Genetic makeup can boost aspirin's benefit

Platelets, the smallest blood cells, are indispensable. They work with other components of blood to form clots that prevent excessive bleeding. Unfortunately, "platelet cells are pretty stupid," says cardiologist Pascal J. Goldschmidt of Ohio State University in Columbus. They don't always distinguish between a cut finger and an internal blood vessel damaged by heart disease.

As a result, platelets sometimes aggregate at an internal site, clog an artery, and cause a heart attack.

Enter aspirin. Doctors are convinced that the inexpensive drug counteracts platelet aggregation, so roughly 95 percent of people who've had a heart attack take aspirin for years afterward to help maintain blood flow. Yet aspirin prevents heart attacks in only 40 percent of this group, research has shown.

Goldschmidt and his team now suggest that some people who benefit significantly from aspirin have the less common version of a gene called PlA^2. In these people, the drug more effectively keeps platelets from teaming up with a protein called fibrinogen and initiating a cascade of events that leads to clotting, the researchers report in the April 25 LANCET.

Past research has shown that about 25 percent of whites, 15 percent of blacks, and a few percent of Asians have at least one copy of this variation of the PlA^2 gene. The gene encodes the platelet receptors that hook up with fibrinogen.

The researchers compared blood samples from 11 people with the genetic variation to samples from 15 people who don't. The groups were otherwise matched by gender, race, and age. The researchers added aspirin and a clot-inducing substance to each blood sample, then gauged the aspirin's anticloting effect. Blood from people carrying the genetic variation needed only one-tenth as much aspirin to inhibit coagulation.

"There is a growing appreciation of the potential limits of aspirin therapy in some patients," says James J. Ferguson, a cardiologist at the Texas Heart Institute in Houston. "This study shows that mechanistically we're beginning to unlock the secrets of aspirin and why some people don't respond to it."

"If we are right," says Goldschmidt, "then genotyping, which might cost $50 as part of a blood test, would be able to help predict which people can be protected by aspirin." People without the variation might be better off taking a different anticoagulant, he says.

Using the test that measures platelet aggregation when blood is exposed to aspirin might also highlight those people who are "nonresponders" to the drug, Ferguson says. While the findings show clear differences, they don't directly address the effects that daily doses of aspirin might have on clotting, cautions coauthor Paul F. Bray, a hematologist at Johns Hopkins Medical Institutions in Baltimore. —*N. Seppa*

Dolly had a little lamb

Reports that Dolly, the first mammal cloned from an adult cell, is pregnant (SN: 4/25/98, p. 263) were slightly amiss. Dolly's already *a mom. She gave birth to a lamb named Bonnie at 4 a.m. on April 13, announced the Roslin Institute in Edinburgh, where Dolly was cloned.*

"We are delighted. Despite Dolly's unusual origins, the birth of her lamb confirms that she is able to breed normally and produce healthy offspring," says Roslin Director Grahame Bulfield.

—J. Travis

Roslin Institute/PA

Sifting through the Web's data jumble

Searching the World Wide Web for authoritative sources of information about a given topic can be a daunting task. Consulting just one indexing service to track down "jaguar," for instance, generates an alarming list of 336,770 documents—a mad muddle of entries about cars, animals, sports teams, computers, and a town in Poland.

Now, a team of researchers has come up with a method for automatically compiling rosters of authoritative Web resources on broad topics. Based on analyses of the way Web pages are linked to one another, the technique produces resource lists similar to those constructed manually by experts at such Web services as Yahoo! and Infoseek.

Computer scientists Jon Kleinberg of Cornell University, Prabhakar Raghavan of the IBM Almaden Research Center in San Jose, Calif., and their coworkers described the project at the Seventh International World Wide Web Conference, held last month in Brisbane, Australia.

In making Web pages, people typically incorporate links to other pages. Such links furnish "precisely the type of human judgment we need to identify authority," Kleinberg says. His team couples that authority with Web-searching tools, known as engines, that hunt indiscriminately for selected words in Web text (SN: 5/2/98, p. 286).

Making the assumption that the most authoritative pages on a given subject would be those most often listed as links on other pages, Kleinberg developed an algorithm to evaluate such relationships.

He incorporated this technique into a novel program that begins by conducting a text-based search using a standard search engine, which supplies a selection of about 200 documents containing the required words. That set is then expanded to include all pages to which those documents are linked.

Ignoring the text, the program examines the network of links and assigns scores to each page on the basis of the number of links to and from it. The program then considers which pages receive the most links. A page, containing authoritative information about a specific topic or providing a useful list would presumably be the focus of other pages. Such pages are given extra value.

Ten repetitions of the calculations usually generate a remarkably focused list, Kleinberg says. In tests by Kleinberg and his coworkers, the results were sometimes better than manually compiled resource lists. However, the method doesn't always work well for highly specific queries, nor does it pick up fresh content. IBM has applied for a patent on the underlying algorithm. —*I. Peterson*