Hope, hype and hypocrisy

"The results presented in this paper open new approaches for future treatments of cancer."

"The new institute will provide the framework in which scientists and clinicians can work together to develop new treatments for patients."

"This start-up company will bring breakthrough research all the way from the laboratory to the clinic."

These are just three examples of the claims that abound in scientific publications and press releases. To the unsuspecting reader, these give the impression that the cure for cancer—or any other terrible disease—is just around the corner, if only we could be more patient and invest a bit more. Yet, seldom is reality equal to the promise of a press release. This hype is particularly prominent in the biomedical sciences because it preys on the hopes of sick people who thus become gullible and intoxicated by the promise of a cure.

The maxim "paper does not refuse ink" does not absolve scientists of their responsibility to present facts in a balanced and reasonable way. Many do so, but usually only to their colleagues. In private, few scientists would attempt to extrapolate from a possible drug target to a cure, whereas, like Houdini, they escape from this straightjacket towards the end of a paper or a grant application. This hypocrisy not only devalues the manuscript or application and the authors, but it also inevitably leads to increasing cynicism among readers, including the public and those funding research.

There was a time when the idea of pointing to a possible cure in a scientific paper seemed bizarre, but hype is spreading for several reasons including: the increasing pressure on institutions and researchers to secure funding from diverse sources; the requirement that scientists explain the relevance

of their work to the general public; and the fact that many grant applications require the applicant to explain the impact of the work on society. At a higher level, scientists are in a fierce competition to maintain and increase public support and funding, and they oblige and numb their critical sensitivities to do so. The net effect is that hype and hope have become common.

However, hype transmits a false message that carries a great danger for research. The promise that a cure is just around the corner after a few million more in funding is, more often than not, an exaggeration. In reality, the first few million's-worth of funding are just the start, but the relentless barrage of press releases and publications lure those funding research and the public into believing that the end point is nigh. How many billions have been invested into cancer research compared with the few drugs to actually treat cancer? Similarly, despite the levels of funding that Parkinson and Alzheimer disease have received, there are no real cures on the horizon in practice. And how many start-up companies, supported by investors' money, government grants and tax rebate schemes have failed and faltered?

If the promised cures are not forthcoming after many years and many millions in research funding, there will be inevitable consequences. The exaggerated claims ultimately lead to a disbelief of the next claim and in due course to the need for an even harder sell of the next grant application. The various turmoils of the financial markets have already led to more caution among investors, and venture capital firms now only get involved when a fledgling biotechnology company has more results to show than just the promise of another cure. Hype and charisma are no longer sufficient to attract private capital.

When it comes to scientific publications and grant applications, reviewers do not usually comment on the credibility of the claims made for the future benefits that might arise from the research. Furthermore, they do not ask for the same level of proof for these speculations as they do, for example, for speculations on a mechanistic step. Equally, most scientific reviewers take for granted the claims in a research proposal, but focus on the scientific arguments and data to see if these hold up to scrutiny. However, funding agencies, like hopeful fishermen, have cast bread on the waters of research with the hope of catching the big fish. At the moment they are patient, but they should not be presumed to remain so.

Ultimately, the problem is that scientists over-promise by sending messages of being close to their goals even if this is not true. They also send messages that, as soon as the first results come in, the next steps to real applications are quicker than the previous research stage; this is not true either.

Scientists will have to change their tune to present more realistic claims and less hyperbole if they wish to prevent negative reactions that could severely affect support for their research. People need hope and they will therefore accept a certain amount of the hype that comes with a new discovery. But they will not accept systematic hypocrisy and self-promotion when scientists talk about their research. To maintain the public's trust and support for science, an atmosphere of trust and transparency is better than a barrage of exaggerated claims and promises.

Frank Gannon

This Editorial represents the personal views of Frank Gannon and not those of Science Foundation Ireland or the European Molecular Biology Organization.

doi:10.1038/sj.embor.7401129