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FETAL TISSUE RESEARCH

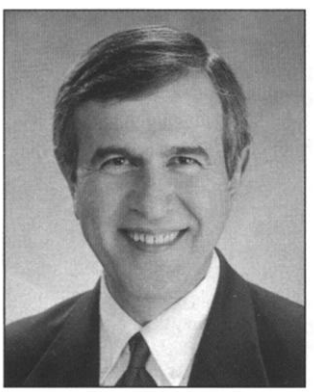
Antiabortion Groups Target Neuroscience Study at Nebraska

Antiabortion politics arrived with a crash at the gates of the University of Nebraska this winter. Scientists who use cells derived from human fetal tissue for studies of Alzheimer's disease and HIV have been under siege for the past few weeks from groups contending that it is immoral for anyone to benefit from elective abortions. State officials, including Republican Governor Mike Johanns, joined in, trying to get the university to stop the research. This provoked a confrontation over academic freedom.

University leaders, including the Board of Regents, have backed the scientists. They argue that this research is important and complies fully with federal and local regulations. So far, they seem to have prevailed. But activists say the story isn't over. Robert Blank, leader of Metro Right to Life of Omaha, an antiabortion group seeking to halt this research, says his group will try to persuade state legislators, who returned from vacation last week, to impose new controls.

And the controversy could move beyond Nebraska. Andrea Sheldon-Lafferty, executive director of the Coalition for Traditional Values (CTV) of Washington, D.C., says: "This is going to be a big issue in 2000. I'm going to take this campaign to several states. ... Researchers are going to have a tough time explaining this one." Her group has already tangled with Nebraska's senior senator, Robert Kerrey (D), accusing him in a TV commercial of condoning an immoral trade in fetal tissue. After Kerrey protested, the Cox cable network last month suspended CTV's commercial. Such tactics could affect a review of guidelines on human embryonic stem cell research, which Congress is gearing up to debate in the spring.

The spark that ignited the Nebraska controversy was an item in the Metro Right to Life newsletter that focused on LeRoy Carhart, a doctor who runs an abortion clinic in Bellevue, Nebraska. Carhart is lead plaintiff in a lawsuit brought by pro-choice activists against a state law forbidding "partial-birth abortions." (The challenge succeeded in federal court last year, forcing the state to give up plans to shut down Carhart's clinic.) The newsletter reported that Carhart is an unpaid "volunteer" member of the University of Nebraska Medical Center (UNMC) faculty. His name has appeared on research articles alongside those of other faculty members, including Howard Gendelman, director of the Center for Neurovirology and Neurodegenerative Disorders at UNMC. Since 1993, the center has used Carhart's clinic as a source of fetal cells for research on viral infection—mainly HIV—and dementia.



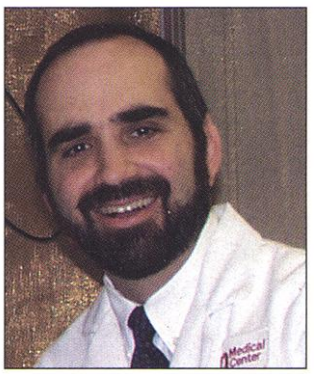
Standoff. Governor Mike Johanns *(left)* sought to halt use of fetal cells. University President L. Dennis Smith's response: "I cannot accede."

Blank claims that the university approved the use of fetal cells from Carhart's clinic without adequate review. "This was done virtually in secret for 6 years," Blank insists. But the chief of UNMC's institutional review board (IRB), Ernest Prentiss, rejects the allegations. "We went way beyond what is required" by ethics rules, Prentiss says. He argues that the law classifies fetal cells as cadaver tissue: Their use doesn't require an IRB review, he says. Nevertheless, UNMC did ask an executive group of IRB members to approve the protocol 6 years ago.

Blank's organization and two other antiabortion groups demanded that UNMC cease using fetal cells and drop Carhart from its faculty. On 28 November, the *Omaha World-Herald* reported the story, and shortly afterward, the state's political leaders jumped. On 30 November, Governor Johanns faxed a letter to L. Dennis Smith, president of the University of Nebraska, Lincoln, expressing his "grave concern." Johanns declared it "unwise" to support research at UNMC "that many Nebraskans link to a practice that they and I find morally deplorable" and asked UNMC to stop it.

Not missing a beat, Smith responded the same day and rejected the governor's request. Such intervention "strikes at the very heart of academic freedom," he wrote, noting that fetal cells have been used in research since the 1950s—for example, to make polio vaccines—and that they are "essential" for UNMC's studies on dementia, neuron damage, and regeneration. He warned that heavy-handed politics could have a "chilling effect" on the ability to recruit researchers in the future. "I cannot accede," he concluded.

Smith's stance was supported strongly by the faculty senate on 7 December and unanimously 4 days later by the Board of Regents. Seven of eight elected members (one was absent) and four student members voted to reject the activists' demands. However, one regent, financial management consultant Drew Miller, issued a statement that, "Like other members of the Board ... I was surprised to read in the paper a few days ago that fetal tissue research sourced from abortions are being used at UNMC." Miller wants the university to create an independent ethics oversight group and find other sources of cells. But he has been tougher on antiabortion leaders, saying they have "spread disinformation and hatred."



Besieged. Nebraska neuroscience center director Howard Gendelman.

Next to join the fray were the Catholic bishops

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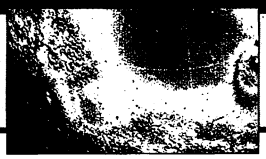
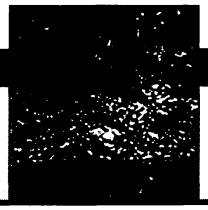


Early plate tectonics on Mars?



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of Nebraska. Three of them issued a joint statement deploring the use of fetal cells in research and calling on UNMC to desist. Creighton University, a Jesuit school in Omaha, threatened to break off a collaboration with UNMC, and at least one Creighton faculty member quit the UNMC lab where he was doing research. Creighton's interim vice president for health sciences, M. Roy Wilson, insists that the faculty member left on his own, not under duress, as some have claimed. "We believe firmly in academic freedom," Wilson says, but he adds that, "we do not condone fetal cell research."

Other state politicians took up the issue, as did members of Nebraska's federal delegation—including U.S. Representative Lee Terry (R) and Senator Chuck Hagel (R). Both issued statements deploring the use of fetal tissue from abortion clinics. The state attorney general, Don Stenberg, who is planning to run for the Senate this year, also opposes the use of fetal tissue.

The scientist whose work lies at the center of this political storm, Howard Gendelman, says he's simply trying to advance what he believes is some of the "hottest" research being done on viral infection and dementia. For more than a decade, Gendelman has investigated how HIV interferes with normal brain function. His center at UNMC, which he says now includes more than 30 scientists, has focused on microglial cells, the role of inflammation in Alzheimer's disease, and patterns of damage and regeneration in brain tissue. This research depends on a supply of cultured brain cells, Gendelman says, and only cells derived from fetal tissue propagate adequately in culture. Gendelman is grateful that the university has given him solid support, and he says that officials have "put their jobs on the line" for his research.

The university has tried to accommodate the activists by promising to create a new bioethics review panel and to find "alternate sources" of human cells. William Berndt, UNMC's vice chancellor for academic affairs, says the university has contacted all area hospitals in an attempt to collect tissue from miscarriages, stillbirths, and ectopic pregnancies. It is also trying to set up a program of rapid autopsy to recover brain cells from adults. But Berndt has acknowledged that getting viable new sources may be difficult.

Gendelman, meanwhile, is recovering from a grueling month. He received a 1-week extension for an $8 million grant application that he was compiling just as the political furor exploded in Omaha and submitted it to the National Institutes of Health on 6 January. The grant, if funded, would support his center for 5 years. But Gendelman knows that the battle over the "soul of the university" is far from over: "We're right in the middle of it now. I don't know how it will play out." –ELIOT MARSHALL

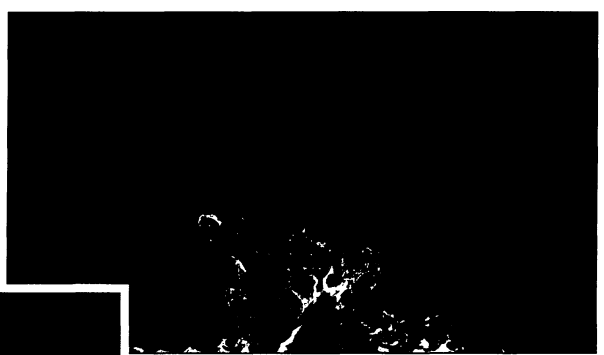
ASTROPHYSICS

Supernova Pumps Iron In Inside-Out Blast

Just in time for today's opening of the big-screen thriller *Supernova*, astronomers have assembled a portrait of a real-life star in our galaxy that blew up 300 years ago. It reveals a supernova more twisted than Hollywood writers could have imagined, with parts of the star's deepest core hurled into space the farthest and fastest.

The images, taken last August by NASA's newly launched Chandra X-ray Observatory and published in the 10 January issue of *Astrophysical Journal Letters*, promise to help unravel the violent processes by which giant stars spew oxygen, silicon, iron, and other vital elements into space during their dramatic death throes. In particular, Chandra's observations mark the first time that astronomers have clearly identified freshly formed iron within the hot maelstrom of gas created by a supernova. The exploding star forged ironlike elements only near its core, but this dense matter somehow blasted out through a thick shroud of helium and other lighter elements perhaps 20 times more massive than our sun.

Theorists had already suspected, based on computer models and distinctive radiation seen from Supernova 1987A in the nearby Large Magellanic Cloud galaxy, that turbulence at the center of a supernova would propel bullets of iron-rich material through a star's outer layers. Even so, Chandra's confirmation of that scenario has excited supernova veterans. "These data go a long way toward illustrating that the star really did blow up inside-out to a surprising degree," says astronomer Robert Fesen of Dartmouth College in Hanover, New Hampshire. Adds astrophysicist Adam Burrows of the University of Arizona in Tucson: "The mere fact that they are seeing iron is a great milestone."



Cosmic alchemy. This image *(above)* from the Chandra X-ray Observatory of supernova remnant Cassiopeia A shows rich blobs of iron (red regions, lower left) far from their origins at the core of the star. Computer simulations *(above right)* suggest that turbulence at the core of a supernova can rifle plumes of such heavy elements into space.

Chandra's quarry was a supernova remnant called Cassiopeia A (Cas A), about 11,000 light-years away. Although the timing of the star's death is uncertain, astronomers believe that light from the explosion reached Earth in 1680—making Cas A the youngest known supernova remnant in our Milky Way. Debris within the remnant, now more than 10 light-years across, still flies outward at thousands of kilometers per second and spawns fierce shock waves as it plows into other matter in space. The shocks zoom back into the remnant and push its gas temperatures to tens of millions of degrees, making the entire cloud emit torrents of x-rays.

Iron within Cas A eluded detection until

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