



# insights

New knowledge in the sciences and the humanities

## Medical Mystery

UNMASKING GULF WAR SYNDROME

When the war in the Persian Gulf ended six years ago, the thousands of American soldiers who risked their lives to force Iraqi troops out of Kuwait were welcomed home as heroes. But as time passed, their sense of pride and accomplishment faded as they began to develop unexplained ailments, including insomnia, memory loss, body pain, weight gain, and a listlessness that sometimes made getting out of bed in

the morning impossible. Compounding the pain and debility was the mystery of the illness—victims didn't know what caused it and doctors could not give it a name.

The Pentagon has been reluctant to acknowledge these illnesses as a "Gulf War syndrome." For several years, veterans and military brass have argued over whether the symptoms are traceable to toxic agents used during the war;

how many troops were exposed to chemical weapons; and whether victims are entitled to compensation. This past fall, President Bill Clinton created an independent panel to monitor past and new research on these illnesses.

The panel may look to the Environmental and Occupational Health Sciences Institute (EOHSI) for answers. With a three-year, \$1.8 million grant from the Centers for Disease Control and Prevention (CDC), the institute, a joint program of Rutgers and the University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School, will study the illnesses suffered by Gulf War veterans. By searching for consistent patterns in symptoms, EOI-ISI investigators led by Dr. Howard Kipen hope not only to identify their causes but also to determine whether they are part of a single syndrome.

Since 1994, Kipen's team and the Department

of Veterans Affairs Medical Center in East Orange have been following 1,500 Gulf War veterans who have demonstrated a wide variety of symptoms; the grant from the CDC will allow the team's work to continue. Kipen considers the illness a complex puzzle that may have one answer or many. "Because this illness is still not explained by standard medical diagnoses, a range of factors—environmental, medical, and psychological—have been invoked as factors," he says. "The challenge is not only figuring it out, but also learning how we can keep it from growing and affecting others."—James Fabiano (RC'99)

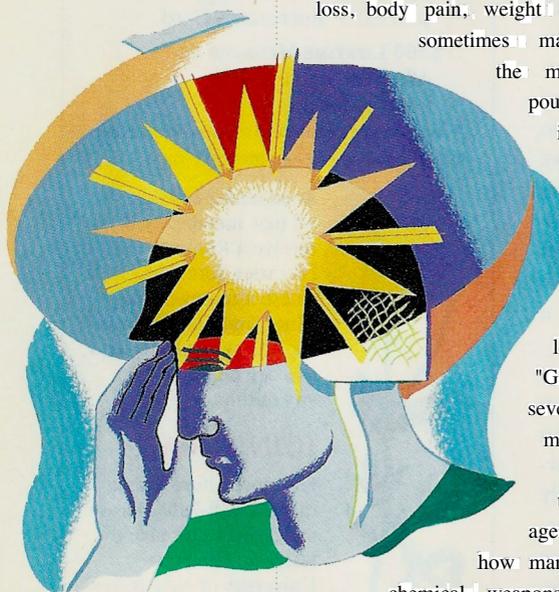
## Kids at Work

TRACKING ILLEGAL CHILD LABOR

One day last fall, Douglas Kruse received a phone call from an Associated Press editor asking if he could recommend a study on underaged children working illegally in the United States. The editor explained that he had a team of reporters working on a series of articles about the issue, but they had been unable to find employment data on the problem.

Kruse, an associate professor of human resource management in Rutgers' School of Management and Labor Relations in New Brunswick, told the editor that he wasn't a specialist in child labor, but he would do some preliminary research to see if any data existed. "Not only did I find that there was no comprehensive study on illegal child labor, but that it would take considerable digging to come up with a reasonably accurate estimate," he says. "The importance of the issue and the AP series intrigued me so much that I volunteered my services.

"We pieced together data from records of work-related injuries, workman's compensation claims, and sweatshop-employment investigations," says Kruse, who was aided by graduate student Douglas Mahony. The pair estimated that 290,200 children were employed unlawfully in the United States last year. Some were older teens working a few too many hours in after-school jobs, but 59,600 were children under the age of 14—a direct violation of the federal Fair Labor Standards Act of 1938, which



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outlaws employment of children younger than 14 except on farms. Another 13,100 children were found to be working in garment sweatshops-factories that repeatedly violate wage, safety, and child-labor laws. "If anything, the estimates are on the conservative side, especially in the area of agriculture, where enforcement is lax," says Kruse, adding that it is also impossible to estimate the number of children working in their homes.

Kruse's numbers gave a national context to the work of AI reporters who found 165 children working illegally in 16 states. The AP series, which ran on the front pages of papers like *The New York Times* and the *Los Angeles Times* and many other publications throughout the world, cited Kruse's data and quoted him extensively.

"If you had told me four months ago that I would be considered an authority on illegal child labor, I would have laughed," says Kruse, who reports that the response to the series has been overwhelming. He is currently revising his study for the Bureau of Labor Statistics and has been invited to speak at a child labor-coalition conference in May. Particularly gratifying to Kruse is the quick action taken at high levels of government: Sen. Tom I-larkin (D-IA) has called for tougher laws against child labor, more funding for enforcement, and Senate hearings on the issue. *-BILL Glovin*

## Trick Shots

FOOLING THE BODY INTO FIGHTING AIDS

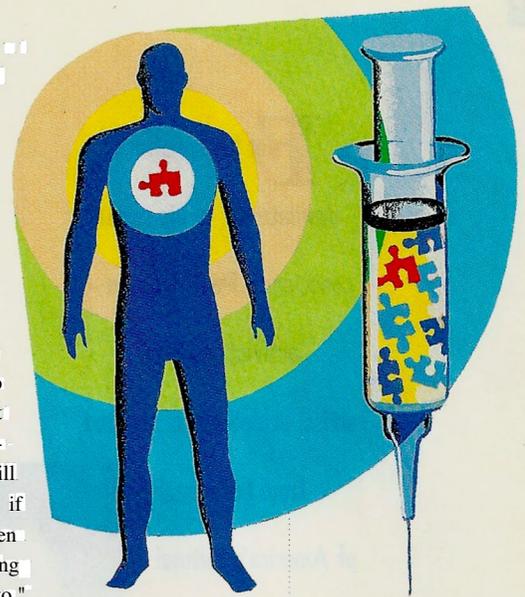
Over the past year in the United States, novel combination-drug therapies have cut the incidence of new AIDS cases in half. But these therapies are not cures, and the staggering cost of the drugs puts them out of the reach of many people, including those on limited

incomes, those without health insurance, and those living in Third World countries. "Sadly, it's largely a question of economics," says Gail Ferstandig Arnold, an associate research professor of chemistry at Rutgers-New Brunswick. "You need \$15,000 a year FOI-the rest of your life to buy what's required, but even then, there's no guarantee that the drugs will work for everyone. And if they do work for you, then you better not miss taking them for even a day or two."

What's needed, says Ferstandig Arnold, is a permanent solution: a safe and effective vaccine that cripples HIV, the virus that causes AIDS. For eight years, she and her husband, Rutgers chemistry professor Edward Arnold, have been creating massive libraries of engineered cold viruses that, in laboratory experiments, have stopped HIV infection of human cells. Their approach, which the pair likens to "wolves in sheep's clothing," was recently reported in the *Journal of Virology* and has received two patents. The work of the Arnolds, who are faculty members at the Center for Advanced Biotechnology and Medicine, is funded by the National Institute of Allergy and Infectious Diseases.

The researchers and their colleagues attach small pieces of HIV's genetic code to human cold viruses. The hybrid viruses (about 98 percent "sheep" and 2 percent "wolf"), when delivered as vaccines, stimulate the body's immune system to produce antibodies that kill the virus and HIV. These engineered viruses, each bearing a portion of HIV, will stimulate a battery of antibodies that the immune system can use as a defense if HIV ever does attack.

"We can generate a very large number of vaccine candidates, but then the problem becomes finding the needles in the molecular haystacks," says Arnold. The "needles" he refers to are the hybrid viruses, or chimeras, that stimulate the greatest immune response. The pair believes that, much as combination-drug therapy is the most effective means available for preventing HIV from developing into AIDS, combination-vaccine therapy may be the best weapon against HIV, a virus that constantly mutates. Says Ferstandig Arnold: "Progress in treating HIV has been very impressive. Wouldn't it be wonderful to have the same progress in developing an AIDS vaccine?" *-BILL Glovin*



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