Letter to *The Times*
'Innovative Science', Wednesday 23 September 2015 p26.

Sir, We write as senior scientists about a problem vital to the scientific enterprise and prosperity. Nowadays, funding is a lengthy and complex business. First, universities themselves must approve all proposals for submission. Funding agencies then subject those that survive to peer review, a process by which a few researchers, usually acting anonymously, assess a proposal's chances that it will achieve its goals, is the best value for money, is relevant to a national priority and will "impact" on a socio-economic problem. Only ~25% of proposals received by the funding agencies are funded. These protracted processes force researchers to exploit existing knowledge, severely discourage open-ended studies and are hugely time-consuming. They are also new: before ~1970, few researchers wrote proposals. Now they are virtually mandatory.

Globally, the university sector has expanded three or four-fold since ~1970. However, the 20th century was dominated by discoveries made by ~500 Nobel Prize winners, almost all of whom began their work before ~1970. Almost all were academics exploring new concepts. Their work led to nuclear power; penicillin; lasers; magnetic resonance imaging and monoclonal antibodies. Most were younger than 40 when they made their discoveries and few, if any, were predicted.

The potential for discovery now is as great as ever, but we must find new ways of giving unconstrained support to the tiny number of scientists with radical agenda. Venture Research was British Petroleum's initiative for supporting such people led by one of us (DWB). It ran from 1980 to 1993, created at least 14 major discoveries from the 37 groups supported, all of whom, except possibly one, had been rejected by peer review. Its total cost, including BP and university overheads, was some £20 million over 13 years. Identifying people to lead such initiatives will be difficult but it must be done.

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