

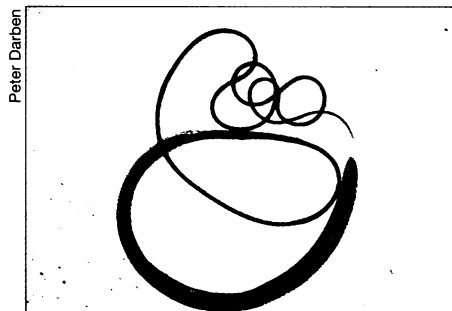
rating with another group, Weinstock's team has begun to investigate similar treatments for animals with autoimmune disorders, in which the immune system attacks parts of its own body.

The team has also begun treating a few patients suffering from inflammatory bowel disease by giving them a drink spiked with eggs from a harmless whipworm. Of six patients studied so far, all showed substantial improvement in their symptoms, the researchers reported at the May meeting.

The research is only an initial foray, the Iowa researchers caution, and controlled clinical trials are essential for evaluating the effectiveness of the treatment. Furthermore, they say, the precise role of Th1-Th2 balance in inflammatory bowel disease remains unresolved, as does the seeming contradiction between their research and the hygiene hypothesis' assumption that Th2 responses usually overpower Th1 responses.

By separating people from their dirty origins, the modern antiseptic environment may have also provoked the medical equivalent of friendly fire: autoimmune diseases such as rheumatoid arthritis and type I diabetes.

The radical notion that infrequent ex-



Iowa researchers theorize that helminthic worms (adult female shown, approximately 60 millimeters long) keep people's immune systems from aggressively attacking the lining of their intestines.

posure to infectious agents contributes to autoimmune diseases has generated far more controversy than the idea that allergies and asthma stem from such deprivation. In fact, says Michael B. Oldstone of the Scripps Research Institute in La Jolla, Calif., most scientists hold the opposite view—that if anything, infections help drive autoimmune diseases (SN: 6/21/97, p. 380).

However, a group led by Irun R. Cohen at the Weizmann Institute of Science in Rehovot, Israel, believes it has evidence to the contrary. These researchers find that rats raised behind germ-free barriers

are more prone to developing arthritis and diabetes than rats raised in normal, germ-filled environments are.

According to Cohen, rats in the ultra-clean environment don't develop the immune cells that can suppress autoimmune responses. If that's the case, he suggests, it may be possible to develop a vaccine to stimulate the aspects of the immune system needed to avoid autoimmune disorders.

"The immune system organizes itself through experience, just like the brain," Cohen argues. However, he notes, other factors, such as environmental toxins, probably also prompt autoimmune reactions. "I don't think cleanliness is the only problem. It's a complex system. The first thing is to ask the right questions, but we have to be patient about the answers."

Ultimately, it may be that asthma, allergies, and other immune disorders are the price society has to pay for escaping the appallingly virulent infectious diseases that have struck down children over the centuries. Scientists aren't quite ready to accept that proposition, however.

"We might be able to do something clever that can actually get the best of both worlds," says Beasley. "I think, at the end of the day, that will be the challenge, because we certainly don't want to go back to the days of old." □

Biology

From St. Louis, at the XVI International Botanical Congress

Oops. That mangrove tree's no lady

The supposedly female trees of the white mangrove have turned out to be perfectly good hermaphrodites.

This raises the question of why in the world there are male white mangroves, say Carol L. Landry of the University of Michigan in Ann Arbor and her colleagues. They estimate that less than 1 percent of flowering plants have both hermaphroditic and male plants, a mating system called androdioecy. In the past few years, botanists have reported this odd sex mix in a Japanese ash tree as well as in a member of the cucumber family.

The presumed female flowers of the white mangrove, *Laguncularia racemosa*, sport what look like male parts, but botanists had assumed that these organs didn't work. Landry tested that assumption in Florida by covering these flowers with small bags to seal out pollen from other trees. About half of the bagged flowers still managed to produce fruit.

Landry experimented with other crosses and found that the hermaphroditic flowers set more fruit when fertilized with pollen from all-male trees than when they self-pollinated.

In a field test on San Salvador in the Bahamas, Beverly J. Rathcke, also of Michigan, and Lee B. Kass of Elmira (N.Y.) College also found functional hermaphrodites, as well as males. —S.M.

Folk remedy zaps Ebola in lab test

A compound from the fruit of the bitter kola, a West African tree that healers have used for centuries to treat other diseases, stopped the Ebola virus from replicating in a laboratory test.

"The same forest that yields the dreaded Ebola virus could be the source of a cure," says Maurice Iwu, a descendant of a family of Nigerian healers who has trained in Western pharmacy. Iwu founded the Bioresources Development and Conservation Programme, with offices in Silver Spring, Md., which spearheads the investigation of compounds from the *Garcinia kola*. The National Institutes of Health has

funded the identification of 46 potentially medicinal compounds from the tree. Some of these chemicals have quashed strains of flu virus in laboratory tests.

The Ebola virus, infamous as the fast-spreading epidemic in the movie *Outbreak*, first attracted the notice of Western doctors during a gruesome epidemic in Zaire in 1976. The virus kills by causing massive hemorrhaging from a wide range of organs. Neither Western nor African healers have a cure yet, and in some outbreaks 80 percent of the victims have died. —S.M.

How a bee finds its first buttercup

A bee that specializes in visiting buttercups relies on a just-for-newbies scent to help with its first attempts at flower identification.

European bees collected in the wild but raised in the laboratory away from real flowers get so excited by whiffs of a volatile compound from buttercups that they try to burrow through cheesecloth scented with the substance, reports Heidi E.M. Dobson of Whitman College in Walla Walla, Washington. Once the bees have some experience buzzing around buttercups, however, they no longer show a strong preference for the scent. "Seemingly, they've changed their search image," Dobson says. Learning a suite of other cues could make identification faster, she speculates.

Dobson has wondered for years how these specialized bees nail the right flowers. Their parents aren't around to provide taxonomy tips. Her earlier tests found that lab bees prefer the color yellow but come across many different yellow flowers.

Buttercup pollen releases bigger whiffs of the compound she tested than the rest of the flower does. The lab bees preferred buttercup pollen to offerings from other spring flowers.

Dobson has never tested the compound with cows, but she says it reportedly gives them taxonomy tips too, signaling a plant not worth munching. —S.M.