

HIV-fighting protein in human saliva

Researchers have long known that HIV, the AIDS-causing virus, rarely gets transmitted among humans via saliva. They've also demonstrated that something in saliva prevents HIV from infecting white blood cells, its usual target. Yet this protective substance eluded them.

Now, investigators from the National Institute of Dental Research (NIDR) in Bethesda, Md., have bagged a protein they believe is responsible for saliva's anti-HIV properties. Tessie B. McNeely and Sharon M. Wahl of NIDR call it secretory leukocyte protease inhibitor, or SLPI (pronounced "slippy").

The researchers tested a series of proteins found in saliva. In naturally occurring concentrations, only SLPI seemed to protect white blood cells from HIV infection.

Next, the team showed that SLPI works by interacting with white cells, not HIV. However, this guardian protein doesn't seem to dock with the CD4 receptor, the portal through which HIV gains entry to a white cell.

"The next step is to identify the SLPI receptor and determine the role it plays in HIV entry into host cells," McNeely says. The team presented its data Jan. 30 at the Second National Conference on Human Retroviruses and Related Infections, sponsored by the American Society for Microbiology and held in Washington, D.C.

Can SLPI protect people against HIV transmitted by exposure to blood? That's one possibility the researchers plan to explore.

Weight gain spells heart risk for women

Standard weight-to-height charts, which allow an age-related boost in flab, may provide a false picture of health — at least as far as the heart is concerned.

A study in the Feb. 8 *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* suggests that women who gain even a modest amount of weight as time goes on face an increased risk of heart disease compared to those who manage to keep their weight on an even keel.

JoAnn E. Manson and her colleagues at the Harvard School of Public Health in Boston studied the diet, lifestyle, and health of 115,818 female registered nurses who were 30 to 55 years old in 1976. The researchers asked the volunteers how much they weighed in 1976 and when they were 18 years old. They also kept track of the women who developed signs of heart disease during the next 14 years.

Women who in 1976 had gained 11 to 17 pounds over their weight at age 18 ran a 25 percent increased risk of heart disease compared to peers who had gained fewer than 11 pounds. Women who had put on 17 to 24 pounds showed a 64 percent greater risk. And women who had gained more than 44 pounds faced the most serious threat. Their risk of heart disease was three times higher than the stay-thin group's.

Women who were lean at age 18 and who had not gained an appreciable amount of weight after that time ran the lowest risk of heart disease later in life.

The new work conflicts with studies that led to current U.S. weight guidelines, which indicate that a modest boost in pounds over the years is okay. The new findings suggest otherwise. The Harvard team's data show that even women not considered overweight increased their heart disease risk with a relatively small weight gain. The researchers believe that a "10- to 15-pound" weight gain after age 18 serves as a warning sign that changes in diet and exercise are required to ward off a future threat of heart disease.

The study's results apply directly only to women. However, other research hints that the same trend would hold true for men.

Mulling over the future of DOE's labs

A year ago, Department of Energy Secretary Hazel R. O'Leary commissioned a task force to scrutinize 10 of her agency's large, multipurpose research laboratories. Its assignment: Recommend a way to harness DOE's national labs to meet the nation's future needs.

On Feb. 1, Motorola executive Robert Galvin handed in his group's assessment. It not only calls for overhauling the management of these facilities, redefining their missions and focusing the activities of each on its greatest strengths, but suggests "defederalizing" them all.

"Many of the least exploited [research] paths involve the need for extraordinarily sophisticated multidisciplinary teams using sophisticated instruments and tools," the Galvin report notes. That need provides the "case for — the justification of — the existence of the DOE laboratories."

However, the new report argues, the labs' strengths and tools should be focused on, if not primarily restricted to, answering questions in DOE's traditional mission areas: national security, energy, environmental science and technology, and the fundamental fields that underpin these disciplines — principally high-energy, nuclear, and condensed-matter physics. In particular, Galvin and his colleagues argued, the labs should neither look for new missions nor expand into research arenas now addressed effectively or more appropriately by others in government, industry, or academia.

In fact, the task force "found it ironic that these [labs] seem to be searching so hard for 'new missions' when there remains a compelling agenda of important work to be performed in their traditional mission areas."

Part of that search for new missions undoubtedly resulted from the post-Cold War shift away from weapons work — the activities that launched these labs and the administrative structure that has evolved into DOE.

While its largest weapons facilities — Los Alamos (N.M.) National Laboratory, Sandia National Laboratories in Albuquerque, and Lawrence Livermore (Calif.) National Laboratory — grew between 1983 and 1994, each would have shrunk 15 to 24 percent over that period without a large infusion of non-defense work. A Dec. 2 analysis by the Congressional Research Service indicates that this extra nondefense work brings each lab an additional \$211 million to \$290 million annually.

Defederalizing is the Galvin report's most controversial recommendation. It suggests that DOE consider linking its labs into "a new, not-for-profit R&D corporation" — one for which the federal government would be the customer. A board of trustees "consisting primarily of distinguished scientists and engineers and experienced senior executives from U.S. industry, appointed to staggered terms by the President," would govern the new body.

Congress would finance this corporation initially through a few programmatic line items in its budget, each for multiyear expenditures. Uncle Sam could not earmark funds for specific programs. Instead, as traditionally occurs within industry, the corporation's management would decide how to allocate its resources to provide those services or create those products desired by the customer.

O'Leary said that although the Galvin report's "unprecedented" defederalizing proposal requires much further study of its potential benefits and liabilities, DOE will "embrace and aggressively act on the overwhelming majority of the task force's recommendations." Her agency will detail how to do so in a plan it will send to the White House around April 15.

Rep. Steve Schiff (R-N.M.), who chairs the House basic research subcommittee, expects to hold hearings on the Galvin report in early March. He calls it "an excellent starting point for discussion of the future for our national laboratories."