

Structured Annual Faculty Review Program Accelerates Professional Development and Promotion: Long-Term Experience of the Duke University Medical Center's Pathology Department

Stanley J. Robboy, MD¹ and Roger McLendon, MD¹

Abstract

This retrospective observational study on faculty development analyzes the Duke University Pathology Department's 18-year experience with a structured mentoring program involving 51 junior faculty members. The majority had MD degrees only (55%). The percentage of young women faculty hires before 1998 was 25%, increasing to 72% after 2005. Diversity also broadened from 9% with varied heritages before 1998 to 37% since then. The mentoring process pivoted on an annual review process. The reviews generally helped candidates focus much earlier, identified impediments they individually felt, and provided new avenues to gain a national reputation for academic excellence. National committee membership effectively helped gain national exposure. Thirty-eight percent of the mentees served on College of American Pathologists (CAP) committees, exponential multiples of any other national society. Some used CAP resources to develop major programs, some becoming nationally and internationally recognized for their academic activities. Several faculty gained national recognition as thought leaders for publishing about work initiated to serve administrative needs in the Department. The review process identified the need for more protected time for research, issues with time constraints, and avoiding exploitation when collaborating with other departments. This review identified a rigorous faculty mentoring and review process that included annual career counseling, goal-oriented academic careers, monitored advancement to promotion, higher salaries, and national recognition. All contributed to high faculty satisfaction and low faculty turnover. We conclude that a rigorous annual faculty review program and its natural sequence, promotion, can greatly foster faculty satisfaction.

Keywords

annual faculty review, mentoring, pathologist, promotion, workforce

Received October 19, 2016. Received revised December 10, 2016. Accepted for publication December 17, 2016.

Introduction

Nearly every university's public website states its mentoring program helps grow both the junior and senior faculty. In 1998, the Department of Pathology at the Duke University Medical Center began formalizing a structured review process for promotion to associate professor and above in compliance with medical school promotion guidelines. This review, in 2003, led to a formalized annual faculty evaluation system in which

¹ Department of Pathology, Duke University Medical Center, Durham, NC, USA

Corresponding Author:

Stanley J. Robboy, Department of Pathology, Duke University Medical Center, Davison Bldg, Rm 227M, DUMC 3712, Durham, NC 27710, USA.
 Email: stanley.robboy@duke.edu



every junior faculty member participated in a yearly review starting with the first year of employment. The promotion program thus became a natural continuum of the annual reviews.

We believed that helping the faculty to develop on a focused career plan was likely the most effective means of helping them to establish a solid academic record. As such, our goals were based on the idea that a rigorous process providing early “mentorship” would help the faculty better identify potential opportunities that might be otherwise missed, develop a better strategic plan for growth, and clarify goals.¹ An important tenet was to help identify weaknesses, eliminate distractions and impediments, and identify failings that might be corrected during a time in which course changes would be beneficial.

Although there were no explicit goals when both the faculty review process and the promotion process were first formalized, working hypotheses nonetheless developed, which could be tested or at least measured against the literature. One was that the annual review process, if started when the newly minted young faculty joined the department, could provide many benefits to developing a successful career. Inherent was that pathology could be a satisfying medical profession.² The second was that a rigorous process preparatory to the promotion exercise would lead to a high success rate. Our experience, described herein, shows how such a review program effectively helped faculty better achieve their academic goals, gain national recognition, and obtain university promotion even during a time when federal grant money and reimbursement for patient care were decreasing.

Methods and Materials

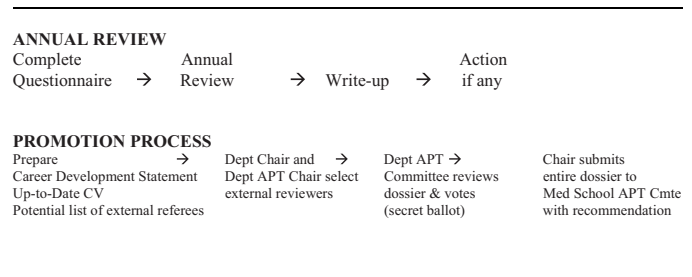
Institutional Review Board

The programs described, the annual faculty review program and the promotion procedures, are administrative in nature, required by university policy and not subject to institutional review board (IRB) approval. Our IRB agreed that this analysis should be exempt from IRB approval.

Departmental Philosophy

Our junior faculty mentoring and review programs were established to promote the department’s and hence the institution’s clinical, teaching, and research missions by helping the newly hired medical school faculty acclimate to a busy academic/clinical service, identify their personal goals, and achieve them more easily and efficiently. We wished to foster career satisfaction while effectively assuring that the faculty were successfully able to carry out their clinical, teaching, and academic responsibilities. We also set out to enhance institutional and departmental support for each faculty member where possible, but more importantly to learn where roadblocks existed. The programs were not designed to prevent early attrition or effect inclusiveness or respect, although these are obvious benefits of a healthy working climate. A factor not discussed in this article was a basic philosophy the then departmental chair

Table 1. Process Flowchart.



Abbreviations: APT, Appointment, Promotions and Tenure; Cmte, committee; CV, curriculum vitae; Dept, department.

established when he accepted his position in 1991: Faculty income should be reasonable, aiming to attain the 75th percentile found in the Association of American Medical Colleges (AAMC) annual surveys. In no case was the level ever to fall below the 50% level.

Annual Review

In 2000, our department began requiring all junior faculty to participate in an annual review of their recent performance as well as discussing goals for the coming year. In 2003, the program was formalized (Table 1). The review process commenced as soon as the new member joined the Duke School of Medicine Pathology faculty. One goal of the program was to better help our junior faculty prepare for eventual promotion, described herein below.

Initially, the program included only the MD faculty at the rank of instructor and above who were involved in clinical care. Over the years, we expanded the program to include the faculty engaged in basic science research and the PhD clinical scientist faculty. The end point for mandatory reviews occurred when the faculty member was granted tenure or, if on a clinical track, reached the rank of associate professor. Reviews were available, but optional, for more senior members, that is, associate professor with tenure, associate professors on the nontenure tracks, and full professors regardless of track. It was available also to any faculty member regardless of rank in the department’s community care division (working at a hospital affiliated with Duke but not at the medical center itself).

Preparation for annual review. To prepare for the review, each faculty member submitted, in advance of the review, an updated curriculum vitae (CV) and a completed standardized questionnaire (Appendix A a-c). Over a several year period, we also introduced a series of questions that helped us understand where the faculty member’s thoughts and priorities lay. The thrust of the reviews focused on, in broad terms: (1) personal accomplishments, (2) individual roles and priorities, (3) perceived areas in need of improvement and plans on how to implement, (4) personal goals for the coming year, and (5) external hindrances and resources needed to help the faculty work more effectively (eg, secretarial assistance, time utilization, accent reduction programs, etc).

We asked the faculty to detail accomplishments and innovations in current research, teaching, service activities, administrative activities, recognitions and honors, and primary goals for the individual as well as for the department.

The review team included the program head (S.J.R.). During this period, he served as chair of the department's Appointment, Promotions and Tenure (APT) committee, as vice chair for Faculty Affairs in the department, and for 18 years as a member of the medical center-wide APT committee. Since the program began, the second author (R.M.) also participated in nearly all of the reviews in his role as a director of anatomic pathology/anatomic services. A third member of the team commonly was the faculty member's division or sectional chief, or for candidates involved in basic science research, the vice chair for research from the department. Sometimes, a fourth person participated who had research interests that could be helpful in the mentoring process. Sometimes, this person was a faculty member in our department but could also come from another department in the medical school. The department chair was *ex officio* and sometimes attended.

Preparation for promotion. The promotion committee chair met with each candidate, sometimes several times, helping the faculty to prepare a career development *précis*. Commonly, several drafts were needed to refine focus, to identify accomplishments, and to state prospective career goals. Preparing a concise, detailed, and visually appealing CV was not trivial. The candidate was asked to provide a list usually of about 8 to 10 potential referees. The medical center-wide guidelines require the rank of the invited reviewer be no less than that to which the candidate aspires. Some were international, especially for those being considered for the rank of full professor. None could be based on friendships during residency or coauthors on manuscripts, with the exception if the coauthor was on a report from a national select committee. The APT committee chair and departmental chair vetted the list and at times added additional names of recognized experts. Following a review and discussion of all collected materials, including external letters, the members of the promotions committee voted by secret ballot to support, to not support, or to abstain from a decision. The department's APT chair then prepared a summary letter, which was then forwarded through the department chair to the medical center-wide promotions committee (for tenure and full professor rank) or to the medical center executive committee (for nontenure decisions).

University guidelines for rank and promotions. The guidelines for rank and promotions used were those the Duke University Medical Center adopted in 2004 (and published in current form in 2006), in which the senior author was involved in the codification (Appendix B). Broadly, 3 tracks led to tenure and reflect whether the candidate had more than 80% clinical activities (grant support not a requirement) (track I), with emphasis of research activities (up to 80%), with grant or contract support (track II), and more than 80% research, with grant support required (track III). The rules defining each track and

guidelines for promotion from 1 to the next appear in the university's Medical Center Faculty Handbook (<http://provost.duke.edu/wp-content/uploads/FHB.pdf> and <https://medschool.duke.edu/sites/default/files/field/attachments/Quick-Reference-Guide-Clinical-Sciences-01.2014.pdf>).

The central and principal theme for promotion on all 3 tenure tracks is to advance an area of knowledge unambiguously and transmit this into the academic realm, principally via the scientific literature. Tracks IV and V are not tenure track and do not require publications but certainly that was desirable. Promotion on track IV was principally related to advancing medicine through clinical skill roles; grant support was not expected but certainly desirable to have. Track V faculty were primarily involved in research. Although desirable, faculty on this track were neither required to solicit grants in their name nor be principal investigator. Others financially supported them.

Our department has defined research generally to involve clinical, basic, or translation advances. Occasionally, educational or administrative projects initially undertaken for purposes of good citizenship developed into research areas of endeavor when the faculty members developed methods to do something better or in unusual ways, publishing and lecturing about these, hence advancing knowledge (this article might be considered such an example). Teaching is expected of all faculty. Credit for teaching efforts counted toward promotion, but only when it was beyond the norm (teaching awards, persistently excellent teaching evaluations by either medical students or residents) expected of all, or leading to publications advancing the field. Peer-reviewed publications were important factors in the promotion process, but we also placed equal weight on invitations to write books or chapters in leading textbooks or editing the textbook itself. Critical recognition by the medical community was also important, as often came when a national committee invited the faculty to join and then when the faculty became recognized as a thought leader there. Ultimately, every candidacy was evaluated on its own merits case by case.

In evaluating publications, significance lay in the importance of the key papers, the total number of papers, the quality of the journals, whether the faculty member led the endeavor (first/lead or last/senior author), and whether the publications were focused in a field of research or scattered. The first authorship was considered a clear indicator of leadership. We placed weight also on the senior (last) position as it acknowledged the senior member's leadership role but allowed junior members working under the senior faculty member's direction to be the lead author and advance his or her career. We generally ignored case reports.

All 5 tracks carried the ranks of assistant professor, associate professor, and full professor. No track's nomenclature identified explicitly, as commonly found in many schools, whether the candidate was primarily involved in clinical or research activity. Our medical center-wide faculty commonly expressed the opinion that such designations, for example, "clinical assistant professor," were labels for second-class citizenry,

especially if the school's bylaws prohibited these members from serving on certain committees, for example, promotion, as happens elsewhere. Regardless of the track, the official title was simply assistant, associate, or full professor.

Promotion on most tracks followed in order: faculty associate (sometimes used for fellows in training who were not in Accreditation Council For Graduate Medical Education mandated programs), instructor (used rarely), assistant professor (usual entry title), associate professor, and full professor. Prior to 2004, faculty on the tenure track were automatically tenured when reaching the rank of an associate professor. Beginning in 2004, Duke separated the granting of tenure from promotion to the associate professor rank. First came promotion to associate professor without tenure and then several years later promotion would be considered with the granting of tenure. Since about 2014, the School of Medicine required that virtually all new faculty with clinical duties enter on the nontenure tract (IV). The dean's office has opined that at some future time, usually at the time of promotion to professor or associate professor, the departmental chair could request that certain faculty with unusually high levels of productivity be permitted to switch to the tenure track. The practicality of the switch has not been tested in the reviewed time period.

The tenure clock at the Duke School of Medicine for clinical faculty has run (and still runs) for 11 years. After formal application, the dean may award additional time in grade based on pregnancy, incapacitating sickness, or special circumstances. Candidates not expected to achieve tenure are notified of this fact by the end of the 10th year, thus providing a grace year before the employment contract terminates. Occasionally, some candidates have jumped rank from assistant professor directly to associate professor with tenure; such decisions were made on a case-by-case basis after consultation with the departmental chair and often the dean.

The primary differences between tenure and nontenure include: (1) guarantee of a small financial stipend from the university tied to the rank of tenure and (2) time-unlimited appointments.

Reviewer time commitments for the annual review process. The time spent by the program head averaged about 3 to 4 hours per every faculty annual review (see Table 2). When the program first began, some 10 to 15 faculty were reviewed annually. In 2016, with expansion of the program, the program head led 22 reviews.

Promotion Process

By joint agreement, the faculty member and the head of the department's APT committee (promotions committee) usually determined the appropriate time for presenting the candidate's promotion package. On occasion, the faculty member initiated the request for promotion consideration. Each promotion consumed roughly 10 hours of the committee chair's time from the beginning to the end of the process.

The candidate was responsible for preparing: career development statement (frequently called "career development

Table 2. Time Required for Annual Review and Promotion Programs.

For the program head

- 40 minutes, arranging scheduling of candidates, including assuring reviewers' availability
- 20 minutes, reviewing candidates past portfolio
- 60 minutes, actual review, subdivided as:
 - 15 minutes for reviewer to discuss candidate
 - 45 minutes for the review itself
- 1 to 2 hours, write review and achieve consensus

For the rare problematic instance, hours to a great many hours were consumed meeting with the department chair, others as needed, and with the faculty member in question

For other reviewers

- 15 minutes, reviewer to discuss candidate
- 45 minutes, review itself
- 30 minutes, review and submit comments and corrections on program head's review

Time Required for Promotion Review Process

For program head (Chair of the Department's Appointment, Promotion and Tenure Committee)

- 2 to 8 hours, helping candidates prepare "career development statement"
- 2 to 4 hours, helping prepare "curriculum vitae"
- 20 minutes, arranging scheduling of candidates, which includes assuring reviewers availability
- 40 minutes, actual review with promotion committee
- 4 to 6 hours, prepare departmental APT letter to departmental chair, transmitted with candidate's portfolio, ultimately reaching the university's board of trustees

For other reviewers

- 30 minutes, read candidate's dossier, which includes career development statement, curriculum vitae, and outside referees' letters
- 45 minutes, participate in committee review, including secret ballot
- 15 minutes, read review and to offer suggestions

Abbreviation: APT, Appointment, Promotion and Tenure.

statement" or "intellectual statement") and the CV. The former was developed together with the head of the promotions committee and generally required several drafts before it was acceptable and ready for submission to the departmental committee. We expect the CV to have been continuously updated before every annual review process. The candidate usually supplied the names of about 10 potential referees of the appropriate rank (equal to or greater than the rank the candidate was seeking, often with international input), generally with no more than 1 from inside Duke. Recommendations based on friendships from residencies or working together as faculties in a department or as coinvestigators were not permitted, unless a coinvestigator was a member of a national society where that person and the candidate had been tasked to develop a report. The expectation was for referees to be independent and without bias. Again, the list was generated together with the head of the departmental promotions committee. Not infrequently, the

promotions committee itself would insert the names of authorities of its own choosing. The letters to referees were sent under the signature of the departmental chair.

The department's promotion committee, after receiving all required documents, reviewed and discussed them and then took a secret vote. Upon departmental approval and the approval of the departmental chair, the promotions committee chair then prepared a detailed letter, commonly 4 to 6 pages long, covering the candidate's brief biographical sketch and educational background, academic accomplishments, clinical achievements/responsibilities, educational achievements, administrative accomplishments, and national and international achievements/recognitions. With these documents, the departmental chair, in turn, forwarded the dossier together with his letter why the proposed appointment should be granted or denied.

Data Analysis

All data came from the CV or submitted form at the annual review, the annual write-ups following each review, and the departmental APT letter to the departmental chairman written on behalf of candidates at the time of the latest promotion. Most data are presented with a median and range rather than the mean, the former being more representative. Data points at either edge of ranges easily and all-too-often skewed the mean. No comparative cohorts were identified and no statistical analyses were performed for they were not considered useful in interpreting the data.

Results

Department Overview

The Department of Pathology had 83 active faculty plus an addition of 23 PhD scientists in the ranks of research associates or postdoctoral fellows at the end of 2016. These numbers exclude emeriti, residents, faculty, on nonprofessorial ranks, and faculty from other departments with secondary, tertiary, or quaternary appointments in the pathology department.

Since 2003, 51 junior faculty members have participated in the annual faculty review program. Of the 33 junior clinical MD faculty who joined our department during this period and 5 junior faculty already in the department, all of whom were engaged in the clinical practice of medicine, all had subspecialty training before joining our faculty (and were certified by the American Board of Pathology within their first 2 years on faculty) or had come in an advanced position to our department. The remaining 13 were involved in basic science or translational research or were PhD clinical scientists. The year of the median hire was 2008. Thirty-three percent of the junior faculty were hired in 2013 or later. During the early years of the program, about 10 to 15 faculty were reviewed annually. On expanding the program to include the basic and also PhD clinical scientists, the number has increased by the final year to 22.

The majority of the junior faculty had MD degrees only (55%). Twenty-nine percent had MD and PhD degrees, of which two-thirds were involved in clinical medicine. Sixteen

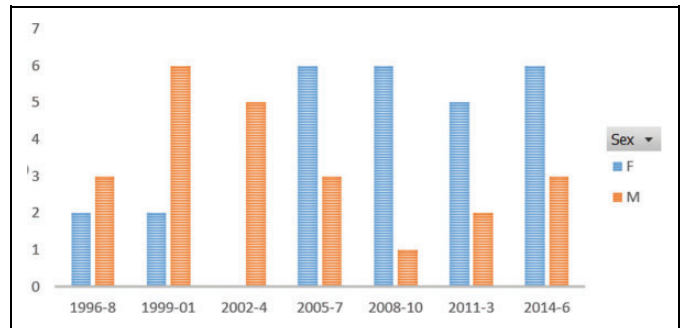


Figure 1. Gender of faculty hires.

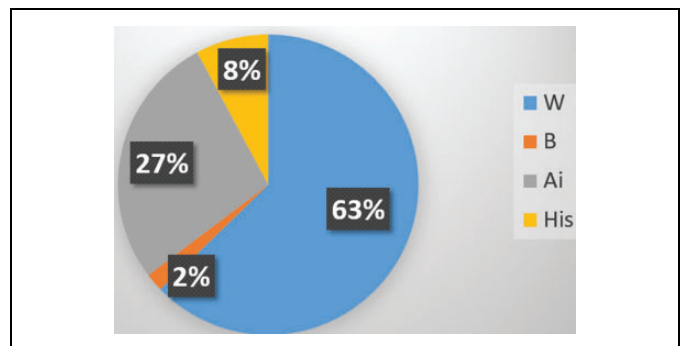


Figure 2. Diversity.

percent had PhD degrees and were PhD clinical scientists or involved in research only. Most young faculty hired since 2005 have been women (72%), which contrasts with only 25% before (Figure 1).

Diversity also changed (Figure 2). In 1997, only 9% of faculty were of Asian, Hispanic, or Afro-American heritage. Among the faculty whose candidacy was evaluated for promotion but who did not have annual faculty reviews, 14% had diverse ethnic backgrounds. Among faculty hired since 2005, 37% have Asian, Hispanic, or Afro-American heritage. Four of them were American born.

Faculty Review Program

Anatomic pathology. Among the 31 young faculty hired into anatomic pathology positions, a concern they raised or the reviewers queried dealt with coping and adjusting to a moderately high-volume clinically challenging practice. A number expressed feelings of inadequacy (regardless if the reviewers thought otherwise, also see Discussion). Most faculty, regardless that all were subspecialty trained, required at least 3 busy years of seeing many specimens before they considered themselves comfortable with the diagnostic issues. Although requiring second opinions on cancer cases is not departmental policy, Duke supports an atmosphere of sharing cases. Our faculty reviews reinforced that it was appropriate and not a sign of weakness to seek second opinions on difficult cases (even the most senior members do so routinely, frequently asking opinions from the junior faculty). By the fourth year, nearly the

entire young faculty felt they had sound diagnostic skills and were comfortable with their development. Noticeably, the vast majority of the young faculty who earlier had trouble for any number of reasons stayed with the program, eventually flourished, and later achieved promotion, some with quite spectacular accomplishments.

By the third or fourth year, common conversational topics dealt more about developing research programs, often of a focused clinical nature and within their specialty. The wants and desires discussed were of an enormous range but were always tailored to each individual on a case-by-case basis. Occasionally, the reviewers knew of institutional resources that the faculty members desired, but of which they had been unaware. Sometimes we were able to foster their teaming with members from other departments or to identify specialized training programs the institution offered that would enhance untapped skills.

Service on a national committee. For faculty on the clinical tracks, involvement in a national society often helped advance careers as well as provide a venue to advance science. During the first years of a career, the junior faculty member best focused on building clinical acumen at Duke. To the extent possible, we suggested that by fourth year, the member might wish to join a national committee. One straightforward way was to befriend more senior members in national societies and ask to become more involved. For most, simply being bold and announcing that he or she, the faculty member, wished to participate in the committee structure was a first step to future success. When possible, the senior faculty members participating in the reviews also served as conduits to new connections. In total, 35 of 79 (45%) members of the department served on national committees, 24 of 51 (47%) as members who went through the review process, and 11 of 28 (39%) who underwent promotion before the department commenced with the review process (Table 3). Of course, to remain on a committee, it is required that the new faculty member to perform well.

Among all national societies, the College of American Pathologists (CAP) provided the most opportunities for our young faculty to participate. Sixteen (31%) of 51 junior members (4 [14%] of all 28 other faculty in this analysis) took leadership roles that significantly enhanced their academic careers. Their growing areas of expertise were as diverse as government and professional affairs and economic affairs, laboratory accreditation, scientific development and resources, member-driven activities, and informatics, including pioneering Systemized Nomenclature of Medicine (SNOMED) and its acceptance by the federal government through the National Library of Medicine as a key medical coding language. One faculty led national works that were sentinel in their fields. Some of the work accomplished led to other national federal roles, such as where the Health Information Technology Standards Committee makes recommendations to the National Coordinator for Health Information Technology, the Centers for Medicare and Medicaid Services (CMS) quality measure development plan technical expert panel provides input on future clinician quality development under the government's quality payment program, or

appointments to an international organization, such as the International Health Terminology Standards Development Organization (IHTSDO). A second organization (American Society of Dermatopathology) involved 4 of our faculty. Seven organizations had 2 to 3 members involved. Thirty-two of the organizations had only 1 member involved.

Recognition of educational efforts. We expected all faculty to participate in educational efforts that supported the department and the institution as a whole. One measure of effectiveness was awards for teaching. A total of 27 faculty received special commendation (18 in the annual faculty cohort and 9 in the group not reviewed; Table 4). The Bernard Fetter award for the best teacher of the year was the most common recognition award. Eight junior faculty received the award 13 times. In all, 12 faculty received the award 18 times. The residents of another department, dermatology, awarded their highest honor (Lamar Callaway Award) 5 times to 2 of our pathologists for their teaching. Being asked by a national society to moderate or organize a scientific session was another form of honor sometimes received.

Faculty in our department were often invited to lecture at outside institutions. This commonly took the form of invited grand rounds at other universities or to present at state, national, and international society and academic meetings (Table 5). Of the 51 members who had annual reviews, 33 (63%) fulfilled this mission ranging from small numbers of invitations to those who spoke frequently. Typically, the frequency increased as the faculty's research and clinical abilities and productivity progressed. Nineteen (37%) junior faculty gave no lectures. About a third of these people left Duke, and one-sixth were in our community practice division where this type of academic exercise was not expected. Two-thirds of the remaining group were young faculty and had not yet built their careers sufficiently to be invited, leaving only 3 members of the department who were more experienced, but never lectured outside the Duke University environment. The invitations to lecture externally were a weighted item the promotion committee examined to gauge readiness for future promotion.

Another educational activity reviewed yearly involved local educational conferences the faculty taught. Certain of them, principally "tumor boards" were considered an obligation and part of clinical service. Some faculty initiated and perpetuated specific teaching conferences in their areas of specialty. The subjects varied but were directed toward medical students, residents, or faculty, either in the department or for other departments. External evaluations ("class evaluations") were reviewed as available.

Clinical effectiveness. A basic requirement for continued employment in our department was clinical excellence. As covered elsewhere, some young faculty were initially slow and tentative with regard to their diagnostic abilities, but with support, nearly all became functioning at high levels by their third year. One measure of effectiveness was few quality assurance miscues. No faculty member fell outside the bounds of the standards long established for our department. Another

Table 3. Service on National Committee (35 Faculty).*

Organization	Number of Faculty	Committee Names
College of American Pathologists	20	AP Convergence Terminology Workgroup AP Integrating Healthcare Enterprise Workgroup Biorepository Accreditation Program Committee Board of Governors Clinical Informatics Steering Committee Comparative Hematology Survey Referee Council on Education Curriculum Committee Diagnostic Intellectual Health Info Technology Committee Engaged Leadership Academy Finance Committee Graduate Medical Education Committee Gynecologic Practices Consensus Conference Health Information Technology Standards Board Informatics Committee Informatics Graduate Medical Education Working Group International Committee Internet Editorial Board Committee Laboratory Accreditation Program, Team leader Lower Anogenital Squamous Terminology project Membership Committee Nominating Committee Pathologists Information Science and Technology Committee Pathology Electronic reporting Committee Personalized Health Care Committee Quality Practice Committee SNOMED International Authority SNOMED International Standards Board Transfusion Committee
American Society of Dermatopathology	4	Audit Committee Ethics Committee Quality Assurance Program Young Physician Committee
American Association of Neuropathologists Associate/ion of Pathology Chairs—Program Directors section American Society of Cytology American Society of Clinical Pathology Hans Popper Hepatopathology Society North Carolina Society of Pathology United States—Canadian Association of Pathology	2-3	AMA CPT Advisory Committee Board of Trustees Constitution committee Curriculum committee Economics and Affairs Committee Education Committee Finance Committee Hemeapheresis Exam Committee Laboratory Advisory Committee¶ President/President-Elect Public Affairs Committee Quality Assurance Committee Scientific Technology Program Review Committee Vogel Award Committee
Alliance for Clinical Trials in Oncology American Association for Accreditation of Laboratory Animal Care American Association of Blood Banks American College of Medical Genetics American Cytogenetics Conference American Joint Committee on Cancer American Society for Colposcopy and Cervical Pathology American Society for Histocompatibility and Immunogenetics American Society of Apheresis	1	Accreditation Review Board Animal Research Committee Anogenital Committee Asbestos Committee Awards Committee Board of Trustees Bylaws Committee Domain Expert Committee Education Committee

(continued)

Table 3. (continued)

Organization	Number of Faculty	Committee Names
American Society of Microbiology		Environmental Health Committee
American Thyroid Association		Executive Council
Association for Molecular Pathology		Fibre Carcinogen Workgroup
Clinical Cytometry Society		Gynecologic Pathology Committee
Cytology Society of Indiana		Hematoma Pathology Committee
Department of Defense		Informatics Secretariat
Environmental Protection Agency		Integrating Healthcare Enterprise Committee
Gastrointestinal Pathology Society		Journal Watch Committee
Gynecologic Oncology Group		Laboratory Animal Medicine Committee
International Agency for Research on Cancer		Laboratory Committee
International Health Terminology Standards Development Organization		Morphology Ultra Structural Division
International Life Sciences Institute		New Technology Task Force
International Society of Dermat Oh Pathology		Organizational Committee
Latin America Pathology Foundation		Passwords Committee
Microscopic Society of America		Pathology Committee/Workgroup
National Academy of Science		Patient Safety Committee
National Cancer Institute		President
National Institutes of Health		Public Board Member
National Quality Form		Review Animal Care Use Protocols Committee
National Toxicological Program		Standardize Nomenclature Committee
Network in Nonalcoholic Steatohepatitis		Technology Committee
North Carolina Association of Biomedical Research		
North Carolina Association of Blood Banks		
North Carolina Council for Sickle Cell Disease		
Papanicolaou Society of Cytopathology		
Pulmonary Pathology Society		
Society of Toxicology		
Southeast Microscopy Society		
World Association of Societies of Pathology and Laboratory Medicine		
World Health Organization		

Abbreviations: AP, Anatomic Pathology; AMA, American Medical Association; CPT Current Procedural Terminology; SNOMED, Systemized Nomenclature of Medicine.

*Due to similarities, the table combines faculty being reviewed (24) with those promoted before the annual review process began (11).

Table 4. Educational Recognition.

Award	Number of Faculty, Annual Reviews	Number of Faculty, Nonreviews	
Fetter award	8 faculty 13 times	4 faculty 5 times	Resident awards to best teacher
Callaway award	1 faculty 4 times	1 faculty 1 time	Dermatology award to best teacher
Hammes award	2 faculty		Best graduate school teacher
Duke Master Teacher award	1 faculty		
Golden Apple		1 faculty 1 time (nominated)	Second-year students award to best teacher
Moderate/organize scientific sessions at national meetings	6 faculty	3 faculty	

measure was whether the faculty member became a “go-to” person whom others would consult on difficult cases. By the time our faculty had been in the department for 6 or 7 years, some had already developed local reputations in their areas of expertise and were receiving “second opinion” consultations.

Administrative recognition. All faculty were expected to carry out some administrative service, considered as “good

citizenship.” Occasionally, the effort far exceeded the norm. In one instance, a faculty served as “chief of staff” at one of our hospitals. Sometimes, what began as an administrative undertaking led to research, especially when the results of the administrative work expanded knowledge in a generalizable manner. Examples included developing better methods to assure quality assurance and biobanking or advance economic affairs. Several of our faculty published about the Duke experience and the

Table 5. Speaking Engagements Outside of Duke.

Number	Educational Speaking Engagements at State, National, and International Society Meeting in the Form of Invited Lectures, Short Courses, and Symposia; Invited Grand Rounds at Universities Away From Home
33	Yes
19	No, of which 6 left Duke, 3 currently in the department's community practice division, 7 currently in department within their first 3 years of employ, 3 currently in department after 4 or more years

novelties they developed. Recently, the Association of Pathology Chairs invited several of our departmental members to report their Duke experience. Work done in the CAP has led to the US Government (via the National Library of Medicine) to adopt the coding language, SNOMED as an official language for our government. More recently, the same faculty have assumed the leadership whereby many countries have formed the consortium, the IHTSDO, to report using a common language and syntax. Probably, the most unusual recognition in the authors' experience came from 2 independent letters about the same person who was under consideration for promotion to the rank of full professor. Both external referees wrote that they did not know the pathologist in question nor had they ever heard his name. But from the resume and career development statement, they recognized the candidate to head a specific program in our department, and each of the 2 respondents' letters continued that the Duke program was widely regarded as "the" model and best of all in the United States. Further, their 2 respective schools had formatted their own programs after Duke's program. This was recognition to the highest degree.

National recognition. Our department weighed national, state, or local recognition in the form of awards or special appointments heavily toward promotion. Six faculty (5 in the annual review cohort and 1 not) won 17 awards. The list included appointments requiring gubernatorial appointment, institution-wide award, or from national societies giving special recognition (Table 6).

Nature of publications. To analyze publications for this analysis, we selected for each faculty 5 consecutive reports they authored either at the time of promotion to associate professor without tenure or, if not yet promoted, their 5 most recent publications. The pathologists whose practices largely focused on tissue diagnoses (largely anatomic and molecular pathology) were the first author, senior (last) author, or in 40%, 45%, and when combined 57% of the published articles. The PhD clinical scientists and full-time-funded researchers had slightly lower percentages (Table 7).

The funding for research was sharply divided. The anatomic pathologists largely "self-funded" the publications emanating from their clinical work (86% self-funded, 15% grant funded; Table 8). For collaborative efforts, investigators from other

Table 6. Special Awards.

Certificate of Appreciation, National Quality Forum Distinguished Scientist Award, Southeast Electron Microscopy Society Frances K. Widmann Service Award, North Carolina Association of Blood Bankers
Lecturer Award, American Society for Apheresis
North Carolina Council on Sickle Cell Anemia (gubernatorial appointment)
Outstanding Achievement Award, National Cancer Institute Pathologist Advancement Award, College of American Pathologists President's Award, 4 times, College of American Pathologists Public Service Award, College of American Pathologists Strength, Hope, and Caring (Leadership) Award, Duke University Hospital
Transformation in Action, featured pathologist, College of American Pathologists
Under 40 Honoree, American Society for Clinical Pathology Young Clinical Scientist, Association of Clinical Scientists

Table 7. Role of Pathologists in Authorship.

	Anatomic Pathologists	PhD Clinical Scientists	Full-Time Funded Researchers
First author	40%	30%	28%
Senior author	45%	0%	34%
Either	57%	30%	50%

Table 8. Research Funding.

	Department Sources	Grants in Other Departments
Anatomic Pathologists	14%	51%
PhD Clinical Scientists Research	-	20%
	100%	93%

departments supplied the grant funding (grants supported 51% of the publications). The works reported by the "research" faculty virtually were always grant supported whether the investigator was from pathology or another department.

The journals in which the anatomic pathologists published mostly were the *Archives of Pathology and Laboratory Medicine and Diagnostic Cytopathology* and slightly less in *American Journal of Surgical Pathology and Human Pathology*. The research scientists published most frequently in the *New England Journal of Medicine, Science, and Journal of Biological Chemistry* (Table 9).

Difficult decisions the review committee sometimes faced. Occasionally, the annual review committee realized the faculty member would likely never be promoted, such as when it was evident that qualifications for tenure would not be achieved within the university's established time limit. Well before any candidate for promotion reached the tenure clock limit, the committee's charge was to advise the member via the departmental chair to request moving to the nontenure track, thus

Table 9. Journals in Which Publications Appear.

	% All Papers*	Funded (Extramural) Studies, % Journals Department Published		Self-Funded Studies, % Journals Department Published	
Pathologists					
First or last author	44%	13%	†	87%	<i>Arch Path Lab Med</i> ‡ <i>Diagn Cytopathol</i> ‡ <i>Am J Surg Pathol</i> § <i>Hum Pathol</i> § <i>Am J Dermatopathol</i> § <i>Am J Clin Path</i> <i>J Cutan Pathol</i> <i>J Mol Diagn</i> <i>Pathol Case Reviews</i> <i>Transfusion</i>
Collaborator	30%	49%	<i>J Clin Invest</i> <i>J Urol</i> <i>J Vas Interven Radiol</i>	51%	<i>J Gastrointest Oncol</i> <i>Transfusion</i> <i>Arch Path Lab Med</i> <i>Radiol</i>
PhD clinical scientists					
First or last author	3%	33%	†	66%	†
Collaborator	7%	79%	<i>J Allergy Clin Immunol</i>	21%	†
Primarily research					
First or last author	8%	100%	<i>New Eng J Med</i>	-	-
Collaborator	7%	93%	<i>Science</i> <i>J Biol Chem</i>	7%	-

*Columns add to 100%.

†Small numbers of journals cited but once.

‡Highest numbers.

§Next highest numbers.

ending the threat the time clock brings. This was done 5 times since our programs began. Three of these candidates eventually went on to become full professors and 2 to associate professors. Since 2012, the dean of Duke Medical School has declared that virtually all new faculty must enter on the nontenure track. Hiring directly onto the tenure track will be a rare exception. Should the faculty prove to develop an outstanding track record, the department can then propose the member be transferred to the tenure track.

Observations during the review. Our review program was not designed to assess faculty satisfaction quantitatively but rather was to help faculty focus and build their careers. Yet certain themes became apparent qualitatively, including areas of young faculty concerns, during the annual reviews.

Probably, the most common wish of the young faculty was to have more protected time and more monetary support for research projects. Older members who were young faculties decades ago rarely expressed this concern, as they did have more protected time. With both the tightening of government grants and contract dollars and diminishing insurance reimbursements, and also with the mandate that hospital laboratories could no longer support research for free, this concern increased. To help ameliorate this issue, there has been some movement to give the faculty a slightly increased amount of protected time plus a research fund was set up where junior faculty may apply for small amounts of money and have it approved much like a mini grant program.

A second major concern, but 1 not quantified nor ever recorded in the annual summary, was the not infrequent discussion of time constraints. Nearly, all of the faculty had spouses with full-time jobs; most had children, often young; a few had disabled parents. For some, the faculty member was the primary income earner, and some were also the sole parent. With the increasing workloads, in part from the shrinking reimbursement per case, and the lesser amount of protected time compared to the past, the faculty members, especially those early in their careers, felt stressed. We often discussed life balance and even for the ambitious faculty member, where work ends. Our general impression, observed over the years, was that in today's age, the quantity of academic scholarship has lessened from decades ago.

One of the most common issues discussed, especially after the time when the faculty were comfortable with their clinical duties, was to hone in on an academic focus, whether related to clinical expertise, research, or educational aspirations. They key was an increase in understanding of a subject and become more efficiently productive. This was a common theme especially among the most productive and gifted faculty.

Another issue commonly discussed with faculty, especially with those who wished collaborative research with others outside the department, was the issue of exploitation. We specifically discussed that no faculty should ever work on a project with anyone with an ill-defined authorship. Too often, a pathologist would be asked to spend many hours to have only a middle authorship on a paper. It was the reviewers' strongly stated position that this situation was typically a waste of their

time, productive of papers with little APT weight. We emphasized to the mentee that he/she should put significant thought into these projects and independently lead at least on some of the component subprojects. In this way, if there were to be research endeavors, the involved parties should identify early on several papers that might ensue and define upfront those which the pathologist would lead and those in which the pathologist would be a middle author, obviously based on content and time. We advised our young faculty to require they participate in all appropriate manuscripts and take the responsibility to read, think, and add materially to the editorial process. We also discussed the issue where the clinician requests the pathologist “just take a photograph” but then omits him a coauthor. In this case, we suggested that the pathologist suggest to the clinician that we would loan him/her the slides and have him/her take the photograph, knowing full well that few clinicians would know what to photograph or have the final product sharply in focus. But, we also emphasized that the pathologist needed to take responsibility to thoroughly read and critique the manuscript, materially adding to it. Collaboration across departments could be exceedingly productive, once all were assured of realistic playing rules.

Salary concerns proved to be a minor issue. Based on the department chair’s philosophy of achieving an annual compensation at the AAMCs 50th to 75th percentiles and preferably toward the higher, we have had few faculty leave because the salary they wished was greater than ever possible in an academic institution. Several did leave expressly for greater salaries, when combined with the high work load we required. Two faculty who experienced a spousal death or divorce and suddenly assumed much greater financial responsibilities left as only a private practice could support. Eventually, one returned. Conversely, some faculty who wished to spend more time writing papers or participating on the national scene sometimes chose to reduce their clinical workload and thereby reduce their salary draw.

A concern raised over time was the increasingly greater amount of regulatory compliance that consumed a not insignificant amount of faculty time and effort. The national regulatory burdens in terms of training sessions have been felt to be excessive. The time needed to comply with IRB regulations were considered overly bureaucratic and time consuming. (Recently, institutional support has been increased to assist in meeting these demands.) The result is that small, “unfunded” clinicopathological analyses based on consultation material, common in the past, and which have led to the discovery of many new tumor types, had become difficult to virtually impossible to conduct. Overall, the increased regulatory climate has negatively impacted research productivity, particularly between the junior faculty and residents, neither of whom had sufficient time to provide in addressing the regulatory hurdles.

Several of our faculty who were born abroad had decidedly strong accents, which we felt would hinder their ability to lecture before groups. We strongly recommended these faculty enroll in accent reduction courses, which some of the faculty later reported helped them enormously. A few also joined programs like Toastmaster.

Three young faculty had conflicts with their section chiefs. The annual reviews were the first alert we had of pending issues and, while not easily resolvable, helped us to work with the section chiefs to identify pathways for improvement.

Feedback and evaluations. Because the review process we are reporting was initiated and effected as an administrative function (per Duke University policy), a formal faculty survey of the reviewed faculty has never been conducted (a project for the future). The comments we have heard over the years were that the reviews let the faculty know where they stood, what resources might be available about which they were unaware at the time of the review, and how they might become engaged on national committees, which might help them advance their careers. A common comment was that by starting the reviews immediately when joining, the young faculty members saved themselves much otherwise wasted years learning how to effectively build a career. Never in any of the reviews did we hear of disparity about race, color, or tenure versus nontenure rank.

Based solely on the senior reviewer’s opinion or occasionally by the faculty members’ comments to the reviewers, the review session improved the pathway to promotion for about two-thirds (32) of the faculty. The remaining members fell into 2 groups. About half of the new faculty came with such enthusiasm and energy that regardless of our reviews, nothing was gained from the mentoring process. Thus, it is difficult to determine how much we aided this latter group, although we believe we did. Unfortunately, some others left for personal reasons, including inability to build research programs, secure research funds, or left for better remuneration or jobs with lower workloads. For many of these instances, we are uncertain how the review process impacted their decisions and careers. Of import, about a fifth of all the faculty who left, generally for spousal, financial, or such issues over which they had little control, returned and thrived. Many of the faculty members have been actively recruited to other institutions, but remained in the department, in part because of the overall support and opportunities available here.

Promotion Process

Progression in this article refers to time from the initial appointment of assistant professor to associate professor without tenure (for both tenure track and nontenure track), to associate professor with tenure (for tenure-track positions only), and to full professor for either nontenure or tenured positions. Tenure track is open to clinicians, PhD clinical scientists, and basic science research scientists.

On the tenure track, progression from assistant professor to associate professor without tenure, to associate professor with tenure, and to professor with tenure occurred with a median time of 7, 9, and 11 years, respectively (Table 10). On the nontenure track, promotion took on average 4 years longer: 11 years for promotion to associate professor and 15 years to full professor.

The total number of papers credited to associate professors without tenure but on the tenure track was 34, to tenured

Table 10. Progression in Rank.

	Number of Faculty	Median (years)	Range (years)
Tenure track			
From assistant professor to:			
Associate professor without tenure	10	7	4-11
Associate professor with tenure	7	9	3-11
Full professor with tenure	5	11	7-20
Nontenure track			
From assistant professor to:			
Associate professor without tenure	8	11	3-16
Full professor without tenure	4	15	7-18

associate professors 51 papers, and to tenured full professors about 85 articles (see Methods and Materials for tenure rules). For faculty on the tenure track or already tenured, the faculty member served as the first (lead) or the last (senior) author in 39% to 68% of instances, indicative of a leadership position (Table 11). Nontenure-track faculty wrote many fewer articles, more of which were case reports, and had lower percentages where they were the first or senior author.

By the end of the study, 23 faculty were promoted from the rank of assistant professor to the rank of associate professor or higher and 28 had not been promoted beyond the rank of assistant professor; of the latter, some were still relatively new (less than 10 years, 20 faculty) or decided to remain at Duke indefinitely at the current rank (8). Some (4) of the latter worked in the department's community practice division where salaries were independent of rank and the writing of research papers and academic promotion were not of a high priority. Another 28 more senior members included in this analysis have never had a review. Twenty of them joined the department before the review system was in place but were promoted during this time; they serve as an internal comparison group. Finally, another group (42) had reached their highest rank before 1998, have had no reviews, and were excluded altogether from this analysis.

Preparatory steps to promotion. Candidates' dossiers were assembled as preparatory before being considered for promotion. As a well-written career development statement and a visually, well-organized CV would provide the outside reviewers cogent material upon which to base their letters, much effort went into assuring that the documents were thorough and reflected the candidates' accomplishments.

From 1998 through 2016, there were 24 promotions to the rank of associate professor without tenure, 17 promotions to the rank of associate professor with tenure, 11 promotions to the rank of full professor with tenure, and 7 promotions to the rank of full professor without tenure. Of these 59 promotions, the medical center-wide promotions committee and the medical center executive did not return a single portfolio, even for any additional information, which was unusual compared to other departments. Occasionally, there was high praise by the medical center-wide promotion committee or by the

institution's medical center executive committee for the candidate (in 1 case, both the chancellor and the dean proclaimed the clinical faculty member up for promotion should be their "poster faculty member" for how he exemplified the process to advance science nationally through one's clinical skills). Clearly, our promotion packages were effective.

Faculty Departures

Junior faculty (annual review program) and more senior faculty (not in annual review program). Thirteen (25%) of the young faculty members (those in the annual faculty review program) left to take jobs elsewhere for various differing reasons (Table 12). Most of issues were beyond the realistic control of the department (greater salary, family issues, inability to obtain research funding grants, innate performance issues). For only 1 issue was there any departmental control and that was personal conflict with the section chief. A rare departure was due to the high pressure to publish; even one of these faculty returned years later to the nontenure track and is highly academically productive.

During the study period, 12 (24%) of the faculty (largely faculty who joined the department prior to the review program but who were promoted at Duke) also left Duke (Table 12). More than half of these individuals were promoted as they left for another institution.

Discussion

A theme common in websites of many US medical school departments is that the mentoring of junior faculty is paramount to that division's success. As a typical example, "junior faculty need both specific-/content-oriented mentoring (eg, specialty-specific career information) and content expertise (eg, teaching skills or professional writing skills used in grant writing, publications, and manuscripts), as well as overall career advice relevant to advancing as a medical school faculty member. The department recognizes that preparing the next generation of [pick your specialty] by developing current junior faculty members is essential to the continued success of the department and the future of [the specialty]."³ A premise underlying this theme is that academic productivity of *clinical faculty*, which constitutes the majority of any departmental faculty, is critically important to both the department's academic reputation and enabler of human research within the institution.⁴

The present study examines the long-term mentoring program at the Duke University Medical Center Department of Pathology during which time the university's promotion policy was stable, federal grant money was decreasing nationally, and the clinical diagnostic faculty was growing. The mentoring and review process we describe exhibited many strengths. From the outset, the design had 2 broad hypotheses that could be tested. One was that the annual review process, if started when the newly minted young faculty joined the department, could provide many benefits to developing a successful career, supporting job satisfaction.⁵ And pathology is a satisfying medical

Table 11. Number of Papers in Progression in Rank.

	Total Number of Papers			First and Senior	
	Authored Papers			Authored Papers	
	Faculty	Median	Range	Median	Range
Tenure track					
From assistant professor to:					
Associate professor without tenure	10	34	21-74	14	6-67
Associate professor with tenure	7	51	42-84	13	11-68
Full professor with tenure	5	89	67-133	42	26-76
Nontenure track					
From assistant professor to:					
Associate professor without tenure	8	20	5-81	7	2-19
Full professor without tenure	4	59	22-98	11	7-32

Table 12. Reasons Faculty Leave.

Reasons Junior Faculty Leave	Number	
Greater salary (private practice)	3	6%
Conflict with supervisor	2	4%
Performance issues	2	4%
Spouse/family	2	4%
Unable to secure grants	2	4%
Left for industry, better resource	1	2%
Left subspecialty	1	2%
Reasons More Senior Faculty Leave		
Primary reason faculty not in review process left		
Promotion	7	14%
Greater salary (private practice)	1	2%
Left for industry, better resource	1	2%
Left subspecialty	1	2%
Retired	1	2%
Spouse	1	2%

profession.² The second was that a rigorous process preparatory to the promotion exercise would lead to a high success rate. Both of these programs averted gaps common in programs where there was dissatisfaction.⁶ These 2 programs used synchronously resulted in a more prosperous faculty that was promoted more quickly and prevented faculty departures, certainly at much lower levels than in the literature.⁷⁻¹⁵

Over a 5-year period, our departure rate would be about 1 faculty per year or 2% to 3% of our active clinical faculty, in opposition to about 35% reported for the aggregate of 23 other US medical schools.¹⁶ (For purposes of calculating the number who departed, death and retirement were excluded.) According to the American Association of Medical Colleges report, the cost in 2012 to recruit and hire a faculty member was about US\$96 000, excluding the startup package which generally ranged for a faculty member in science or engineering of about US\$110 000 to US\$1.5 million and took 10 years to recoup.⁷ The article notes “more often faculty leave for reasons of work environment. Even in cases where the reason is more salary and higher ranked institution, faculty often would not have even

looked or allowed themselves to be courted if there had been as many opportunities for mentoring, research collaborations, and support as they had expected.”

Strengths

We found that the review process immeasurably helped young faculty overcome the hurdles in becoming a young professor^{15,17} (Table 13). Many new faculty feel ineffectual to even incompetent during their first several years of practice, despite the fact that they are far abler than they believe. The review helps them to know it is entirely appropriate to feel insecure and that it is proper and useful to seek second opinions from their colleagues. An especially difficult problem lay with realistic expectations of fellowship-trained pathologists, which today is the norm. Our experience is that most feel some degree of uncertainty, and sometimes even the best are unsure of their skills, even though in reality they are far better than they recognize. With quiet support, most are quite comfortable by the end of their third year, some much more quickly. The weight of the responsibility they carry and the complexity of what they have not yet experienced are real, as is the all-too-present threat of a malpractice suit. Others too have noted that mentoring reduces stress.¹⁸

We believe that publications in peer-reviewed journals should be the hallmark of academic progress. We support the contention that the act of formulating a hypothesis, researching, and digesting the literature and analyzing results to prepare a report is the foundation of understanding the field in which one wants to practice. The twin impetuses of improving one's understanding of the world in which that person lives while advancing the world's scientific knowledge have historically fostered the “publish or perish” ethos. In the modern academic world where research funding has dwindled, regulatory oversight of research increased, and time for research has disappeared, a strong mentoring program that advocates the departmental mission, while supporting the junior faculty's career is mandatory. The majority of the papers that the anatomic and clinical pathologists published in which they were the first or the senior author were in general or

Table 13. Lessons Learned.

Faculty reviews
Reviews in a multitrack faculty system can be exceeding helpful to assure each faculty ultimately is on the correct track, which sometimes differs than that when hired.
Diagnostic unease is normal during the first several years, reduced by seeking consultation with colleagues.
Service on a national committee has multiple values, including recognition, and often abilities to conduct types of research on a scope larger than available at any individual institution, better funded than with traditional grants, and with an authority more influential as a group product than that from a single person.
Identifies institutional impediments, which when identified early can often be fixed or at least ameliorated to the benefit of all. These are of a wide range, including faculty mentor discord.
Reduces faculty turnover. Even faculty who leave for reasons beyond their or the department's ability to control sometimes return.
Promotes career satisfaction, faculty responsibilities, institutional/departmental support.
Promotes inclusiveness, respect, and open communication.
Enhances professional development, institutional recognition, and support for excellence in teaching and clinical care.
Must be blind to gender, race, and ethnicity.
Faculty retention
Departmental/institutional policy generally sets salary guidelines/levels, which if inadequate materially affects retention.
Insufficient protected time for academic endeavors sometimes leads to the decision to seek employment in the private sector. Unfortunately, in today's economic climate, more than a small amount of guaranteed protected times is becoming a rarity.

specialized pathology journals or in the journals of their clinical subspecialties. Eighty-seven percent were self-funded, in common with some,¹⁹ but far greater (26%) than 1 survey of 6 North American academic pathology departments.²⁰ The journals where the publications appeared correlated also with whether the studies were self (department)-funded or grant funded.²⁰

A comfortable, collegial, and supporting atmosphere of developing trust with others in the department builds strong working relations and camaraderie. It certainly helps overcome the silo climate we have sometimes seen elsewhere. Of course, an occasional new member finds the pressure too high and leaves, which sometimes happens with a combination of high volume clinical practice and the encouragement to publish. (It is beyond the scope of this article to analyze the measurement of workload, but as others have observed,²¹ Hsiao's physician work relative value unit system that is in common use inadequately measures productivity for which reason our department many years ago developed its own unique all-inclusive pathologist work benchmarking system, which we review for each faculty at his or her annual faculty review.) Some faculty find that they love pathology in an academic setting but wish to work in a pure community practice that lacks academic tasks, and that too is a solution, which is constructive. Many stay in the academic setting due to the presence of students, residents,

and more challenging cases but choose to remain on a clinical (nontenure) track so as to avoid the pressure to publish. A few desire the greater remuneration common in a community practice or private setting. With the supportive process in our academic environment, few leave (about 1 per year and usually within the first 3 years) and some later return, which this study suggests reflects the cordial supportive working atmosphere the department fosters. What we cannot assess is to what degree our desirable geographic region, climate, culinary, and cultural attributes influence decisions.

The review process, by commencing early, helps young faculty to better plan their future careers. The advice the reviewers provide aids the young pathologist to determine priorities better and avoid pitfalls. The review group also helps the young pathologist understand when in their careers it is appropriate or desirable to accept new administrative tasks and when overextension may be injurious. The review group can also help the young pathologist reach out beyond the walls of the department to develop contacts by becoming involved in national societies and thus develop their own network and enhance their career focus, similar to that reported in other disciplines.²² In particular, the CAP should be complimented for the many opportunities it afforded the many young faculty who wished to work to develop major national reputations during this study (and continues to the present day). This was true for at least 20 of our faculty (16 of the young faculty and another 4 of the members coming for promotion but earlier than when the review process began). In many instances, the projects on which these faculty led and published helped advance science, for example, in the areas of biobanking, informatics, and quality assurance, and were far more profound than what might have been achieved if the faculty member had endeavored to work alone at Duke.²³⁻²⁷ What is clear is that "research" and the concept of "advancing the field" are so much broader in academic pathology than the traditional view restricted to "grant funding," "a new stain," or finding a "new molecular diagnostic mechanism."

Our review process provided a formal manner in which young faculty could present suggestions for how the department might improve, remove obstacles, and so on. The suggestions are too many to list but commonly dealt with strategies aiding the department to better organize workloads, to provide needed resources (especially secretarial or office assistant), and to streamline life in a complex environment. This has proved an effective means to give feedback to the department chair and the administration. We are unaware of any disparity based on race, color, or tenure versus nontenure rank, as sometimes has been reported in other academic departments elsewhere in the United States.²⁸ Our department recognized that women commonly, and increasingly men, have major parenting obligations and all efforts were made to accommodate these needs (work-life balance).²⁹ As reported elsewhere, the percentage of women nationally in academic pathology was about 26% in 1995 and 30% in 2001,³⁰ which is not dissimilar to that in our department. Since 2005, the percentage in our department has dramatically increased and is now over 70%.

Another advantage the review process affords is that it has helped the candidates undergo a self-assessment with regard to their academic and diagnostic progress to identify areas of weakness and strength and to formulate strategies on improvement prior to attending the review session. At the review session, they are led to understand and clarify the guidelines for advancement, that is, what does promotion require? To the extent possible, the faculty members comprising the review team for each young faculty came from within the department. Where useful, and especially for faculty engaged in basic science research, not uncommonly an appropriate person from another department was asked to participate.

For the faculty approaching promotion, the annual review committee also provided a comprehensive sounding board for when candidates were ready to proceed.

The philosophy behind our rigorous promotion process was simple and straightforward. A strong, compelling career development statement and a visually appealing, but concise CV let the young faculty present himself in the best light and provided the program head strong arguments to include in the letter he must write. The proof that this system worked, and worked well, was that not a single promotion package was ever turned back to the department, either as a denial or with a request for additional information. This was unlike any other department at our medical school during this period.

Unwittingly, a sloppily prepared promotion package creates a converse threat to the institution, which a well thought out package prevents. If the package were done sloppily and an outside reviewer stated that the faculty member should not be promoted based on the précis, it forced the institution into a most unpleasant and uncomfortable bind. Knowing the candidate to be excellent, and yet having the outside letters suggest otherwise, does the institution allow or deny promotion? If promoting, then what does that tell the outside reviewer? Would the outside reviewer ever wish to write another letter for a candidate at the institution knowing that the institution ignored his advice? This has occurred.

Limitations

The hypotheses we wished to test, the utility of the faculty review process and structured promotion process, were hampered by vulnerability in study design or interpretation. One limitation is that promotion/career outcomes cannot be truly linked directly to the faculty review program since there are many other influences/variables at play that cannot be measured. Examples include other programs external to the department (school-wide faculty development workshops/programs and mentoring by others outside the department or school).

Devising appropriate comparisons and controls for a project like our review process is also exceedingly difficult. It would be unethical to have half of the departmental members receive what we considered best practice and the others not, when dealing with people's careers. Our process is also exceedingly labor intensive, which in a larger department

could prove prohibitive to carry out. Each annual review requires the group chair to devote about 3 to 4 hours of time and each of the other members of the review member about 1 hour. The head of the promotion committee devotes about 8 to 10 hours and the other members about 1 hour per candidate. In the case where a faculty member is having considerable difficulty, the head of either review team and the departmental chair may then need to devote many extra hours. Based on our experience and discussions with many others at other universities, it is important that whoever leads the reviews has a real enthusiasm for the undertaking. The departmental chair must also decide who will lead the program. Many chairs wish to but lack allocable time. Some departments have split the responsibility, but this often leads to variable reviews. We suggest that the departmental chair delegates the head of the committee to a single person who is both interested and willing to carry on this position for many years. We also suggest that the departmental chair can be an ad hoc committee member and participate as time allows. For reviewers other than the chair head, the time commitment is less, which usually consists of taking part in the review and editing and critiquing the report itself. Regardless, having the departmental chair participate sometimes leads to quick remedies and ways to remove institutional impediments.

Another limitation our programs faced was compliances with institutional rules for promotion and further philosophies of the individual departmental chairs. This was expressed through the overarching, anxiety-provoking issue the young academic faculty members faced: what was required for promotion. Major universities commonly speak of prowess as an outstanding diagnostician, teacher, and researcher. Yet the ever-decreasing grants, contracts, and insurance funding continuously has made it even more difficult to be the so-called and desirable "triple threat." Coupled with the obligation of a department to be diagnostically skilled and train future pathologists and medical students with a strong sense of disease, our department decided philosophically that our diagnostic pathologists excel in the latter 2 facets, encouraging any who wished to excel also in the former. (Basic science researchers were expected to excel and produce major basic science advances.) The university also developed explicit minimum requirements for the various tracks (Appendix B). Although regrettable that few diagnostic pathologists today are the triple threats of yore, the results showed that our faculty continued to publish, often identifying niches of academic practice that funding agencies ignored. Such areas included postgraduate education improvement, transfusion practice, biobanking, quality assurance, and informatics. Mentoring in these niches was challenging and we often sought outside assistance. In this regard, national committees proved very useful in arranging connections, marshaling academic resources, and organizing cooperation. Historical landmarks of academic success such as endowed chairs, chairmanships, and textbook editors do not yet apply to this group of faculty as the vast majority are still early in their careers, but we anticipate that these will soon be achieved by this group of overachievers.

Future Direction and Summary

The Department of Pathology at the Duke University Medical Center has built 2 highly successful programs, an annual faculty review and a promotion review program, which work in concert. They have been successful in helping young faculty achieve the potential for which reason they came into academics. The faculty review program in the past, but especially looking to the future, helps more quickly acclimate the younger faculty member to the rigors of patient care where they are the responsible caregiver (“the buck stops here”), focus as they slowly plan and focus on their future pathways, overcome impediments, avoid exploitation, and find quicker entrances to national societies. At the same time, programs with a broader scope might be established to enhance a more continual support.^{31,32} Further, as all would acknowledge, programs are needed at the associate professor level as this group of professional looks toward tenure and full professorship. Such programs might help avoid the stagnation that sometimes occurs, leading to the monikers, a “terminal associate” or “a tenure mistake.”³³

Appendix A

Suppl Table 1

Name: _____

Questionnaire for Annual Review

Please submit electronically your UP-TO-DATE CV.

Areas for thought

- What 3 accomplishments of yours in the context of the Department’s goals and mission stand out?
- What 3 of your roles are most important to you? Least important to you?
- In what areas do you need to improve and what will you do about it?
- What are your organizational and/or personal goals for the coming year and how do they fit with the Department’s current goals and objectives?
- What external factors (outside of yourself), if any, interfere with your abilities to achieve your personal goals? Your organizations goals?
- What specific decisions and actions are necessary to strengthen your Department? What additional resources are needed to make you more effective in your work?
- What should the Department’s priorities be for the next year?

Accomplishments & Innovations (FOR LAST & THIS CALENDAR YEAR ONLY)

- Current research interests and activities
- Publications
- Projects/Funding
- Projects from non-funded research

- Teaching
 - Evidence of quality
 - Efforts to improve teaching
- Service
 - Maintenance of expertise in area
- Administrative
 - Activities on the national scene
 - Special recognition or honors
- Major goals
 - Yours for the coming year
 - Suggestions for the Departments
- Suggestions to improve the Diagnostic Pathology or Research Services
- Other Recommendations:

Suppl Table 1b

SURVEY - TEACHING

(List events & their frequency)

- Conferences
 - Clinical care (for other departs, eg tumor boards)
 - Teaching for other departments (lecture or slide sessions for residents of another department)
 - For teaching of path residents (repetitive conferences)
- Medical School (Identify on CV & Report from Dean’s office)
 - Courses (Lectures & Labs)
- Graduate School (Identify on CV & Report from Dean’s office)
 - Courses (Lecture & Labs)

Supple Table 1c

SURVEY - Administrative efforts

	Types of duties
Dept	
QA	
Residency	
AP	
Division head	
Section head	
CP	
Lab director	
Medical School	
Admissions	
Other listed Committee	
Graduate School	
Admission	
Hospital	
Listed Committee	
Other administrative area	

Appendix B

Table B. (Quick Approval Guide): Promotion and Tenure Policies for Clinical Departments (Approved by Duke University Board of Trustees May 2006).

Track	1	2	3	4	5
Primary mission	Clinician, Educator, Admin	Clinician-Investigator	Research	Patient Care	Research
Academic focus	Y	Y	Y	N	Y
Tenure clock	Y	Y	Y	N	N
Focus for Promotion	Publications, Reputation	Publications, Grants, Reputation	Publications, Grants, Reputation	Clinical Component and contributions to education, research and clinical care. Criteria determined by individual department	Publications; teaching measures
Secondary Objectives	Grants; clin vol; quality measures re: teaching, clinical care	Quality measures re: Teaching, clinical care	Teaching measures (esp. grad students and postdoc fellows)	Publications, teaching measures	Grants; teaching measures
Yrs to tenure	II	II	II	NA	NA
Effort %	>75% Clinical	50-50 Clin/Translational Res	>75% Research	Varies due to interests	> 80% research
Research funding philosophy	NA	Sustained funding	Sustained funding	NA	Supportive
Asst Prof					
Total Papers/First + Senior	≥3/0	≥3/3	≥3/3	Varies due to interests	≥5/0
Reputation	NA	Local	NA	Local	NA
Teaching	Local	Local	Commitment	Participate	NA
Grant funding	NA	NA	NA	NA	NA
Assoc Prof					
Total Papers/First + Senior	≥15/5	≥15/5	≥15/5	Varies due to interests	≥15/5
Reputation	Strong Regional/ Local to National	Strong Regional/ Wide arena	National Wide arena	Strong Regional/ Participate	National
Teaching	Local to National	Wide arena	Wide arena	Participate	Research directed
Grant funding	NA	NA	Obtained	Varies due to interests	Supportive
Assoc Prof w tenure					
Total Papers/First + Senior	≥20/5	≥25/10	≥25/10	No Such Rank	No Such Rank
Reputation	National	Strong Regional/ National	National		
Teaching	Local to National	National	Wide arena		
Grant funding	NA	Sustained	Sustained		
Full Prof without tenure					
Total Papers/First + Senior	≥40/10	No Such Rank	No Such Rank	Varies due to interests	≥40/6
Reputation	National/International			National/International	National/International
Teaching	National			Wide arena	Wide arena
Grant funding	NA			Varies due to interests	Supportive
Full Professor w tenure					
Total Papers/First + Senior	≥40/10	≥50/20	≥50/20	No such rank	No such rank
Reputation	National/International	National/International	National/International		
Teaching	National	National	National/International		
Grant funding	NA	Sustained	Sustained		

Acknowledgments

The authors wish to thank Dr Salvatore Pizzo, MD, PhD, who fully supported this program during his 25 years as chairman of the Department of Pathology, and Dr James Crawford who critically reviewed this manuscript when in preparation.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The authors are salaried by the Department of Pathology, which provides their sole financial support for the research, authorship, and/or publication of this article.

References

1. Maloof PS. Mentoring: an evidence-based strategy to increase diversity among students and faculty from racial and ethnic groups underrepresented in maternal and child health training programs. 2012. https://nccc.georgetown.edu/documents/final_lit_review_with_cover.pdf. Accessed October 1, 2016.
2. Xu H, Remick DG. Pathology: a satisfying medical profession. *Acad Pathol*. 2016;3:1-4. doi:10.1177/2374289516661559.
3. Faculty development, mentoring, and teaching. <http://www.kumc.edu/school-of-medicine/radiation-oncology/faculty-and-staff/faculty-mentoring.html>. Accessed October 1, 2016.
4. Crawford JM, Tykocinski ML. Pathology as the enabler of human research. *Lab Invest*. 2005;85:1058-1064.
5. Mukhtar F. *Work Life Balance and Job Satisfaction Among Faculty at Iowa State University* [Graduate Theses and Dissertations. Paper 12791]. Iowa State University Digital Repository; 2012.
6. Bruner DW, Dunbar S, Higgins M, Martyn K. Benchmarking and gap analysis of faculty mentorship priorities and how well they are met. *Nurs Outlook*. 2016;64:321-331.
7. Bunton SA, Corrice A, Mallon WT; Association of American Medical Colleges. Clinical faculty satisfaction with the academic medicine workplace. <https://members.aamc.org/eweb/upload/Clinical%20Faculty%20Satisfaction.pdf>. Published 2010. Accessed October 1, 2016.
8. Cropsey KL, Masho SW, Shiang R, Sikka V, Kornstein SG, Hampton CL; Committee on the Status of Women and Minorities, Virginia Commonwealth University School of Medicine, Medical College of Virginia Campus. Why do faculty leave? Reasons for attrition of women and minority faculty from a medical school: four-year results. *J Womens Health (Larchmt)*. 2008;17:1111-1118.
9. Grigsby RK. Five potential pitfalls for junior faculty at academic health centers. *Acad Physician Scientist*. 2006. https://www.aamc.org/download/164736/data/grigsby_five_potential_pitfalls_for_junior_faculty_at_ahcs.pdf. Accessed October 1, 2016.
10. Knoepfler P. Top 10 reasons why professors leave, elephant in the lab series. The Niche Web site. <http://www.ipscell.com/2012/06/top-10-reasons-why-professors-leave-elephant-in-the-lab-series/>. Published June 19, 2012. Accessed October 1, 2016.
11. Mylona E, Brubaker L, Williams VN, et al. Does formal mentoring for faculty members matter? A survey of clinical faculty members. *Med Educ*. 2016;50:670-681.
12. Pololi LH, Evans AT, Civian JT, et al. Mentoring faculty: a US national survey of its adequacy and linkage to culture in academic health centers. *J Contin Educ Health Prof*. 2015;35:176-184.
13. Pololi LH, Krupat E, Civian JT, Ash AS, Brennan RT. Why are a quarter of faculty considering leaving academic medicine? A study of their perceptions of institutional culture and intentions to leave at 26 representative U.S. medical schools. *Acad Med*. 2012;87:859-869.
14. Bucklin BA, Valley M, Welch C, Tran ZV, Lowenstein SR. Predictors of early faculty attrition at one academic medical center. *BMC Med Educ*. 2014;14:27.
15. Lowenstein SR, Fernandez G, Crane LA. Medical school faculty discontent: prevalence and predictors of intent to leave academic careers. *BMC Med Educ*. 2007;7:37.
16. Corrice A, Fox S, Bunton SA. Retention of full-time clinical M.D. faculty at U.S. medical schools. *Analysis in Brief*. 2011;11(2). https://www.aamc.org/download/175974/data/aibvol11_no2.pdf. Published February 2011. Accessed October 1, 2016.
17. Chung KC, Song JW, Kim HM, et al. Predictors of job satisfaction among academic faculty members: do instructional and clinical staff differ? *Med Educ*. 2010;44:985-995.
18. Johnson WB. *On Being a Mentor: A Guide for Higher Education Faculty*. 2nd ed. New York, NY: Routledge, Taylor & Francis Group; 2006.
19. Ross JS. Judging academic pathology chairpersons. *Am J Clin Pathol*. 2001;115:180-181.
20. Crawford JM. Original research in pathology: judgment, or evidence-based medicine? *Lab Invest*. 2007;87:104-114.
21. Ducatman BS, Parslow T. Benchmarking academic anatomic pathologists: the Association of Pathology Chairs survey. *Acad Pathol*. 2016;3:1-12. doi:10.1177/2374289516666832.
22. Bickel J. The role of professional societies in career development in academic medicine. *Acad Psychiatry*. 2007;31:91-94.
23. McCall SJ, Souers RJ, Blond B, Massie L. Physician satisfaction with clinical laboratory services. A College of American Pathologists Q-Probes study of 81 institutions. *Arch Pathol Lab Med*. 2016;140:1098-1103.
24. Dash RC, Robb JA, Booker DL, Foo WC, Witte DL, Bry L. Biospecimens and biorepositories for the community pathologist. *Arch Pathol Lab Med*. 2012;136:668-678.
25. McConnell P, Dash RC, Chilukuri R, et al. The cancer translational research informatics platform. *BMC Med Inform Decis Mak*. 2008;8:60.
26. Robb JA, Gulley ML, Fitzgibbons PL, et al. A call to standardize preanalytic data elements for biospecimens. *Arch Pathol Lab Med*. 2014;138:526-537.
27. de Baca ME, Madden JF, Kennedy M. Electronic pathology reporting: digitizing the College of American Pathologists cancer checklists. *Arch Pathol Lab Med*. 2010;134:663-664.
28. Task Force for Non-Tenure-Track Faculty. Report of the Task Force for Non-Tenure-Track Faculty. https://www.bu.edu/ntt/files/2010/04/NTTFaculty_TaskForce_Report.pdf. Published 2010. Accessed October 16, 2016.

29. Howell LP, Elsbach KD, Villablanca AC. The role of compensation criteria to minimize face-time bias and support faculty career flexibility: an approach to enhance career satisfaction in academic pathology. *Acad Pathol.* 2016;3:1-9. doi:10.1177/2374289515628024.
30. Bickel J, Wara D, Atkinson BF, et al; Association of American Medical Colleges Project Implementation Committee. Increasing women's leadership in academic medicine: report of the AAMC Project Implementation Committee. *Acad Med.* 2002;77:1043-1061.
31. Chen MM, Sandborg CI, Hudgins L, Sanford R, Bachrach LK. A multifaceted mentoring program for junior faculty in academic pediatrics. *Teach Learn Med.* 2016;28:320-328.
32. Gotlieb AI. Academic mentorship builds a pathology community. *Acad Pathol.* 2015;1:1-5. doi:10.1177/2374289515598542.
33. Fox RA. Mentoring mid-career faculty. American Speech-Language-Hearing Association Web site. <http://www.asha.org/Academic/questions/Mentoring-Mid-Career-Faculty/>. Published 2014. Accessed October 10, 2016.