

Gallo-Roman villas in the region. These sites are rich cultural resources that may yield the artifacts needed to understand 2,000 years of the region's history, from the Celtic Iron Age to the present.

Working in the field in France and at the remote sensing center on the Cook campus, Madry and Wiencek developed a com-



Wiencek and Madry created a three-dimensional "layer cake" image that pinpointed undiscovered Gallo-Roman hillforts and villas.

puter-based Geographic Information System (GIS) for the region. By combining via computer all available geographical, environmental, and cultural data on the area—antique and modern maps, satellite imagery, aerial photographs, field surveys, thermal scanning reports, and other pertinent information—the pair created a three-dimensional "layer cake" image that predicted undiscovered sites. "Once the various layers are in the system, we can easily conduct a wide variety of display, measurement, and analysis operations on the data that are much harder, if not impossible, to perform using traditional methods and paper maps," says Madry, who has been involved in the project since 1978.

The work of Madry and Wiencek will be featured this fall on the Discovery Channel program "Ultrasience II;" the episode will focus on four high-technology archaeological rescue projects. The program's producers, who filmed Madry and Wiencek on location at Rutgers and in France, first learned of the project through their Web site at <http://deathstar.rutgers.edu/projects/france/france.html>.

Skin Deep

COMPOUND MAY CURE PSORIASIS AND VITILIGO

Ancient Egyptians discovered that if they rubbed on their faces the sap of reeds that grew along the Nile River and then basked in the sun, their complexions would darken dramatically. What they didn't know was that the magic

ingredient of their beauty secret was a protein found not only in these reeds but also in celery, lime, and oil of bergamot, which gives Earl Grey tea its distinctive smell. These proteins, which are called psoralens, accelerate the sun's impact as much as 100 times. And, say modern scientists, they have medicinal, as well as cosmetic, uses.

In combination with exposure to ultraviolet light, psoralens are effective in treating patients with

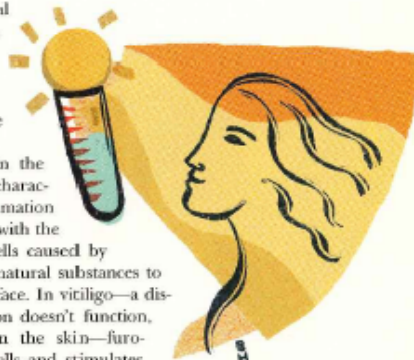
skin diseases like psoriasis and vitiligo. But these proteins quickly lose their effectiveness, and, more importantly, because their therapeutic activity disrupts the skin's genetic material, they may also cause skin cancer. If a substance demonstrating the therapeutic power of psoralens without the ill effects could be found—or synthesized—the benefits to patients with debilitating skin conditions would be enormous.

That substance may have been found. In laboratory tests, a synthetic compound called furocoumarin eliminated psoriasis and vitiligo in human

skin cells without the toxic effects of psoralens. Its discoverers, Jeffrey Laskin and Michael Gallo, toxicologists at Rutgers' Environmental and Occupational Health Sciences Institute in Piscataway, and Ned Heindel, a chemist at Lehigh University, recently received a patent for the compound.

Furocoumarin, explain the researchers, prevents the characteristic flaking and inflammation of psoriasis by interfering with the overproduction of skin cells caused by the adherence of certain natural substances to receptors on the cells' surface. In vitiligo—a disease in which pigmentation doesn't function, causing white patches on the skin—furocoumarin binds to skin cells and stimulates production of new pigment. And while furocoumarin is as effective as psoralens, says Laskin, "our compound is less likely to muck up the cell's genetic material."

In addition, Laskin and Gallo have found that furocoumarin's binding properties allow it to firmly adhere to viruses found in blood; exposure to ultraviolet light destroys the furocoumarin-treated viruses without damaging the blood cells. "We're optimistic that furocoumarin may someday be used to eliminate viruses like hepatitis and HIV from the nation's blood supply," says toxicologist Laskin, who cautions the need for further research.—*Bill Glavin*



In laboratory tests, the new compound eliminated psoriasis and vitiligo without toxic effects.