Chairman, I have lupus. My sister died from lupus," Imanishi-Kari testified, noting that manipulated data could thwart efforts to find a cure for the disease.

Despite such testimony, nagging questions remain. For example, at least one finding obtained by a scientist working under Imanishi-Kari was never entered in a notebook but was recorded directly on a chart published in the CELL report. In addition, Imanishi-Kari acknowledges she "reorganized" her notebooks after questions about the report arose.

"These revelations of unorthodox data-handling practices have prompted us to initiate a detailed audit," testified National Institutes of Health Director James B. Wyngaarden. NIH recently reopened its investigation of the case after learning of the Secret Service analysis (SN: 5/6/89, p.278). NIH had appointed a three-member panel of scientists to scrutinize O'Toole's complaint. Their report, issued in February, cleared Baltimore and colleagues of fraud but did find "significant errors of misstatement and omission" in the CELL report.

The hearing underscored another disturbing piece of evidence: a Sept. 9, 1986 letter written by Baltimore. "The evidence that the Bet-1 antibody [the experiment's key reagent] doesn't do as described in the paper is clear," Baltimore wrote to Herman Eisen, an MIT scientist investigating some of O'Toole's concerns. "Thereza's statement to you that she knew it all the time is a remarkable admission of guilt."

Baltimore says he wrote the letter in haste after learning Imanishi-Kari had told Eisen Bet-1 didn't work properly — a misunderstanding that was cleared up several days later. Imanishi-Kari, a Brazilian citizen who speaks several languages, "has difficulty communicating in English, as the history of this controversy painfully shows," Baltimore says.

The significance of the case goes well beyond the CELL paper, striking at the heart of how institutions respond to allegations of scientific error. On the one hand, Baltimore and his supporters decry congressional attempts to put a choker on the individual pursuit of scientific knowledge. Yet Dingell and other subcommittee members remain wary of the scientific community's ability and willingness to police itself.

Moreover, Dingell and a few members of the scientific community say they remain concerned about the fate of scientists — especially junior researchers such as O'Toole — who raise questions about scientific accuracy. O'Toole testified she has suffered personally from the controversy: "I was left without a recommendation. I was left without a job." Wyngaarden says he believes O'Toole's career was damaged simply because she pursued her convictions. The scientific community, he adds, must allow individuals to speak out. — *K.A. Fackelmann*

Mid-Atlantic Ridge survey hits bull's-eye

Oceanographers have spent decades studying the Mid-Atlantic Ridge — an underwater set of volcanic mountains and valleys running from the Arctic to the South Atlantic. In many ways, these researchers have resembled the legendary blind men who failed to identify an elephant because they studied only small patches of the immense object. But a recent mapping project has added a bounty of new information about the ridge, helping scientists glean new insights into seafloor spreading — the complex process that creates new ocean crust as Earth's plates slowly pull apart.

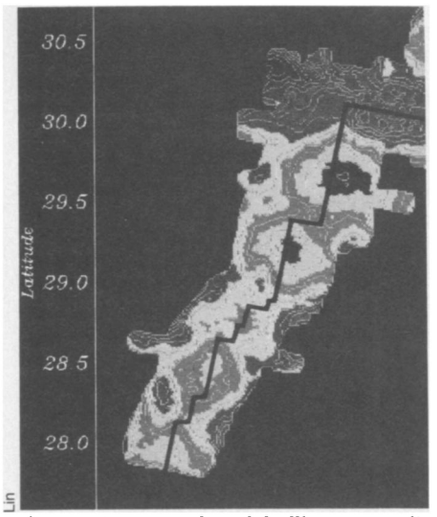
Using a high-resolution sonar bathometer called Sea Beam and other devices, researchers from the University of Washington in Seattle and the Woods Hole (Mass.) Oceanographic Institution completed a 900-kilometer-long survey of the Mid-Atlantic Ridge in January. Graham M. Purdy from Woods Hole says the information collected on these cruises dwarfs previous data. "The only other Sea Beam coverage on the Mid-Atlantic Ridge has been little postage stamp areas," he says.

At a meeting of the American Geophysical Union in Baltimore this week, Purdy and his colleagues described some important features of the ridge. In particular, they say, the ridge fails to live up to its traditional staircase-shaped image when viewed closely.

The Mid-Atlantic Ridge does not form a continuous line. Rather, it is broken into small, straight sections called spreading centers. In some areas, a perpendicular transform fault separates adjacent segments, forming an arrangement that looks much like a staircase. If the spreading sections represent the vertical jumps between stairs, the faults serve as the horizontal steps themselves. Transform faults allow blocks of ocean crust to slip past one another, and play an important role in seafloor spreading.

Traditionally, oceanographers have thought such faults separated most spreading segments in the Atlantic, but that turns out to be untrue, says Hans Schouten of Woods Hole. The researchers identified a string of 16 spreading centers, each 30 to 50 km long, separated by a variety of 5- to 25-km-wide nontransform offsets. In some, the end of one spreading center runs past the end of another. In others, the tips of the segments bend toward each other, reports Jean-Christophe Sempere of the University of Washington. Sempere thinks a diffuse area may take the place of a distinct transform fault in absorbing motion between the plates.

In addition to the nontransform offsets, the researchers found bull's-eye patterns in the mantle gravity field under the ridge. Jian Lin of Woods Hole says these may represent a number of different structures.



A recent survey found bull's-eye gravity patterns under the Mid-Atlantic Ridge. These low-gravity regions are thought to reside in Earth's mantle and may represent pools of molten rock under the crust. Black line shows approximate locations of spreading segments and nontransform offsets.

Geophysicists often use sensitive gravity meters to probe unseen material below ground, but these measurements can be difficult to interpret. Because Lin and his colleagues were interested in learning about the mantle, they attempted to remove mathematically the gravitation effects of the ocean water and the ocean crust, both of which influence the gravity measured near the surface. The leftover signal, they reasoned, should reveal information about the mantle beneath the crust.

After performing the corrections, the researchers found circular regions of low gravity under the middle of many spreading centers. Lin says these may represent plumes of molten mantle rising toward the volcanic regions of the ridge. Because hot, molten rock is less dense than cold, solid rock, it would show up as spots of low gravity.

Alternatively, Lin says, the pattern may indicate that the crust, whose rock is lighter than mantle material, is thickest in the center of the spreading segment. Future studies with seismic waves should resolve the differences between these two interpretations.

This is the first time researchers have identified a string of such bull's-eye patterns. Previous gravity measurements showed a couple of isolated circular gravity lows along the Mid-Atlantic Ridge, but until now investigators have lacked the high-resolution bathymetric maps needed to correct for crustal influences, says Purdy. — *R. Monastersky*