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Section: Photo

Page: 5

### Arthritis help sought for pets, people

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COLUMBIA Chief, 6, and his owner, Carolyn Kinser, 53, of Ashland, Mo., wait patiently in an exam room at the University of Missouri-Columbia veterinary medical clinic.

When people enter the room, the mottled brown mutt lumbers off the floor to greet them with a wag and a lick. But it's clear that Chief has a problem. He won't put weight on his left hind leg.

James "Jimi" Cook delivers the diagnosis: Chief has torn a ligament that **helps** stabilize the knee, ripped cartilage that cushions the joint and developed **arthritis**. He will need surgery.

Kinser and Chief are kindred spirits. Three small, pink lines on Kinser's knee announce her recent surgery to repair torn cartilage and smooth damage from **arthritis**.

Cook directs the Comparative Orthopedic Laboratory at MU, where he focuses on finding relief from **arthritis** for pets and their people. He and his colleagues are learning which molecular changes lead to **arthritis** so that one day they may be able to stop the disease before it causes painful damage.

Cook also is pioneering a customized replacement joint built from real bone and cartilage instead of metal and plastic. He is testing it in laboratory dogs. If it's successful in dogs, it eventually could **help** the 300,000 people each year who get knee replacements.

About 20 percent of dogs over a year old have **arthritis**, Cook said. And it's a disease humans know well.

"Anyone who lives past age 45 will begin to develop some signs and symptoms of **arthritis**. It's a fairly universal problem," said Jason Calhoun, chairman of the department of orthopedics at the University of Missouri. The degenerative joint disease is the leading cause of disability in people over 15 years old.

**Arthritis** remedies may **help** relieve some discomfort but don't stop the disease. That could be a matter of bad timing, Cook said.

"The only time we know to give them (**arthritis** drugs) is when you come in and say, My knee hurts, but by that time, we've lost the battle," Cook said.

He and colleague Aaron Stoker are looking for the earliest signs that **arthritis** is starting. The researchers take MRIs and blood samples from dogs with knee injuries. **Arthritis** often is brought on by injury, overusing the joint, or by genetics and environmental causes. But no one knows the order of steps that lead some people and animals to the disease.

Cook and Stoker have found 16 genes in dogs that change production patterns after a knee injury and are associated with later **arthritis**. All of those genes are found in people, too. Researchers have no idea what some of the genes do, but others are clearly involved in inflammation or tearing down bone and cartilage.

The discoveries could lead to drugs or supplements that could block **arthritis** from getting started. By the time **arthritis** sufferers develop symptoms -- about seven years to 15 years after an injury for people, but only six weeks to a couple of months for dogs -- it is too late to reverse the damage, Cook said.

When the knee has degraded so far, doctors must replace the whole joint. "We're doing this with metal and plastic. It's very good metal and plastic. They last six to 20 years, but it's like putting a tire on a car; eventually they wear out and you have to replace them," Calhoun said. The artificial joints also limit a person's activity -- not as much as **arthritis** does, but enough to keep some workers away from their former jobs and athletes away from their sports, Calhoun said. Cook and collaborators at Columbia University in New York are developing a replacement joint made from a canine patient's own cartilage cells and natural bone taken from cadavers. mopanarthritis15\_10-14-2006\_ULOGH63.xml