Joe Howard, director of the Max Planck Institute of Molecular Cell Biology and Genetics in Dresden, Germany, favor yet a third model. In "asymmetric hand-over-hand," the kinesin heads step over each other but rotate little. The mystery might be solved if researchers can overcome a technical challenge universal to kinesin motion studies: the difficulty distinguishing between the two tiny heads. Scientists are experimenting with special dyes to do just that.

Myosin researchers can sympathize with their kinesin brethren. Recent work on these motors, which control muscles and transport various proteins, shows that two family members don't move as believed. Myosin VI, whose function remains a puzzle, apparently edges backward and takes far larger steps than its structure suggests is possible. And myosin V has been found to stay stuck to its filament during motion rather than lifting off periodically.

Motor molecules are "capable of some pretty surprising things that we might not have predicted," says Richard Cheney, a cell biologist at the University of North Carolina, Chapel Hill. And they're taking scientists along for the roller-coaster ride.

–JENNIFER COUZIN

SPANISH UNIVERSITIES

Reforms Spark More Jobs—and Protests

BARCELONA—Spain's government sees it as a cure for cronyism. The universities see it as an infringement on their autonomy. The bone of contention: a new law governing hiring practices that has triggered a mad rush to fill academic posts and has sparked a bitter row between the universities and the education ministry that funds them.

Last December, Spain's parliament passed government-sponsored legislation that subjects candidates for academic posts to peer review by national panels before they can apply for a job. In the weeks leading up to the law's passage, university rectors assailed the legislation, arguing, among other issues, that it would erode the autonomy of Spain's public universities, impeding their ability to hire top talent. At one point, the rectors appeared to be winning the public relations battle: On 1 December 2001, more than 100,000 people took to the streets to protest the law. But they lost the war when the bill became law a few weeks later.

Now the rectors are under fire from their own rank and file. In a 3-week period last fall, Spain's 48 public universities advertised some 4600 new positions, about twice the number posted during an entire year. Because the jobs were advertised before the new law took effect on 13 January, the slots will be filled under the old rules, in which five-member appointment boards select candidates by majority vote. But hiring so many people this year will have "hugely negative effects" by sharply limiting opportunities for young researchers in coming years, predicts inorganic chemist José Vicente of the University of Murcia.

The government's reforms are designed to reduce the universities' influence over the appointments board. Two of the five board members come from the university, so only one other member must be persuaded for the university to land its favored candidate. Thus the deciding vote often is "largely influenced by favoritism and mutual self-interest," contends astrophysicist Antonio Ferriz-Mas of the University of Vigo. An education ministry survey appears to offer some support for that claim: Professorial posts handed out under the old system went to internal or local candidates over 90% of the time.

According to the law, a new agency will first review the qualifications of aspiring applicants to sort the wheat from the chaff. Those who pass muster can present themselves to national boards of experts, who would recommend the best applicants to the university for final selection. The law will ensure that only capable individuals land professorial posts, says physicist Luis Rull-Fernández of the University of Sevilla.

However, the Spanish Council of Rectors (CRUE) claimed in a statement that the law erodes university autonomy, which it calls a "fundamental right" under Spain's constitution.

CREDIT: COORDINADORA DE PROFESORES CONTRA LA LEY DE ORDINACIÓN UNIVERSITARIA

Not reform-minded. A recent protest of the new university law sent thousands into the streets of Madrid.

ScienceScope

Time Limit German researchers are protesting a new law that would require aspiring academics to get a doctorate and a permanent university job within 12 to 15 years. Faculty members at the University of Bielefeld this week boycotted classes to protest the new rule, which lawmakers approved in December and German President Johannes Rau will sign soon.

Currently, would-be professors face some time limits on tenure-seeking and temporary research contracts, but a switch to a different institution restarts the clock. Under the new rules, researchers who don't find permanent posts within the qualification period—up to 15 years for medical scientists—would have to try to extend their contracts under general employment law or leave. Backers say the limits will bring new blood into academia and prevent institutions from exploiting temporary researchers.

But the Bielefeld protesters say the new deadlines are unrealistic given the scarcity of permanent posts. And they fear that thousands of contract scientists will lose their jobs under the law. University administrators are calling for a phase-in period that gives threatened researchers more time to adjust. German officials have yet to respond to the idea.

About-Face The U.S. military is planning to surrender a long-running HIV research program to civilian bosses, according to scientists. Caltech president David Baltimore, chair of the AIDS Vaccine Research Committee of the National Institutes of Health, said at a meeting this week that the Bush Administration has decided to transfer military HIV research—including a $40 million Army vaccine trial—to the Department of Health and Human Services. A Pentagon spokesperson declined comment, but an Army vaccine researcher attending the meeting confirmed the plan. Although similar past efforts were shelved, "this time it's going to stick," the researcher predicted. He said the decision was made 4 January at "a very high level."

AIDS is a significant problem in the U.S. military: HIV infects about 500 soldiers in active and reserve forces each year. But Secretary of the Army Thomas White ruled in a memo last year that studying HIV was a "nontraditional" military activity (*Science*, 20 July, p. 404). Congress still must approve the shift, which is expected to be included in the 2003 budget proposal the president will release on 4 February.

Contributors: Martin Enserink, Katie Greene, Adam Bostanci, Eliot Marshall

CRUE president Saturnino de La Plaza says his organization may mount a court challenge. He defends last fall's mass job postings, which he says aim primarily to give permanent posts to researchers who have toiled for years on temporary contracts.

The education ministry dismisses CRUE's explanation. It said that the "hasty and massive" posting is an attempt to "avoid a more open, competitive, and transparent recruitment to ensure the quality of research in universities." Some see darker motivations for the rectors' opposition to the new law: As Rull-Fernández points out, it requires all rectors to step down in 6 months, paving the way for a new generation of academic leaders. **–XAVIER BOSCH**

Xavier Bosch is a science writer in Barcelona.

PHEROMONE RECEPTION

When in Doubt, Mice Mate Rather Than Hate

A new genetically modified mouse abides by the motto of the psychedelic age: Make Love, Not War. A male that can't sniff out the sex of its partner will, to put it delicately, try to partner with it rather than attack it. The same mutation could never lead to a peaceable kingdom among humans, however, because the part of the brain responsible for the mice's amorous behavior is as vestigial in humans as the appendix.

The research, led by Harvard molecular neuroscientist Catherine Dulac and published online by *Science* this week (www.sciencexpress.org), suggests that the default social interaction for mice is to mate. Only a scent-based cue from another male inhibits a male's urge to mate and spurs him to fight. The number of genes that control this behavior is precisely one; it encodes the protein TRP2 that sits on the surface of certain olfactory nerves that detect pheromones.

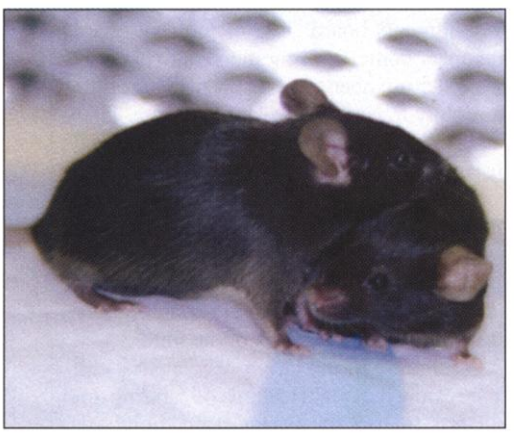
Calling the work "superlative," neurobiologist Emily Liman of the University of Southern California (USC) in Los Angeles says, "it opens the way for genetic analysis of a plethora of behaviors," including sexual maturation, gender recognition, and spontaneous abortions in mice, all of which are influenced by pheromones. It also debunks the notion that mating has to be evoked by a pheromone that tells a male it's in the presence of a female.

Mice have two olfactory systems. Airborne smells trigger the main olfactory epithelium that sends messages to the primary olfactory cortex. Pheromones—personal identification molecules that emanate from both males and females—stimulate a batch of 400 nerve cells in the nose-based vomeronasal organ (VNO). The VNO sends signals to the hypothalamus, a brain region involved in reproduction, defense, and eating. TRP2 resides only in these VNO cells.

To find out what TRP2 contributes to pheromone detection, Dulac and colleagues deleted the *TRP2* gene; they then bred mouse strains that had two, one, or no copies of the gene. All of the animals reproduced as if nothing were amiss. But controlled introductions between individual mice revealed the effect of the missing gene.

Male lab mice have a black-and-white worldview: They defend their cages aggressively from other males but put the moves on any females. The researchers dropped in an intruder mouse, observed the interaction, and monitored the nerves firing in the resident mouse's VNO. The team ensured that the intruders were giving off a strong pheromone signal by using either females in estrus or males that had been castrated (castrati are not aggressive and won't start a fight) and daubed with pheromone-rich urine from intact males.

As expected, resident males with one or both chromosomal copies of *TRP2* mounted introduced females. When a urine-daubed eunuch mouse was allowed entry, the males with *TRP2* picked a fight. Male mice with no copies of the gene, however, tried to mate with either type of visitor. If offered both companions at the same time, the *TRP2*-negative mice spent just as much time trying to mate with the males as the females. Males without *TRP2* also courted eunuchs that hadn't been spritzed with urine, suggesting that a pheromone signal isn't needed to enkindle mouse romance.



Mating games. Male mice lacking *TRP2* don't know they should be fighting with each other.

The knockout mice aren't entirely peaceniks; they will fight back if provoked by other males. Their VNO neurons looked normal and fired if stimulated. But the neurons were quiet, compared to the same neurons in normal mice, when the knockout mice interacted with pheromone-doused companions. The researchers conclude that *TRP2* is necessary for detecting pheromones that indicate whether a strange mouse is a male.

If the mouse VNO controls basic behavior such as mating and fighting, and humans have remnants of this system, at what point in our evolutionary past did humans "overcome" being controlled by pheromones? USC's Liman, who studies the *TRP* gene family in primates, is trying to answer that question. But not everyone is pleased that humans have apparently largely abandoned pheromones when making mating decisions. "The perfume industry would like consumers to believe it's not vestigial," Liman says.

According to many researchers, the fact that one gene has such a marked effect on sexual behavior was a surprise. Says neurobiologist Charles Zuker of the University of California, San Diego, "I would have expected that the sexual identity of a mate was not solely determined by one pheromone cue—mating is so extraordinarily important biologically." The bohemian mice seem to agree: Love is fundamentally more important—biologically speaking—than war.

–MARY BECKMAN

Mary Beckman is a writer based in southeast Idaho.

MYANMAR

Planned Reactor Ruffles Global Feathers

VIENNA—Western officials are raising safety concerns over Myanmar's plans to build its first nuclear reactor. The small reactor would produce medical isotopes and test the feasibility of bringing nuclear energy to the poverty-stricken country, formerly known as Burma. It would also give Russia, which would supply the reactor and technical support, a larger presence in the region.

A groundbreaking ceremony was scheduled for last week at a military complex near Magwe, a central region bearing Myanmar's richest uranium deposits, a U.S. Defense Department official told *Science*. The reactor would have a capacity of 10 megawatts and cost roughly $25 million. The Myanmar government confirmed privately to the International Atomic Energy Agency (IAEA) that more than 200 of its scientists and technicians have received nuclear training in Russia in recent months.

Both the Soviet Union and the United States built research reactors around the world during the Cold War as part of a competition to promote the peaceful use of atomic energy. Some reactors became huge proliferation risks. During the Vietnam War, for instance, U.S. Special Forces tried to recover plutonium from a U.S.-made research reactor in the south that had been seized by communist troops—only to find that the fuel was

CREDIT: L. STOWERS *ET AL*