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OCTOBER 2014

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Silk Screws

The worms that crawl in David Kaplan's biomedical lab at Tufts University aren't pests. They're a key to helping broken bones heal faster. The protein fiber that silkworms spin into cocoons is being turned into screws and plates that can hold bones together.

The silk screw (left) was designed by researchers at Tufts and Beth Israel Deaconess Medical Center as an alternative to traditional steel screws and alloy plates, which, while strong, often place stress on bone and tissues, interfere with x-rays, and require second surgeries to remove.

Silk, by comparison, degrades in the body, eliminating the need for follow-up incisions. "It has just the right mix of properties," says Kaplan, a biomedical engineer. It's both strong and malleable. Advanced engineering can create silk screws that last as little as a few hours or as long as several years.

Rats were the first test subjects. Human trials may come next. One early application may be in facial reconstruction in children, whose growing bones can benefit from screws that disappear. —Daniel Stone