

Of Mice and Women

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ABOUT 20 YEARS AGO, scientists realized that testing drugs and medical procedures primarily on men told them little about how a woman might react. But animal researchers have just recently begun to conclude that using only males means they're getting only half an answer. "seventy-nine percent of pain studies are on male lab animals only, even though far more women have problems with pain," says Jeffrey Mogil, PhD, professor of pain studies at MCGill University and a premier sex-difference researcher in the field of pain genetics. "We're missing valuable information because so many researchers don't look at both sexes when studying lab animals." "Sex matters in ways we haven't really thought about before," says Virginia M. Miller, PhD, a professor of physiology at the Mayo Clinic in Rochester, Minnesota. One of Miller's lab studies (with female pigs) unearthed a possible reason why premenopausal women get little or no heart protection from low -dose aspirin: The linings of female arteries produce a mix of chemicals that don't respond to aspirin the way males' do. This helps explain why the conventional wisdom about aspirin-that it protects everyone's heart from dangerous blood clots-was off the mark. "The beauty of studying both sexes in animals is that what you see is what you get," says Sherry Malts, PhD, executive director of the organization for the study of Sex Differences. "Girl mice don't wear twinsets or have lower-paying jobs than boy mice. Different reactions are going to be due to genes, hormones, or physiology, not gender issues like income, education, or health care." Researchers have been reluctant to use female mice because-wouldn't you know it-they're more complex. "All those pesky hormones," says Marts. "A mouse's menstrual cycle is just four to six days long," enough to influence results. "You have to test each mouse to see where she is." The process is a little like performing a tiny PAP smear. when researchers have made the effort to include both female and male animals, they've turned up startling differences. Among the tidbits so far: • PAIN RELIEF Male and female mouse brains have different pain- processing circuitry, which may help explain why women are so much more prone to chronic pain than men. They're nine times more likely to have fibromyalgia, eight times more likely to have jaw pain, three times more likely to get migraines, and twice as likely to have irritable bowel syndrome. "Someday we could have pain treatments that target these sex- specific mechanisms-pills that work well for one gender but don't work at all for the other," says Mogil, who authored this research .• SUNBURN Female mice are more susceptible to burns; males get skin tumors earlier. This could lead to sunblock tailored to women's and men's needs, say scientists at Ohio State university. Their findings suggest women may need more anti-Inflammatories to soothe sun damage after a day on the beach, while men may need more antioxidants to protect against cancer. • STROKE The brains of female rats have a stronger inflammatory response, according to a study in stroke. This may be one reason that women's strokes are more debilitating-and more deadly-than men's. Studies on animals suggest that compounds that block brain-damaging proteins during a stroke protect males but harm females. Mogil believes that researchers who start working with female rodents will be pleasantly surprised. "Males can be more aggressive," he says. "They'll bite more readily than females."