

Features

Researchers rebuild organs with inorganic materials

United Press International
PROVIDENCE, R.I. — Brown University medical researchers are looking for ways to breath new life into failing bodies by building "hybrid" artificial organs with ceramics, plastics and metals.

Brown's "spare parts" department, as it is called on campus, is using inorganic materials as building blocks upon which an organ's living cell structure can thrive.

The researchers are also building organs from scratch, including an experimental lung constructed of 22 coils of teflon and thick, clear plastic.

"Medicine traditionally had been looked at as the alleviation of pain or disability," explains Swiss-born Dr. Pierre Galletti, director

of Brown's research program. "Next came preventive medicine. Now we are on the threshold of substitutive medicine: if you cannot cure it, get rid of it and replace it," Galletti said.

Galletti, who is vice president of the school's biology and medicine program, and fellow researchers at Brown believe hybrid organs — the bridging of living cell with man-made materials — can be an alternative to total organ replacement.

"We are using ceramics and metals which can be used as a 'scaffold' so tissues, or cells, can grow upon them. We are trying to match plastics with biology," Galletti said in a thick accent, brushing back a shock of his hair.

The marriage of man and metals is being tested in the department's laboratory at the Ivy League school's Bio-Med Center.

Sheep with implanted lungs and dogs with implanted pancreas move around in their pens, appearing normal except for bandages covering surgical incisions.

Galletti said the artificial lung has worked on a number of sheep,

but its use in humans is at least a decade away. The pancreas, which has maintained insulin levels in rats and dogs, could be available for diabetics in less than a decade.

Work is also continuing on hybrid kidneys and livers, each encased with a semi-permeable membrane — the scaffold of living cells — to ward off rejection. And

researchers talk of a breakthrough in vascular replacements for arteries.

The organs have "gone through several generations. We're eliminating our problems along the way," said Len Trudell, chief surgeon and lab director.

Perhaps the most difficult task of "creating" organs is deciding on the design, much of which is un-

charted waters in medical research. The shape of an original organ often provides no clue to the design of the man-made replacement.

The artificial pancreas, for instance, resembles more a clear plastic horseshoe with tubing than the organ itself.

"Our job is to create things that don't exist. This is really the Buck

Rogers department," Trudell, who calls himself "the creator" and Galletti the "co-creator."

Galletti believes man could improve upon his own design.

"It's not obvious that man knows best," Galletti said. "I think water-based life is the things have to be?"

Dental magician turns patients into audience

United Press International
BALTIMORE — Everyone has a horror story about a visit to the dentist, but Scott Sales, 7, can tell his friends about the day he saw a magic show from the dentist's chair.

Scott paid a visit to the University of Maryland Dental School last week and there he met Craig Schneider, 24, of Silver Spring, Md., a third-year student who does a lot more than assist dentists at the outpatient clinic.

Schneider, you see, is a magician, a man who can change the look of fear on a child's face with the snap of a magic box.

"I want to see if you've been brushing your teeth," Schneider

said to Scott. "Now, if I open this box and the rabbit is black, you haven't been brushing."

Scott's eyes widened. Schneider pulled off the cover of the box and the rabbit was black.

Schneider explained the principles of good brushing and gave Scott another shot at the magic box.

"Now look at the rabbit," Schneider said. The rabbit was white.

Scott giggled and told Schneider to turn the drawing over. Scott had it all figured out.

But when Schneider pulled off the back of the box Scott saw nothing but the tail of a white bunny. The black rabbit was gone and so

was Scott's fear.

To Schneider the act was part of his ability to combine the ancient arts of science and magic. Schneider takes both his dentistry and his magic very seriously.

"When I was 12, I started reading magic books. I found I had a talent and started giving children's shows. Now I do both adult and children's magic," he said.

His demonstrations of adult magic — flashing coins, card tricks, floating dollar bills — leave his adult audiences with mouths agape. And Schneider's mind is as dazzling as his tricks.

In his senior year in high school, Schneider convinced his teachers to let him do independent study combining philosophy and psychology. He speaks with as much authority about Hume as he does about Houdini.

His undergraduate major was Latin and now he is in a five-year program with a double major in zoology and dentistry.

He could easily make a living doing magic, but said, "The life of an entertainer is too tough for me."

"I don't think I'd like being on the road all the time. So I can use my magic skills with patients, both adults and children."

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Vegetable oil could replace diesel fuel in farm equipment

United Press International
PEORIA, Ill. — If researchers at the Department of Agriculture's regional laboratory have their way, farmers of the future will beat the energy crisis by getting into the oil business.

The vegetable oil business, that is.

Tests are underway to determine if oil from soybeans, sunflowers, peanuts or cottonseed can fuel diesel-powered farm equipment. If the experiments prove fruitful, farmers may become energy self-sufficient.

"A farmer might be self-sufficient by growing his sunflowers, soybeans or whatever, and then using it to replace diesel fuel," said Arthur W. Schwab, researcher at the Northern Regional

Research Center, one of four USDA labs which study new outlets for farm commodities.

The idea is not new. Vegetable oils were used on a small scale in early diesel engines until after World War II, when cheap and abundant petroleum took over the market.

But now that fuel prices have been rising dramatically, researchers across the nation have begun studying vegetable oils along with other prospective alternative diesel engine fuels.

The USDA hopes its tests will help reach a goal of making all farmers energy self-sufficient by 1990.

"Short-term tests have been successful. It's on the longterm endurance tests that problems start

showing up," said Everett Pryde, research leader of the project.

"Engine design is an important factor. Direct injection engines are very efficient, but not good for vegetable oils. Ours is an attempt to look at modifying fuel (vegetable oil) to work in direct injection diesel engines."

Other researchers have found vegetable oils work better in combustion diesel engines. USDA researchers said most farmers own direct injection engines and it is cheaper to modify them than the engines.

The biggest problem with vegetable oil is that it is heavier and thicker than diesel fuel. It does not burn as well and often forms a rubber-like gel.

If the engine continues to run after the crankcase oil has solidified, it could be ruined. It also tends to plug other parts of the engine, including the filter.

USDA researchers said they will try to change the physical chemical properties of vegetable oil by mixing it with other substances such as other oils or naturally produced alcohols.

The tests began earlier this year and researchers hope to have a solution within a year. Long-term engine tests will be conducted in cooperation with several universities, researchers said.

"It's a very confused situation right now, but I'm very optimistic there will be a solution to these problems," Pryde said.

Even if USDA researchers find a trouble-free mixture for vegetable oil, there are other problems.

Vegetable oil fuel is more expensive than diesel fuel. Researchers said some vegetable oil would cost about twice as much as current diesel fuel prices. It would become economical only if a farmer if diesel fuel is in short supply or if prices continue to

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