An analysis of myths about irritable bowel syndrome by Brian Lacy, M.D., Ph.D., showed that 43% of 261 patients think it's caused by food allergies and 68% by depression.

Once-obscure enzyme is now a hot property

Ten years ago, Lee Witters, Ph.D., was one of only a handful of people studying an obscure enzyme called AMP-activated protein kinase (AMPK). But in the past few years, he says, "a lot of people got really interested." AMPK is now a hot research topic, having emerged as an important player in cancer, appetite control, and Type II diabetes. Even though the field is much more crowded now, Witters, a DMS biochemist, is still at its forefront, having recently identified an enzyme that regulates AMPK.

Gauge: The cells that make up our bodies need a constant supply of energy to function. AMPK is key in regulating cellular energy. It acts as a gas gauge by sensing how much energy a cell has. "It's both sensing energy and doing something with that information," explains Witters, who is the Eugene W. Leonard 1921 Professor of Medicine and of Biochemistry. When the cell has plenty of energy, or a full gas tank, AMPK remains inactive and the cell carries out its normal processes. If the cell has an energy deficit, or an empty tank, AMPK is activated by another enzyme and tells the cell to conserve energy or to create new energy.

MARK WASHBURN

Lee Witters and graduate student Rebecca Hurley identified a key regulator of the enzyme AMPK.

Scientists already knew that the enzyme LBK1 turns on AMPK in response to low energy stores in the cell. Witters and graduate student Rebecca Hurley, along with collaborators in Australia and at Duke University, suspected that other enzymes regulate AMPK, too, and set out to find them. And they did. According to a study recently published in the *Journal of Biological Chemistry*, another enzyme, CaMKK, can also turn on AMPK.

When a normal cell has low energy levels, it won't divide. But a cancer cell will, according to Witters. In some cases, he believes this may be due to a malfunction in the molecules that regulate AMPK. In fact, scientists had identified LBK1 as a tumor suppressor even before they realized it regulates AMPK. LBK1 normally restrains cell growth but, if it's missing or inactivated by a mutation, cell growth is uncontrolled. Although more experiments need to be done to prove the theory, Witters suspects that CaMKK may also act as a tumor suppressor.

Tank: "If you could deprive [a cancer cell] of the ability to run when the gas tank is a quarter full, you would thwart the ability of the cell to grow," explains Witters. He believes that the AMPK pathway may someday be targeted to combat the uncontrolled growth of cancer.

AMPK may also have applications in appetite control and diabetes treatment, too, but Witters believes that in order to successfully target AMPK "you need to know who all the players are." As the enzyme continues to gain favor among scientists, Witters will keep trying to understand the basic biochemistry behind this important pathway—just as he has for the past decade.

KRISTEN GARNER

Smoke screen

When movie stars light up, adolescents often follow suit, according to the first national study to look at the connection between smoking in movies and smoking initiation. After adjusting for other influences, DMS researchers found that adolescents with the highest exposure to smoking in movies were 2.6 times more likely to smoke than those with the lowest exposure. Onscreen smoking "is a very strong social influence on kids ages 10 to 14," says DMS pediatrician James Sargent, M.D. "Its impact on this age group outweighs whether peers or parents smoke or whether the child is involved in other activities, like sports."

Dirty pool

Cholera—a bacterial disease that's transmitted through contaminated drinking water—relies on a single gene and protein to colonize the human intestine, DMS researchers reported in *Nature*. "We've identified a factor that works both in the environment and in the human body," stated Ronald Taylor, Ph.D., who led the research. Though a vaccine for cholera exists, it's effective only 50% of the time. This finding "has a strong potential for vaccine and therapeutic development," according to Taylor, whose group will continue to look for other ways cholera bacteria infect humans.