

Editorial

Training of the Endocrine Surgical Scientist

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The call by Alder and Chen for a renewed emphasis in the development of surgeon-scientists is by no means new to academic surgery [1- 5]. NIH funding awards to surgical investigators have been declining relative to our non-surgical colleagues over the past two decades. Surgical awards comprise less than 3% of the total NIH awards, and MD surgical faculty hold only 1 to 2% of the NIH awards [4]. Although surgical applications to the NIH have a lower success rate than those from non-surgical disciplines, the decline in surgical funding appears to be directly attributable to the diminishing rate of surgical submissions. Research is an essential component of quality patient care, yet in times of economic crisis and with the added time constraints from increasing clinical demands, research is usually the first thing to be sacrificed. Alder and Chen studied the trends of NIH funding in the sub-specialty of endocrine surgery, a small, yet vital part of any academic surgical unit. Similar to the global trends, NIH funding to endocrine surgeons has been declining compared to non-surgical investigators [1]. If this current trend is not addressed, the true impact of this decline on care of patients with endocrine surgical diseases will not be realized for several years. We all are tempted to blame the usual suspects for this decline, such as increasing clinical demands, lack of resources and declining support from within surgical departments [5]. Yet, how much does the current or-

ganizational structure of fellowship training add to this problem? The reason for the decline in NIH funding is clearly multi-factorial and as such, multiple strategies will be needed to reverse this trend.

Mann *et al* proposed several solutions calling for 'affirmative action' on surgically driven research submitted to the NIH. They suggested a minimal commitment of awards be reserved for surgical research and extension of the duration of career development awards for surgeons [4]. Although these suggestions have some merit, affirmative action is rarely a long-term solution. Niederhuber has pointed out that the individual investigator working alone in the current surgical departmental structure will experience increasing difficulties in meeting the challenges of the increasing pace of scientific discovery [2]. The future development of translational and laboratory science requires a team approach and possibly the growth of non-traditional research centers outside of the current hospital department structure. This will put the surgeon in the difficult position of having to answer to two different institutions, two different bosses.

Clearly, any solutions put forward to help the existing faculty will require the surgical leadership and deans to unite to tackle these problems globally. We should not however, overlook the foundation of our future workforce: the residents and fellows. Embarking on a career in academic surgery requires strong role models, continuous mentoring and support from colleagues and the departmental leadership. Surgical residencies across North America offer research education, essential for the ability to

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critically appraise the literature in practice. Some centers offer the ability to 'step out' of residency training to pursue a focus period of research training in the laboratory setting [5]. Scott Jones and Dehas pointed out the limitations to the current models of surgeon-scientists' programs and called for an integrated model of research training following residency. Today, however, the development of subspecialties in General Surgery has led to the extension of clinical training beyond the residency. Surgical societies responsible for the education and development of these subspecialties need to critically appraise how their own organization may be contributing to the trend of diminishing surgical researchers in their area of expertise. Recognizing and acknowledging the way our current fellowship training programs have contributed to this problem is the first step helping address the issues. The AAES has recently documented the number of basic science projects submitted and accepted to our annual program has declined over the last few decades. This decline in basic science research is concerning to the AAES, as it could reflect a declining involvement of endocrine surgeons in translational and molecular research. The AAES executive is currently looking into strategies of improving the submission and acceptance rates of basic science research to our annual spring meeting. There has been much debate, however, over instituting an isolated mechanism of increasing basic science submissions to the AAES program. A sustainable solution in my opinion does not lie in affirmative action, it lies in a paradigm shift in the training of endocrine surgeons. To date there are 16 clinical AAES recognized fellowships in North America. These fellowships have evolved greatly from the previous apprenticeship model, to an organized curriculum with set objectives and a coordinated effort to standardize the training of the future generation of endocrine surgeons [6]. Yet the trend of a one-year fellowship immediately following a General Surgery residency leaves little time to foster skills needed to be a successful investigator in surgical research and, as such, the end-product is a clinically trained endocrine surgeon. It is becoming increasingly difficult for even the most industrious fellow to develop a solid foundation of clinical research skills within this one year period. Advanced training such as master's degrees and PhD studies are not options in the current fellowship model. As a result the

majority of research produced by the current AAES fellows, although very important and worthy of peer-reviewed publication, is clinically based. It doesn't have to be that way. Integrated fellowships with our non-surgical colleagues would provide a broader foundation to scientific investigation, help establish and develop a strong network of colleagues outside of surgery, and allow for the mentoring of young investigators early in their academic careers, while still providing the surgical skills for tertiary endocrine surgical care. What is stopping the AAES from offering such a program is not the lack of investigators presently involved in basic science research. The limitations are stable funding, integrated resources and the desire on the part of the fellows to be passionate about the prospects of becoming surgeon-scientists in endocrine surgery. One way that we as an organization can reverse the current trend of diminishing laboratory and translational research in endocrine surgical diseases, is to develop a surgeon-scientist integrated fellowship program. This program would have to provide the laboratory structure and mentors for sound research and discovery while providing a clinical base for advanced endocrine surgical care. It is therefore conceivable that this type of fellowship training may take place in at a non-traditional research institute, with integrated clinical training provided by different group of preceptors, perhaps at the surgeon's home base. Our past president Mike Demeure called for the development of endocrine research to extend beyond our own individual institutional silos [7] so why not extend that concept to our fellowship training? The AAES, or for that matter all surgical subspecialties, need to consider an additional stream of fellowship training to meet the challenges of training surgeon-scientists. Alder and Chen have shown that the decline in NIH funding in endocrine surgery is probably a reflection of diminishing surgeon-scientists in this field. I believe the AAES should focus on the development of endocrine surgical scientists within our fellowship program either by re-tooling some of the existing ones or—even better—developing an alternative stream of fellowship training. Although the other issues previously recognized by the surgical leadership as obstacles to sound surgical research will need to be addressed [5] the training of the future surgical investigators is one aspect that associations such as the AAES can tackle within their existing structure.

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Research is a cornerstone to quality patient care. It is scientific discovery that helps stimulate a sub-specialty group to provide *state of the art* clinical care and advance their specialty. The future of surgical research and its development ultimately rest in the hands of the next generation of surgeons. The current leadership of all surgical sub-specialties must therefore address the training of these individuals now before patient care and the future of their surgical discipline is compromised.

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