Celebrating 50 years of the cell cycle

To round off a year of scientific commemoration, let's raise a glass to Howard and Pelc.

Sir — This year the world has celebrated the 50th anniversary of the discovery of DNA's structure (see, for example, *Nature* **421**, 395–453; 2003). Meanwhile, however, another important scientific anniversary is in danger of slipping past unmarked.

Also in 1953, Alma Howard and Stephen Pelc published their work on cell proliferation in bean (*Vicia faba* L.) roots[1]. They grew plants with a ^{32}P isotope label and showed that it was incorporated into DNA in the nucleus only during interphase, and that it took 12 hours from the end of division until the beginning of the isotope uptake into new DNA. By analysing heterogeneous populations of meristematic cells, Howard and Pelc deduced that DNA synthesis takes about six hours, and that cells enter prophase of the next mitosis only eight hours after DNA synthesis is completed.

Howard and Pelc were the first to ascribe a timeframe to cellular life and they proposed the existence of four periods in the cell cycle: a period of cell division, the pre-S-phase (called G1), the S-phase (a period of DNA synthesis) and period G2, or the pre-mitotic period. The concept of the cell cycle was born.

Since then, cell-cycle studies have flourished. It is unfortunate, therefore, that this discovery is now almost forgotten (though not totally: see www.nature.com/celldivision/milestones/full/milestone03.html). The view of the cell cycle formed a basis for determining time parameters of the cell cycle (by labelling mitoses and other methods) and for the biochemical and molecular events that take place at each stage of the life of the cell between divisions in various groups of organisms.

As we know, the concept was later developed and the checkpoints in cell-cycle regulation and universal control mechanisms were determined by using genetics and molecular biology[2].

All these recent achievements stemmed from Howard and Pelc's study — which calls for another 50-year anniversary celebration to be held by the international scientific community.

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1. Howard, A. & Pelc, S. *Heredity* **6** (suppl.), 261–273 (1953).
2. Nurse, P. *Nature* **344,** 503–508 (1990).

What Darwin knew

Sir — In his review of the republication of James Hutton's 1794 book *An Investigation of the Principles of Knowledge and of the Progress of Reason, from Sense to Science and Philosophy,* Paul N. Pearson (*Nature* **425,** 665; 2003) tells us that Hutton devoted an entire chapter to natural selection, and adds, "it seems possible that a half-forgotten concept from his [Darwin's] student days resurfaced afresh in his mind as he struggled to explain the observations of species and varieties compiled from the voyage of the *Beagle*".

Pearson is surely right. But despite his lifelong interest in natural history, Darwin was educated not as a biologist, but as a country vicar. Although he may have read Hutton's book, it is equally likely that Darwin read one of the standard religious works of his day (now perhaps the most ridiculed book in biology), William Paley's *Natural Theology* (1803), which presents Paley's proof of the existence of God, as well as of Divine creation.

Part of chapter five is devoted to what we would recognize as variation and selection. It begins, "There is another answer which has the same effect as the resolving of things into chance." Paley proposes that "the eye, the animal to which it belongs, every plant, indeed every organized body which we can see, are only so many out of the possible varieties and combinations of being which the lapse of infinite ages has brought into existence; that the present world is the relict of that variety; millions of other bodily forms and other species having perished, being by the defect of their constitution incapable of preservation, or of continuance by generation." As Pearson has commented, Stephen Jay Gould discusses this in his *Structure of Evolutionary Theory* (Harvard Univ. Press, 2002).

Of course, Paley proposes natural selection only to reject it. Nevertheless, it is there. And Darwin himself could not have expressed it better. Natural selection was a heresy in Darwin's day, but a common one.

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There's more to science (and life) than scoops

Sir — Reading Helen Pearson's News Feature "It's a scoop!" (*Nature* **426,** 222–223; 2003) about competition in biology is likely to depress a lot of young researchers. What greater honour or peer recognition could there be than finding competitors relaying the results of your poster by cell phone, as described in your News Feature?

However, I believe they would be wrong to blame journals for accelerated publication or to berate competing labs for beating them to the post. One does not advance science by using faster computers, working in better-equipped labs or even spending more hours in the lab than could be considered socially normal. Science is best done between your ears. There is no stopping someone who is willing to cut corners to be first in line. The rest of us will just have to think harder and better. Satisfaction comes from knowing you did it right and it was your independent idea, not from a date on the top of your reprint.

When I was leaving the lab of my postdoctoral mentor, Eric J. Brown, I asked him whether he would be pursuing some of the same research that I was about to embark upon independently. He wisely told me that — as we were two different people — even if we did exactly the same experiment one day, we were likely to be performing different experiments the next.

Diversity of thought strengthens the overall progress of scientific inquiry. The formation (and superfunding) of consortia, research institutes and the like brings the risk of stagnation resulting from conformity.

Scoop me once, shame on me. Scoop me twice and I might ask why you aren't capable of any original thought.

I am now going home for the night.

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