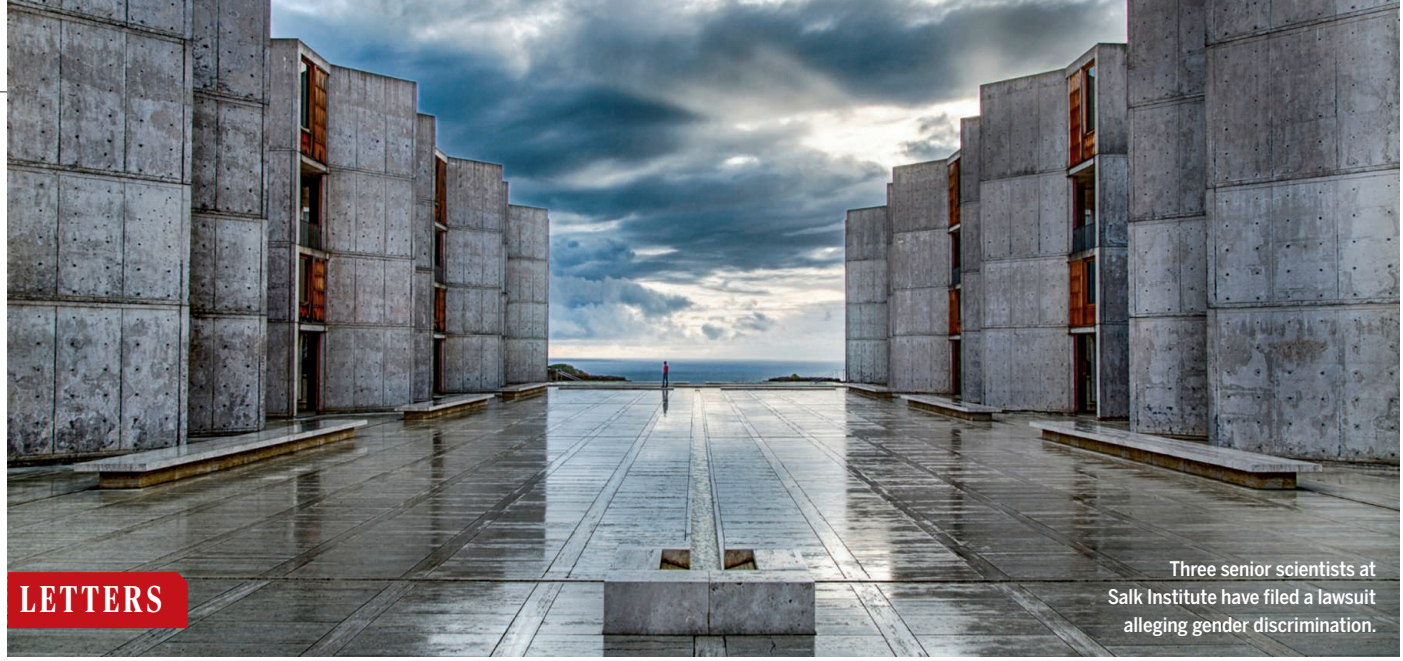

LETTERS

Three senior scientists at Salk Institute have filed a lawsuit alleging gender discrimination.

PHOTO: COURTESY OF SALK INSTITUTE FOR BIOLOGICAL STUDIES

*Edited by* **Jennifer Sills**

# *Not just Salk*

In her *Science*Insider News Story "Salk Institute hit with discrimination lawsuit by third female scientist" (20 July, http://scim.ag/2uPXWCa), M. Wadman reports that three of the four senior women scientists at the Salk Institute have filed a lawsuit alleging gender discrimination. The concerns of these faculty serve to remind us that these issues are still relevant, and they are not unique to the Salk Institute.

In the 1990s, Nancy Hopkins became a spokesperson for fair treatment of women when she confronted the Massachusetts Institute of Technology (MIT) for systematically assigning less space and resources to women faculty. The now-famous MIT 1999 report (*1*) suggested steps to correct the bias, which were implemented by MIT. Subsequently, a number of institutions evaluated potential discrimination of their women faculty, including Stanford in 2002, University of Michigan in 2002, Princeton in 2003, Duke in 2003, Johns Hopkins in 2006, and Yale in 2014 (*2*). Among the concerns raised were bias in promotions, space and resource allocation, committee assignments, and leadership opportunities. These allegations of bias are substantiated by data, as summarized in the 2007 report by the National Academy of Sciences, "Beyond bias and barriers" (*3*), and in the 2010 American Association of University Women (AAUW) report, "Why so few?" (*4*). The reports highlight the role of unconscious bias that leads to fewer opportunities for women. Unconscious bias is difficult to assess, precisely because it is unconscious, and usually unintended, yet it is deeply embedded in our culture ("Measuring and managing bias," J. Berg, Editorial, 1 September, p. 849). Notably, both men and women, nonscientists and scientists, display the same biases against women (*5*).

When leaders claim that there is no bias at their institutions, it is essential to examine the data. Whereas some reports (such as the AAUW report) suggest progress is being made, recent studies (*5*, *6*) document the persistence of the problem. Indeed, the Salk lawsuit has led many of our colleagues to again raise questions of similar discrimination at their institutions, illustrating that gender discrimination problems are far from solved. Furthermore, we recognize that, while the Salk case is about gender discrimination, our minority colleagues face even greater challenges (*7*–*9*), and we need to include their concerns as we fight bias. Combatting all forms of discrimination and overcoming unconscious bias is an ongoing battle. It will require deep societal changes, in addition to strong institutional policies to commit to change. The Salk case reminds us of the challenge of diversifying academic biomedical communities, both for women and minorities.

We can look to several evidence-based solutions that can lead to real change (*10*, *11*). It is time to take action and make changes that will solve this recurring issue. The next generation of scientists is watching, and many are choosing not to pursue a career in science, where they feel they will not have support. We need a vigorous national response to this national problem. The health of the scientific enterprise depends on it.

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# China must lead on emissions trading

About 25% of global greenhouse gas emissions come from sources in China, more than the United States (14%) and the European Union (10%) combined (*1*). Given China's impact on the climate and the Trump Administration's retreat on international action, we should not only welcome positive signs of China's leadership on climate ("China can lead on climate change," C. Wang and F. Wang, Letters, 25 August, p. 764) but acknowledge that the world is depending it. We must also demand that China's climate actions be sufficiently quick, genuinely effective, open to scrutiny, and free from diplomatic brinkmanship.

Recent declines in energy-related carbon emissions and coal consumption, as well as leadership in manufacturing and deployment of renewable energy technologies, are positive signs, but China's path forward is largely dependent on the effectiveness of its proposed national emissions trading scheme. If effective, this scheme should systematically facilitate China's transition to a low-carbon economy and go a long way toward limiting global climate change. Lessons from other countries, such as those involved in the European Union Emissions Trading Scheme, have shown that emissions trading schemes only work if carbon accounts are accurate, emissions reduction targets are sufficiently ambitious, and the number of free permits allowed is minimized. Furthermore, the supply of offsets cannot distort emissions reduction objectives, and liable entities must be aware of and able to implement their abatement options (*2*–*4*). A trading scheme's effectiveness is ultimately determined by its design architecture and transition trajectory (i.e., the pathway and rate by which an economy transitions from carbon-intensive to low carbon). The seven pilot trading schemes in China over the past few years gave away too many free permits to be truly effective in the short term (*5*). China's national emission trading scheme must strike the elusive balance between a prudently-timed implementation and the need to hastily achieve real emissions reductions. If this can be

done, then China most certainly deserves recognition as the world's leading nation on climate action.

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# *Carbon footprint of China's belt and road*

Four years ago, China proposed the Belt and Road Initiative in an effort to lead globalization and regional economic cooperation with countries situated along the land-based "Silk Road Economic Belt" and the oceangoing "Maritime Silk Road." The initiative promotes trade between China and countries in Asia, Africa, and Europe by providing capital and technology investments (*1*). Increased trade is expected to help China diversify and export some of its production and restructure its high-pollution and high-carbon economy. In their Letter "China can lead on climate change" (25 August, p. 764), C. Wang and F. Wang cite the Belt and Road Initiative as evidence of China's ability to lead on climate change. Although the Initiative will contribute to global prosperity, it could also lead to increased global carbon emissions.

The construction of infrastructure, particularly roads, bridges, mining and power plants, dams, and workshops for the manufacturing industry, as planned in Belt and Road countries, will require substantial energy consumption. Energy needs will likely be met with fossil fuels given the lack of renewable energy facilities in many Belt and Road countries (*2*). Moreover, the operation and maintenance of the infrastructure will mean that Belt and Road countries will continue to release considerable carbon emissions for decades.

Currently, about 70% of China's energy is supplied by coal, and China is one of the most carbon-intensive economies worldwide (*3*). Extending its supply chain by streamlining exports to Belt and Road countries will lead to the growth of China's energy-intensive industries (such as mining, iron, and steel), which will in turn accelerate energy combustion and increase total global carbon emissions.

Given its significance, global environment impacts need to be considered carefully as the Belt and Road Initiative is implemented. Advanced green energy technologies and low-carbon incentives should play a key role in infrastructure construction and subsequent development. We suggest and expect a green belt and a clean road.

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## TECHNICAL COMMENT ABSTRACTS

### Comment on "The complex effects of ocean acidification on the prominent $N_2$-fixing cyanobacterium *Trichodesmium*"

**David A. Hutchins, Feixue Fu, Nathan G. Walworth, Michael D. Lee, Mak A. Saito, Eric A. Webb**

Hong *et al*. (Reports, 5 May 2017, p. 527) suggested that previous studies of the biogeochemically significant marine cyanobacterium *Trichodesmium* showing increased growth and nitrogen fixation at projected future high $CO_2$ levels suffered from ammonia or copper toxicity. They reported that these rates instead decrease at high $CO_2$ when contamination is alleviated. We present and discuss results of multiple published studies refuting this toxicity hypothesis.

Full text: dx.doi.org/10.1126/science.aao0067

### Response to comment on "The complex effects of ocean acidification on the prominent $N_2$-fixing cyanobacterium *Trichodesmium*"

**Dalin Shi, Rong Shen, Sven A. Kranz, François M. M. Morel, Haizheng Hong**

Hutchins *et al*. question the validity of our results showing that under fast growth conditions, the beneficial effect of high $CO_2$ on *Trichodesmium* is overwhelmed by the deleterious effect of the concomitant decrease in ambient and cellular pH. The positive effect of acidification reported by Hutchins and coworkers is likely caused by culture conditions that support suboptimal growth rates.

Full text: dx.doi.org/10.1126/science.aao0428

# Carbon footprint of China's belt and road

Ning Zhang, Zhu Liu, Xuemei Zheng and Jinjun Xue

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