

Mutations and plagiarisms

SIR—In a paper¹ on the origin of mutants, my colleagues and I suggested, in the discussion, that reverse transcription of variant mRNA molecules is one way whereby cells might be able to generate novel, testable phenotypes before these become genotype. We felt that all our readers would know the source of that idea and so we gave no references.

The speculation was based, of course, on Temin's classical work with the retroviruses, which led him to propose the "protovirus hypothesis"² and earned him a Nobel prize in 1975. He suggested that "in development of an organism, information transfer from DNA to RNA to DNA would allow variability"³. "There would be certain regions of the genome predetermined for this type of transfer"³ and protoviruses "would be important in embryonic development, antibody formation, and memory"². "In extreme cases", he wrote, "one could imagine that a product of protovirus evolution would infect the germ line, become integrated there, and thus also affect progeny organisms. Such a process could provide part of a mechanism for inheritance of some acquired characters"³.

Dr E. J. Steele of the University of Wollongong in Australia apparently believes that these ideas have somehow become his "intellectual property", and he has written to many people and com-

Reactor lives

SIR—Our fast reactor is alive and well!

It is not correct to say, as Peter Coles did (*Nature* 337, 197; 1989), that "Britain and West Germany have effectively abandoned their fast-breeder programmes".

In the United Kingdom we have assured funding for our fast reactor (PFR) until 1994 and for the fuel reprocessing plant on the same site until 1997. We also have a contribution of £10 million a year from the Department of Energy for our fast reactor research programme. This month we will sign up with the best Germans and the French, creating a European fast reactor programme in which we shall all collaborate. Fast reactors make much more efficient use of uranium than do thermal reactors and could supply the world's energy demand for a thousand years after we have burned up the coal, oil and gas. They do not contribute to acid rain or the greenhouse effect and are affordable. If successful, the European collaboration should lead to the construction of a series of fast reactor power stations.

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plained to the Australian press, saying that my colleagues and I have committed plagiarism because we did not refer to him⁴.

Steele wrote an interesting book in 1979 about the possibility of inheritance of acquired characteristics by way of retroviruses⁵, and shortly thereafter he published some experiments on the subject⁶. Later he wrote about the possibility of generating antibody variability by selective reverse transcription⁷.

As far as I can determine, Steele has never considered whether spontaneous mutations always arise at random, which was the topic of our paper; nor has he

Progress since 1900?

SIR—Your interest in educational matters reminds me that in 1900, when the average person had to learn many more skills than we need today, only 6 per cent of Americans graduated from high school — but the nation survived and even prospered.

Now, there are 60 million people associated with formal education in the United States, most of whom nicely illustrate John Holt's thesis in *How Children Fail* that "the major difference between the good student and the poor one is that the poor student forgets right away while the good one is careful to wait until after the examination".

Meanwhile, the United States has become the largest debtor nation in the history of the world, with numerous problems, oodles of expensive degrees, relatively little wisdom and millions of bored, anxious and resentful students. For the questioning and testing process almost guarantees that most feel quite inadequate long before their brains are fully developed and before their lives have hardly begun.

We could, of course, using inborn growth, creative, competence and curiosity drives, decide to help kids learn as opposed to 'Coop 'em, teach 'em, test 'em and flunk 'em'. But, with certain relaxed and productive exceptions, we usually seem to prefer a rigid, repressive and anxiety-promoting system where the 'failure' of the many gives the grade of 'A' to the few.

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Credit where it's due

SIR—A. G. E. Pearse (*Nature* 337, 300; 1989) is absolutely correct to point out that the phrase *Omnis cellula e cellula* had been used before 1839. The lapse is even less forgivable as there is a discussion of the issue in the splendid biography of

referred to any of the classical papers on the subject. Certainly, nothing he has written had any influence on our work or on anything we put in our paper.

I am writing this letter to set the record straight. Let us hope that we can now all go back to work.

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1. Cairns, J., Overbaugh, J. & Miller, S. *Nature* 335, 142–145 (1988).
2. Temin, H. M. *Perspect. Biol. Med* 14, 11–26 (1970).
3. Temin, H. M. *J. natn. Cancer Inst.* 46, ii–vii (1971).
4. *Nature* 337, 101 (1988).
5. Steele, E. J. *Somatic Selection and Adaptive Evolution: On the Inheritance of Acquired Characters* (University of Chicago Press, 1979).
6. Gorczynski, R. M. & Steele, E. J. *Proc. natn. Acad. Sci. U.S.A.* 77, 2871–2875 (1980); *Nature* 289, 678–681 (1981).
7. Steele, E. J. & Pollard, J. W. *Molec. Immunol.* 24, 667–673 (1987).

Virchow published 30 years ago by my old teacher, the late Professor Erwin Ackerknecht. Whether Raspail's earlier use of the phrase qualifies him to be the "father of the cell theory" is another (and rather scholastic) matter. As J. V. Pickstone points out (*Dictionary of the History of Science*, article on 'Cell theory'), Schwann himself first used the phrase 'cell theory'. In our current state of knowledge, we should perhaps limit ourselves to the conclusion that Raspail is (probably) the father of the phrase *Omnis cellula e cellula*.

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Disclaimer

SIR—On behalf of the board of directors of Foundation 41, I wish to disassociate the foundation from the contents of a letter by Dr William McBride (*Nature* 336, 614; 1988) and to say that it is unfortunate that the foundation's name and address were appended to that letter.

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Error acknowledged

SIR—The writer of the article "Lamarck, Dr Steele and plagiarism" (*Nature* 337, 101; 1989) seems to have committed what is known, I believe, in Great Britain as a school-boy howler. It would have been difficult for Copernicus to analyse Tycho Brahe's measurements as he died three years before Tycho was born. Obviously your writer confused Tycho with Johann Kepler.

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■ The presumption is sadly correct. —
Editor, *Nature*. ▶