

Bright Ideas

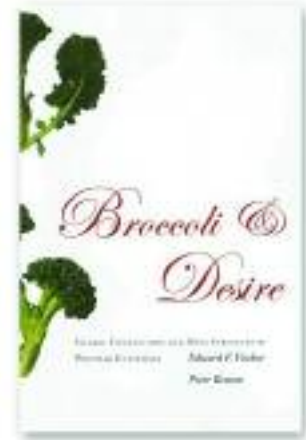
“Maya farmers and Nashville consumers don't know anything about each other, yet are intimately connected.” —EDWARD FISCHER, anthropologist

The Crucifer of Desire

1 NEXT TIME YOUR children turn up their noses at the broccoli you put before them, try this tactic: “Eat your vegetables, kids. Poor children in Guatemala won't be able to attend Catholic school if you don't finish that broccoli.”

It turns out that Americans' desire to live well has a great deal in common with Maya farmers' desire to live well. In their new book, *Broccoli & Desire*, anthropologists Edward Fischer and Peter Benson, BA'01, trace the complex connections between the hopes and dreams of Maya farmers in Guatemala and the health and dietary choices made by shoppers in Nashville.

“The idea behind this book was to link Maya farmers with Nashville consumers who don't know anything about each other, yet are intimately con-

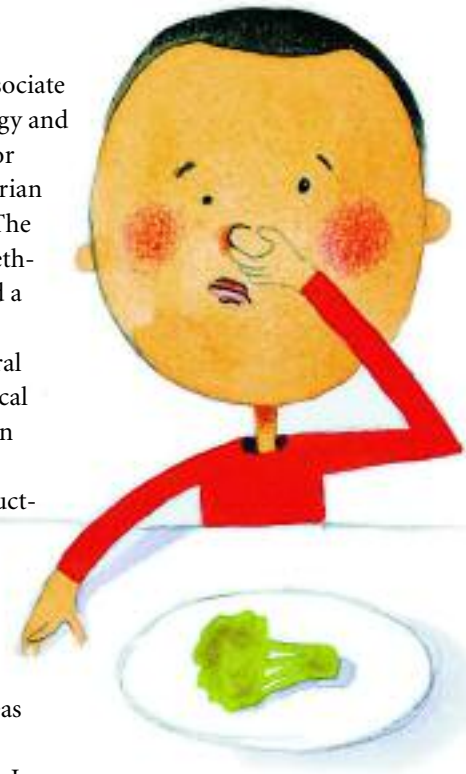


nected,” says Fischer, associate professor of anthropology and director of the Center for Latin American and Iberian Studies at Vanderbilt. “The two groups are tied together in a web of desire and a web of economics.”

Fischer studies cultural anthropology and political economy, with a focus on the Maya of highland Guatemala. While conducting research there, he noticed that poor Maya farmers had started to grow new specialty crops such as broccoli, cauliflower and snow peas for export.

“After asking around, I learned that some of the larger, corporate agriculture operations in the area had tried to grow some of these crops, but gave it up because it was such labor-intensive, grueling work,” Fischer says. “They then started contracting it out to small-operation Maya farmers.”

Fischer found that hundreds, possibly thousands, of these farmers are now growing broccoli for export to the United States. He decided to follow the broccoli on its journey from field to grocery store, interviewing the farmers, importers in Miami and consumers in Nashville. He found that despite the obvious differences between the farmers and consumers,



both groups were bound by a common driver: desire.

“Consumers in Nashville and across the United States have a desire to eat healthy foods and live well. These desires are constantly present in popular discourse about living the good life,” Fischer says.

“We often think of the Third World as having needs, while we in the ‘first world’ have desires. Peasant Maya farmers, for example, are struggling to get by—how can they have desires?” he says. “But they do. They want to save money, buy a truck, send their kids to Catholic school. And these desires drive them to produce crops they know they can sell, like broccoli.”

In the book, Fischer and Benson explore moral, sociological and historical issues surrounding the economic connection between these two groups and that connection's roots in the victimization of the Maya people throughout history. Through profiles of individual farmers and consumers, they illustrate the stark differences between how the groups attempt to satisfy their own desires for a better life and the vastly higher level of risk the Maya must assume to do so.

One such profile involves a farmer named Pablo, a married, 39-year-old Kaqchikel Maya farmer.

“For farmers like Pablo, surviving—meeting the basic needs of human existence—is always present as an imperative that must be met and satisfied,” Fischer and Benson write. “But there is something else at work here. ... Export agriculture is compelling for farmers like Pablo not because it is the only way they can survive, but because it plays into the desire for ‘something more’ or ‘something better’—a diffuse desire with which the average American broccoli consumer would also be familiar even if the particular desiderata differ.”

Broccoli & Desire is published by Stanford University Press. Peter Benson is a graduate student in the Harvard

University Department of Anthropology and a former student of Fischer's.

For more information about the book, visit www.sup.org.

Constant Lighting May Disrupt Premies' Biological Clocks

2 EVERY YEAR about 14 million low-weight babies born worldwide are exposed to artificial lighting in hospitals. But a new study suggests that keeping the lights on around the clock in neonatal intensive care units may interfere with the development of premature babies' biological clocks.

The study, headed by Douglas McMahon, professor of biological sciences at Vanderbilt and an investigator at the Vanderbilt Kennedy Center for Research on Human Development, reports that exposing baby mice to constant light keeps the master biological clock in their brains from developing properly and can have a lasting effect on their behavior. The results were published in the Aug. 21 issue of the journal *Pediatric Research*.

“We are interested in the effects of light on biological clocks because they regulate our physiology extensively and

also have an important effect on our mood,” McMahon says. “This study suggests that cycling the lights in NICUs may be better than constant lighting from the perspective of developing their internal clocks.”

“Today we realize that lighting is very important in nursing facilities, but our understanding of light's effects on patients and staff is still very rudimentary,” says Dr. William F. Walsh, chief of nurseries at the Monroe Carell Jr. Children's Hospi-



tal at Vanderbilt. “We need to know more.”

Although older facilities still use round-the-clock lighting, modern NICUs, like that at Vanderbilt, maintain their lighting in a day-night cycle and keep lighting levels as low as possible. Covers are kept over the isolets that hold the babies in an effort to duplicate the

dark conditions of the womb.

The finding that exposure to constant light disrupts the developing biological clock in baby mice points to an underlying mechanism that helps explain the results of several previous clinical studies. One study found that infants from neonatal units with cyclic lighting tend to begin sleeping through the night more quickly than those from units with constant lighting. Other studies confirmed that infants placed in units that maintain a day-

humans, the master biological clock is located in an area of the brain called the suprachiasmatic nuclei (SCN). It influences the activity of a surprising number of organs, including the brain, heart, liver and lungs, and regulates the daily activity cycles known as circadian rhythms.

The SCN is filled with special neurons that are wired in such a way that their activity varies on a regular cycle of roughly 24 hours. In a normal brain the activity of these clock neurons is synchronized to a single cycle that is set by the 24-hour day-night cycle.

Newborn mice provide a good model for premature human infants because baby mice are born at an earlier stage of development than humans, a stage closely equivalent to that of premature babies.

The researchers studied two groups of newborn mice. One group was exposed to a normal cycle of 12 hours of light and 12 hours of darkness for the first three weeks of life; the second was exposed to constant light for the same period. The researchers used a special transgenic strain of mouse with an artificial gene that produces a green fluorescent protein under the control of one of the genes associated with the biological clock. As a result, when the neurons are active they produce a bright glow. >>

This allowed scientists to determine that the SCN neurons in the baby mice who were exposed to a normal light cycle quickly became synchronized. By contrast, the clock neurons in baby mice exposed to constant light were unable to maintain coherent rhythms. However, when the constant-light mice were exposed to a day-night light cycle, the clock neurons rapidly fell into lock-step.

“This is a new area of research,” says McMahon, “so there are a lot of unanswered questions. For example, could disruption of a baby’s biological clock increase his vulnerability to associated mood disorders like depression and seasonal affective disorder? Could it make it harder for someone to adjust to shift work or suffer more from jet lag? All this is speculative at this point. But, certainly the data would indicate that human infants benefit from the synchronizing effect of a normal light cycle.”

The research was funded by a grant from the National Institutes of Health.



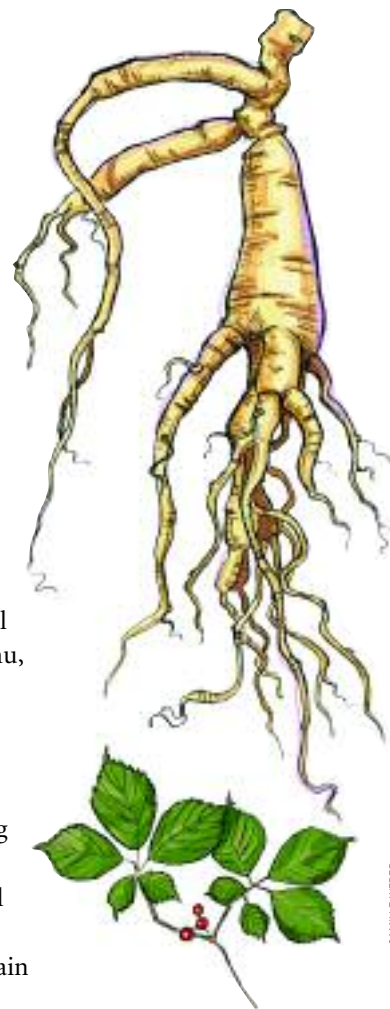
Douglas McMahon uses transgenic mice to study bioclocks.

Ginseng Found to Improve Breast Cancer Outcomes

3. GINSENG, ONE of the most widely used herbs in traditional Chinese medicine, may improve survival and quality of life after a diagnosis of breast cancer, according to a recent study by Vanderbilt-Ingram Cancer Center researchers.

The large epidemiological study, led by Dr. Xiao-Ou Shu, professor of medicine, was published online recently in the *American Journal of Epidemiology*.

Ginseng is a slow-growing perennial herb whose roots have been used in traditional Chinese medicine for more than 2,000 years. The two main classes of ginseng—red and white—have different biological effects, according to traditional Chinese medicine theory. White, or unprocessed, ginseng is used over long periods to promote general health, vitality and longevity. Red, or processed, ginseng provides a



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much stronger effect and is used for short periods to aid in disease recovery.

Both varieties contain more than 30 chemicals, called ginsenosides, which have anti-tumor effects in cell culture and animal studies, suggesting that the herbs may provide specific benefits to cancer patients.

Ginseng use has been increasing among cancer patients in recent years, particularly in women diagnosed with breast cancer. Despite the encouraging laboratory findings, scientific analysis of ginseng’s health benefits in patient populations has been lacking.

“There is a lot of skepticism about herbal medicine,” says Shu. “That is why we are taking the observational approach at this time to see whether there is any efficacy. If so, we can go to the next phase ... and

eventually go to clinical trials.”

Shu and colleagues assessed the effects of ginseng use in breast-cancer survivors as part of the Shanghai Breast Cancer Study, which followed 1,455 breast-cancer patients in Shanghai since 1996. Researchers evaluated breast-cancer patients for ginseng use both before and after their diagnosis of breast cancer. All patients who used ginseng had received at least one type of conventional cancer therapy such as surgery, chemotherapy or radiotherapy.

Information about ginseng use prior to cancer diagnosis, which was available for every subject, was used to determine whether prior ginseng use predicted survival.

At follow-up—about three to four years after diagnosis—the researchers asked about ginseng use since diagnosis. That information, which was available only for survivors, was used to look at quality-of-life measurements, including physical, psychological, social and material well-being.

Before diagnosis, about a quarter of patients (27.4 percent) reported using ginseng regularly. After diagnosis, that percentage jumped to 62.8 percent.

The researchers also found significant improvements in both survival and quality-of-life measures in patients who used ginseng. “When patients used ginseng prior to diagnosis, they tended to have higher survival,” Shu explains. “Ginseng use after cancer diagnosis was related to improved quality of life.”

The findings suggest that ginseng may provide tangible benefits to breast-cancer survivors, but the study has limitations. The varieties and the methods of ginseng use and the

use of other complementary and alternative therapies could not be fully accounted for in the analysis. Also, the quality-of-life measures relied exclusively on patient self-reporting.

Although side effects of ginseng use were not recorded in this study, Shu warns that the seemingly innocuous root can create problems when improperly used and should be taken with caution.

“It’s not a ‘drug’ in terms of being managed by the FDA, but it was used as a drug in traditional Chinese medicine,” he says. “Any drug may have some side effects and may interact with other drugs. So, discuss with your primary care doctor before you decide to take ginseng roots or products.”

Shu hopes to confirm and expand the current findings through continued collection of data in this patient population, from another ongoing study of 4,000 breast-cancer patients and, eventually, in randomized clinical trials.

Scientific study of complementary and alternative medicines is tricky, though, says Shu. “Chinese traditional medicine is very individualized. It gives you different drugs based on your symptoms and your overall health. There is much to be learned.”

Other authors on the paper were Yong Cui, Hui Cai, Meng-Hua Tao and Wei Zheng from Vanderbilt and Yu-Tang Gao from the Shanghai Cancer Institute. The research was supported by grants from the National Cancer Institute.

For more on breast cancer treatment and resources at Vanderbilt, go to www.vicc.org/cancers/disease.php?id=7.

New Treatment for Age-Related Macular Degeneration

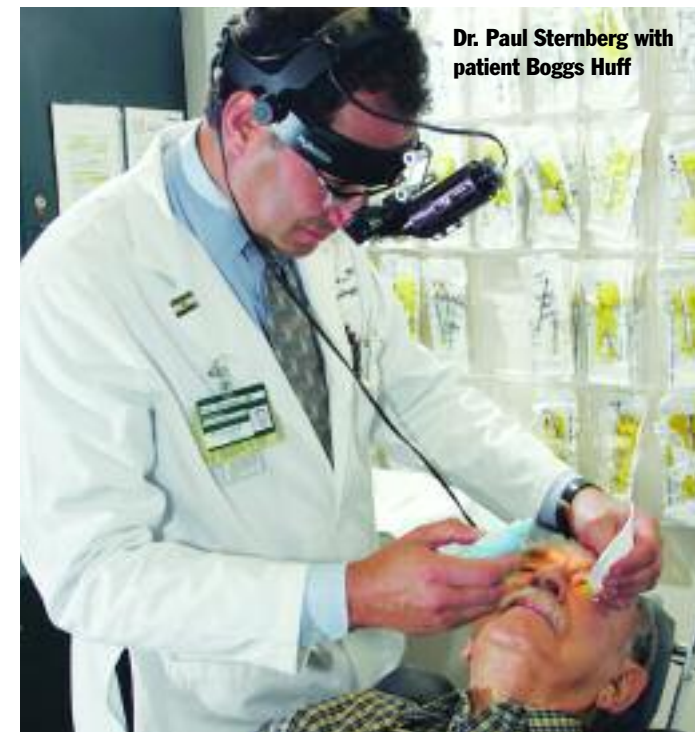
4. VANDERBILT University Medical Center recently began offering a new treatment for wet age-related macular degeneration (AMD) that may improve—and in some cases restore—patients’ vision.

Nearly 6 million Americans 55 and older suffer from AMD, with 1.5 million cases resulting in some vision loss. It is estimated that 100,000 people develop wet AMD each year.

Lucentis, also known by the generic name ranibizumab, was approved by the Food and Drug Administration in June. The drug is administered by injection directly into the eyeball of patients suffering from wet AMD, a chronic condition caused by abnormal growth of blood vessels behind the eye. The disorder leads to leaking or bleeding within the eye, causing central vision loss and often blindness.

This is the first drug to show promise in significantly improving visual acuity for these patients, says Dr. Paul Sternberg, the George W. Hale Professor of Ophthalmology and Visual Sciences, chair of the department, and director of the Vanderbilt Eye Institute. While other treatments slowed the progression of the disease, Lucentis helped improve vision by inhibiting the growth of blood vessels.

“This represents a tremendous step forward for patients with wet AMD,” Sternberg says.



Dr. Paul Sternberg with patient Boggs Huff

“In the past we have told patients there is nothing we can do. Now we are hopeful and excited that we can tell them there are drugs that might be able to help slow down the deterioration.”

“We now can offer a drug that has the potential to improve visual function,” adds Dr. Franco Recchia, assistant professor of ophthalmology and visual sciences, who was the first to administer the drug at Vanderbilt.

That’s just what Boggs Huff, BA’46, is hoping for. Huff, now 81, was diagnosed in 2000 with the beginning stages of AMD in both eyes. Last year he underwent cataract and corneal replacement surgery in his left eye, which was showing signs of worsening.

“Doing the surgeries worked great,” Huff says. “It was amazing—it changed my sight. I could read without a magnifying glass, and I could see the signs on the road.”

But it was short-lived. Three months later he developed wet AMD and came to Sternberg early this year.

“I feel hopeful,” Huff says. “I live in hope, but I am prepared to know that if it doesn’t help, I tried it all. When you start losing your eyesight, you’ll go through any route.”

In clinical trials of Lucentis, nearly 40 percent of patients experienced significant vision improvement.

Each injection costs nearly \$2,000. Many insurance companies are covering the treatment, Sternberg says.

Sternberg and his team, which includes Assistant Professor of Ophthalmology Dr. Anita Agarwal, have treated about 10 patients so far. All have tolerated the treatments without complication, says Sternberg. Each patient will return for at least three more doses for a total of four treatments, at which time they will be evaluated for visual acuity. ▼

For more information about stories in *Bright Ideas*, visit Vanderbilt’s online research journal, *Exploration*, at <http://exploration.vanderbilt.edu>.