

Briefings

edited by CONSTANCE HOLDEN

On the Trail of Genes for IQ

Where are the genes that influence intelligence? Researchers at Pennsylvania State University have launched the first study attempting to answer this provocative question.

The 3-year project, headed by psychologist Robert Plomin, was recently awarded \$600,000 by the National Institute on Child Health and Human Development. The researchers will screen more than 100 genetic markers—particularly those associated with neurological function—in 600 children aged 6 to 12 who range from mildly retarded to “gifted.” Markers will be assessed from cell lines that will be permanently established from blood samples. The markers will be analyzed in association with data from an extensive battery of cognitive tests.

Until recently, finding genes involved in cognitive ability has seemed beyond the scope of science because large numbers are involved and no single gene is expected to show a major effect. All that has changed thanks to quantitative trait loci (QTL) association analysis, a method that has been used to analyze complex traits in plants. With QTL techniques, the researchers believe they will be able to determine the approximate location of genes that account for as little as 1% of the variance in a given trait. “A few years ago scientists would have regarded this as an extremely high-risk venture in the sense of getting interpretable results,” says Pennsylvania psychologist and co-investigator Gerald E. McClearn. It is the recent proliferation of markers for genes related to the nervous system, McClearn explains, that has made scientists “increasingly confident we’ll be able to apply similar techniques to complex human behaviors.”

Plomin says he expects the

real payoffs of the study to come from “the really smart kids.” He explains that results from low test scorers will be ambiguous because there are so many factors that may be responsible. But “the only way to get high scores is if you’ve got everything going for you, including the positive alleles.”

UARS Launches Earth Mission

With the lofting of the Upper Atmosphere Research Satellite (UARS) into orbit last week aboard the space shuttle, NASA got its \$30-billion, decades-long Mission to Planet Earth off the ground. The 6500-kilogram UARS is the first major spacecraft in NASA’s grand plan to take the pulse of the planet from space. Mission to Planet Earth will, in turn, constitute the bulk of the United States’ contribution to the international campaign to predict global change.

UARS will have its hands full. It will paint a three-dimensional picture of the chemistry and physics of the upper atmosphere in order to understand such changes as the destruction of the protective ozone layer. In addition, it will serve as an informal prototype for NASA’s Earth Observation System (EOS), a

Medical Gender Gap	
	percent female
Medical school deans	0%
Medical school department chairs	2%
Surgeons	8%
Physicians	16%
Medical school faculty	21%
Medical school students	36%
Nurses	98%

Two different worlds... Although the proportion of female medical students has grown considerably in recent years, sexism is still rampant throughout medicine, according to a report by the Feminist Majority Foundation (headed by former National Organization for Women chief Eleanor Smeal) and the American Medical Women’s Association.* The percentage of medical faculty who are women has risen only 7% since 1967. And female doctors, who are clustered in the lowest paying specialties, earn only 62.8% of what male doctors earn. The report also notes that the top ranks of the American Medical Association and the American College of Obstetricians and Gynecologists are virtually devoid of women.

*The report, “Empowering Women,” is available from the Feminist Majority Foundation, P.O. Box 96780, Washington, D.C. 20077-7277.

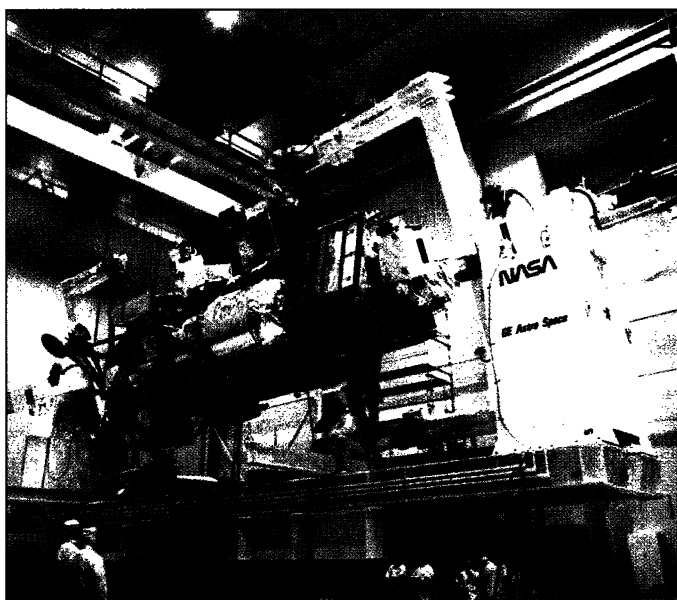
series of orbiting platforms planned for launch beginning late this decade that would be the backbone of Mission to Planet Earth.

Like the 13-ton EOS platforms, the smaller UARS bristles with scientific instruments, all depending on a single on-board support system for electric power and control.

Putting so many eggs in one \$750-million basket was seen as necessary to obtain a detailed global picture of the upper atmosphere. But in view of the steady stream of troubles that have afflicted NASA space hardware, some critics think such an arrangement on EOS could prove risky. Unlike the ailing Hubble Space Telescope, an EOS platform couldn’t be repaired from a shuttle.

UARS will also anticipate the way the torrent of data from the larger EOS spacecraft will be handled. Nine instrument teams and ten teams of theorists will be required to manage the stream of data, ensuring the data are sound and using them to test models of the upper atmosphere. NASA thinks it can control this potential data Babel by having UARS instrument and theoretical investigators receive all the processed data at their home institutions through a special electronic communications system.

Coming just 2 weeks before a hearing on the Hill considers a review of EOS engineering plans, UARS’s early days had better be good ones.



Global eye-in-the-sky. Successfully lofted last week, UARS is NASA’s first step toward keeping tabs on global change.