belt. If it really is cometary debris, the number of comets orbiting the star must be 1000 times larger than in our solar system.

The inner region of the disk, comparable in size to our own planetary system, contains little material, perhaps because it has been swept clean by planets forming from the dust. A bright spot in the ring is probably "either dust trapped around a planet or dust perturbed by a planet orbiting just inside the ring," says Greaves.

It is "good evidence but not convincing proof" of a planet, agrees theorist Jack Lissauer of the NASA Ames Research Center.

Any planets around Epsilon Eridani are likely to be either relatively small or far from the star, says Geoff Marcy of San Francisco State University. Marcy has observed Epsilon Eridani for the past 11 years, looking for the wobbles that might betray the presence of a massive planet. The absence of detectable wobbles implies, he says, that "no companion having a mass greater than three Jupiter masses is likely to exist" within five times the Earth-sun distance. That, of course, leaves a comfortable margin for planets like our own. **–GOVERT SCHILLING**

Govert Schilling is an astronomy writer in Utrecht, the Netherlands.

PNAS 95, 9274 (1998)

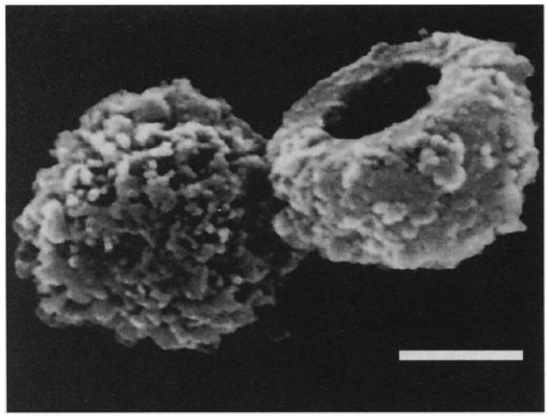
MICROBIOLOGY

Bacteria to Blame for Kidney Stones?

Tiny bacteria have been fingered as possible culprits behind kidney stones and abnormal calcium deposits in other tissues. The bacteria, described in the 7 July *Proceedings of the National Academy of Sciences*, are among the smallest ever found, barely bigger than some viruses.

Physician Olavi Kajander of the University of Kuopio in Finland first noticed the bacteria more than 10 years ago as a white film in his mammalian cell cultures. From the film, he was able to culture the slow-growing bugs, which he dubbed nanobacteria. At 200 to 500 nanometers wide, they are one-tenth the diameter of a typical *Escherichia coli*. So far, Kajander and his colleagues have found the nanobacteria in cattle blood, in 80% of samples of commercial cow serum in which mammalian cells are grown in the lab, and in the blood of nearly 6% of more than 1000 Finnish adults tested. The organisms had not been implicated in any diseases, however—until now. Kajander and clinical microbiologist Neva Çiftçioglu report that they have cultured nanobacteria from all 30 human kidney stones they examined.

Kajander and his colleagues suspected that the bacteria may play a role in the formation of kidney stones because, under certain growing conditions, they build calcium-rich spherical shells around themselves. Now the team has found that the structures are made of apatite, a primary component of kidney stones and other calcified deposits in tissue but different from the calcium compound in teeth and bones. Blood contains several proteins that inhibit the formation of apatite crystals, but Kajander speculates that the bacteria might be free to form shells if they leave the bloodstream and take up residence in tissues. The small spheres, he says, may be seeds for larger calcium deposits, such as kidney stones or the abnormal calcifications found in patients with scleroderma or some cancers.



Seeds of kidney stones? Tiny bacteria form calcium shells that may trigger larger deposits. (Scale bar is 1 μm.)

The hard shelters protect the bacteria from most assaults, including high heat and many antibiotics. However, says rheumatologist Dennis Carson of the University of California, San Diego, tetracycline is known to accumulate on apatite crystals and so might be a promising candidate for attacking nanobacterial infections.

The link between bacteria and kidney stone disease is far from proven, however. "They may have something here," says microbiologist Mitchell Cohen of the Centers for Disease Control and Prevention in Atlanta. "But I'd like to see broader studies looking at different types of stones in different parts of the world." Nevertheless, the find is "one of the most intriguing and fascinating additions to this area of research that I can imagine," says nephrologist and kidney stone specialist Fredric Coe of the University of Chicago. Coe notes that at least four teams have reported tiny spherical deposits in or near the calcified plaques often found in the kidneys of patients who suffer from kidney stones. "I don't know that it's their bacteria," he says, "but it sure looks suspicious." **–GRETCHEN VOGEL**

ScienceScope

NO ESCAPE FROM RED TAPE

Stanford biologist Paul Berg's idea for cutting through onerous legal paperwork in the lab has taken off somewhat like a lead balloon. His proposal—to abolish material transfer agreements (MTAs) signed when research tools are shared between nonprofit labs—has won plenty of verbal support but only one formal endorsement.

This spring Berg and Stanford's licensing chief Kathy Ku proposed eliminating as many as 50% of MTAs—routine agreements designed to protect an inventor's rights. Berg says that when he phoned scientific leaders at a half-dozen other institutions, they responded enthusiastically. But only one actually signed up—the Carnegie Institution of Washington, D.C. "It's a fine idea, but it cannot bring back the good old days" before universities became enmeshed in a commercial environment, says Karen Hersey, intellectual property counsel for MIT.

Berg, meanwhile, says he is dropping his scheme and hoping for a measure of relief as a result of guidelines on legal aspects of scientific collaborations now being drafted by the National Institutes of Health (*Science*, 12 June, p. 1687).

NEW ERA AT RIKEN

Physicist Shun-ichi Kobayashi will be stepping into some pretty big shoes next month as president of Japan's Institute of Physical and Chemical Research (RIKEN), Japan's leading research center, outside Tokyo. He succeeds physicist Akito Arima, widely regarded as the most powerful scientific figure in Japan. A veteran dispenser of science advice to the government, Arima resigned in May to run for the Diet (*Science*, 22 May, p. 1181).

Kobayashi

Kobayashi, little known outside the University of Tokyo where he is vice president, is by comparison "an unknown quantity," according to one RIKEN staffer. Kobayashi admits "I've got some studying to do," joking that he took the job because Arima, a former mentor, "ordered me to." His immediate challenge will be looking out for RIKEN's interests in the coming merger of its funding body, the Science and Technology Agency, with Monbusho, the Ministry of Education, Science, Sports, and Culture.

Contributors: Dennis Normile, Richard Stone, Eliot Marshall