group attitudes, and concluded that love could be a "potent instrument for social and collective transformation." And in the case of those who sheltered and protected Jews from the Nazis, Pittinsky says, "Tolerance—the absence of prejudice—is unlikely to fully explain these brave acts. While it is possible that social justice motives, rather than allophilia, may have motivated their first steps, love for the beneficiaries of these courageous acts may have come to sustain many of the individuals who brought them about."

To help define the components of allophilia, Pittinsky and postdoctoral research fellow Seth Rosenthal, Ph.D. '01 (see "Self-Esteem, Real and Phony," September-October, page 18) conducted a recent survey by questionnaire that collected 3,500 statements describing various facets of allophilia. Their "snowball sample," seeded with 15 college students (10 from Harvard), yielded an international cohort of 281 respondents (54 percent from outside the United States) who ranged in age from 18 to 74, and were two-thirds female and one-third nonwhite. A statistical factor analysis identified four salient components of allophilia: *admiration* (believing members of the group have desirable traits); *trust* (believing members of the group are dependable and moral); *connection* (feeling similar to members of the group); and *engagement* (desiring to interact with members of the group).

In a subsequent study, the researchers measured these attitudes and checked their persistence. Subjects' responses remained stable over a one-week period, with a very high correlation (.96) in a test/retest experiment. Research to date does not suggest any differences between genders in allophilia levels, but levels do vary significantly among individuals. This suggests that allophilia measures may be effective ways to record people's real sentiments and likely behaviors. (By contrast, Pittinsky observes, measures of racism and sexism show minimal variance among individuals and are of limited social-scientific value because research subjects tend to give socially desirable responses, not wanting to admit to prejudice.)

Pittinsky hopes that the concept of allophilia will be applied to a wide range of problems across disciplines. Currently, Anna Chen '06, a psychology concentrator, is using the allophilia scale in her honors thesis, which will examine the conditions under which foreigners' attitudes toward U.S. political leaders positively or negatively affect their feelings for the American people. Allophilia may also have relevance for education. Wendy Kopp, the founder of Teach for America, an organization that places recent college graduates in economically disadvantaged and racially diverse public schools, is collaborating with Pittinsky on a study of how teachers' allophilia for their students may affect student achievement.

Pittinsky is prepared for skeptics who may question the wisdom of substituting one kind of group thinking for another. "Humans have organized, and always will organize, their social world into groups, and categorize others," he says. "The study of allophilia shifts us away from the negative aspects of these tendencies, toward their potentially positive aspects."

—Ashley Pettus

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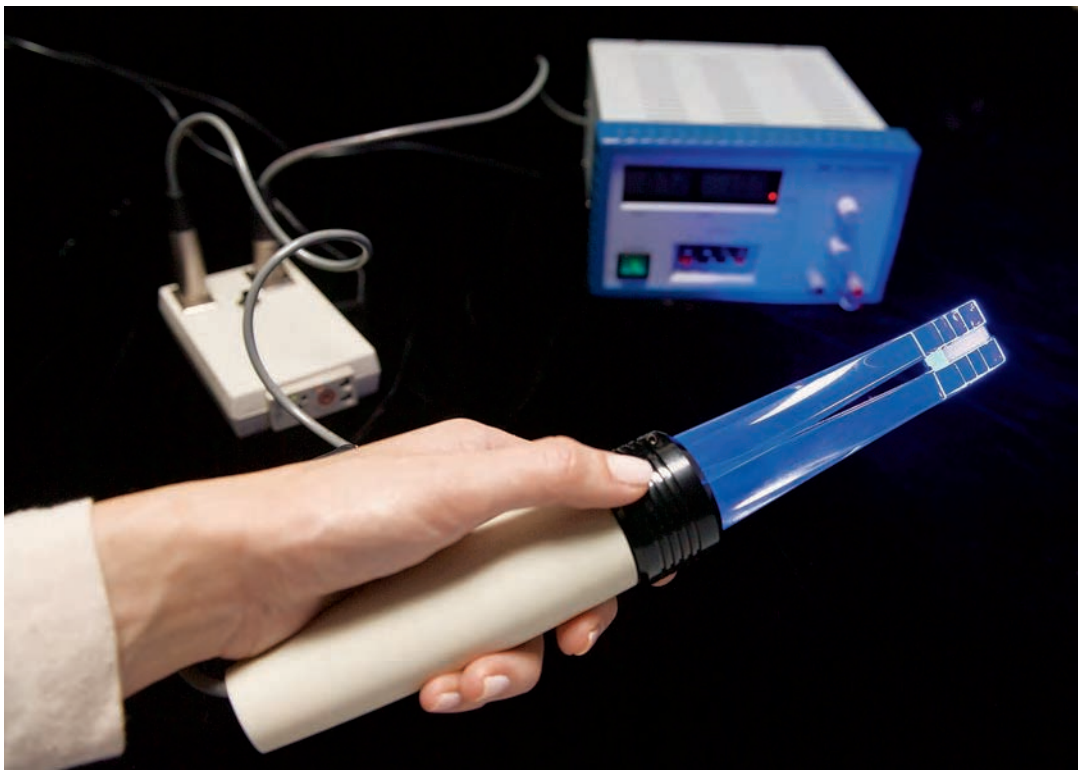
RAYS BAN

Light Blitzes Plaque

Fast forward a decade and imagine what a drugstore shelf might hold. A pill containing an entire day's nutrients? A gadget that confers the benefits of aerobic exercise as you sit in your armchair? Among such items it's possible, even likely, that you'll find a little blue light that you pop briefly into your mouth each day to prevent gum disease. Two researchers at the Harvard-affiliated Forsyth Institute have developed a prototype of just such a device after discovering, wholly by accident, that blue light kills the bacteria that are the prime cause of periodontal disease.

Associate clinical professor of periodontal medicine J. Max Goodson, the institute's director of clinical research, was using intense blue light (its wave-

Photograph by Ricki Rosen/Corbis



One prototype of a blue-light-emitting device proposed by Harvard researchers resembles an electric toothbrush. Using it inside the mouth for 30 seconds daily might help prevent much periodontal disease.

length falling within the blue segment of the visible light spectrum) to whiten patients' teeth, the same way sunlight bleaches laundry hanging in a backyard. Because he expected the light to cause a sunburn-like reaction as a side effect, he measured the inflammation of the patients' gums. "Much to our surprise," he says, "rather than an irritating effect, we actually found a diminution of inflammation."

Goodson had stumbled on a discovery with important implications for preventing and treating periodontal disease, which affects 30 percent of Americans to a degree that threatens tooth loss. After a single one-hour treatment with blue light, patients' gingival index scores—which measure inflammation, a symptom of gum disease—not only dropped, but stayed down for six months. On a scale of zero (normal, healthy gums) to three (spontaneous bleeding, without any probing), the average patient's score went from 0.64 before the whitening treatment to 0.33 three months later, and 0.28 six months later.

Upon reflection, the finding made sense. Several species of bacteria that cause periodontal disease, known as black-pigmented bacteria, transport hemoglobin into their bodies as an iron source (this is thought to be why they make the gums bleed, by using enzymes that weaken blood vessels), and store the hemoglobin's dark-colored, photosensitive porphyrin. Light directed at these bacteria is absorbed by the porphyrin and, through a chemical reaction, produces substances that are toxic within the bacterial cell.

Because the whitening treatment used peroxide, an antibiotic, as well as light, Goodson—working with instructor in dermatology Nikolaos S. Soukos, who directs the Forsyth Institute's applied molecular photomedicine lab—tested the finding using light alone. Their results, reported recently in *Antimicrobial Agents and Chemotherapy,* showed that in the mouths of control-group members, who were told they were receiving light therapy, black-pigmented bacteria constituted 6 percent of all oral bacteria. In the mouths of people who received the blue-light treatment, just 1 percent of the bacteria were black-pigmented. (The researchers' goal is not to banish *all* bacteria from the mouth, but to get rid of the most harmful types—Soukos speaks of restoring "balance and harmony in dental plaque.") Goodson and Soukos also experimented with other colors of light and found that blue worked best. At this point, they aren't sure why.

Goodson and Soukos envision an over-the-counter device, available at drug stores, that people could use for 30 seconds a day. Their electric-toothbrush-like prototype resembles a glow-in-the-dark popsicle; another design concept would run on batteries and fit fully within the mouth. Because the light frequency used lies within the visible range, users wouldn't even need protective eyewear. The scientists are seeking a corporate investor to manufacture and promote the product.

Will light therapy replace flossing? Not likely. Of the 700 species of bacteria that live in human mouths around the world, blue light works only on the black-pigmented group. (Periodontal disease and tooth decay are caused by two different groups of bacteria that tend to be mutually exclusive: if you've got gum disease, you probably won't get cavities, and vice versa.) Blue light has no effect on the bacteria that cause tooth decay (chiefly oral streptococci), whereas flossing gets at the cavity causers that nestle between the teeth and under the gums.

One product that light therapy *might* replace is the breath mint. Black-pigmented bacteria are also to blame for halitosis, and light therapy gets at its root cause by killing the bacteria, rather than simply masking their odor as mints

Photograph by Jim Harrison

and mouthwashes do. Goodson isn't optimistic that U.S. consumers will buy a product designed to prevent a disease they don't care much about until it strikes, especially a product that adds one more task to the hectic morning list of shower, shave, brush, and floss. But he does think they might respond to a marketing approach that targets their vanity: they spent $300 million last year on Crest Whitestrips tooth-whitening kits. A one-hour whitening treatment, of the type Goodson was performing in his initial study, costs $600. "People will go out and pay incredible amounts of money for whiter teeth, but to cure their disease, they won't," Goodson says. "Bad breath, they care about."

—ELIZABETH GUDRAIS

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NOT-SO-BIG EASY

Rethinking New Orleans

IN THE IMMEDIATE WAKE of Hurricane Katrina, President Bush promised to "do what it takes" to help New Orleans's residents "rebuild their communities and their lives." The scale of the human tragedy, combined with mounting evidence of government failures at many levels, precluded public debate, at least initially, on the economic rationale of Bush's pledge. But in the ensuing weeks, economists have begun to ask a politically prickly question: Is restoring New Orleans to its former size actually in the national interest—or even in the best interests of Katrina's victims?

According to Glimp professor of economics Edward Glaeser, who directs the Taubman Center for State and Local Government and the Rappaport Institute of Greater Boston, the answer is no. In a recent issue of the on-line journal *The Economists' Voice*, he argues that it would be better to give federal money directly to displaced New Orleans residents than to spend it on expensive reconstruction projects in the city's devastated neighborhoods. "When you have a car crash or your house burns down," he says, "the insurance company sends you a check. It doesn't provide you with a new car or a new house." Federal disaster insurance, he contends, should similarly insure *people*, not *places*—especially when the place is a city suffering a decades-long decline.

Glaeser, who specializes in urban economics, believes that "there are cities in America that may not be worth rebuild-