When I arrived to take the Graduate Record Examinations this past January, it was hard to tell whether I was in a testing facility or an airport security line. After submitting my identification and placing all my belongings in a locked drawer, I was waved over by a security wand and instructed to turn out my front and back pockets, shake out my sweatshirt hood and lift up my pant legs. I recalled the MTV movie about six teenagers who conspire to steal the SAT answer key. During the 3½ hour exam, my fellow test takers and I were under constant video surveillance and permitted to leave only once, for 10 minutes, provided we signed in and out. We were allowed to write on only official GRE scratch paper, which seemed suspiciously identical to normal paper, except for the text printed at the top reminding us that cheating was, as a matter of fact, forbidden. All these security measures reminded me of the time my friend Maggie opted for eight simultaneous ibuprofens rather than seeing a doctor about her swollen ankle.

I had to take the GREs, protracted and belittling though they may be, because I could not become a biochemist without them. According to U.S. News and World Report, of the top 10 biochemistry graduate programs in the United States, only one, the University of California, Berkeley, is test optional, and, historically, a low GRE score means no admission to any graduate program, in or out of the sciences. The logic, according to the website of the GRE's administrative company, Educational Testing Service, or ETS, is that the GRE is "a proven measure of an applicant's readiness for graduate-level work" and "gives you more opportunities for success."

This description seems reassuring, as the future of biochemistry rests in the hands of graduate students who have passed through the GRE. But what kinds of students tend to do well on the test? According to Robert J. Sternberg, a professor of human development at Cornell University, mostly rich, white and male ones. Sternberg, talking to The Atlantic magazine, refers to decades of research from Stanford University, New York University, the University of Florida and the University of Missouri showing that women and racial minorities consistently underperform on the GRE compared with their white male counterparts. A 2014 Nature article by Casey Miller and Keivan Stassun supports Sternberg's claim, stating, "in simple terms, the GRE is a better indicator of sex and skin colour than of ability and ultimate success."

GRE results fail to predict performance in future academic courses, an area where even the notoriously biased SAT is somewhat effective. In 1997, Sternberg and Wendy M. Williams, another Cornell professor, published data in American Psychologist suggesting high GRE scores fail to correlate with any metric of graduate school success beyond first-year grade point average — and this correlation held for only the analytical section of the GRE and for only male students. My own adviser, now a tenured professor of molecular biology and biochemistry, initially was rejected from graduate school because her GRE math scores were too low.

Even though its irrelevance has been clear for more than 20 years now, the GRE survives because ETS, a self-styled "mission-driven, not-for-profit organization" that has not paid federal taxes since 1949, uses the exam to enrich its executives. Robert Murley, the ETS chairman, has no
For almost 70 years, the Graduate Record Examination, or GRE, has been a rite of passage toward a doctoral degree in the United States. Introduced in 1949, the GRE is a standardized test that seeks to assess verbal, quantitative, critical thinking and analytical writing skills, all of which are undeniably important for success in graduate school. Of late, however, the GRE has come under increasing criticism from students and educators alike and appears to be falling out of favor.

Since 2015, the National Institutes of Health no longer requires GRE reporting for institutional training grants and individual fellowships, and the popular National Science Foundation Graduate Research Fellowship Program stopped asking for GRE scores in 2010. A growing number of top-notch graduate programs (at the University of California at San Francisco and Berkeley, the University of Michigan, Emory University) have dropped the GRE requirement from their applications. Other graduate programs are paying attention: Once a critical mass of #GRExiters is reached, schools will have to decide whether to join the exodus or risk a significant loss of applicants who choose not to take the exam.

Many old-timers, myself included, may have strong reservations about abandoning a long-held gold standard for admission. The GRE potentially offers equal opportunity for applicants who otherwise would be difficult to compare across widely disparate college and grade standards. This is especially true for international students: With no context for my college grades from India and no comparable research experience, the GRE was my only ticket to graduate admission in the U.S. So I read the Oxford English Dictionary from A to Z, aced the tests and voila — the admission offers came rolling in. This was in 1983; today, admissions criteria are tougher and programs even more competitive. Surely a standardized test is the great leveler? The data, however, say otherwise.

Let’s start with convincing evidence that GRE scores are poor predictors of graduate school success. A 2017 study by Joshua D. Hall and others at the University of North Carolina Medical School found no correlation between GRE scores and productivity in terms of publications within a cohort of 280 students who matriculated into the umbrella biomedical sciences program at UNC at Chapel Hill between 2008 and 2010. Nor was there statistical difference in time-to-degree or even degree completion with respect to GRE scores.

Similarly, from an analysis of 683 Vanderbilt University biomedical graduate students, Liane Moneta-Koehler and researchers at Vanderbilt concluded that GRE scores were not useful in predicting success in graduation rates or times, obtaining fellowships, passing qualifying exams or publishing first-author papers, although test scores were moderate predictors of graduate GPA. Based on these and other studies, reliance on GRE scores as a quantitative admissions metric may seem imperfect but harmless. Why not keep the scores as part of a more holistic approach to application reviews?

Unfortunately, more insidious problems may exist with standardized testing. Many studies show that GRE scores track best with socioeconomic status: It is well known that practice makes perfect, but taking — and retaking — the GRE is not cheap (about $200 each time), and the cost of courses or tutors for test preparation can run to thousands of dollars, well beyond reach for many economically disadvantaged students.

Equally troubling, GRE scores reflect bias against women and minorities. Data from the Educational Testing Service, or ETS, the company that administers the test, show that women score 80 points lower on average than men and African-Americans.
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background in education, holding a B.A. in politics and master’s degrees in business administration and economics. According to its IRS Form 990, a publicly available document that federal tax-exempt organizations must file out yearly, ETS had revenues of about $928 million, $1.2 billion and $1.1 billion in 2015, 2014 and 2013, respectively, in addition to more than $600 million in assets. Greater than 85 percent of that revenue came from “Program Services,” including test-prep courses and practice books that ETS promotes on its website, as well as the $205 fee to take the GRE, which amounts to more than 20 hours of work at my on-campus job (low-income students can pay half that). Since 2011, ETS has allocated more than $240 million of its income to salaries and wages, plus an additional $13.9 million for “executive compensation.” The Washington Post reported that, in 2015, some ETS board of directors members worked approximately two hours a week for almost $1,000 an hour, totaling $103,000 that year. Meanwhile, the average graduate student in the U.S. earns less than $30,000 a year, and most professors are in a near-constant scramble for funding. What kind of science would be possible if researchers had even half the amount of money ETS sees on a yearly basis?

The GRE still exists not because it provides an accurate assessment of graduate school readiness, not because it allows across-the-board comparison among applicants from various schools and not because it creates educational opportunities but because business executives with no interest in science or education can earn huge sums of money from the proliferation of a discriminatory exam and because universities are complicit in that effort. Each time a graduate program requires applicants’ GRE scores, it is dissuading low-income, female and minority students from becoming scientists. The fields of molecular biology and biochemistry have probably lost thousands of creative, hard-working, curious individuals by demanding they participate in an outdated, discriminatory examination system that exploits students to enrich those at the top. All graduate programs affiliated with the American Society for Biochemistry and Molecular Biology should remove their GRE requirement as soon as possible.

When I finally was released from the exam, a woman waiting at the bus stop recognized me from the testing center. I asked her what she thought of the exam. “It was OK,” she replied. “It’s my second time taking it, so I knew what to expect. But I didn’t score high enough, so I’ll have to take it again sometime. Maybe during spring break.”

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score 200 points lower than white Americans in the quantitative test. Using score cut-offs could disproportionately eliminate women and minorities. While the ETS implements statistical measures to eliminate bias in the questions, many factors are beyond their control, including stereotype threat and socialized behavior in risk-taking (guessing). Studies have shown that marking gender and ethnicity in standardized tests like the GRE risks confirming a negative stereotype associated with a minority group that undermines their performance. A consequence of socialization, stereotype threat often is overlooked, yet it can be quantified in real time by physiological stress responses that include increased anxiety and hypervigilance about making mistakes, which negatively impact working memory. Whatever the reason, Casey Miller and Keivan Stassun conclude in a 2014 essay in Nature, “The misuse of GRE scores to select applicants may be a strong driver of the continuing underrepresentation of women and minorities in graduate school.”

For years, GRE scores were a quick and easy way for busy faculty, who often rotate through graduate admissions committees, to screen hundreds of applications. There is no easy solution or time-saving shortcut that can substitute for a holistic review of strengths and weaknesses in the application. While no perfect predictor of success exists, perhaps it’s time to retire the GRE as an admissions criterion for graduate school.

What do you think?

Should graduate programs continue to require the GRE? If so, why?
If the GRE is retired, what (if anything) should take its place?
Send your thoughts, in 500 words or fewer, to asmbmtoday@asmbmb.com. We hope to publish responses to these essays in a future issue.