Correspondence

Urgent action on Cerrado extinctions

Brazil has reduced deforestation in the Amazon by almost 80%, a major contribution to the goals of the United Nations Convention on Biological Diversity (CBD). Neighbouring Cerrado, a vast tropical savannah that hosts some 4,800 species of plants and vertebrates found nowhere else, has not fared so well.

Our findings show that a severe extinction episode is unfolding in the Cerrado, with plant extinctions projected to be an order of magnitude higher than all global recorded plant extinctions so far — yet in our view, this catastrophe can be avoided (B. B. N. Strassburg *et al. Nature Ecol. Evol.*, in the press).

Public and multi-stakeholder policies that supported Brazil's Amazon success need to be replicated in the Cerrado. For example, the region could be included in the Amazon's soya-bean moratorium and its public protected areas increased from 7.5% of the biome to the nationwide CBD target of 17%. Also, the new Forest Code should be enforced there, and large-scale restoration undertaken to boost and connect habitats that are crucial for endangered species.

These and other policies could transform an impending irreversible extinction episode of global proportions into another immense contribution to national and international goals of safeguarding biodiversity.

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Fermi's predictions live on

Gino Segrè and Bettina Hoerlin's biography of Enrico Fermi — *The Pope of Physics* (Henry Holt, 2016) — is a delightful sequel to the inspiring *Atoms in the Family*, written by Fermi's wife Laura in 1954 (Univ. of Chicago Press). I find reviewer Graham Farmelo's judgement too harsh on the fallibility of Fermi's foresight (see *Nature* **538,** 168–169; 2016).

In 1934, Fermi predicted (in a paper rejected by *Nature*) that particles actually change their identity in weak nuclear interactions; with his student C. N. Yang in 1949, he suggested that there were too many particles for them all to be elementary. These remarkable testaments to Fermi's foresight have survived as founding concepts of today's standard model of matter.

Twenty years later, I generalized the Fermi–Yang model by assuming that quarks combine to form neutral composite states that interact only over short distances (P. C. M. Yock *Int. J. Theor. Phys.* **2,** 247–254; 1969). A similar solution was later adopted in the theory of coloured quarks (H. Fritzsch *et al. Phys. Lett.* **47B,** 365–368; 1973) on which the standard model is based.

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Forge a clearer path for technical careers

The UK Biotechnology and Biological Sciences Research Council (BBSRC) surveyed more than 800 technicians and laboratory assistants about their roles, careers and professional recognition (see go.nature.com/2fs6icb). The results reveal opportunities for change in the current ill-defined status of technical staff.

These non-faculty members professed to a blurring between technical and academic roles. Forty per cent of them teach and 60% supervise students. They need to have expertise in mathematics, statistics and computing, for example — skills that are crucial for research but hard to come by (see go.nature.com/2grqk10). Yet the progression opportunities and career pathways for technicians and academics are poles apart.

Academic career metrics such as publications and grants are not necessarily useful for technical staff. We found that 80% of those surveyed had contributed to research papers, although only 19% were first authors; 22% had written grants, but only 12% of respondents realized that they could apply for BBSRC funding. Moreover, 39% did not have an up-to-date job description and just 32% said that their role carried clear performance-related metrics.

Technical staff should not remain the unsung heroes of research. They need a well-defined career structure, clear job descriptions, appropriate performance metrics and an associated reward system. The BBSRC will seek to develop sustainable careers, in partnership with research organizations and according to the professional registration standards of the Science Council (www.sciencecouncil.org).

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Nobel launchpad is immaterial

The question of which institutions produce the most Nobel prizewinners is one not just of numbers but of ratios (see *Nature* **538,** 152; 2016). Merely counting doesn't cut it.

We analysed the distribution of US Nobel laureates and members of the US National Academy of Sciences according to their undergraduate institutions (R. Root-Bernstein and K. Pawelec *J. Genius Eminence* **1,** 28–42; 2016). We found that most had trained in California, Illinois, Wisconsin, Massachusetts, New York, Connecticut and New Jersey. Yet after correcting either for the number of scientists per state or by state population, the probability of becoming a Nobel prizewinner or National Academy member was almost the same, irrespective of institution.

The case is entirely different for graduate education, where institution seems to be a dominant factor in future success.

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Focus like a lens, not like a laser

As someone who once held the world's first laser in my hand (while interviewing its inventor, the late Ted Maiman), I find the expression 'laser-focused' irritating. That phrase, or the equally misleading 'focused like a laser', appears at least twice in *Nature*'s 27 October 2016 issue.

The *Oxford English Dictionary* defines 'focus' as "to converge to or towards a single point or place", which a laser does not. It produces coherent light — light of the same wavelength and in phase; no converging is involved. To speak of a laser focusing light is to mislead generations of schoolchildren (and the rest of us) into thinking that a laser works like a lens, missing the beautiful quantum process that is actually involved.

Maiman's laser was simply a cylinder of artificial ruby about the size of a cigarette filter, half-silvered on both ends and nested in the spiral of a high-intensity flashbulb, all contained in an aluminium can no bigger than a flashlight battery. *Nature* had the good sense to publish his paper on the invention (*Nature* **187,** 493–494; 1960) after another journal had rejected it.

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