷ the near future may find a further increase in the percentage of permanent women chairs of pathology departments. Indeed, the facts that women are frequently willing to assume the very difficult and often less rewarding role of interim chair; women frequently successfully hold significant other leadership roles in academic pathology departments; and deans seem to be willing to choose capable women faculty to temporarily lead a department, it is conceivable that service as an interim chair may be one of the best mechanisms to develop greater gender parity among permanent department chairs. Future studies are needed to determine how often women interim chairs become permanent chairs, why they may not make this transition and whether women and men holding interim positions become permanent chairs at equivalent rates.

Of particular note in our survey, family issues were identified by some as impeding their academic success, but nearly all respondents acknowledged that family support was an important contributor to their success. Some studies have shown that postponement of marriage and childbearing due to long educational and training paths and that a focus on career building among professional women has led to intentional and unintentional childlessness.^{8,9} In contrast, 98% of our respondents had spouses or partners and 76% had children with 38% having children younger than age 18 when they became chairs (Table 1 and Table 11). Thus, in the responder group, having a family was compatible with being a chair, and this observation should be noted by medical school leaders and search committee members who may have an unconscious bias against women faculty with children as chair candidates. A study evaluating the impact of children and other family responsibilities on work–life balance of medical school faculty demonstrated that both clinical and nonclinical faculty with children reported fairly high satisfaction with their work–life balance.¹⁰ In contrast, nonclinical faculty without children reported a low level of satisfaction with work–life balance unlike clinical faculty without children, a somewhat surprising finding since one might surmise that the absence of children would provide more time for researchers to pursue career goals and leadership opportunities.¹⁰ It would be worthwhile to further investigate with our respondents what specific family issues might be potential impediments, as well as the positive aspects of family life that can be leveraged to enhance the success of women in academic pathology and encourage more women to pursue academic leadership as a department chair. The difficulties of finding reliable and satisfactory childcare are significant challenges for the career advancement of professional women who

have children. Our survey also revealed a notable percentage (37%) of women chairs who were currently married/living with a partner who works from home, a factor that could have mitigated some of the childcare challenges and concerns for those women.

The survey assessed what parameters were important in one's decision to become a chair. Most had decided to seek chair positions less than 5 years before they applied, and the most frequently chosen motivation was a desire to make a greater contribution to pathology and their institution. This chosen reason aligned closely with the 3 chief choices of what was most satisfying about being a chair: being able to help faculty be successful, helping to achieve department goals, and working with other institutional leaders to build programs. Another important reason chosen by half of the respondents was that they had served in a departmental leadership position and becoming a chair seemed a natural progression. All but one of the women chairs had previous departmental leadership experience, and in responding to what facilitated their success, one of the 3 most common factors was the opportunity to participate in leadership. Importantly, not only serving in clinical unit leadership and as a vice chair, but also having experiences as residency program directors and directors of medical student teaching programs were listed as leadership experiences of many of the women chairs (Table 11). Thus, providing women with leadership opportunities and mentoring them to achieve success in these roles helps to both stimulate them to seek higher level leadership opportunities as well as providing experience to draw upon once they assume a chair position.

The leadership pathway for women CEOs in the business world demonstrates many similarities to the pathway for women pathology department chairs in our study.^{11,12} Women CEOs tend to be "long-term insiders" like the women chairs where the majority reported being internal candidates or interim chairs before assuming the permanent position. Notably, the insider pathway for women CEOs was found to be 50% longer than that of male CEOs,¹¹ suggesting negative biases in institutional culture toward women leaders. A 2017 study of women CEOs funded by the Rockefeller Institute and conducted by executive search firm Korn-Ferry demonstrated that two-thirds of women said they did not realize they could be a CEO until someone else told them.¹² Similarly, our study found that aspiration to become a chair was not a long-term ambition for most of our survey respondents. Like many of the women CEOs, 68% of women chairs reported that they were told by others that they would be a good chair, indicating that they were seen as high-potential candidates. Clearly, mentorship and institutional culture toward developing women as leaders can make a difference for women seeking leadership, especially with fewer women chairs who can be role models for women.

The survey confirmed that if the department of pathology is within a medical school with a heavy investment in NIH-sponsored research, women are rarely appointed as chairs. When asked about the NIH-sponsored research rank of her medical school at the time she became chair, only one was

appointed in a school that ranked in the top 25. This bias against the appointment of women to chair research intensive pathology departments is not unique to pathology. A similar phenomenon has been noted among deans of medical schools where women deans are more likely to lead less research-intensive schools¹³ and are more likely to hold associate and assistant deanships focusing on education, mentoring or institutional public image, rather than research, strategy and policy, finance, or government relations.¹⁴ This disparity may highlight the bias against women as strong researchers and leaders, including entrenched biases against changing the status quo of male leadership in successful organizations. This phenomenon is also observed in the business world where Fortune 500 firms experiencing declines are more likely to appoint women and minorities as CEOs than successful and stable firms.¹⁵ Although this may seem to be a high-risk opportunity for women and minorities, they have a tenure similar to white male CEOs, indicating their successful performance as leaders.¹⁵ Appointment as a department chair in a struggling or aspirational department may provide women an opportunity to change the perceptions of others regarding their abilities to be strong or transformative leaders.

A major challenge in changing the gender disparity in leadership in pathology departments in research intensive medical schools is to assure that more pathology departments support the early careers of women faculty members in pursuing research, particularly of the type sponsored by the NIH. This type of experience is invaluable to someone who wishes to chair a department that is heavily invested in the research enterprise. Studies have shown that women are less likely than men to receive a R01 grant following an NIH career development award¹⁶ and that this is likely related to gender-based bias, including biases in the grant review process itself¹⁷⁻²⁰ since equally talented high-potential individuals of both genders are chosen for NIH-career development awards. An NIH study reported that women performed as well as men on NIH competing research and training awards, and women were more successful than men on R01 program grants. However, more men than women had multiple R01 awards at every age, and success and funding rates were higher for experienced men submitting renewal R01 awards, because women tended to delay applying for renewal or other grants. The reasons for lower application rates for women could not be determined, but suggested reasons included unconscious bias in review or selection, lack of self-confidence, and/or increased family responsibilities for women affecting their undertaking additional grants.¹⁸ Notably, in our survey, one-third of respondent women chairs had a PhD, indicating significant training to do research, yet major obstacles to career advancement as indicated by half of our respondents were a lack of time, resources, and/or training to do research as well as heavy clinical responsibilities. Nonetheless, one-third of the survey respondents had previous national funding for their research. Women who aspire to chair a research-intensive department are best served if early in their careers they are given the opportunities to succeed in research by being given adequate protected time

(including limiting clinical care commitments), start-up funds, space, and appropriate mentoring. An analysis of a national survey of academic pathologists found that women faculty spent more of their effort in patient care and less in research than men.⁷ Research resources are also not equally accessible for both genders.²¹ More women than men in K08 programs have reported inadequacies related to access to shared resources such as grant administration and statistics support where gender-based differences such as assertiveness or biases in the workplace culture are more likely to have an influence.²¹ Mentorship can be important in addressing these issues and ensuring equitable growth of women's research careers and future opportunity for leadership.

Gender, racial and/or ethnic bias, and sexual harassment are important potential impediments to the success of women in any profession but have been documented to be a greater problem for women in medicine than in other areas of science, technology, engineering, and mathematics (STEM).²² A recent report from the National Academies for Sciences, Engineering, and Medicine stated that bias, discrimination, and harassment are major drivers of the underrepresentation of women in leadership roles in medicine and science.²³ Our survey asked specifically about these issues. Nearly all women chairs acknowledged they had experienced gender bias at some point from their residency training to junior and senior faculty positions, and one-third said that it was an impediment in their career advancement. Over half indicated they had experienced sexual harassment. As in this study, another recent study of women faculty in the STEM fields found that gendered microaggressions (an active expression of gender bias) were experienced by women faculty regardless of the stages of their faculty career.²⁴ Gender bias has important implications for women seeking leadership positions, including a department chair, and although it functioned as an impediment in their progress for some women, the women in our survey had not allowed these experiences to interfere with their becoming a chair. Valuable lessons may be learned from asking how this cohort of women have overcome the negative aspects of gender bias. Certainly, it can be helpful to provide training to raise awareness and prevent this type of behavior, which is often unconscious.²⁵ Addressing these difficult issues is a challenge for all academic leaders and should continue to be a focus of further discussions.²⁶

In general, women chairs found their jobs satisfying with the majority expressing high levels of satisfaction. The lists of what is satisfying and what is challenging about being chairs are very similar to those identified in publications of former chairs of pathology still active in APC (members of the Senior Fellows Group [SFG]).²⁷⁻²⁹ Examples of similarities include the satisfaction of being able to help faculty to achieve success and to make their departments better and the dissatisfaction of interacting with difficult faculty. The survey was not intended to compare current men and women pathology department chairs, but for many issues relating to faculty satisfaction in departments of pathology, men and women share many similarities.⁷ Thus, it is not surprising that past pathology chairs in the

SFG, which has predominantly male members, would describe similar reasons for their satisfactions and dissatisfactions with their former chair roles as do current women chairs.²⁷⁻²⁹

In reflecting about when to transition out of the chair role and why, the most common theme was their age or their spouse's or partner's current or ensuing retirement. The high stress and time demands of the chair position were nearly as common a reason for deciding to limit their terms as chair. Interestingly, in the reasons expressed for transitioning out of their roles as chairs by the membership of the SFG, the more common reasons for transitioning were unrelated to age or spousal retirement but rather to assume other, often higher, administrative positions outside their departments and a different leadership role within their own departments.²⁷⁻²⁹ Other common reasons past chairs in the SFG mentioned for transition that were not common with current women chairs were job boredom, wanting greater challenges and frustrations with other leadership in their institutions.²⁷⁻²⁹ These differences in reasons for transitioning may reflect not only the dominantly male membership of the SFG but that looking back offers a different perspective from one that may come from looking forward. Also, the SFG members surveyed in the referenced papers had all been permanent chairs for a much longer time (average 15.5 years, median 12 years)²⁷ than our respondents (average 6.8 years, median 4 years). Finally, it is also possible that the experiences of the SFG retired chairs are not representative of the much larger group of all retired chairs.

A shortcoming of our survey and report was that 27% of women chairs did not respond. An additional shortcoming might be that we did not compare responses among various types of chairs (interim vs permanent) nor between chairs of the 2 categories of departments (medical school-based vs non-medical school-based). The majority of women chairs who responded to our survey are permanent chairs of medical school-based departments, the category of chairs that is the predominant chair group in APC. We believe that the other chair groups were too small to make meaningful comparisons. Nevertheless, at the time we initiated this study, we were most interested in facilitators and impediments of the academic careers of successful women pathologists. Because achieving a position as a women chair of any academic department is a strong indicator of success, we believe that reporting the combined data was the correct approach.

The results of this survey of current women chair members of the APC show that despite obstacles to their success, these women also had important facilitators for their career advancement and have found satisfaction in becoming chairs. It would be worthwhile to survey women chairs of other academic medicine disciplines to determine any commonalities across medical specialties to the experiences documented here for pathology. Meanwhile, department chairs, deans of medical schools, and other leaders involved with career development and mentoring may find the current report useful in developing strategies to further increase gender diversity in leadership positions, especially in their pathology departments where the

gains in gender diversity may be lost since so many current women chairs are contemplating leaving their positions in the next 5 years. Furthermore, this report should provide useful information to any academic pathologist, regardless of gender or racial/ethnic origin, who might consider becoming a department chair, regarding expectations and satisfactions of serving in this role, what they might negotiate for with their current department's leaders in order to facilitate their successful advancement, and how to prepare for being a chair before pursuing this goal.

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