Boom in 'cute' baby dinosaur discoveries

More than 70 million years ago, flood waters swept through a nest and cracked open two eggs containing tiny dinosaur embryos, spilling the partially formed animals onto the floor beside their still-intact siblings.

Found last year in southern Alberta, the fossilized remains of these animals, belonging to the genus *Hypacrosaurus*, are part of a baby boom in dinosaur studies. Last week, at the 49th annual meeting of the Society of Vertebrate Paleontology in Drumheller, Alberta, scientists reported they are beginning to uncover scores of baby dinosaur fossils, which are helping unravel clues concerning the growth and nurture of these behemoths from Earth's Mesozoic age.

"The dinosaur sessions [at the meeting] were dominated by babies, which is the first time this has happened," says Philip J. Currie, associate director of the Tyrrell Museum of Paleontology, which hosted the conference.

Fossil hunters have collected dinosaur bones for centuries, but only in the last few years have researchers started discovering a wealth of eggs and bones of baby dinosaurs. "People didn't see them and they were everywhere," says Currie. Now, he says, "knowing what the babies look like and what the eggs look like, people are starting to find them."

Researchers from Tyrrell discovered the embryonic hypacrosaur in the Devil's Coulee of the Milk River geologic formation. Hypacrosaurs walked slightly erect on their hind legs and sported a crest of hollow bone atop their heads. While adults typically grew to a length of about 30 feet, the embryos measured only about 1½ foot from head to tail and fit into 7-inch-long eggs. The group has discovered several more nests – one containing 21 eggs – in the same area.

Currie reports that the embryos display some unexpected characteristics. Most animals are born with disproportionately large heads while the rest of the body has a shape similar to that of an adult. As expected, the hypacrosaur embryos had large heads – yet they also had relatively long arms and legs, says Currie, who worked on the project with John R. Horner of the Museum of the Rockies in Bozeman, Mont.

"The analogy is something like a baby horse that comes out and stands up right away," Currie says. This finding has confused him because evidence suggests that hypacrosaurs and other members of the hadrosaurid family apparently nurtured their young. Horner has found hadrosaur nest sites in Montana that show hatchlings remained in the nest and received food from attentive parents in a manner similar to birds.

Currie also reports that some surfaces on the embryos' teeth are worn smooth, indicating hypacrosaurs ground their teeth while within the egg. This finding disproves earlier suggestions that worn teeth could serve to identify animals that had already hatched. In general, the babies will help scientists understand how hypacrosaurs grew – information important to the debate of whether dinosaurs were warm- or cold-blooded.

In a separate talk, Horner amused conferees by presenting evidence that dinosaur babies may have been "cute." Behavioral scientists have suggested that in some species, parental care is inspired by neotony – the retention of immature features by juveniles. Humans and dogs, for instance, have small noses or snouts throughout much of early life, an example of a neotonous developmental trait that humans, at least, perceive as cute.

Reptiles, which typically do not receive parental care, are born with much more adult-shaped skulls. Yet the babies of hypacrosaurs and other dinosaurs apparently had "pushed-in" snouts until they reached a substantial size. This is interesting, Horner says, because these kinds of dinosaurs did nurture their young.

– R. Monastersky

Two Americans, Briton share medical Nobel

Black

Elion

Hitchings

Gertrude B. Elion was getting dressed at 6:30 a.m. Oct. 17 when a journalist called, congratulating the new Nobel laureate. "I said, 'You're kidding; this must be a joke,' " Elion recalls. "It took me a day before I really began to believe it."

But the telegram from the Karolinska Institute in Stockholm confirmed that Elion would share this year's Nobel Prize in Physiology or Medicine with George H. Hitchings, her former co-worker at Burroughs Wellcome Research Laboratories in Research Triangle Park, N.C., and with Sir James W. Black of King's College Hospital Medical School in London. The Nobel committee cited the three scientists for "their discovery of important principles for drug treatment," creating a "rational" method for designing new compounds.

"It is the very first time scientists working on cancer treatment won the medical Nobel," says John Laszlo of the American Cancer Society in Atlanta.

Elion, 70, and Hitchings, 83, together set out in 1945 to discover how normal human cell growth differs from that of bacteria, parasites, viruses and cancer cells in hopes of finding ways to selectively kill disease-causing life forms in humans. Sticking to this idea, the scientists developed, over decades, treatments for leukemia, malaria, bacterial infections, herpes, gout, autoimmune diseases and transplant rejections.

In the early 1950s, Elion and Hitchings developed thioguanine and 6-mercaptopurine, which helped cure childhood leukemia. The first organ transplants became possible several years later when they created azathioprine, which today treats autoimmune diseases as well. In the early 1960s came allopurinol, a treatment for gout. In 1977, a team led by Elion developed acyclovir, the first effective herpes treatment. Other scientists applied the ideas of Elion and Hitchings in working with zidovudine (AZT), the only federally approved AIDS treatment.

Elion says she got a "high" from each drug discovery. "It's hard to choose among your children," she says. "Each drug was wonderful, each one rewarding. It's been rewarding all along."

Black, 64, was applauded for work on drugs that block receptor molecules on cells. In 1964, he engineered a drug, propranolol, that would bind to a so-called beta receptor, which normally responds to epinephrine and norepinephrine. Propranolol prevented the heart-stimulating effect of these hormones, reducing stress on heart disease patients. It is now used to treat heart attacks and other forms of heart disease, high blood pressure and migraines.

In 1972, Black identified a histamine receptor, H_2, key to gastric acid secretion. In 1975, he developed cimetidine, a receptor blocker that enables physicians to treat stomach and duodenal ulcers nonsurgically.

– I. Wickelgren