Beware of the biomedical industrial complex

Dr. Steve McKnight, President of the American Society For Biochemistry And Molecular Biology, has written an article that must be as painful for life sciences advocates to read as it was for him to write.

He plainly says biomedical researchers are not as good as they used to be (bold mine).

> First, **the average scientist today is not of the quality of our predecessors**; it's a bit analogous to the so-called "greatest generation" of men and women of the United States who fought off fascism in World War II compared with their baby boomer children. Biomedical research is a huge enterprise now; **it attracts riff-raff** who never would have survived as scientists in the 1960s and 1970s.

At first glance that could just be romanticism – some old people insist baseball players were better when they were young, they have the fog of history about them. I think my 1985 Atari ST was revolutionary for its time, it blew away Intel PCs until the 386 came out, but I don't want to go back to it now.

He is not saying biomedical science today is *bad*, he is saying the quality has plummeted compared to previous generations because of more people. Basically, he is saying that his society, the ASBMB, has too many members. Obviously, sometimes the past *was* better in some ways. McKnight uses the analogy of the "greatest generation", that term for the folks of World War II. But were scientists of the past really better? If so, the evidence is not in Nobel prizes. This chart compiled by Jon Bruner in Forbes shows that from 1970 on, America instead began to truly dominate the Nobel Prizes:

America has dominated the life sciences since the 1950s so clearly the issue is not at the top end. Instead, McKnight highlights three issues he believes is bringing the average down.

First, he says there is too much funding, which is certain to startle young researchers doing their third post-doc job for little pay. Yet he feels the correlation between money and quality is obvious. The money is easy to see. Between 1999 and 2004, the budget nearly doubled the budget for the National Institutes of Health

> Biomedical research in the 1960s and 1970s was a spartan game. Prototypically, scientists were employed as teaching faculty members at universities. Carving out what time they could manage relative to their primary roles as educators, scientists worked in a focused manner on discrete problems in biology or medicine.

What had once been, as McKnight termed it, a small academic field where the best survived, was now a scramble to spend the money or lose it – and that meant biomedical researchers who may not have passed muster in 1999 suddenly got grants approved a few years later. The NIH had a budget of about $1 billion in 1970. That means in 43 years it has gone up 2900 percent, leading to what McKnight calls a "biomedical industrial complex," a play on President Dwight D. Eisenhower's concern regarding the "military-industrial complex.

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“Riff-raff” is certainly inflammatory but he uses that term for the lower caliber of scholars to make his second point. Those people scientifically on the quality margins can still become members of a study section at the NIH Center for Scientific Review (CSR), which determines the fate of biomedical proposals and therefore the future of science. In the past, the standards for being appointed to a CSR were so high that being on a study section was prestigious. Now, with a dizzying number of study sections necessary to approve 50,000 projects, it is instead a thankless, obscure task. With so many committees, he cautions, “second-tier scientists” are creating a future of biomedical mediocrity.

> ..let’s consider what might be expected from a grant review committee composed largely of second-tier scientists with limited knowledge of the breadth of biology and medicine. I propose that these committees are equally good at ensuring that the worst and best applications never get funded.

Inspired biomedical ideas that are ahead of their time are going to be penalized. Research becomes incremental rather than bold if the people doing the reviews are not the best and brightest.

In Eisenhower’s “military-industrial complex” speech of 1961, he warned of large special interests that held tremendous influence over policy. In the biomedical industrial complex, McKnight believes inquiry into the unknown is taking a back seat to finding new ways to get funding, and that can mean decisions that are based on relationships rather than evidence. The power of insider membership is McKnight’s final concern. With so much of biomedical research being so narrow, there isn’t a great deal of value for researchers to be at conferences but he believes that it would be a career disaster not to be in a club and attend meetings because many of the senior people in science societies are also in CSR groups at the NIH.

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