Spray Guards Chicks from Infections

A drug spray that wards off *Salmonella* infection in newly hatched chickens has just been approved by the Food and Drug Administration. Preliminary tests indicate that the drug, Preempt, also thwarts infection by *Campylobacter*, *Listeria*, and the deadly *Escherichia coli O157:H7*, thus holding out the prospect of greatly reducing food poisoning caused by poultry.

Designed to be sprayed on hatchlings, Preempt consists of 29 types of living, nontoxic bacteria isolated from the gut of mature chickens. As it preens, a treated chick ingests the bacteria, seeding its ceca—intestinal cul de sacs—with the beneficial microbes. The bacteria cover niches in the cecal surface so quickly and heavily that intestinal pathogens find it all but impossible to move in, explains Donald Corrier, a veterinary pathologist with the U.S. Department of Agriculture in College Station, Texas, and a developer of the drug.

Because the ceca are where *Salmonella* reside, Corrier notes, "if you can keep them out of there, they're out of the bird." Indeed, his tests indicate that a single treatment can confer lifelong protection on 99 percent of chickens.

"The unique thing about our culture [of bacteria]," Corrier told SCIENCE NEWS—and the key to its approval—"is that we know exactly what bugs are in it." While the precise function of each member is not known, he says, the microbial combo provides "an ecosystem that is very similar, on a small scale, to what's in an adult chicken."

While the spray may reduce the number of infections in chickens, "I'm concerned about whether consumers will think that because birds have been 'Preempted,' they might not have to take all the normal precautions when preparing chicken at home," says Amy L. Waldroup, a poultry scientist at the University of Arkansas in Fayetteville.

Chicks being sprayed with Preempt (top). Within 3 days, beneficial bacteria, shown as light patches in this colorized transmission electron micrograph (bottom), can be found seeding virtually every cecal niche.

Corrier agrees that since even treated birds may become contaminated during food processing or in the kitchen, cooks must continue to practice good hygiene when working with eggs or raw chicken. However, adds John R. DeLoach, a former coworker and a Preempt developer, use of the drug may someday make the concentrations of the pathogens "so low that they aren't important."

Last week, orders to purchase Preempt began flooding MS Bioscience of Dundee, Ill., which is licensed to market the drug. By Friday, notes DeLoach, the company's vice president, "I had more orders than I can fulfill in the next 10 months." The customers include "large poultry integrators," he said, "who want to try our product on their entire complex—millions of chickens." In Japan, where the drug has been available for more than a year, customers are equally divided between those who raise chickens for meat and for eggs.

Indeed, for coping with *Salmonella* in chickens and eggs, "this [drug] looks like the best available option," notes Donald J. McNamara, executive director of the Egg Nutrition Center in Washington, D.C.

Poultry doesn't provide the only market for bacterial treatments, Corrier observes. His group is trying out a swine-tailored mix on newborn pigs, and a third assortment is under development for calves.

"Ultimately, this is going into humans," DeLoach predicts. It may take 5 to 7 years to clear the FDA hurdles, he says, "but there's no question that we can come up with a [mix] for humans that can be used to alleviate all sorts of intestinal imbalances," such as those that can occur when therapeutic antibiotics wipe out many of the good bacteria in the gut. —*J. Raloff*

Science Talent Search has new sponsor

The competition was fierce, but a winner finally emerged from the pack. The Science Talent Search (STS), a 57-year-old contest in which U.S. high school seniors annually display their scientific prowess and promise, welcomed a new title sponsor last week.

Holder of the coveted designation is Santa Clara, Calif.–based Intel Corporation, the world's largest maker of computer chips.

Science Service, the nonprofit organization in Washington, D.C., that publishes SCIENCE NEWS, has administered the STS since its inception—until now in partnership with the Westinghouse Foundation.

"Science Service looks forward to continuing this great tradition of excellence and commitment to nurturing young scientific talent in its new partnership with Intel," said Ann Korando, director of development and public affairs at Science Service.

Intel sought to establish its new affiliation with the STS in order to carry into the next century the accomplishments of a program that it considers a "national treasure." Says Gordon E. Moore, chairman emeritus of Intel, "We are committed to finding ways to bring the program—the country's most prestigious science competition—to more students, teachers, and schools."

Seventy-six companies from around the world contacted Science Service about the opportunity to become the new title sponsor of STS. All of the organizations that were considered have been invited to collaborate with Intel in supporting future STS competitions.

The STS provides a prestigious forum in which high school students active in scientific and mathematical research exhibit their projects, win national recognition, and attract the attention of leading universities (SN: 3/14/98, p. 165). More than 1,500 students entered this year's competition. The 40 finalists received college scholarships ranging from $1,000 to $40,000.

Intel also sponsors the International Science and Engineering Fair, which is administered by Science Service.