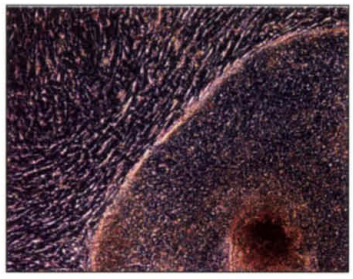
Mouse-Free in Singapore



Human embryonic stem cell colony growing on human muscle feeder cells.

A group at the National University of Singapore reported last week that it has successfully started a new line of human embryonic stem (hES) cells using human instead of mouse cells as "feeder" cells.

One concern about using hES cells to treat diseases is the fact that all the lines eligible for U.S. government funding have been cultured with mouse fibroblasts, which raises the possibility of contamination. Last year, researchers at Geron Corp. in Menlo Park, California, managed to keep mouse cell ingredients out of a medium that had been exposed to them. But lead Singapore investigator Ariff Bongso says his group found that the Geron recipe supported undifferentiated cell growth for only short periods.

The Singapore team thinks they've found something better: human fetal muscle cells. These cultures not only stably support existing cell lines, the researchers report in the 5 August online edition of *Nature Biotechnology*—they also enabled the creation of a new line, which has now undergone 50 cell divisions. "This certainly opens the way to deriving more new, safe cell lines," says Bongso.

Stem cell researcher Ronald McKay of the National Institute of Neurological Disorders and Stroke says Bongso's team has done "important" work. "[hES] cells are hard to grow, and there is a real need for methods that make them grow better," he says. Geron CEO Thomas Okarma says that Geron still thinks its own technology, which has been transferred to seven other labs, is more promising. But he says that because of the Bush Administration's decision to limit federal funding to lines created before 9 August 2001, "it's not a surprise" that the first group to derive a new line of hES cells without animal cells works "outside U.S. borders."

On the Edge

Three times as many females as males fit the criteria for "borderline personality disorder": emotionally volatile, easily bored, prone to substance abuse and bad relationships, beset with chronic feelings of emptiness, and often suicidal. Now scientists have suggested one reason for the disparity: shifting estrogen levels.

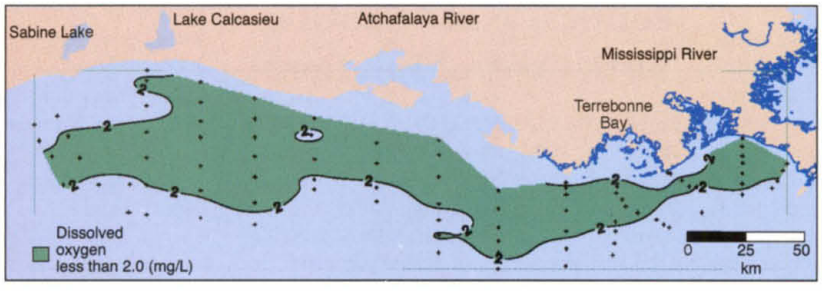
A team led by Catherine DeSoto of the University of Northern Iowa, Cedar Falls, zeroed in on the link with three studies. First they did psychological assessments of 226 female undergraduates. Those taking oral contraceptives, which increase daily hormone fluctuations, showed significantly higher degrees of borderline symptoms. And more than one-third of those in days 5 to 10 of their menstrual cycles—when estrogen levels are rising fast—showed some borderline symptoms, compared with fewer than 20% at other times.

In a second study, the researchers found that rising levels of estradiol, as measured from saliva samples, were associated with more borderline symptoms. Finally, in a prospective study, they compared 17 women who were planning to go on the pill with 29 controls. The pill had no effect on most women but appeared to exacerbate borderline symptoms in those who already had them.

In a paper in press at *Psychoneuroimmunology*, the researchers emphasize that the salient factor appears to be estrogen fluctuations and not absolute estrogen levels. They speculate that rapid fluctuations, which are linked to serotonin levels, "tax the system" and help bring out borderline traits among the susceptible. "Researchers are only beginning to understand how estrogen levels might affect symptom expression in women who suffer from psychiatric conditions," says psychologist Elizabeth Hampson of the University of Western Ontario in London.

The findings "mesh well" with recent bad news about hormone replacement therapy, adds co-author David Geary of the University of Missouri, Columbia: "I guess it's not just testosterone that's 'poison.' "

Dead Zone Grows



The Gulf of Mexico's ominous "dead zone"—the low-oxygen realm, partially created by fertilizer runoff, that materializes every spring off Louisiana and Texas—is bigger than ever. It's ballooned to 22,000 square kilometers, outstripping the record 20,000 sq km in 1999, says Nancy Rabalais of Louisiana State University in Baton Rouge, who leads an annual mapping effort. The federal government has a Hypoxia Action Plan aimed at reducing the zone to 5000 sq km by 2015.

Lying Leaves

The moth-eaten look adopted by the ragged-leaved palm *Reinhardtia gracilis* works better than nasty-tasting chemicals to keep predators away, suggests ecologist Rodolfo Dirzo of the National Autonomous University in Mexico. Some plants develop bad-tasting chemicals after being attacked by insects. Dirzo, reporting last week at the Ecological Society of America meeting in Tucson, Arizona, said the already-dined-upon appearance of *Reinhardtia*'s leaves is apparently enough to keep bugs away in the wild. Back in the lab, however, insects, when fed unidentifiable leaf bits, prefer it to other palm brands.

CREDITS: (TOP TO BOTTOM) A. BONGSO; MIKE GRAY