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Nature's sexism

The editors of this publication need to improve how we reflect women's contributions to science. For this, we must inject an extra loop into our thinking.

Earlier this year, we published a Correspondence that rightly took *Nature* to task for publishing too few female authors in our News and Views section (D. Conley and J. Stadmark *Nature* **488,** 590; 2012). Specifically, in the period 2010–11, the proportions of women News and Views authors in life, physical and Earth sciences were 17%, 8% and 4%, respectively. The authors of the Correspondence had taken us to task in 2005 with a similar analysis for the authorship of our Insight overview articles, and gave us slight credit for having improved that position.

Our minds were further focused on the problem by a much-discussed paper published in September (C. A. Moss-Racusin *et al. Proc. Natl Acad. Sci. USA* http://doi.org/jkm; 2012). The disturbing message of this blinded, randomized study was that US academics discriminated in hiring decisions and in salary against women who applied for a lab-manager position. Notably, female faculty members were as significantly discriminatory as males.

So here is a fuller litany of facts about *Nature*'s performance in this arena, based on internal surveys.

Of the 70 editors and reporters around the globe who commission, select, write or oversee *Nature*'s daily and weekly content, 38 (54%) are women. This proportion is reflected among team leaders. We feel confident that there is no discrimination in the recruitment and hiring practices of *Nature* and its publishers; the same applies to the writers whom we employ as freelancers.

Our performance as editors is much less balanced.

Of the 5,514 referees who assessed *Nature*'s submitted papers in 2011, 14% were women.

Of the 34 researchers profiled by journalists in 2011 and so far in 2012, 6 (18%) were women.

Of externally written Comment and World View articles published in 2011 and so far in 2012, 19% included a female author.

There are well-known external factors that will lead to some imbalance. The proportion of female researchers active in certain disciplines is low. The proportion of women active in the upper reaches of all disciplines is low. As a result, women in science will be asked to help to ensure a gender balance on committees and will therefore collectively experience greater pressure of that sort than men, leaving less time for writing and reviewing. One can speculate that there also may be a tendency for women to be less willing than men to push themselves forward, which may lead to editors being less aware of them. But it is certainly the case that women typically spend more time than men as homemakers and looking after children, further reducing the time available for journal contributions.

However, we do not believe that these considerations can fully account for, or excuse, the imbalance in *Nature*'s pages. Nor do we believe that our own editors consciously discriminate against women.

That leaves the unconscious factors, and here we believe that there is work to do. We believe that in commissioning articles or in thinking about who is doing interesting or relevant work, for all of the social factors already mentioned, and possibly for psychological reasons too, men most readily come to editorial minds. The September paper speculated about an unconscious assumption that women are less competent than men. A moment's reflection about past and present female colleagues should lead most researchers to correct any such assumption.

"There is a need for every editor to ask themselves, 'Who are the five women I could ask?'"

We therefore believe that there is a need for every editor to work through a conscious loop before proceeding with commissioning: to ask themselves, "Who are the five women I could ask?"

Under no circumstances will this 'gender loop' involve a requirement to fulfil a quota or to select anyone whom we do not know to be fully appropriate for the job, although we will set ourselves internal targets to help us to focus on the task. It is not yet clear just what difference this workflow loop will make. But it seems to us to be a step towards appropriately reflecting in our pages the contributions of women to science. ■

Too much to ask

A market-based malaria-control programme may not be perfect, but it deserves to continue.

The ravages of malaria are most damaging where they are hardest to combat: in rural areas in Africa that have little or no public health infrastructure. In response to that quandary, scientists and economists in 2004 dreamed up a scheme called the Affordable Medicines Facility — Malaria (AMFm). It aims to get artemisinin-based combination therapies (ACTs) — the most effective malaria treatments known — into the private pharmacies and village shops that are the only source of medicine in many rural African areas. Now, this grand experiment seems likely to end, its successes underrated and potential improvements not yet explored.

The high costs of ACTs have often meant that few rural outlets stocked them. Instead, shops sold cheaper but often ineffective drugs such as chloroquine — or, worse, artemisinin monotherapies, which are a recipe for the emergence of drug resistance. To overcome these problems, the AMFm first secures much cheaper prices from makers of ACTs by generating and negotiating massive bulk orders. Next, it offers importers subsidies to bring prices down further, to levels that are affordable in rural Africa. The scheme has been tested since 2010 at the country level in Ghana, Kenya, Madagascar, Niger, Nigeria,

Tanzania and Uganda, and last month an independent evaluation found that it had performed remarkably well on the main benchmarks of success, increasing the number of outlets stocking ACTs and lowering prices (S. Tougher *et al. Lancet* http://doi.org/js2; 2012).

Last week, however, the Global Fund to Fight AIDS, Tuberculosis and Malaria decided to end the AMFm as a stand-alone programme, by integrating it into the fund's core system for awarding malaria-control grants to countries. This integration probably spells the end for AMFm, because there will be no new money for the programme after the end of next year.

The fund's decision may be related to long-standing US opposition to the AMFm. Congress has passed legislation discouraging support for the programme until the concept has been proven, and the US President's Malaria Initiative maintains that private-sector treatment efforts should be carried out in partnership with governments. Other critics say that trained community health workers, not shop-keepers, should be at the front line of malaria treatment. In an ideal world, that may all be true. But whatever its detractors might say, the programme has succeeded in getting effective antimalarials to the only places in rural areas where most parents can get treatment for a child whose life is threatened by malaria.

More sensibly, the AMFm's critics also note that because not all cases of fever are malaria, selling ACTs over the counter inevitably leads to overtreatment, resulting in waste. But overtreatment has long plagued all malaria-control programmes, and would happen with or without the AMFm. It is only within the past few years that progress in rapid diagnostic tests for malaria — which use just a finger-prick of blood to check for proteins specific to the malaria-causing *Plasmodium* parasite — has made routine testing feasible. Only in 2010 did the World Health Organization begin recommending the use of diagnostics before treatment of malaria.

"Whatever its detractors might say, the programme has succeeded in getting antimalarials to rural areas."

There is plenty of scope for improving the AMFm's approach, which is still young. Combining diagnostics and treatment is clearly the next step, for example, and there is a major need — social scientists listen up — to devise clever ways to market tests and drugs together.

But it would be senseless to give up on the AMFm's strategy of using the vast existing private-sector infrastructure in Africa to get good medicines where there were none before. Anyone who doubts the power of the continent's private-sector distribution networks should consider how the free market has made Coca-Cola and other soft drinks available in even the remotest locations. That force should be harnessed equally for lifesaving malaria therapies. ■

Water wars

Environmental protections must not wait until a population is about to disappear.

Where there are serious threats to the environment, governments should not postpone cost-effective preventative measures because the scientific evidence is inconclusive. So says the precautionary principle, an idea enshrined in several international treaties, including the declaration signed in 1992 at the Earth Summit in Rio de Janeiro, Brazil.

Many scientists think that this principle should have long ago triggered action to curb the damage to aquatic wildlife caused by the synthetic hormone ethynyl oestradiol (EE2), an ingredient of birth-control pills that passes through wastewater treatment plants and into streams and lakes (see page 503). In 2004, for example, the UK Environment Agency declared that the hormone feminizes male fish and is likely to damage entire fish populations. It later concluded that this damage is unacceptable in the long term.

Eight years on, the evidence against EE2 continues to mount, but the European Commission is only now proposing the first serious effort to tackle the problem, suggesting tight limits on the hormone's concentration in the environment. The legislation would set a global precedent. But its prospects look bleak, mainly because of concerns about how best to limit the escape of EE2 into the aquatic environment, what that would cost and who should pay.

Governments and members of the European parliament are right to consider the costs of implementing the legislation. But some governments and industry groups are stifling these crucial discussions when they have barely begun.

The UK government, for example, has suggested that the necessary changes to wastewater treatment plants would cost England and Wales between £26 billion (US$41 billion) and £30 billion over ten years, a figure so breathtaking that it is likely to ensure that the legislation is kicked into the long grass. Other governments and industry groups have also branded the proposed rules unaffordable. Privately, scientists have told *Nature* that they suspect the calculations aim for the highest possible cost in order to portray the rules as financially unrealistic.

Nature's investigation shows that the UK estimate ignores significant cost-cutting opportunities. And is the cost really so high when the UK water industry has already committed to spend £22 billion from 2010–15 to improve infrastructure and water quality in England and Wales? What is more, the same measures that would limit EE2 in waste water would also reduce other potentially harmful pharmaceutical residues, including antibiotics and diclofenac — a second substance for which the European Commission has proposed stringent limits.

In addition, the discussion has focused on wastewater treatment, with little consideration of what the pharmaceutical and farming industries could do to keep their drugs out of the aquatic environment. Doctors and patients have a responsibility here, too, to make sure that the drugs are prescribed appropriately and that leftover pills are disposed of properly. To be clear, no one is seriously suggesting inhibiting patients' access to the drugs they need, even though some parties in the dispute have charged that the restrictions would do just that.

It is time to set aside scare tactics and to have an open and honest discussion about how to solve a potentially devastating environmental problem. The European Commission's proposed limits on the levels of EE2 in streams and lakes are a crucial first step.

That the regulation of EE2 faces such hurdles despite the mounting evidence of harm highlights a wider problem with environmental risk assessment. Governments may acknowledge the precautionary principle, but before taking action they often insist on strong evidence that populations, and not just individuals, are at risk. In the case of EE2, industry groups acknowledge that individual fish may have been harmed but note that there is no sign of a crash in Europe's freshwater fish numbers. Yet an unequivocal link between a specific chemical in the environment and harm to wildlife populations has been demonstrated in a mere handful of cases.

Often, the clinching evidence comes only after massive harm has been done, as was the case for North America's bald eagle (*Haliaeetus leucocephalus*) in the 1960s, when the population plummeted because residues of organochlorines such as DDT (dichlorodiphenyltrichloroethane) had caused the species' eggshells to thin. Governments and members of parliament have an opportunity to prevent a similar wildlife catastrophe, but they must act on the evidence before it is too late. ■

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