

STEM CELL RESEARCH

Canada Gives OK for New Cell Lines

OTTAWA—Canadian and U.K. scientists have gotten the green light to proceed with human embryonic stem (ES) cell research.

Researchers may derive new lines of stem cells from embryos left over from fertility treatments or tissue from aborted fetuses under guidelines announced Monday by the Canadian Institutes of Health Research (CIHR). (Such derivation is prohibited for publicly funded researchers in the United States.) But the guidelines, issued in draft form last spring (*Science*, 6 April 2001, p. 31), prohibit the creation of embryos for research purposes or for so-called therapeutic cloning.

The guidelines “balance the safety and ethical issues of concern to Canadians with research and clinical opportunities and the desire of Canadians to proceed with the use of stem cells to treat disease,” says CIHR president Alan Bernstein. A new committee will review research proposals, and all new cell lines generated using CIHR funds will be listed at an electronic registry and will be available to all researchers.

Canadian researchers and private disease-fighting groups hailed the new guidelines, which lift a voluntary moratorium for the past decade on human ES cell research. These new rules also are consistent with draft legislation before Parliament. But they have drawn the ire of some pro-life members of the governing Liberal party, who accuse Bernstein of trying to circumvent the parliamentary process.

Bernstein says he does not see CIHR’s move as a substitute for legislation: “What we’re doing today is putting guidelines in place where there’s been a vacuum. ... [They] will be replaced if and when legislation comes in.”

Canadian stem cell scientists are pleased that the government has set down a clear path. “A lot of scientists have been waiting to hear what’s going on,” says Mick Bhatia of the John P. Robarts Institute in London, Ontario, who is gearing up to culture hematopoietic cells from ES cell lines acquired from WiCell in Wisconsin. Michael Rudnicki of the University of Ottawa points out that Canadian researchers have had plenty of time to think about how to pursue their aims and have a well-organized infrastructure—including a research network called StemNet and centralized fertility clinics with approved informed-consent procedures to supply embryos.

In the United Kingdom, meanwhile, officials are moving forward with the world’s most liberal stem cell policies. Last week the Medical Research Council (MRC) issued its first two licenses to researchers wishing to derive cell lines—to Austin Smith of the

Centre for Genome Research in Edinburgh and Peter Braude of Guy’s Hospital in London. A House of Lords committee has sanctioned the existing policies, even stating that therapeutic cloning might be permissible in cases of “exceptional need” when embryos are not available from fertility clinics.

The United Kingdom is also planning to set up the world’s first stem cell bank. MRC is soliciting bids from national laboratories, and a winner will be chosen this summer.

—**WAYNE KONDRO AND CONSTANCE HOLDEN**
Wayne Kondro writes from Ottawa.

ANIMAL BEHAVIOR

Guppy Sex and Gluttony Guided by Orange Glow

What do females want? In peacocks, it’s a male with a billowing train of colorful, eye-spotted feathers; in túngara frogs, it’s a male with a low-baritone “chuck” call. And in guppies (*Poecilia reticulata*), it’s a male with orange spots. But why females prefer males with these particular traits and not bright purple spots, for instance, has proved difficult to pin down. Now, behavioral ecologist F. Helen Rodd of the University of Toronto and her colleagues report that for guppies, at least, the attraction derives from a simple gut response: Orange looks like food.

“It’s very cool,” says Anne Houde, an evolutionary biologist at Lake Forest College in Illinois. “Other studies in other species have shown a preexisting bias for certain traits in

traction to orange in the early 1990s while studying wild guppies in Trinidad. Her voyeuristic counts of courtship displays and mating attempts were disrupted every time a small, orange fruit from a cabrehash tree hit the stream. Sex immediately lost out to gluttony. Indeed, Rodd says, the orange fruits were about “the only thing” that ever interrupted the males’ persistent mating displays.

Struck by that observation, Rodd and her colleagues decided to test guppies’ color preferences. They painted small plastic disks various hues and placed them in streams, then counted the number of times the guppies pecked at disks of each color. Orange was always the high scorer—even among a well-studied population of females that do not prefer males with orange spots. The team followed up their field tests with laboratory experiments using second-generation guppies raised from wild ancestors. In all cases, notes Rodd, “guppies of all age and sex classes preferred” orange disks, apparently because of their hard-wired appetite for the orange fruits, the researchers report in the 7 March issue of the *Proceedings of the Royal Society of London, Series B*.

At first, the idea that females are attracted to food-colored males was “a little depressing,” says Rodd. “Are female guppies really that stupid? All it takes is a flash of orange that looks like a fruit?”

There may be more in the flash, though, than meets the human eye. Like many orange-colored fruits and vegetables, cabrehash fruits are loaded with carotenoids, which contain vitamin A and may support the immune system. Males that eat more carotenoid-bearing foods have the most distinctive orange color in their display spots, points out Greg Grether, an evolutionary biologist at the University of California, Los Angeles, one of the study’s co-authors. Because the fastest fish get the limited supply of fruits, Rodd adds, “the color of the spots could still be telling the females something about the health of the males.”

Indeed, previous research revealed that female guppies dislike males with dull orange spots—an indication that they are

or have been infected with certain parasites.

Thus, the male’s orange spots may be like infomercials, both grabbing the female’s attention and giving her hard data about the quality of the male’s genes. “Attracting a mate is a multistep process,” says David Reznick, an evolutionary biologist at the University of California, Riverside, who has led numerous studies of wild guppies. After catching a female’s eye, the male does a bend-and-shake dance that “holds the female’s attention and tells her something about



Yum. Orange fruit (above) and fruit-colored spots (right) catch a guppy’s eye.

