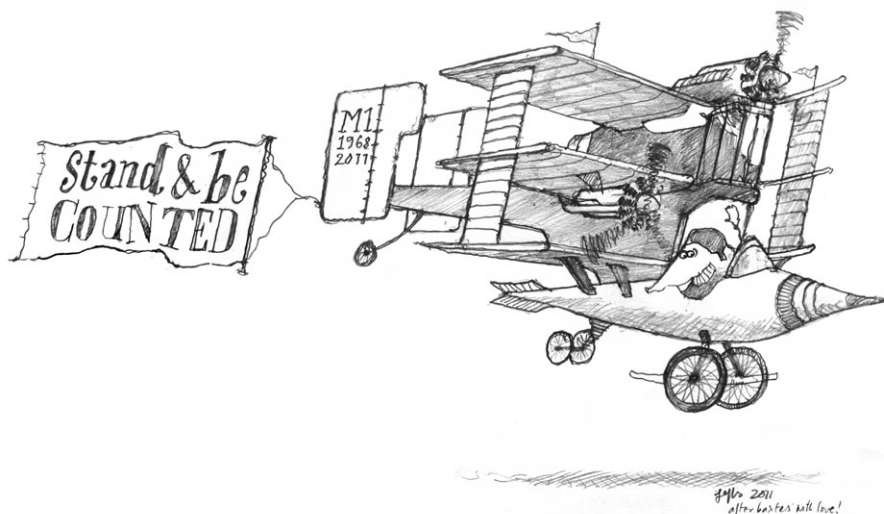


An occasional column, in which Mole and other characters share their views on various aspects of life-science research. Correspondence for Mole and his friends can be sent to mole@biologists.com, and may be published in forthcoming issues.



Revolution I – Takin’ it to the streets!

Something’s happening here. What it is ain’t exactly clear. Okay, I admit it: I’m an old hippie. I may wear sports jackets over my tie-dyed t-shirts, and my once long hair is short and balding (more bald than short); my wild beard is now a gray goatee, and I long ago traded the bong for a martini glass. But underneath it all, I’m a hippie. So I’m here to tell you, we need volunteers for the revolution. It’s time to stand and be counted.

If you are a biomedical scientist, or just interested in biomedical research (and I hope so, otherwise I have to question your choice of reading material), you may have noticed a strong trend in the funding of our research. The various agencies that support us throughout the world seem to be tired of what they see as arcane minutiae, understood by only the scientific elite, and they want results that cure people of what ails them. And they want it now – apparently, we are not coming through fast enough. So, instead of supporting innovations in basic science, the lion’s share is moving to large-scale initiatives to produce these cures, managed by administrators who report directly (or nearly so) to the powers-that-be.

In essence, it is time, say these agencies, to cash in the chips. We have more than enough basic research done already, and now we need to turn our attention to *using* it. It is basically a management problem; basic research is supervised, mostly, by individual investigators doing work that interests them (provided it also interests other scientists who review it); but curing disease is what we need and, therefore, the research effort is under new management.

Don’t get me wrong – translation of basic findings into practical application is terribly important and *must* be done. And it is much

more difficult to perform clinical studies than it needs to be; ways to streamline such translation are needed. I recognize that this is why governments and foundations support our research in the first place, and, indeed, why most of us got into biomedical research.

But this approach of re-directing most of the research money is simply wrong. We already have a trillion dollar (euro, yen, rimaldi, simoleon) effort underway to cure disease – it is called the global pharmaceutical industry. And despite the massive effort, and money, going into this, translation is glacially slow. Apparently (and I have this from the head of development at a major pharma) only four new drugs are approved worldwide every year and, as we know, a lot of these don’t work all that well. Clearly we are doing something wrong, but it isn’t because the work isn’t being funded. Unlike many basic scientists, these companies are *only* interested in successful translation. Projects are routinely terminated by those in charge if they are deemed unlikely to yield the goods, and all of the effort is put into those seen as most likely to succeed. Nevertheless, only four per year do so.

And now we want to apply this model to public support for research (at a small fraction of the industry budget). Look at the Gates Foundation, or Stand Up for Cancer (why not ‘to’ cancer? Never mind.). Or similar, albeit *very* laudable efforts. These organizations see that scientists need more supervision – if we are guided by time-honored business models, we will generate the needed cures. But it hasn’t worked, and these foundations have acknowledged this, but don’t quite know why it has turned out to be harder than they once thought.

Why is this happening now? I mean, the situation hasn’t really changed over the last few

decades. We always had diseases and efforts to cure them, and yes, profits to be made from doing so. What happened to require a shift in how we do things now? I reckon that there are three factors at work. Two are pretty obvious.

The first comes from the fact that, a couple of years ago, a lot of people who make a lot of money by moving money around screwed up and caused an economic melt-down of major proportions. Governments were caught out (having let this happen, because it was a *lot* of money, I guess) and are now in the position of having to justify to the public why they are spending money on anything (more justification than they used to) and biomedical research is a big-ticket item. Of course, the ever-rising cost of health care, fueled in large part by the success to date, is a big part of this, and we want better cures for all this cost. Overall, this may be a major reason, but it isn't the whole reason. Because unlike the U.S. and Europe, countries that had no melt-down are taking the same course. Like China. While the Chinese government is currently pouring money into research, this is being carefully focused on translation: projects must move to the clinic quickly or be terminated. Other factors are at work here.

The second reason is equally obvious. The pharmaceutical industry is a juggernaut, capable of lobbying governments and foundations to

cover their developmental costs. In the current environment, such lobbying is paying off well, and yes, even in China.

But it is the third reason that is not only less obvious but perhaps best makes up for the shortcomings of the others. Whether it is true, I don't know, but it *feels* true. Like you, the Mole is not privy to the deepest workings of the decision making, but I like to make guesses. There are scientists, however, who *do* have such access, and more to the point, whose opinions have a great deal of influence. You may know some of them. I guess.

Several years ago, these very influential folks (VIFs) were drawn to deep questions of basic research, questions that were not only deep, but could be answered through innovative approaches and technologies. And through their collective efforts, these questions were answered. As a consequence, their stature grew, and they became emblems of scientific success and, eventually, VIFs. But as these big questions were answered over the years, as the VIFs became busier with VIF things, their interest in other, new, questions waned. In this view, most of the really interesting things have been solved, and the current efforts just seem, well, trivial. Or to put it another way, "we've cleared away all of the large boulders, and you are spending all of your time looking at pebbles." (It is noteworthy, though, that this was said to me many,

years ago, when I was an Assistant Mole.) Now it is being said again.

So, this logic goes, it is time to cash in. The only big questions left require really big efforts (and big money), and we need to turn our knowledge into cures. Individual scientists want *papers*, but really, who cares about *papers*? We want *product*! And if this isn't happening, or happening fast enough, we are just going to have to manage the science better to *make* it happen.

Okay, so let's do the math. The global pharmaceutical industry, with its vast resources, produces four new drugs a year. By redirecting all public funds for biomedical research to such efforts, we may be able to increase this to, what? Four and a half? Five? And, of course, this will be at the cost of tying up the *source* of the stream, the basic research that drives this roaring, um, trickle.

Revolt. It is time, my friends, to take it to the streets. It is time to tell the *Man* that this is wrong, wrong, wrong. Raise your voice. Tell people. Stop complaining about grants and write letters to the newspaper, the government, anyone who will listen. Then put on the 'phones and listen to some Airplane, Carlos, and Dead, and next time we'll discuss the Revolution.

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