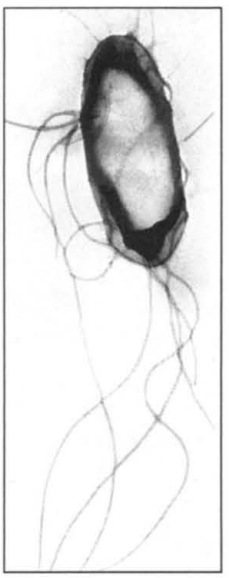
living cell and all its functions, says Barry Wanner of Purdue University in West Lafayette, Indiana. This month, a group of scientists spearheaded by Wanner launched an international alliance to consolidate global *E. coli* modeling efforts, dubbed the International *E. coli* Alliance (IECA).

Wanner says the move to join forces has been growing at the grassroots level for several years. It all came together at the 4 August "Intelligent Systems for Molecular Biology" meeting in Edmonton, Canada. "There was overwhelming agreement that a central organization was needed to coordinate these efforts," he says.



The real thing. Researchers are collaborating on a computer model of *E. coli*.

IECA's steering committee is made up of leaders of *E. coli* projects around the world. The cooperative venture will steam ahead on multiple fronts: modeling, bioinformatics, and characterization and description of the functions and interactions of all of *E. coli*'s ingredients.

"This will be a major breakthrough if we can solve a simple cell," says Wanner, who heads the main U.S. piece of the action, the *E. coli* Model Cell Consortium, created in March. Other advocates say the project dwarfs the Human Genome Project. "It is 10 times more ambitious and 100 times more important for mankind," claims Hans Westerhoff of the Free University in Amsterdam, who heads Amsterdam's Silicon Cell Consortium. Westerhoff says the genome project and related work can be compared to having "a complete catalog" of car parts. The *E. coli* model goes much further, to show "how all the pieces should be fitted together." If the work proceeds as expected, "all interactions between genes, proteins, and small molecules will be revealed, and the whole cellular network will be reconstructed," says Igor Goryanin, who heads cell modeling at GlaxoSmithKline in Stevenage, U.K. He says his group is working on an *E. coli* model, but "we have found a lot of knowledge gaps that could be resolved only by the alliance."

George Church, a computational geneticist at Harvard University, says that with a complete computer model, "you can run through changes that might take hundreds of years in the lab." It will enable scientists working from their desktops to create various mutants and introduce genes from other organisms to see which would be most relevant for work on a new antibiotic, for example.

Church adds that the *E. coli* effort is likely to turn out to be more "democratic" than the genome project. For the latter, he points out, a lab had to invest in expensive sequencing machines to get in the game. But "for computational biology, all you need is a PC and some gray matter." Further plans will be developed at a November meeting of the alliance in London. **–CONSTANCE HOLDEN**

NEUROSCIENCE

Researchers Thrilled With Seminal Discovery

There are a lot of things scientists don't understand about sex. Insights into the vagaries of arousal and the how's and why's of orgasms, for example, aren't easy to nail down in a laboratory setting.

Now two researchers have found an intriguing piece of the puzzle: a long-sought bit of circuitry called the ejaculation generator. And no, they didn't find it at a sex shop or on some sleazy Web site; they found it in the spinal cord. On page 1566, neuroscientist Lique Coolen and postdoc William Truitt of the University of Cincinnati College of Medicine in Ohio describe a population of cells in male rats that they believe is critical for triggering ejaculation.

"I think it's fabulous," says Kevin McKenna, a neuroscientist at Northwestern University in Evanston, Illinois. Ejaculation is a reflex, he explains, but it's no simple knee jerk. What triggers ejaculation is poorly understood—sometimes it takes a lot of sexual activity, other times just a little—and it invokes a complicated pattern of muscle contractions. Knowing where this activity is coordinated, he says, is an important step toward understanding male sexual function.

From animal experiments and clinical studies of men with spinal cord injuries, researchers knew that the ejaculation generator must reside in roughly the lower quarter of the spinal cord. The new study narrows this down to a population of cells, called lumbar spinothalamic (LSt) neurons, scattered throughout two segments of the lumbar region. These neurons, distinguishable by the combination of neurotransmitters they use to exchange signals, are part of an information highway called the spinothalamic tract that relays sensory information from the body to the brain.

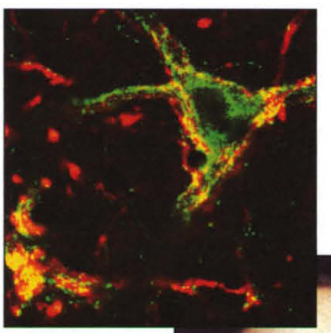
Coolen and Truitt initially hypothesized that the LSt cells might help inform the brain's pleasure centers about any hot action down below. But last year the pair began to suspect that they play a more active role. LSt cells are activated after ejaculation in male rats, they found, but not after other types of sexual behavior such as mounting or penetration.

To investigate further, the researchers killed LSt cells in male rats by injecting a toxin into the spinal cords. Ten days later, they tested the rats' sexual behavior by putting them, one at a time, into a cage with a ready and willing female. A group of untreated rats was tested too. Truitt, who didn't know which rats were which, kept a play-by-play of the romance—noting instances of mounting, penetration, and ejaculation.

Shortly after this last hurrah, Coolen and Truitt killed the rats and tallied the LSt cells remaining in their spinal cords. Not one of the rats with less than one-third the normal number of LSt cells had been able to ejaculate, despite mounting and penetrating at the same rates as their untreated counterparts.

The findings don't necessarily mean that the LSt cells are all there is to the ejaculation generator, Coolen says, but they indicate that these cells are at least a critical component. Several anatomical studies in Coolen's lab—some published, some still in progress—bolster her contention by establishing that LSt cells are well wired for mediating ejaculation; for instance, they receive inputs from nerves in the penis and connect to spinal neurons that regulate muscles and glands involved in ejaculation.

The research could lead to better understanding and treatment of ejaculation disorders, says neuropsychiatrist Marcel Waldinger of Leyenburg Hospital in The Hague, the Netherlands. This includes not just men complaining about bad timing but also those with spinal cord injuries who want to have children. Triggering ejaculation by stimulating LSt cells might be a better option than some of to-



Spine-tingling. LSt neurons (*top*) allow male rats to fully consummate a relationship.

CREDITS: (TOP TO BOTTOM) MELVIN L. DEPAMPHILIS AND JULIUS ADLER; W.A. TRUITT AND L.M. COOLEN

day's more invasive methods. Clinical developments are still a long way off, however, cautions Nancy Brackett, a neuroscientist who works with men with spinal cord injuries at the University of Miami School of Medicine in Florida.

All the same, the study is certain to stimulate more research from scientists curious about sex. One intriguing line of investigation: What do LSt cells do in females? "It's a great question," Coolen says. "That's a study we're planning to do." –GREG MILLER

HUMAN SUBJECTS

Ethicists Fault Review Of Children's Study

The ethics panels that assess proposed experiments on human subjects by U.S. researchers traditionally operate behind closed doors. A recently dusted-off federal rule governing certain children's studies is opening that process to the light of public review, however, and some bioethicists don't like what they see.

The specific rule involves studies in which healthy children would be exposed to greater than minimal risks. Under a 19-year-old standard, a university's Institutional Review Board (IRB) must pass such a research hot potato to the Department of Health and Human Services (HHS), which then seeks advice from an expert panel. Last year HHS's expert panel, acting on the first of what appears to be a new wave of such proposals, opted to allow a group of healthy Japanese-American and Caucasian children to be exposed to above-minimal-risk procedures, such as the use of a catheter for glucose tests. The children would be studied because Asian Americans are believed to be at elevated risk for developing type II diabetes around puberty.

On 7 August the responsible HHS agency, the Office for Human Research Protections (OHRP), put out a request for public comments on its proposal to proceed, but some bioethicists believe that the agency isn't giving the public enough time or information. "The way this has been handled is atrocious," says Robert Nelson, who oversees ethics reviews at The Children's Hospital of Philadelphia.

HHS had previously been sent only two studies under the rule, 45 CFR 46.407. But the cancellation of a National Institutes of Health study on obesity in children nearly 2 years ago (*Science*, 17 November 2000, p. 1281) led OHRP to clarify the rule, and seven such studies are now in the pipeline, according to OHRP spokesperson Pat El-Hinnawy. A 1998 law requiring companies to test drugs on children might be a contributing factor, along with added caution by IRBs.

Shining more light on the IRB process is good, says medical ethicist Loretta Kopelman of East Carolina University in Greenville, North Carolina, especially given recent shutdowns of trials at several institutions (including the University of Washington, which proposed the diabetes study). Kopelman says that openly discussing the study could help explore questions such as what risks to children are acceptable, and when the overall benefits to society from research on healthy children outweigh the risks to individuals. Such issues are not aired often, because IRB reviews normally remain confidential.

Kopelman and others are sharply critical of how OHRP is seeking comments, however. The notice says the expert panel's summary report is available upon request but doesn't offer anything else—such as individual panelists' reports or the protocol. Of 10 comments received by OHRP, three viewed by *Science* called for more time and more sharing of information. "What gives moral credibility to [rule] 407 is the public nature of the discussion," and "a 2-week comment period falls far short," says Nelson, who was a member of the panel that reviewed the University of Washington study.

No pain, no gain. Government panel weighs value of performing procedures such as imaging on healthy children.

The protocol is available under the Freedom of Information Act, but some have suggested that OHRP should post it on the Web. IRBs consider protocols confidential, notes Mary Faith Marshall of the University of Kansas Medical Center in Kansas City, because they usually haven't received federal funding, and they contain information that could be used by a competitor.

The OHRP spokesperson declined to say how the agency plans to proceed once it has finished reviewing the comments. The rule sets no time period for a final decision. –JOCELYN KAISER

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ScienceScope

Stem Cell Slowdown Australian scientists will have to wait a little longer for national legislation endorsing research on human embryonic stem (ES) cells. Researchers had hoped that federal legislators would finalize a long-debated law (*Science*, 12 April, p. 238) by the end of August, but the Senate last week ordered another committee review, delaying action until at least December.

The delay won't disrupt existing research, scientists say. But "we really do need the endorsement of the legislation to get on with our work," says cell biologist Martin Pera of the Monash Institute of Reproduction and Development in Melbourne and chief science officer of the new Centre for Stem Cells and Tissue Repair. The bill would ban human cloning but allow researchers to use and derive certain human ES cell lines.

Researchers are cautiously optimistic that the bill will pass this year. But if it fails, at least three of the nation's six state governments—which have the power to regulate health research—have vowed to enact similar laws.

It's in the Mail U.S. efforts to implement a major new bioterrorism law have hit a glitch—infuriating some university officials who are scrambling to meet a looming deadline. Under the law, universities and thousands of other facilities must notify the Centers for Disease Control and Prevention (CDC) in Atlanta by 10 September if they possess any of about 40 potential bioterror agents. But when a CDC contractor mailed out 190,000 special notification forms earlier this month, it somehow missed the nation's 3000 or so colleges and universities—one of the major targets of the law.

"Given more time, we certainly could have had a more accurate list," the contractor, Analytical Sciences Inc. of Durham, North Carolina, told academic officials in a note posted on an Internet bulletin board. It promised to have the forms—which are printed with special machine-readable ink and paper—in the mail to academia by this week. But if one doesn't show up, the company advises campus officials to "go looking for it!"

The oversight "is helping making a hard job for universities even more confusing and difficult," says Cheri Hildreth, who is managing compliance for the University of Louisville, Kentucky. Even institutions that don't get the forms, she notes, could face penalties for missing the deadline. Help seekers can call 866-567-4232.

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