

minutes to UV-B, the rays most sunscreens try to block. They repeated the exposure twice a week for three weeks, so the mice received about three times the UV-B needed to give them a sunburn. After the final session, the researchers injected all of the mice's ears with melanoma cells from genetically identical mice to see how well their immune system fought off the cancerous cells.

The group of mice put under the sunlamp had a higher incidence of melanoma tumors than the unexposed mice, Kripke and her co-workers write. The lotion protected them against sunburn; however,

Finding that protection against sunburn does not necessarily imply protection against melanoma is "really kind of surprising," Kripke says.

In other studies using lower light levels, sunscreen reduced the DNA damage that researchers believe leads to melanoma, she notes. She speculates that even a small amount of DNA damage may increase an animal's melanoma risk.

The study "reminds us that the pathophysiology of melanoma appears to

differ markedly from that of non-melanoma skin cancer," note Howard K. Koh and Robert A. Lew of the Boston University Schools of Medicine and Public Health in an editorial accompanying the article.

"This is really a particularly interesting study" because it shows that the radiation stimulates the melanoma cells to grow, says John Epstein of the University of California, San Francisco. However, a stronger sunscreen than the one the researchers used might have offered more protection, he says.

Darrell S. Rigel of New York University Medical School also warns that these results may not apply to humans, since melanoma acts differently in mice.

Other animal studies have found that light not screened out by most sunscreen lotions, such as UV-A, may cause the cell changes that lead to melanoma (SN: 7/24/93, p.53). To ward off skin cancer, use lotions and dress properly, researchers conclude. "With a wide-brim hat you can prevent 70 percent of the rays" from reaching you, Epstein says. — *T. Adler*

Mental disorders strike about half of U.S.

Far more people suffer from mental disorders than previously assumed, according to a national survey published in the January ARCHIVES OF GENERAL PSYCHIATRY. In fact, nearly one in two adults experienced a mental disorder at some time in his or her life, and almost one in three suffered from one during the previous year.

The survey, the most comprehensive look at the mental health of U.S. citizens to date, finds that roughly one-sixth of the population grapples with three or more mental disorders over the course of their lives. These people tend to sink further and further into psychological turmoil. They accounted for a majority of lifetime mental conditions reported by the national sample and an even greater proportion of disorders cited for the prior year.

"Really serious conditions that demanded immediate treatment affected 3 percent to 5 percent of our sample," asserts study director Ronald C. Kessler, a sociologist at the University of Michigan in Ann Arbor. "These people typically had developed several mental disorders over time, not just one disorder that suddenly appeared."

Most individuals who had experienced a mental disorder managed to function adequately at work and home despite their symptoms and to recover on their own, Kessler notes.

The findings come from interviews conducted between 1990 and 1992 with a nationally representative sample of 8,098 people age 15 to 54. Unlike surveys that reported a lower prevalence of mental disorders (SN: 2/27/93, p.134), the new

study employs the latest official psychiatric diagnoses and has obtained a broad array of data on each participant's family and social circumstances.

The most common disorder discerned by the survey was major depression, with 17 percent of the sample citing a history of this condition and 10 percent reporting a bout of depression in the previous year. Next came alcohol dependence, with 14 percent suffering from this problem at some time in their lives and 7 percent experiencing it in the past year.

Social and "simple" phobias reached lifetime prevalences of 13 percent and 11 percent, respectively, with slightly lower rates reported for the previous year. Social phobias range from an inability to speak in public to avoidance of any social activity; typical simple phobias include fear of heights and flying.

Fewer than 40 percent of those who had suffered from a mental disorder had ever received medical or mental-health treatment for their condition; fewer than 20 percent reporting a disorder in the past year had entered such treatment.

Rates of mental disorders fell as participants' education and income rose. Blacks cited a lower prevalence of serious mental conditions than whites. And compared with urban dwellers, people living in rural areas showed a greater tendency to report only one prior mental disorder and to avoid the multiple psychiatric problems that most often necessitated medical treatment.

"Blacks and rural Americans face much adversity, but we need to look at the strengths in these communities, too," Kessler asserts. — *B. Bower*

Fragile bones linked to vitamin D gene

Vitamin D does build strong bones, but perhaps not exactly in the way scientists had envisioned. Australian researchers have linked a single gene—one that codes for vitamin D's receptor, or cellular docking site—to the tendency of people to lose bone mass as they age and to develop osteoporosis.

Despite all the environmental factors, such as dietary calcium, exercise, and smoking, known to influence the thinning of bones (SN: 12/26/91, p.262), genetics still plays a key role in determining who will suffer fractures late in life, says John A. Eisman of the Garvan Institute of Medical Research in Sydney. Scientists had thought that many genes set the stage for osteoporosis.

After examining the results of earlier studies, however, Eisman focused on the gene that codes for the vitamin D receptor. Once activated in the body, vitamin D becomes a key hormone that alters a cell's absorption of calcium.

The Sydney group determined the distribution of the two forms, or alleles, of this gene in 250 fraternal and identical twins. The researchers also measured the density of several bones, including the spine, in each person. A twin with one or two copies of one allele had denser bones than the sibling with one or two copies of the other allele, Eisman, Nigel A. Morrison, and their colleagues report in the Jan. 20 NATURE. When the scientists evaluated 311 middle-aged women, they found they could predict bone density on the basis of the women's genetic makeup.

They suspect that the vitamin D receptor helps control how fast bone builds up and disintegrates. During the first 20 years of life, bone thickens. Decades later, it begins to thin. The twin studies suggest that one form of the receptor leads to less thickening; such bone then has less to lose before becoming fragile.

The researchers calculate that people with two copies of the allele that leads to weaker bones should develop osteoporosis by age 65; those with one copy, by age 69; and those with none, by age 76.

"What is surprising is that [the researchers] made the association with one particular gene," comments Gregory R. Mundy, an endocrinologist at the University of Texas Health Science Center in San Antonio. "I think [the finding] is going to make people sit up and take notice."

However, "it still needs to be confirmed in other groups," Mundy cautions. If the result holds up, then a simple genetic test may help identify people particularly susceptible to developing weak bones, he adds. Moreover, Eisman thinks the finding will speed the development of more effective treatments for osteoporosis.

— *E. Pennisi*