

# A Primer for Success as an Early Career Academic Plastic Surgeon

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**Background:** The early career academic plastic surgeon strives to be an expert surgeon, an innovative researcher, and an impactful educator. Navigating these challenges is difficult in a healthcare landscape with diminishing public research funding, increasing demand from institutions for clinical productivity, and decreased value of surgical education. To help the junior academic plastic surgeon, this article discusses the fundamental aspects of developing an early academic plastic surgery practice, rooted in clinical care, research, and education.

**Methods:** Using published literature, expert opinion, and faculty interviews, the authors prepared this primer for education and guidance of plastic surgery residents considering a career in academic plastic surgery and early career academic plastic surgeons.

**Results:** This primer highlights elements important to succeeding as a junior academic plastic surgeon including defining goals and priorities, institutional and financial support, mentorship, education of students and residents, developing a practice niche, promotion and tenure, and social support and burnout.

**Conclusion:** The early career academic plastic surgeon can create an environment for academic success with appropriate institutional support, mentorship, personal, and social support, to progress toward promotion while minimizing burnout and professional exhaustion. (*Plast Reconstr Surg Glob Open* 2022;10:e4066; doi: 10.1097/GOX.0000000000004066; Published online 25 January 2022.)

## INTRODUCTION

The modern academic plastic surgeon aspires to be an expert surgeon, an innovative researcher, and an impactful educator, all within the context of navigating a changing and challenging healthcare landscape.<sup>1</sup> Unfortunately, public research funding is diminishing, medical reimbursements are shrinking, and academic plastic surgeons are increasingly squeezed for more clinical productivity.<sup>2</sup> Diminishing public grant funding has resulted in increasing competition.<sup>3,4</sup> Many academic plastic surgeons feel their teaching roles are under-valued by their departments/divisions.<sup>5</sup> There is the allure of private practice with hopes of greater compensation and more practice

control.<sup>6</sup> To help the young academic surgeon face these challenges, many authors have published on tips for success in academic surgical practice<sup>3,6-13</sup>; however, there is no primer on an academic career for the junior academic plastic surgeon.

This article seeks to discuss the fundamental aspects of developing an early academic plastic surgery practice, rooted in clinical care, research, and education. The authors will discuss aspects of defining goals and priorities, institutional and financial support, mentorship, medical education, developing an area of academic interest, promotion and tenure, and social support.

## DEFINING GOALS

It is important to first identify and define priorities for professional advancement. This process begins during one's training years and extends into the early faculty appointment. The act of clearly defining goals allows for (1) identification of the best training pathway to meet the defined goals (2) identification of important milestones and structured career development activities necessary to achieve the defined goals, and (3) an opportunity for mentors and sponsors to provide concrete opportunities towards the attainment of the defined goals. Formally

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*Received for publication November 9, 2021; accepted November 24, 2021.*

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DOI: 10.1097/GOX.0000000000004066

**Disclosure:** Dr. Janis receives royalties from Thieme and Springer Publishing. All the other authors have no financial interest to declare in relation to the content of this article.

written, frequently discussed and intermittently revisited and updated goals are best practice. One particularly helpful tool is an “Individual Development Plan” (IDP, <https://myidp.sciencecareers.org/>), which provides a framework for organizing and tracking goals and objectives and serves as a useful communication tool with one’s mentors when measuring progress. This specific resource has been shown to provide trainees with skills in self-assessment and self-reflection.<sup>14</sup> Its effectiveness has been proven in high-functioning scientific laboratories.<sup>15</sup> It has also been implemented successfully in medicine, specifically in a radiation oncology residency.<sup>16</sup> There is no assessment of IDP usage in plastic surgery; however, this does not detract from its possible benefit for an early career academic plastic surgeon in setting goals early in their career. Once goals are set, it is useful to assess progress and redefine them if necessary at quarterly or otherwise regular intervals.<sup>17</sup> With specific goals in mind such as achievement in science, medical education, surgical care, or healthcare administration, the junior academic plastic surgeon can more efficiently evaluate resources such as the materials presented later in this article.

## INSTITUTIONAL AND FINANCIAL SUPPORT

### Negotiating the Contract and Beyond

Securing institutional and financial support starts in the initial contract negotiation. Ideally, these negotiations should take place before the start of the first academic position with a deliberation timeline that does not rush careful consideration by the early career plastic surgeon. Unfortunately, plastic surgery residency programs provide limited education in business acumen,<sup>18</sup> but investigation of published literature<sup>6,19</sup> with assistance from a contract lawyer can provide the inexperienced early career surgeon with initial knowledge. Negotiations extend well beyond the initial academic appointment contract as will be discussed below.

### Institutional Infrastructure

The establishment of defined goals allows the academic plastic surgeon to specifically negotiate for necessary and concrete institutional support for building one’s practice, such as adequate clinic space and equipment, optimal operative time, or research resources. For those pursuing a research practice, this includes the negotiation for dedicated research time, laboratory space, software, equipment, and supplies.<sup>11</sup>

### Institutional Personnel

The early career plastic surgeons can negotiate for necessary personnel such as medical assistants, nurses, and schedulers and skilled supportive collaborators such as speech language pathologists or hand therapists. For a research practice, an academic surgeon can consider negotiating for research-specific scribes, nurses, or specialized staff such as a biostatistician. The surgeon may consider whether an institution has grant management

### Takeaways

**Question:** How does one succeed as an early career academic plastic surgeon?

**Findings:** An early career academic plastic surgeon can find success by defining goals and priorities, establishing institutional and financial support, developing a practice niche and educational system for residents and students, and maximizing social support.

**Meaning:** Success for an early career academic plastic surgeon can be achieved through diligent planning and prioritization.

staff available to support faculty. A research coordinator to enroll and track patients in prospective and controlled clinical trials can be enormously beneficial. Sinno et al found that plastic surgery publications are generally of moderate-to-low quality level of evidence for lack of appropriate person-power to run prospective and controlled clinical trials.<sup>20,21</sup> By employing research coordinators, the early-career plastic surgeon can more easily overcome this obstacle and pursue high-quality research.

### Financial Support

The level of necessary financial support is dependent on the goals of the academic plastic surgeon. Those who will dedicate a significant amount of time to clinical, translational, or basic science must devote a substantial portion of protected time to the pursuit of research funding. There are multiple sources of funding, including departmental/divisional, institutional/intramural, and extramural. Extramural funding is not required to conduct meaningful research,<sup>22</sup> but additional funding of any kind is beneficial for executing high-quality surgical research. All sources of funding require significant investment from the busy surgeon, and expectations for the competitiveness of grant applications should be commensurate with one’s professional time allotment, especially in the midst of maintaining a busy clinical practice.

### Intramural Funding

A junior faculty member’s division/department is often their first source of funding for academic endeavors. In a survey of academic plastic surgery programs by Chen et al, 28 (35.4%) of 79 academic programs reported to provide initial seed funding for research studies, though they did not specify the amount, duration, or criteria for continued funding. Additionally, 31 (39.2%) academic programs provide protected time for research.<sup>10</sup> Institutional funds can be an excellent starting point to gather preliminary data and identify needs for larger-scale projects.

### Extramural Funding

Extramural funding can come from academic societies, philanthropic foundations, industry, and governmental entities (Table 1). In general, extramural funding provides larger financial awards for more involved and larger-scope endeavors and will require significantly more

**Table 1. Plastic Surgery Funding Sources**

Funding Source	Description
PSF*	Supports the research of ASPS† members. Support innovators' idea and teaches researchers how to articulate the relevancy, the impact, and the possibilities that their ideas hold
AAPS‡	Provides two-year faculty research scholarships to plastic surgeons entering academic careers for assistance in the establishment of a new and independent research program
Biotechnology private companies	Support trials that specifically investigate products or pharmacotherapies manufactured or sold by the company
NIH§	Seeks fundamental knowledge about the nature and behavior of living systems and the application to enhance health, lengthen life, and reduce illness and disability. Composed of 27 institutes and centers focused on disease-specific and organ-specific pathologies.

\*PSF.

†American Society of Plastic Surgeons.

‡American Association of Plastic Surgeons.

§NIH.

preparation, reporting, and post-award documentation. The Plastic Surgery Foundation (PSF) and the American Association of Plastic Surgeons have grant opportunities that cover a broad array of objectives. Investigator awards through American Association of Plastic Surgeons and Plastic Surgery Foundation are highly correlated with achieving National Institutes of Health (NIH) funding.<sup>23</sup> It would benefit all early academic plastic surgeons to review Hume et al's 19 elements that are critical for achieving a Plastic Surgery Foundation grant.<sup>12</sup>

Biomedical and pharmaceutical companies are becoming a more common source of funding,<sup>24</sup> especially as governmental sources of funding decrease year-to-year. Momeni et al found that studies with industry sponsors were twice as likely to report significant findings compared with studies with public funding, and in nearly all cases (95%), these studies favored the industry sponsor's intervention.<sup>24</sup> Industry funding does not exclude the possibility of high-quality research; however, the industry-sponsor relationship is considered a potential source of bias and must be disclosed properly on publication or dissemination of results.

NIH awards can provide sustainable and long-term funding for an academic surgeon's scholastic efforts (Table 2). Silvestre et al found that a low percentage of plastic surgery faculty (2%) secure NIH funding<sup>25</sup> and plastic surgery as a specialty receives the least NIH funding of all surgical subspecialties.<sup>26</sup> Nevertheless, these data should not deter early career academic plastic surgeons from applying. Lopez et al uncovered that academic plastic surgeons (9.6% of 607 surgeons) with and without formal research training program—a PhD or postdoctoral fellowship—were able to obtain extramural funding, though those who had completed a formal research training program experienced greater rates of funding.<sup>27</sup>

### MENTORSHIP

Mentorship is crucial at all stages for the motivated and ambitious academic plastic surgeon.<sup>28–30</sup> Mentors can provide role-modeling, advocacy, sponsorship, writing and

**Table 2. Common National Institutes of Health Grant Program Types**

Grant Code	Designation	Description
R	Research	Funds discrete, specific, and well-circumscribed research projects.
F	Fellowship	Supports predoctoral, graduate, and postdoctoral students/fellows. Provides salary support and some tuition support.
K	Career development	Supports primarily early career faculty in a mentored capacity as they transition toward research independence. Provides salary support and offsets research costs.
T	Training	Institutional training grants that are awarded to a primary principle investigator that then supplies funding for pre- and postdoctoral trainee salary and tuition support.
P	Program	Supports the development of multidisciplinary, long-term, institutional programs, and associated research.

grant preparation guidance, promotion advice, work-life integration assistance, and networking opportunities.<sup>31,32</sup> By identifying and establishing mentorships with more experienced surgeons, one is able to learn how to develop a clinical and an academic practice and best techniques for integrating these practices in a way that is synergistic. Importantly, mentorship is not limited to only one individual. Mentor networks have been suggested to be the most effective way of ensuring the success of an academic surgeon.<sup>33</sup>

In-field plastic surgeons in and outside of one's institution are critical for identifying knowledge gaps and developing clinically significant research interests that are potentially practice-changing. Some subspecialty academic societies have structured mentorship programs, but for those that do not, participation in academic societies remains an effective way of identifying a within-field mentor. Attending a variety of meetings—regional, national, and international—is crucial for successfully developing a wide network.<sup>34</sup>

It is also important to find mentors who relate from a sociocultural perspective. This is especially true for underrepresented minorities within academic plastic surgery—women and persons of color.<sup>29,30,35–38</sup> In DeCastro et al, multiple NIH K08 and K23 female awardees commented on the necessity of having at least one female mentor to guide their academic surgical career.<sup>33</sup> Establishing “horizontal mentorship” or peer advisors/mentors to share ideas and pitfalls is also important. These peer mentors are often junior colleagues that can be a source of clinical and general support, whether to discuss a challenging case or seek support after a complication.

### EDUCATION

An academic surgeon has an obligation to educate and train medical students and resident surgeons. However, surgeons may receive minimal training or education on the education of students and residents.

The academic plastic surgeon can teach foundational skills such as sterile technique, a surgical history and

physical, basic anatomy, identification of surgical pathology, and presenting the surgical patient.<sup>39</sup> Medical students can be expected to report patient data, examine surgical patients, and begin to develop care plans. Importantly, the academic surgeon can focus on teaching the identification of a patient who may require surgical expertise and not necessarily surgical skills as most students will not pursue surgery or a surgical subspecialty.

Principally, all resident physician education is about modeling and teaching empathy toward patients, staff, learners, and colleagues.<sup>40</sup> Specifically, surgical education for a resident consists of three areas: coaching, teaching, and mentoring.<sup>41</sup> Coaching is an often neglected area of surgical education<sup>42</sup> but is critical toward attainment of procedural mastery. Coaches create opportunities for trainees to perform tasks and make situational decisions within a set of rules or limits.<sup>41</sup> This manner of coaching establishes the ability for independent performance with sound surgical judgment. The resident should perform deliberate practice—focus on a defined task.<sup>43</sup> To encourage deliberate practice, the faculty surgeon can identify specific tasks within a procedure for the trainee to improve.<sup>44</sup> Deliberate practice should be paired with debriefing—structured assessment, constructive feedback, and guidance toward self-identification of areas of improvement.<sup>44</sup>

Effective resident education is not without challenges. First, maintaining the clinical productivity demanded by one's institution leaves little, if any, time to teach residents.<sup>45</sup> Second, residency rotation schedules, differences in residents' learning curves, and practice variance leads to interrupted education. To ensure educational continuity, the junior faculty surgeon may request the trainee to send an email with a specific procedure/surgery (ie, breast reduction, carpal tunnel release), the portion(s) completed by the resident, and the area(s) of future improvement. This exercise is helpful for continuing the resident's education at the appropriate proficiency level.

The academic plastic surgeon can be conflicted between their commitment for surgical education and their commitment for clinical productivity. Teaching students, residents, and even fellows during operative procedures can decrease efficiency.<sup>46,47</sup> The attending surgeon may trade surgical throughput for the trainee's educational opportunity. As most academic medical centers transition physician compensation to a productivity-based model using relative value units (RVU),<sup>48</sup> there is an opportunity cost for the academic plastic surgeon to provide trainee education.<sup>47</sup> RVU-based compensation models have not resolved crucial issues of physician compensation such as the sex pay gap,<sup>49</sup> but a discussion of compensation is beyond the scope of this article. Nevertheless, it may benefit the surgeon to evaluate how trainee surgical education is compensated and to negotiate for a direct or indirect increase in the value of one's clinical and surgical education. For example, a surgeon may negotiate for a pathway for promotion and tenure in surgical education that considers trainee evaluations. LeMaire et al implemented an academic RVU system that included teaching, mentorship, and educational awards that awarded up to an additional \$10,000 for the top 10% by academic RVU production.<sup>50</sup>

## DEVELOPING A PRACTICE NICHE

It is important to identify clinical problems that are underserved or poorly served—an expertise gap. Once one has identified an underserved problem, the surgeon can perform an exhaustive review of evidence-based practices. Afterward, they can set a vision for what to address, how to address the issue, and how to continually improve patient care for this problem.<sup>51</sup> The academic surgeon can identify all stakeholders and engage them early in the process of building the necessary infrastructure to excellently address the surgical issue. For example, the senior author (JEJ) is a co-director and co-architect of the Center for Abdominal Core Health, which engages multiple disciplines in the care of patients with abdominal wall defects.<sup>52</sup> Another author (IK) leads his institution's multidisciplinary hemangioma and vascular malformations program.

As the practice is being established, it is beneficial to record business variables of the practice, including the number of clinic visits generated, internal referrals generated, internal and external referrals received, procedures, imaging, and operations performed, and patient satisfaction and experience surveys. This information can quantify the benefit of serving this medical issue to departmental/divisional leadership.

As the junior academic plastic surgeon is building a practice, it is beneficial to identify collaborators. Collaborators can provide out-of-field expertise and opportunities for multidisciplinary research. Collaborators can yield patient referrals. The junior surgeon should personally promote a culture of collaboration and be willing to share data. Psychologist Adam Grant writes in *Give and Take* that, "interdependence [is] a source of strength, a way to harness the skills of multiple people for a greater good."<sup>53</sup> As an investigator, acting as a generous collaborator increases reputation among faculty members, which can ultimately lead to unique and greater academic opportunities.<sup>54</sup>

To iteratively improve one's practice, the junior academic plastic surgeon can set up a prospectively-collected database. Patient-reported outcomes should be an essential variable of interest when deciding on clinical outcomes to quantify and track. Patient-reported outcomes have become an exploding area of interest for academic plastic surgery in the transition to patient-centered care.<sup>55–57</sup> Patient-reported outcomes, which capture physical and emotional impairment, function, health status, and impact on quality of life, are critical to determining quality and value of surgical treatment.<sup>58</sup>

Lastly, as one becomes more reputable for the treatment of a particular problem, they can establish standard criteria for appropriate referral. A patient access coordinator can screen referrals per criteria to maximize the surgeon's time investment in clinic.<sup>51</sup>

## PROMOTION AND TENURE

The demanding work of a junior academic plastic surgeon to excel in scholarship, education, and clinical productivity is rewarded uniquely through promotion and tenure. There are generally four major tracks for

academic surgeons to pursue: (1) clinical surgeon, (2) clinical scholar, (3) surgical educator, and (4) surgical scientist.<sup>59</sup> It is expected that the faculty candidate exhibits excellence in one area between research, education, or clinical management.<sup>17</sup> In general, promotion to associate professor requires regional reputation, whereas promotion to full professor requires national reputation.<sup>60</sup> Surgeons can familiarize themselves with the Association of American Medical Colleges Faculty Salary Report that provides compensation data for most US medical colleges when discussing promotion and salary increases.

The promotion and/or tenure review process is institution specific,<sup>59</sup> and each aspiring and current junior faculty member should familiarize themselves with the faculty handbook describing the guidelines. Performance expectations should be clearly understood as early as possible.<sup>59</sup> The promotion and tenure committee will review the faculty member's academic portfolio, which consists of every academic, clinical, and educational endeavor pursued. Each endeavor should include a documentation of effort and an outcome measure of effectiveness or excellence.<sup>17</sup> The timeline for evaluation before the promotion and tenure committee for promotion to associate professor is approximately 5–6 years.<sup>17</sup> Progress toward promotion and tenure should be evaluated every 6–12 months by one's department/division, evaluating specific areas of patient care, education, research progress, and commitment to the greater institution and professional organizations.<sup>59</sup> An early career academic plastic surgeon should consider becoming involved with committees for their institution and professional organizations as early as their willingness permits. It is the senior author's (JEJ) opinion that one primarily requires interest, energy, and enthusiasm rather than seniority, reputation, and expertise to contribute significantly to professional committees. Significant contributions to institutional and professional organizations further lend credence during promotion and tenure reviews.

Nevertheless, there can be significant challenges to attainment of promotion and tenure. First, scientific achievement is generally afforded greater recognition and visibility compared with clinical outcomes or educational scholarship. In some cases, tenure can only be granted to surgeon-scientists.<sup>61</sup> Second, tenure positions for academic physicians and surgeons have gradually diminished year-over-year. In 2013, only 14% of full-time academic physicians were in tenure track positions.<sup>62</sup> In 2016, only 25.2% of surgery faculty appointments were on a tenure track, and 63.4% of surgery faculty appointments did not even offer tenure.<sup>62</sup> Tenure in academic medicine is likely to continue to diminish, but promotion remains a vital pathway for recognition and reward for the early-career academic plastic surgeon.

## SOCIAL SUPPORT

### Family and Personal Support

A surgeon's motivation for their work is only as good as their contentedness with their personal life. The emotional and social support provided by one's family, loved

ones, children, and/or friends is crucial for sustainable success.<sup>63</sup> The life of an early career academic plastic surgeon can be quite challenging, with long hours and frequent clinical and academic frustrations.<sup>64</sup> It is important to discuss what the early junior faculty period will be like in terms of hours, stressors, and anticipated obstacles with one's family and loved ones. It is also important to engage one's departmental/divisional and institutional leadership for initiatives and programs to mitigate academic stressors and obstacles. Faculty success and retention are equally important to the department/division as to the surgeon; so professional obstacles should be addressed together.

### Burnout and Professional Exhaustion

Without professional, social, and personal support for the ambitious early-career academic plastic surgeon, burnout and career dissatisfaction are significant risks.<sup>63,65,66</sup> Work-related burnout describes a state of emotional exhaustion and/or depersonalization from work that ultimately impairs professional effectiveness.<sup>67</sup> Unfortunately, it occurs in approximately 40% of United States surgeons.<sup>64,68</sup> It is described at alarming rates among highly-specialized surgeons: otolaryngology, urologists, transplant surgeons, and plastic & reconstructive surgeons.<sup>64,69–72</sup> Reduced nonmedical recreational activities, perceived limited control over delivery of medicine, inadequate research and administrative time, minority gender status, greater number of call shifts, and a greater-than-70-hour work week are all positively correlated with professional burnout. Bertges et al found that maintaining interests outside of medicine, seeing humor in one's life, and maintaining connections with others were positively correlated with minimizing burnout.<sup>72</sup> The same study recommended that surgeons who develop clear goals regarding what is important in their professional and personal lives and place their finite effort and energy efficiently into those goals would be at a lower risk for developing burnout. Institutions must also play their part in reducing burnout and creating a sustainable work environment.<sup>65</sup> Song et al successfully implemented a resilience coaching program supported by the surgery department that effectively increased resilience and decreased burnout among surgical trainees.<sup>73</sup> Forsythe and Suttie describe efforts in the UK for surgeons to develop leadership and nonclinical skills in their institutions to increase engagement and morale.<sup>74</sup> Plastic surgeons exhibiting professional burnout report twice as many medical errors as those without self-reported burnout<sup>69</sup>; so regardless of the methods to prevent burnout, proactive efforts benefit the surgeon and their patients. In the midst of competing demands, mindfulness of one's priorities can be a useful strategy to minimize the negative impact of day-to-day stressors.

## CONCLUSIONS

The goals of an academic plastic surgeon—a skillful surgeon, adept teacher, and innovative researcher—are difficult tasks in the current healthcare environment. Despite this, all aspiring academic plastic surgeons should

strive toward this tripartite mission. When seeking their first academic position, the early academic plastic surgeon may seek an institution that provides adequate infrastructure, necessary personnel, opportunities for funding, and mentorship. To effectively educate residents, the faculty surgeon should engage trainees in deliberate practice followed by debriefing. Lastly, the ambitious academic plastic surgeon should recognize the risks of professional burnout and maintain personal relationships, physical health, activities outside of medicine, and set appropriate expectations with family. Although the surgeon may transiently falter, the academic mission to provide and advance plastic and reconstructive surgical care for the patient remains feasible and fulfilling.

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#### ACKNOWLEDGMENTS

The authors thank Stephen Poteet, MD, Assistant Professor of the Department of Plastic and Reconstructive Surgery at the Ohio State University, for his input. This study was supported by NIH F32HL144120, NIH T32AI106704 and the Ohio State University President's Postdoctoral Scholar Program.

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