

Some successes have already been achieved, particularly with cancer. Tests such as MammaPrint and Oncotype DX, which measure the expression patterns of 70 or 21 genes, respectively, are now commercially available to help predict the risk of breast tumour recurrence and to guide treatment decisions for patients with breast cancer.

But most new biomarker candidates fall by the wayside and are not pursued — even those first published in high-profile journals. Identifying potential candidates is only the first step. The initial validation must be done to a sufficiently high standard and reported in enough detail for the study to be assessed and reproduced, thereby allowing the best candidates to be identified and taken further. Validation seems to be a major stumbling block.

As with all translational research, biomarker discovery involves two communities: basic scientists working to produce new technologies or to understand the cellular and molecular underpinnings of disease, and clinicians who seek to derive new insights from patient-oriented studies. Global recognition of the importance of translational research has resulted in renewed funding and infrastructural initiatives to pull these two communities together — the conventional boundaries between bench and bedside are becoming less distinct.

As more of *Nature's* readers and authors engage in translational

research, we are encouraged to see an increase in submissions on potential disease biomarkers that address important clinical challenges. One of the main criticisms from our referees of such studies is that the methods are not presented in sufficient detail for the studies to be effectively refereed or repeated. We ask authors to ensure that, where patient studies reveal potential disease biomarkers, the initial validation is conducted to a robust standard and all methods and statistical analyses are reported in sufficient detail to allow the study to be repeated. Specifically, the manuscript should contain detailed information about the patient and control cohorts, the criteria for inclusion of patient samples and the methods for obtaining and preparing the samples. Any algorithms used to generate a signature should be described in sufficient detail to allow repetition.

These are exciting times in biomedical research, and *Nature* as a multidisciplinary journal is keen to have a role in bridging laboratory research with patient care. The technology exists to provide meaningful biological indicators of disease. If we are to harness this information to generate clinically useful diagnostic or prognostic tests to guide treatment decisions in the clinic, scientists straddling the boundary between bench and bedside must conduct and report their research with the rigour that each individual community expects. ■

False alarms

British scientists must adopt a positive tone if they hope to protect their gains in funding.

On 11 January, a coalition of 20 leading British research universities published an editorial in *The Guardian* newspaper warning of impending calamity. If the spending cuts being proposed by the government are implemented, the authors asserted, the nation's entire higher-education system, eight centuries in the making, could be undone in just six months.

Such alarmist statements have worked before. In an ordinary budget year, cries of falling skies and loss of leadership can pressure politicians to shift resources towards research.

But the coming budget for Britain looks anything but ordinary (see page 410). To maintain the country's financial standing in the face of the ongoing global recession, the government will soon have to start to lower its deficit. And with taxes already high, across-the-board cuts in spending seem inevitable. If this summer's election leads to a change of government, as many expect it will, then this autumn's budgeting process will be even more chaotic.

Alarmist rhetoric is much less likely to work in this kind of budgetary climate. Politicians may wish to support science, but asking them to put research ahead of front-line government services such as policing and public health is not just unrealistic, it risks making scientists look petulant.

There is an alternative. Rather than trying to convince politicians that the problem is pressing, researchers should prove to them that science can be a solution. After the banking and financial-services industries collapsed in 2008 and 2009, research and higher education became one of Britain's strongest industries. Scientists should make the case that

these institutions can be mobilized to help the nation out of recession, by providing world-class education for its citizens and innovations that will set Britain apart from its competitors. They should also move the debate beyond the budget cuts, and into a broad consideration of how best to spend the limited funding that will be available.

This more anodyne, pro-science message will be effective only if politicians hear it again and again from all corners of the scientific establishment. At the moment, however, that seems far from happening. Most groups now mobilizing in support of science are fighting for their particular corner of the research enterprise. High-energy physicists, for example, are energetically battling a current round of spending cuts. Medical charities are pushing to preserve funds that support their university research.

Fortunately, the tools for a more coherent effort are already in place. The Campaign for Science & Engineering in the UK (CaSE), created after former Prime Minister Margaret Thatcher imposed draconian cuts in the 1980s, is a broad coalition of charities, universities and industry that promotes science. In the run-up to the UK election, CaSE is preparing a series of letters encouraging politicians to form a positive science agenda along the lines described above. Individual researchers should add their voices to the chorus by inviting local politicians to their campuses, and by signing on to CaSE's agenda.

In addition, the Royal Society, Britain's leading academic society, is preparing to release a report on the future of UK science. That document, which is being authored by two Nobel laureates and several researchers from industry and government, is expected to make a strong, positive case for long-term investment in science.

The positive tone will not be enough to shield British science entirely from the cuts that lie ahead: research is only one national need among many, and cannot claim a special entitlement. But done right, it can help to ameliorate the losses and ensure that science grows quickly whenever the nation begins its recovery. ■