How commercialization puts a blight on research

Good science stems from people with ideas, not from corporations or strategic teams.

Sir — The enthusiasm, discussed in your Opinion article "Towards a 'knowledge nation'" (*Nature* **411,** 619; 2001), for commercialization of Australian basic scientific research, and the call for more entrepreneurial activity by scientists, needs tempering with a dash of reality.

Australian universities are in a parlous state, mainly because they have had little or no increase in real funding since the present right-wing government was elected in 1996. Lacking a tradition of private endowments, they are being encouraged to an unprecedented degree to seek commercial finance for projects.

Your Opinion article did not discuss many of the negative aspects of these changes. Commercialization of basic research will never lead to a 'knowledge nation', and basic research will not flourish in a commercial environment when profit dictates the direction of science.

The influenza drug Relenza was not invented by a pharmaceutical company, but resulted from years of curiosity-driven basic research in publicly funded institutions in Australia and overseas. These discoveries were then commercialized by GlaxoWellcome.

In our experience, commercialization of university research leads to diminution in the free flow of ideas, a focus on more applied projects and serious conflicts of interest. For example, past successes of the Australian National University (ANU) were used to float the company Biotron, set up to exploit discoveries, as yet unmade, in the medical sciences.

Of 65 million shares issued, 40 million are held by principals in the company, including scientists still employed by ANU but carrying out the research extolled in the company prospectus. This unacceptable conflict of interest appears to be tolerated, and indeed actively encouraged, by senior management in Australian universities.

To address the problems inherent in university research driven by commercial considerations, we need to identify the conditions required for good science to flourish. Good scientific research is not done by corporations, or by the strategic teams beloved of politicians and administrators, but through ideas which develop in the minds of individual scientists.

Strategic research will not produce truly novel discoveries. As George Porter, former president of the Royal Society, once said: "If a man comes to you with a strategic research plan, you'd better lock up the spoons". US President Richard Nixon had a famously comprehensive strategic plan to cure cancer within five years, half the time his predecessor, John F. Kennedy, had given NASA to land a man on the moon.

NASA achieved its goal, but 30 years after Nixon's pledge we still have cancer. Why? Because we haven't yet discovered what causes most cancers.

We will retain our best scientists and attract our most talented young people to take up a career in science only in an environment which encourages curiosity-driven research — and in order to flourish this needs to be free from the constraints of commercialization.

At the moment, Australian society is overwhelmed with examples of corporate greed and lack of ethics. The integrity of scientific research in universities must be protected by staying at arm's length from commercialization of its only product — the basic research that leads to a better understanding of the world.

Of course, scientific discoveries made in universities should be developed for commercial use and for the benefit of the country that funded the research — and scientists making those discoveries should be rewarded financially.

The ideal situation is vastly increased government support for curiosity-driven basic research and a mechanism, including an enforceable code of ethics, to commercialize any discoveries that are made in this way.

Graeme Laver, Arno Müllbacher, Paul Waring
Australian National University, Canberra, ACT 2601, Australia

Biotechnology gets big backing in Australia

Sir — The Opinion article "Towards a 'knowledge nation'" (*Nature* **411,** 619; 2001) does not fully convey the priority that the Australian Commonwealth government — the national government of Australia — places on biotechnology.

For example, the Commonwealth government gave A$296 million (US$150 million) in the year 1999–2000 to biotechnology through funding schemes such as the National Health and Medical Research Council, the Australian Research Council and the R&D Start programme. This expenditure represents more than 9% of the government's total R&D funding and is separate from the initiatives discussed in your editorial.

In limiting your article to individual initiatives, you did not discuss the coordinated nature of the Commonwealth response to biotechnology. This is best exemplified by the creation of Biotechnology Australia, a body that implements and evaluates national biotechnology strategy, and manages the government's non-regulatory biotechnology activities.

The national biotechnology strategy was developed in consultation with the biotechnology sector and the government's biotechnology consultative committee. It identifies priorities, including the Biotechnology Innovation Fund, set up with A$40 million to address the market failure arising from the current shortage of venture capital available at the critical proof-of-concept phase.

The government also has programmes such as the Innovation Investment Fund to encourage the flow of venture capital. The national biotechnology strategy also identifies the need for collaboration with state governments to facilitate the development and coordination nationally of existing clusters and networks. A national biotechnology centre of excellence is planned, with initial funding of A$46 million.

Proponents of biotechnology must not forget that the public will not accept this new technology without appropriate safety measures and without information. The Australian Commonwealth office of the gene technology regulator started operations on 21 June, introducing stringent procedures to protect both human health and the environment, and serving the biotechnology sector by publishing clear guidelines and transparent procedures.

Commonwealth initiatives, such as labelling genetically modified food products and providing factual information for the public, continue to be a major activity (for example, see www.biotechnology.gov.au).

Sandy Radke
Biotechnology Australia, GPO Box 9839, ACT 2601, Australia

correspondence
contributions to correspondence may be submitted to **corres@nature.com**. They should be no longer than 500 words, ideally shorter.