

Competition: our constant companion

Competition is at the heart of every step we make during our careers as research scientists. We first compete for a place in a laboratory to carry out our PhD research. We then compete for postdoctoral fellowships. And as heads of laboratories, in a way that is perhaps unique to research, we compete for funds to finance the experiments performed in our laboratories. It is not an exaggeration to state that competition is a constant companion of the research scientist.

In other walks of life there is, of course, a lot of competition too. The more customers a dental, legal, medical or engineering practice attracts, the more money their owners earn. In some fields, the competition to get a place at a good university or a position at a good practice takes place mainly at an earlier stage in the career. For instance, a national health system will provide physicians at a hospital with the materials and instruments they need once they have been appointed. But for us research scientists, a different and more demanding model is applied. When we eventually get a job in a university or research institute our salary is usually taken care of, as are the costs of performing some basic work. But that is often not at a level sufficient to perform the experiments that are possible and necessary today. And so we apply for grants again and again, and for all of the years that we practice as researchers. Each time we define a new research project we clarify our thoughts afresh—and this is indeed helpful—but there is a balance between the time and effort required to prepare a grant proposal and the pay-off that comes with success. And although the benefit of preparation is real, it is not an essential part of a successful research career—as is obvious for those with major funding who do not need to write new proposals each year. There is also a clear conclusion to be drawn if letters of rejection repeatedly come in the mail; it signals the end of ambition for a research career.

Competition is not limited to funding. The prestige of the journal in which we publish our results is also a result of layers of competition. Will our research reach a publishable conclusion before someone else working on the same topic somewhere else in the world gets to this point? Even when we are the first to get the results, is our paper more appealing to journal editors than a paper on a different topic from another 'competitor'?

Strangely, the non-scientific world remains largely unaware of this demanding work style. Politicians macho-like to the commercial benefits of competition and scrutinize company mergers to ensure that the benefit to society through competition is not lost. It would therefore be just and appropriate if they pointed to the scientific world as a leading example of competition and selection for the benefit of society. Instead, they drone on about duplication of research projects and the need for greater coordination and cooperation. Given that variations of similar experiments being performed in separate competing and/or collaborating laboratories provide extra credibility (*The Secrets of Scientists, EMBO Rep.*, 1, 453; 2000), it is clearly desirable to have some overlap in research. In this way, the deadening monopoly of opinion is avoided and novel insights are likely to appear.

One important component of competition is fairness. And here we have a major problem. A scientist working in a country where only limited funds are available, or where money is distributed by formula rather than competition, has a clear disadvantage that can place a ceiling on his or her ambitions. The same applies to those colleagues who are not well networked, and are therefore less aware of new developments, or those who have inadequate access to modern equipment. Others are considered 'too young' to develop their own ideas in a hierarchical system, have an excessive teaching load or, being women, are not part of some old boys' club that often seems to decide on grants. At a national level, some of these

aspects remain neutral, as all applicants have the same handicap. But, of course, they are not neutral in terms of publication output and quality. If funds are sought internationally then all of the extra burdens listed above are real disadvantages. The extent to which a national system provides the needs of a laboratory through local competitive funding predictates the potential of the group to find international support.

Some of these differences will become even more obvious within the European Union (EU)'s Framework Programme when the EU expands to 25 member states. Some of the new accession states come with underfunded national systems that can be described as precarious in terms of survival. Such lack of funds and other structural weaknesses have already forced many of their brightest and best to move to countries where their skills are better appreciated and supported. Membership of the EU will make it even easier for them to move to competitive and well-funded laboratories elsewhere in Europe—accession and access go hand-in-hand. Furthermore, action must be taken to prevent the scientists who stay in difficult national systems from being excluded from international funding schemes. Some scientists will of course succeed with their applications, but perhaps not enough to provide for the *juste retour* so frequently sought by politicians. But the easy solution of fixing the results of competition must be avoided. Scientific programmes must continue to be based on scientific priorities and quality, and should not be used for social engineering or integration. Competition is a harsh and brutal process, but it does identify champions. And we need champions in science who push forward the boundaries. We also need to engage as many people as possible in science. Let us therefore make clear and uncompromised choices to ensure that both goals are reached.

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