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UNIVERSITÀ CAMPUS BIO-MEDICO DI ROMA

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When science gets it wrong

Let the light shine in

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Two big recent scientific results are looking shaky—and it is open peer review on the internet that has been doing the shaking

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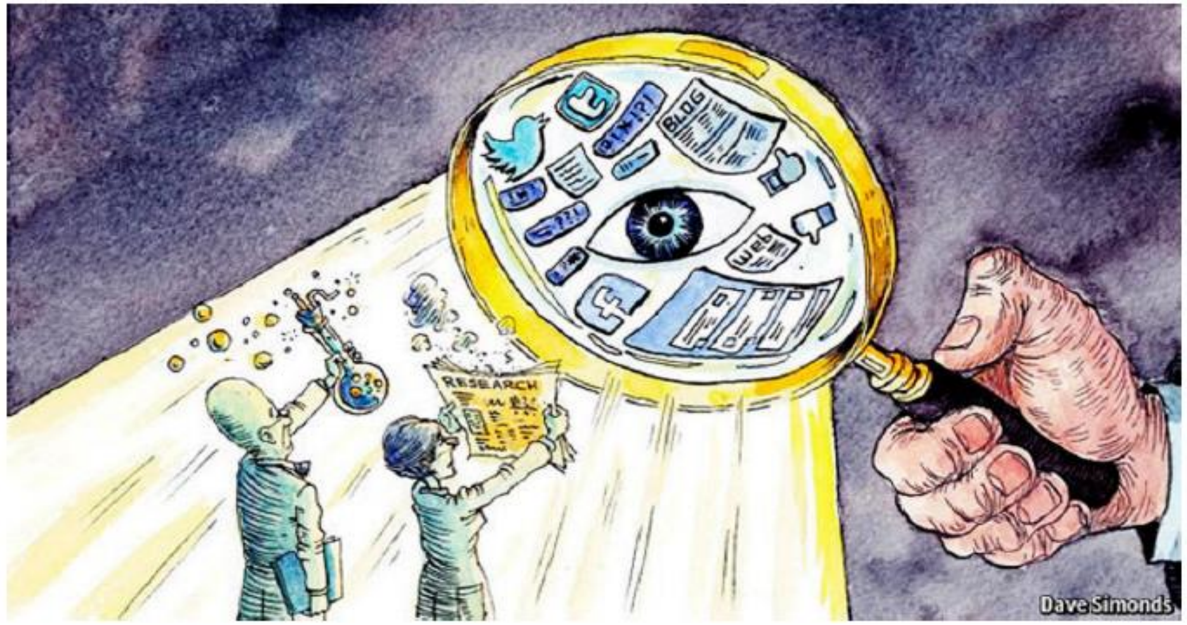

SCIENTISTS make much of the fact that their work is scrutinised anonymously by some

100 published studies to see if the results of these could be reproduced (only 36% could). Dr Smaldino and Dr McElreath therefore modified their model to simulate the effects of replication, by randomly selecting experiments from the "published" literature to be repeated.

A successful replication would boost the reputation of the lab that published the original result. Failure to replicate would result in a penalty. Worryingly, poor methods still won—albeit more slowly. This was true in even the most punitive version of the model, in which labs received a penalty 100 times the value of the original "payoff" for a result that failed to replicate, and replication rates were high (half of all results were subject to replication efforts).

The researchers' conclusion is therefore that when the ability to publish copiously in journals determines a lab's success, then "top-performing laboratories will always be those who are able to cut corners"—and that is regardless of the supposedly corrective process of replication.

Ultimately, therefore, the way to end the proliferation of bad science is not to nag people to behave better, or even to encourage replication, but for universities and funding agencies to stop rewarding researchers who publish copiously over those who publish fewer, but perhaps higher-quality papers. This, Dr Smaldino concedes, is easier said than done. Yet his model amply demonstrates the consequences for science of not doing so. ■

Poor scientific methods may be hereditary

reading lights to broadcast the signal. Lu ciom, a French firm, is even further ad vanced. In January 2017 it will begin install ing Li-Fi on passenger jets built either by Airbus or by its American rival, Boeing (a non-disclosure agreement forbids it from saying which one).

In the longer run, though, it is buildings that Li-Fi's manufacturers have their eyes on. PureLiFi, a British firm that sells compo nents to lighting manufacturers, plans to use the same cable to carry power and data to the LEDs themselves. That should make the system simple to install. PureLiFi is also designing LEDs that radiate data even when dimmed, so that a film can be streamed into a room and shown with the lights down.

Installing a Li-Fi LAN, then, should not

also, as Cohen suggested, often mistook noise for a signal. More thorough labs took time to rule these false positives out, but

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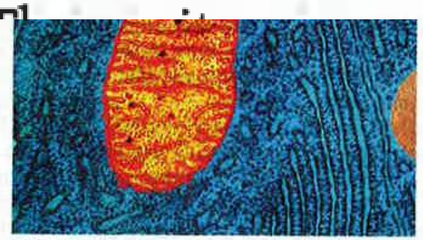
Mitochondrial donation

Three's company

Mice with genes from three parents live longer

GENETICALLY speaking, everyone has two parents. But that could soon change. Several countries, led by Britain—whose legislators approved the idea last year—are working on a procedure called mitochondrial donation, which would result in a child with DNA from three people: its mother, its father and a female donor sometimes dubbed a mitomum.



Elixir of life

leaving behind that strain's mitochondria, and transplanting them into enucleated eggs of the second strain, whose mitochondria remained in situ. A group of the first strain, left unmodified, was employed as a control. The researchers raised the mice and kept an eye on how they developed.

While the animals were young, few differences were apparent between modified and unmodified individuals. But as mu-

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La scienza come istituzione implica un tacito contratto sociale tra gli scienziati così che ciascuno dipende dall'affidabilità degli altri [...]

l'intero sistema cognitivo della scienza è radicato nell'integrità morale del complesso dei singoli scienziati

Jacob Bronowski