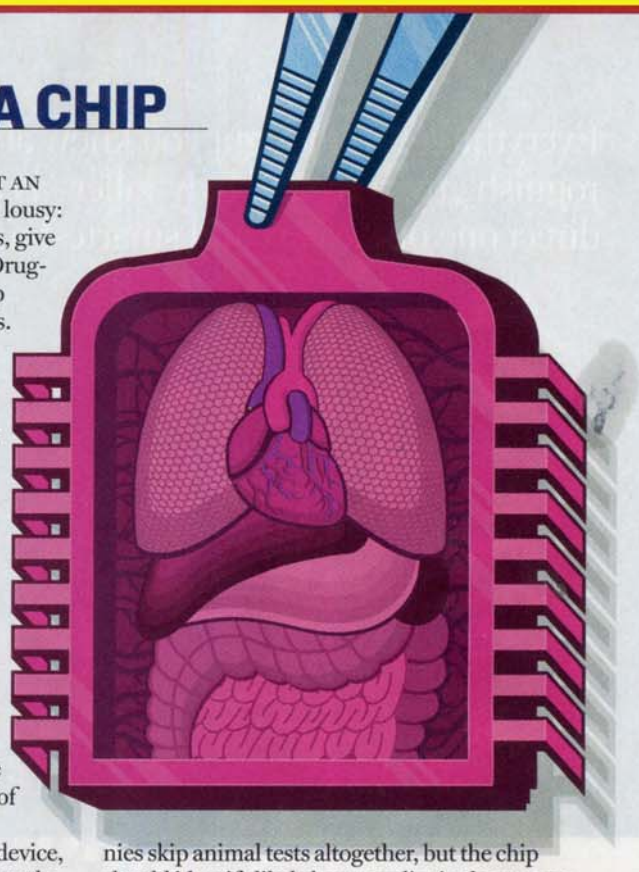
STAR POWER: UCLA scientists have harnessed fusion reaction

DESKTOP FUSION

For more than half a century, physicists have been trying to harness fusion, the nuclear reaction that makes the sun shine and hydrogen bombs explode. But experimental reactors built so far have been gigantic, expensive furnaces that produce less energy than they consume. Now UCLA researchers have built a fusion reactor the size of a lunch bucket—and they

YOUR BODY ON A CHIP



THERE ARE THREE WAYS TO TEST AN experimental drug, and they're all lousy: swish it around in a dish with cells, give it to animals or test it on people. Drugmakers often do all three—and still wind up with drugs that have unforeseen side effects.

Cornell researcher Michael Shuler knew that a drug's effect depends less on chemistry than on the way it navigates the obstacle-course of the body's organs: being broken down by the liver, absorbed by the intestines and held onto by fat. He created a lab-size suite of artificial organs to duplicate the havoc, and fellow researcher Greg Baxter helped shrink the whole thing onto a microchip. Etched into the stamp-size device are chambers and channels lined with living human or animal tissue. When pumped through with artificial blood laced with test drugs, this torso-on-a-chip can highlight both harmful and beneficial effects other tests miss. That could reduce the need for animal testing, and do a better job of steering the right drugs to human trials.

Drug companies are now looking at the device, and results are impressive. The chip has correctly shown that the pesticide ingredient naphthalene damages lungs, and that the cancer drug Tegafur effectively attacks colon tumors—results conventional tests miss. The FDA isn't likely to let companies skip animal tests altogether, but the chip should identify likely losers earlier in the process, knocking up to $100 million off the cost of drug approval. Assuming, of course, no one comes forward to defend the rights of chips.

-DAVID H. FREEDMAN

WHAT'S THAT FISH DOING IN HERE?

THE MAKERS OF 3-D show each eye a piecemeal im- microscopically fine patterns

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ful for irradiating tumors, scanning baggage or even powering a spacecraft. And it doesn't even have to be plugged in to work; all it needs is a little heat. Dunking it in warm water could be enough to kick off some fusion. That's heavy!

-JOHN HORGAN

public-size prototype, they say a medium-resolution holographic computer monitor costing between $500 and $1,000 could be on the market within a year or two. It may not be all that long before a holographic Tony Soprano is glaring at you from the middle of your living room. At least you'll hope it's a hologram.

-D.H.F.

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