

ScienceNOW

From Science's
Online Daily News SiteWhen Social Fear Disappears,
So Does Racism

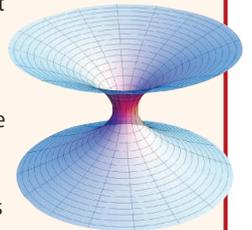
Children with a genetic condition that quiets their fear of strangers don't stereotype based on race, according to a new study. The findings support the idea that prejudice stems from fear of people from different social groups, although some researchers question how well the new study supports that conclusion. <http://bit.ly/socialfear>

Cholesterol Genetically Linked
To Eye Disease

Two genetic studies involving thousands of participants suggest that age-related macular degeneration, an eye disease common among the elderly, is tied to a gene that helps regulate "good" cholesterol. The studies present the first genetic evidence of a link between cholesterol and the disease, and they may lead scientists to identify new targets for therapy. <http://bit.ly/eyedisease>

Does Our Universe Live Inside
A Wormhole?

A long time ago, in a universe much larger than our own, a giant star collapsed. Its implosion crammed so much mass and energy together that it created a wormhole to another universe. And inside this wormhole, our own universe was born. It may seem fantastic, but a theoretical physicist claims that such a scenario could help answer some of the most perplexing questions in cosmology. <http://bit.ly/wormholes>

Earth-Like Planets May Abound
In Milky Way

Observations of formerly sunlike stars called white dwarfs suggest that the overwhelming majority of them once harbored at least one rocky world. And because sunlike stars could account for up to half of the Milky Way's population of several hundred billion stars, that means thousands or even millions of civilizations might inhabit our galaxy. <http://bit.ly/earth-like>

For the full postings and more, go to news.sciencemag.org/sciencenow.



Blast off. A new U.S. audit criticizes the most energetic laser ever built.

FUSION SCIENCE

Report Calls for Improvements
At Livermore's Giant Laser

Will the world's biggest laser—designed to simulate the nuclear fusion that occurs in stars and thermonuclear weapons—ever work as advertised? A new U.S. government audit of the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory in California says the \$4 billion behemoth faces “scientific and technical challenges and management weaknesses.” But scientists associated with the project believe that the machine will do great science if Congress gives it a chance to flex its muscles.

NIF's 192 lasers focus on a thimble-sized target in which various types of hydrogen atoms, under incredible heat and pressure, are meant to undergo fusion. That accomplishment, called ignition, would allow researchers to better monitor aging nuclear weapons, understand processes in the cores of stars and planets, and point the way toward clean, cheap energy. The project has encountered repeated delays since construction began in 1997, however, and its cost has more than doubled. Last year, it was formally dedicated (*Science*, 17 April 2009, p. 326) with the hope of performing ignition experiments sometime in 2010.

But the path to ignition still has some bumps, says the Government Accountability Office (GAO) in a report issued last week.* Although GAO said the project had “made progress,” among the serious problems it identified was the machine's capability to shoot at full energy. Congress funded NIF to fire at 1.8 megajoules (MJ). But GAO found that problems with laser optics that were identified years ago have continued to limit the machine's 192-beam shots to 1.3 MJ or less.

That shortfall is serious because higher

energies improve NIF's chances of success. (At the same time, the laser's optical equipment is more prone to damage at higher energies, and NIF is utilizing a 4-month pause to work on the problem.) Indeed, said GAO, experts “are concerned” that energy losses or damaged optics would doom ignition experiments, undermining NIF's value in weapons science.

GAO also said that the Department of Energy's National Nuclear Security Administration (NNSA), which funds the project, had failed to manage it properly. One major example: NNSA took 4 years to appoint a standing review committee after outside advisers recommended the need for independent oversight.

Raymond Jeanloz, a physicist at the University of California, Berkeley, thinks government auditors have given the project a bum rap. In the past 5 years, scientists at NIF developed new means of examining and repairing glass optics without replacing them, says Jeanloz, who hopes to use the machine to study processes in the interior of planets. The changes give NIF a fighting chance of achieving its 1.8-MJ goal. NIF officials also say that it may be possible to achieve ignition at lower energy. Even at 1.3 MJ, Jeanloz points out, the laser is roughly 40 times more energetic as any other such machine. “You want the best value for the taxpayer, of course, ... but we really don't know what will work at these energies.”

NIF officials defend their management decisions. And they face little heat from federal lawmakers, who can do little to influence the project at this point short of shutting it down. So Jeanloz says it's time to let the scientists “do cutting-edge science” and then “see what happens.”

—ELI KINTISCH