



Communities that have more doctors who practice primary care are likely to have healthier senior citizens, concluded a DMS study published in the *Journal of the American Medical Association*.

Study shows fat chance of attacking tumors

Lipoprotein lipase (LPL), an enzyme that helps tumors grow by providing them with fatty acids, is a tough critter. Or, as DMS endocrinologist William Kinlaw, M.D., puts it, “a very woolly enzyme to work with.” Woolly or not, Kinlaw—with DMS oncologist Nancy Kuemmerle, Ph.D., D.O., and others—has dug into LPL’s bizarre daily life to explore a new way to attack tumors.

Kinlaw and his team knew, based on a past study, that patients with invasive breast cancer were less likely to have a post-treatment recurrence if they followed a very-low-fat diet. Most researchers were focusing on developing drugs to inhibit fat synthesis. But Kinlaw thought that perhaps cancer cells could “wiggle out” of fat synthesis inhibitor drugs by using LPL to take in dietary fat from the bloodstream.

Particles: LPL is an enzyme that clips fatty acids out of insoluble fat particles. The now-soluble fat, broken down by LPL, is then able to get into tumor cells through a channel called CD-36, a hole in the cell membrane.

Kinlaw’s idea turned out to be right. He found if you use fatty acid synthesis in-

hibitors to prevent cancer cells from synthesizing fat, the cancer cells will then consume dietary fat from the bloodstream, using LPL and CD-36.

Prevalent: Kinlaw and Kuemmerle then studied 45 different breast cancer cell lines, and cells from breast cancer and liposarcoma tumors, and found that LPL was very prevalent in six of the cell lines and in nearly all of the tumor cells.

“Nancy . . . really got into this whole hog,” says Kinlaw. “With a great deal of tenacity, she pulled off something that is known to be very difficult to do, and that was to generate an antibody against [human LPL].”

“If I choose a peptide from a region of human LPL that isn’t identical to that part of mouse LPL—maybe 70% to 85% identical, but not 100%—the mouse will recognize it as a foreign protein, and it will make antibodies against it,” explains Kuemmerle. So she then harvested those antibodies and made the mouse anti-human LPL antibody. The idea was to see if the antibody could prevent LPL from providing tumors with fatty acids.

The finding is interesting scientifically, but there’s a problem with making clinical use of it. That’s because, explains Kinlaw, “poisoning LPL is going to deprive the patient of a way of getting rid of circulating fat particles.” Over time, such particles can build up, eventually causing inflammation of the pancreas—a very serious condition. So the long-term inhibition of LPL may not be the best way to attack tumors.

Steps: Still, the finding holds promise. Targeting CD-36 may work better, Kinlaw thinks. The researchers plan next to investigate ways to keep CD-36 from functioning or to prevent the cell from moving it to the surface so fatty acids don’t pass through it. MATTHEW C. WIENCKE

LPL is an enzyme that clips fatty acids out of insoluble fat particles.



JON GILBERT FOX

Kinlaw, shown with his lab manager, Christina Donnelly, discovered how tumor cells use dietary fat.

Diabetes dangers

Diabetes, which affects 11% of Americans over the age of 20, carries all sorts of complications. A recent study by DMS researcher Todd MacKenzie, Ph.D., may have found yet another complication. The study, published in the journal *Cancer*, found that individuals with diabetes were twice as likely to develop bladder cancer as individuals without diabetes. The link grew even stronger over time; people who’d had diabetes for 16 years or more were three and a half times as likely to develop bladder cancer. Diabetics who used oral medications to control their blood sugar rather than just monitoring their diet also had a much higher risk.



In good hands

Good hand hygiene is key to health in everyday life, and it’s critical to patient health in intensive care units. Even seemingly small changes in hand-hygiene procedures, like giving ICU staff a personal hand-sanitizer unit that they can attach to their clothing, can reduce infections among patients. So found a recent study published in the *Journal of Critical Care* by a team of DH anesthesiologists. The incidence of ventilator-associated pneumonia decreased by 50% after the introduction of such dispensers, although the rate of central line catheter-related infections remained the same.

