

EDITOR'S PAGE



## Avoiding the Curse of the “Sorcerer’s Apprentice”

### How to Attract and Develop Successful Academicians



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In the late 18th century, Johannes Wolfgang von Goethe wrote a short poem about a sorcerer’s apprentice who takes advantage of his recently acquired magical skills to carry out some chores that he considers mundane (1). Because the young apprentice does not appreciate the full understanding of his responsibilities and capabilities, he loses control of the magic broom that he has commanded to sweep his master’s workshop, until the sorcerer returns to save him. This 200-year-old poem still maintains an important message for contemporary investigators and their mentors. Namely, there is a delicate, painstaking process in *selecting appropriate future academicians* and bestowing upon them the proper balance of responsibility and guidance, which are both integral to foster the strongest cardiovascular investigators and educators. However, the single most important component of making this process successful is a *strong engagement with a mentor rather than a premature independence*. This mentor can observe and help guide the candidate through his or her pathway toward triumphs, as long as the researcher listens to and relies upon this mentor. Finally, *society must help to provide tools and opportunities that will motivate these young academicians*.

#### SELECTION OF THE SPECIAL

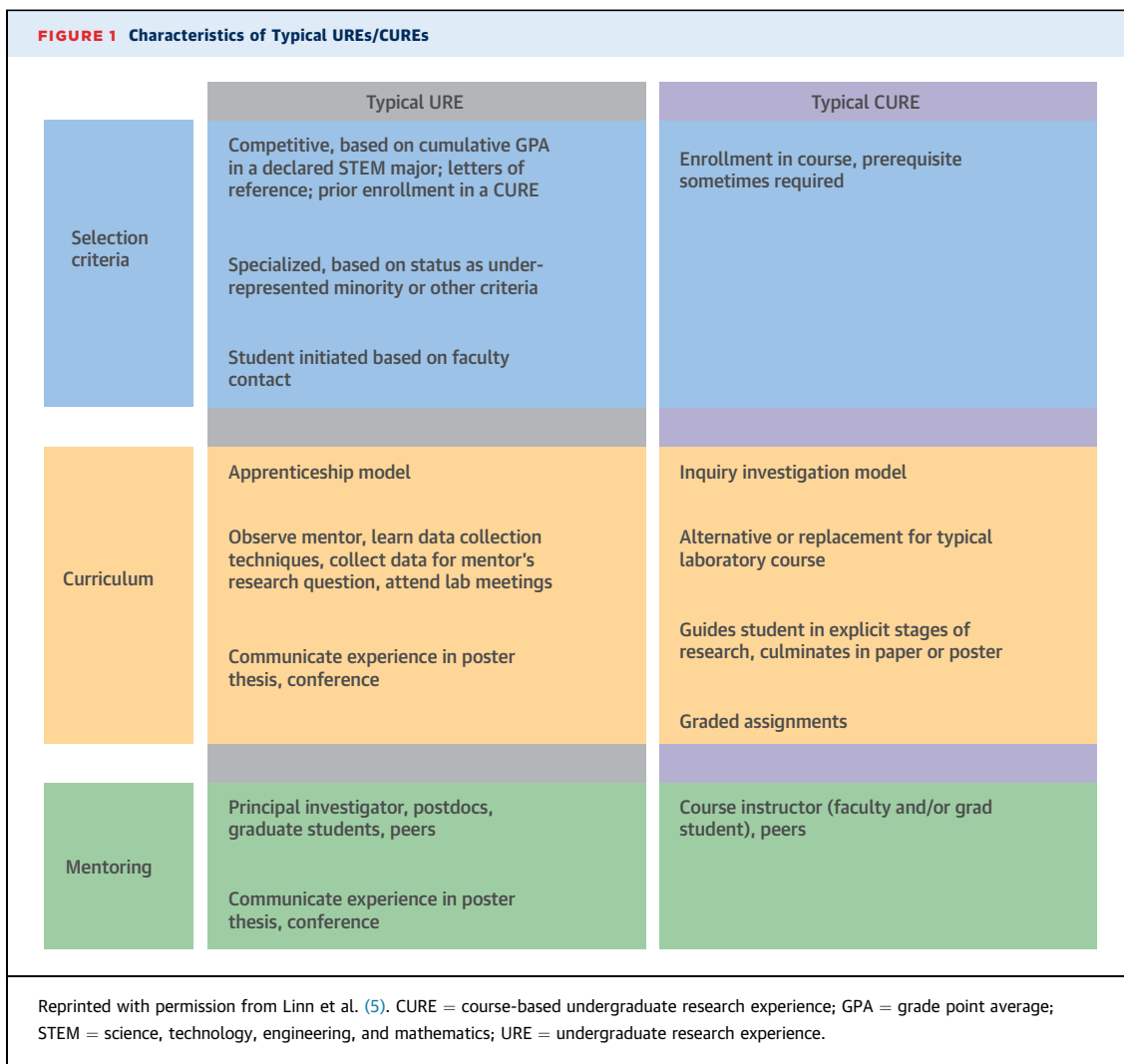
In this flattening, global medical world, biomedical research allows only a few individuals to be selected for success in strong academic and medical facilities

(2). As a first step, program managers and mentors need to ensure that the selected candidates have benefitted from a rigorous educational and training background. There is a consensus that undergraduate and post-graduate education should be when future academicians begin training (2).

To ease this process, the European Commission has begun a series of reforms to make the new European Higher Education Area more competitive and attractive to European scholars, particularly researchers, by adopting an easily transferable system with comparable qualifications across the continent (2). State-side, the U.S. House of Representatives proposed an ambitious biomedical innovation plan in early 2015 (3), and the presidential \$215 million Precision Medicine Initiative would mean an overall 3.3% increase to the National Institutes of Health to \$31.3 billion (4). While these steps are encouraging, I am concerned about how long it would take for these types of federal funding initiatives to trickle down to future academicians. However, most U.S. colleges and universities offer undergraduate research experiences and/or course-based undergraduate research experiences (5), which tend to most often benefit those who intend to pursue a career academic research. Course-based undergraduate research experiences typically provide research experiences for  $\geq 30$  students by a course instructor and/or graduate student, and they involve classes, credits, grades, and assignments; whereas students typically compete for undergraduate research experiences placements, spend time in a research laboratory, and receive 1-on-1 mentoring from a post-doctorate, graduate student, or faculty member (5) (Figure 1).

Despite these burgeoning opportunities, undergraduates often express anxiety about the duration

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of programs and associated costs, which is why *perseverance* and *hopefulness* are dominant character traits, along with the *intellect* and *creativity* that need to be assessed in the selection process.

### ENGAGEMENT VERSUS PREMATURE INDEPENDENCE

Often, young researchers speak about the barriers prohibiting them from achieving their goals, including time, a lack of financial incentives, inadequate infrastructure, and uncertain futures. Although these impediments are not always perceived and can feel very real to the pressured young person, I always tell them that persistence is key both in science and in life—and it will be integral in shaping one's pathway toward a successful academic career. This research path is not linear, and these individuals will meet

with many disappointments. Although its rewards are outstanding, it requires a certain kind of individual with considerable resilience, strength, and focus to achieve the desired outcomes (6). If a person embodies these characteristics, then a mentor, through observation and motivation, shares in the responsibility of helping him or her to avoid the curse of the “sorcerer’s apprentice” (1).

As 1 example of distraction, many young people in the investigational field are prematurely enamored with the idea of independence—achieving personal success publicly, without the assistance of others. There are certainly activities for young investigators that warrant independent action and reward, such as grant writing, but when it comes to writing and compiling a complex manuscript, the best outcome will result from the reliance upon and authorship recognition of senior faculty or a

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