Biomedicine

Fetal-tissue transplant bill dies

Eleventh-hour filibustering has thwarted a Senate bill that would have allowed federally funded fetal-tissue transplant researchers to use tissues from induced abortions.

As the 102nd Congress struggled to conclude its legislative business last week, a dozen senators delayed indefinitely consideration of the bill, which would also have authorized additional spending on breast cancer research and other high-priority areas of women's health.

Majority leader George J. Mitchell (D-Maine) grudgingly conceded the demise of the bill during the congressional session that concluded this year. But he vowed to make passage of the measure a top priority next year.

"That will be the first order of business in the next Senate, and it will begin the first day that the Senate reconvenes following the inauguration of the President," Mitchell said on the Senate floor last week.

The funding ban on transplantation of tissues from induced abortions has been in place since 1988. In July of this year, President Bush vetoed a congressional attempt to reverse the prohibition (SN: 7/4/92, p.15).

Fetal-tissue transplantation has shown promise as an experimental therapy for Parkinson's disease, diabetes, and Huntington's disease (SN: 11/16/91, p.308). But opponents claim that proliferation of the technique would increase the number of elective abortions.

To cushion the effect of his veto earlier this year, Bush suggested the establishment of a federal bank of fetal tissue procured from miscarriages and from termination of life-threatening ectopic pregnancies. Scientists contend, however, that such tissues are often unusable for research because of contamination or genetic defects. Also, the bank might not provide enough suitable tissue for research.

The bill that met its end in the Senate last week—a modified version of the measure vetoed in July—would have sanctioned transplantation of tissue from induced abortions only if supplies from the planned federal bank proved inadequate or unusable.

Brains of formula-fed babies differ

Is the way to a baby's mind through its stomach? A new report suggests that formula-fed infants may end up with a smaller supply of chemicals important for brain development than they would have if fed on breast milk.

Researchers at the Royal Hospital for Sick Children in Glasgow, Scotland, analyzed brain tissue from 22 babies who had died in the first 43 weeks of life. The researchers looked for biochemical differences between formula- and breast-fed infants.

The brains of breast-fed infants contained a higher percentage of docosahexaenoic acid (DHA), a polyunsaturated fatty acid, than did the brains of babies nourished with over-the-counter formula, they report in the Oct. 3 LANCET.

The apparent shortage of DHA in formula-fed infants may prove important, the researchers suggest. As a baby's brain grows, its cerebral cortex hungrily takes in DHA and other polyunsaturated fatty acids. These building blocks become part of the tissue that makes up one-quarter of the brain's solid mass.

Do higher concentrations of DHA lead to better, smarter baby brains? For now, the researchers decline to draw any firm conclusions about DHA's effects on learning, memory, or other brain functions. However, they add, should future research establish that low levels of DHA impair the proper development and functioning of babies' brains, "failure to maintain an intake of fatty acids similar to that provided by mature human milk may cause permanent adverse side effects."

Earth Science

What does a squashed crater look like?

In the forests north of Lake Huron lies a large basin shaped something like a 60-kilometer-long, 40-kilometer-wide lima bean. Called the Sudbury structure, it contains some of the world's greatest nickel-copper ore deposits, but questions about its origin have long stymied geologists. Now, researchers have uncovered evidence that the oblong basin started off as a circular meteorite crater that was later deformed.

After first discovering the Sudbury structure in the 19th century, geologists theorized that magma rising from Earth's mantle formed the rich ores and unusual igneous rocks in the region. In the 1960s, researchers challenged that theory after finding evidence linking the Sudbury structure to a meteorite impact. Yet many geologists discounted the impact theory, in part because of the structure's oblate shape.

Recently, a team of geophysicists from the Geological Survey of Canada in Ottawa studied the basin through seismic profiling—a technique that sends vibrations down into the Earth and measures how they reflect off deep geologic features. Information collected by the profiling experiment reveals that the shape of the Sudbury structure has changed much more than scientists previously believed. Faults below the surface are oriented in such a way that their movements have apparently deformed the ring's shape. Although it remains unclear how much the Sudbury structure has changed, it may once have been circular, they contend. This finding opens the possibility that it resulted from a large impact, they say in the September GEOLOGY.

Among the evidence supporting the impact theory, geologists have found grains of shocked minerals in the region. Such grains are often accepted as the hallmark of a meteorite or comet crash. Because the proposed impact occurred 1.85 billion years ago, most of the crater would have eroded away by now. The current basin most likely represents the remnant of an internal ring that formed part of the original crater, says Richard Grieve, one of the coauthors of the paper. He estimates that the original crater measured roughly 200 kilometers in diameter, which would make it the largest impact structure known on Earth.

Ozone killer shows signs of slowing

While chlorine from chlorofluorocarbons presents the greatest threat to the world's ozone layer, bromine chemicals also play an important role in destroying Earth's natural sunscreen. Atmospheric scientists report this month that levels of bromine-containing chemicals are increasing more slowly than they were a few years ago, a positive sign that nations are bringing this pollution under control.

Much of the bromine in the atmosphere comes from halons, a class of chemicals used primarily in extinguishing fires. The halons are unreactive in the lower atmosphere, giving them time to float up to the stratosphere, where they release their ozone-destroying bromine.

Since 1987, the National Oceanic and Atmospheric Administration (NOAA) has measured halon levels in the lower atmosphere by collecting air samples every one to two months in Alaska, Colorado, Hawaii, and American Samoa. Between 1987 and 1989, levels of one particular halon, H-1301, climbed at the steep rate of almost 3 percent per year. Since that time, however, the rate of increase has dropped to between 1 and 2 percent per year, reports a group of researchers from NOAA and the Cooperative Institute for Research in Environmental Sciences in Boulder, Colo. They discuss their findings in the Oct. 1 NATURE.

If nations continue to reduce their use of halons as they have in recent years, the gas concentrations could level off and start dropping as early as 1994, say the researchers.