

Interferon may reduce MS attacks

Interferon, a group of natural substances made by the body, was once touted as a "magic bullet" against cancer and a number of other diseases. But while interferon (there are three main types — alpha, beta and gamma) can exert powerful antiviral effects and give the immune system a boost, its role as an antidisease agent has been a limited one at best. Neurologist Hillel Panitch of the University of Maryland Hospital in Baltimore calls interferon "a wonder drug in search of a disease."

Panitch and researchers in California may now have found such a disease. Panitch, who was at the University of California at San Francisco, and colleagues at Stanford University and Scripps Clinic and Research Foundation in La Jolla report in the October *NEUROLOGY* that injections of alpha interferon can benefit patients with a particular type of multiple sclerosis (MS), a crippling central nervous system disorder that afflicts a quarter-million Americans. The finding — considered preliminary but promising — emerges from the first double-blind, controlled study of MS and interferon.

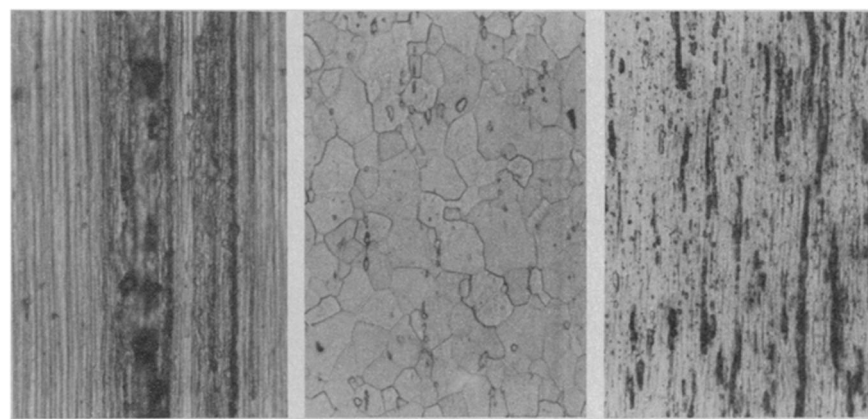
MS usually strikes young adults, and both its cause and cure are unknown. Its symptoms include blindness, numbness, loss of coordination and paralysis. In more severe cases, there may also be bladder and bowel problems and sexual dysfunction. In recent years, a number of studies have linked MS with a still unidentified viral infection that results in autoimmune disease. The body's own defense network rebels, mistakenly destroying myelin, the fatty sheath that surrounds impulse-conducting nerve fibers (SN: 1/30/82, p. 76). Without this insulation, messages from the brain may be slowed and garbled.

The California researchers found that 15 patients with relapsing-remitting disease, a form of MS in which attacks come and go sporadically, had fewer and milder attacks during treatment than when given a placebo. In contrast, nine treated patients with chronic progressive (steadily worsening) disease showed no changes, continuing their downward spiral.

Scientists aren't sure exactly how the interferon works in these cases, says neurologist Robert Knobler of Jefferson Medical College in Philadelphia. However, Knobler, who participated in the study while at Scripps, believes that interferon's antiviral properties and its ability to stabilize the immune system may both play a role. In any case, more studies are needed, he says.

In the study, each patient received daily injections of interferon or placebo for six months. Neither the patients nor the doctors caring for them knew when they were

Wiring a harpsichord's subtle sound



Antique harpsichord wire (left) shows elongated grains and has a high phosphorus content. The best modern harpsichord wire (right) also shows striations, characteristic of "cold" drawing, but lacks phosphorus. In contrast, modern piano wire (center) has large grains because it was reheated after it was drawn.

Walter Burr isn't completely satisfied with the sounds that issue from his carefully crafted harpsichords. Even after 14 years of painstaking experiment, the ring of his instruments doesn't exactly match his sense of the way harpsichords sounded 200 years ago. The tone should be "darker, less bright," he says.

"The serious lack in these instruments is that the wire is modern," says Burr, who builds harpsichords at his workshop in Hoosick Falls, N.Y. "To copy everything slavishly about a harpsichord and not to have the correct wire is really serious. The old instruments were designed around the nature of the wire."

With the help of materials engineer Roger N. Wright of Rensselaer Polytechnic Institute (RPI) in Troy, N.Y., one of the few wire specialists at a major engineering school, Burr is now coming closer to his goal of duplicating the acoustic qualities of 18th-century iron harpsichord wire. While the basic process for making wire has changed little over the years, says Wright, "the conditions under which it is produced today are vastly different." The temperatures modern wires reach during processing are much higher, and the chemical compositions are somewhat different.

So far, Wright and student Laurinda MacKinnon have discovered that antique wire (a sample from a Shudi harpsichord made in 1782) contains a great deal of phosphorus. "That's a very unusual element to find in iron or steel," says Wright.

Because the element makes steel brittle, the phosphorus level is kept very low in modern iron alloys. "There are seasoned metallurgists who have never seen a piece of steel with as much phosphorus as in this old wire," he says. Whether the presence of phosphorus accounts for the special sound qualities of antique wire isn't clear yet, says Wright. The odd size of phosphorus atoms could, for instance, contribute to damping subtle movements within the material.

Another factor that may play an important role in determining a wire's sound is the heat treatment it undergoes during processing (as shown in the photographs). Wright is now testing the way various heat treatments affect the acoustic properties of modern wires. Eventually, he hopes to compare wires that also have different phosphorus contents.

One problem that both Burr and Wright face is determining the effect of aging on the antique wires. Two hundred years is somewhere on the borderline where changes in iron wires would probably start to appear, says Wright, but no one really knows what the changes, if any, would be.

Despite the growing number of questions that Wright's research is producing, Burr is encouraged. "I'm really anxious to get something smelted, but we're not going to rush into it," he says. "I never thought I'd be able to address this problem, and it's really amazing what's gotten done so far." — I. Peterson

receiving drug or placebo — thus, the "double-blind" aspect. "The study had to be carefully controlled because a placebo effect, where the act of being treated is enough to make a patient feel better, is a well-documented phenomenon in MS patients," Knobler explains. "Also, the disease is characterized by spontaneous im-

provement. We had to know the medicine was doing the job."

Says Lawrence Jacobs of the Dent Neurologic Institute at Buffalo's Millard Fillmore Hospital: "The results are intriguing and promising. Now we'll have to see how long these positive effects last."

— S. I. Benowitz