

Shell tells a tale of survival

Study of brachiopods indicates they weren't a predator's top pick

BY **ABBY VOGEL**
TIMES-DISPATCH STAFF WRITER

In the oceans, predators are constantly at war with prey. Members of the mollusk family, such as clams and snails, battle creatures that drill holes in their shells and devour the meat inside.

"It is not uncommon in modern seas that 25 percent or more of mollusks are done in by voracious drilling killers such as whelks and moon snails," said Michal Kowalewski, a geobiologist at Virginia Tech.

The same modern-day sea battle was believed to exist in prehistoric times. It constantly intensifies because predators learn to better identify and kill their victims and prey learn to better defend themselves.

Kowalewski and other researchers reported recently in the journal *Science* how one sea creature, the brachiopod, was frequently able to avoid being eaten. Ancient brachiopods look similar to modern clams (but are not related) and seem to have been innocent bystanders in this sea battle.

By studying the evolutionary battle that brachiopods fought 250 million to 550 million years ago, scientists can better understand what's going on in today's oceans.

A study led by Kowalewski examined more than 44,000 brachiopod shells from museum collections across the globe and found surprisingly few drill holes. The holes varied in size from a pinhole to straw size.

Scientists previously studied only modern mollusks or ancient brachiopods in a specific location or during a short time period.

"This study is one of the first and one of the most in-depth tests of escalation outside of mollusks. This is really one of the first large-scale and quantitative attempts to test this evolutionary arms race using brachiopods," said Rowan Lockwood, a paleobiologist at the College of William and Mary who was not involved in Kowalewski's study.

Fewer than 1 percent of the brachiopod shells from the beginning of the study period had drill holes, and only slightly more drill holes were found in later shells. This ramping up in the number of brachiopod drill holes over time was not as severe as the evolutionary escalation seen in modern mollusks.

Enemy sea creatures may have just mistakenly drilled brachiopods, Kowalewski's group concluded. The study suggests that brachiopods were only attacked when other, more meaty and nutritious creatures were unavailable.

Lockwood said brachiopods probably were not frequently eaten by the enemy because they are not as meaty as mollusks.

Brachiopods are comparable to clams in size and have a hinge, but that is where the similarities end. Brachiopods and clams also feed differently.

Even though brachiopods managed to survive predators in the ancient oceans and are still around, the majority died off in a mass marine killing more than 250 million years ago. Scientists are still debating why, Kowalewski said.

Contact Abby Vogel at (804) 649-6154 or avogel@timesdispatch.com

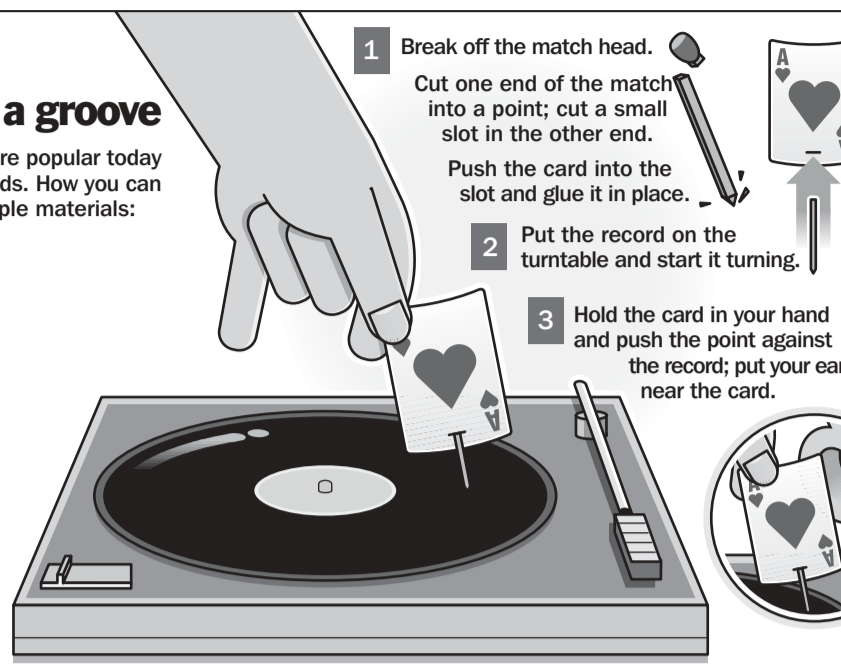
Try this

Sound from a groove

Tapes and CDs are more popular today than vinyl plastic records. How you can play a record with simple materials:

You'll need:

- Record player or turntable
- Wooden match
- An old record
- Index card or playing card
- Scissors
- Glue



Source: Hunkin's Experiments

What happened?

You can hear sounds on the record coming from the card.



A record has a waving groove that spirals from its outside to its inside.

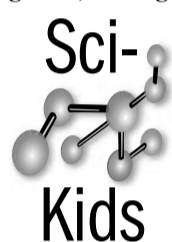
The groove makes tiny movements of the matchstick, which passes the vibrations along to the card.

KNIGHT RIDDER TRIBUNE

ELIZABETH MOORE - special correspondent

Man's best friend goes way, way back in time

Most of us have owned a dog or know someone who has. Dogs have served humans in many roles; as beasts of burden, companions, guards, hunting assistants and even food, as Lewis and Clark found out.



How long have humans and dogs had an intertwined history? Possibly a lot longer than you think.

Scientists have used dog remains from archaeological sites to

try to figure out how long dogs have been part of human cultures.

Archaeologists in Virginia have found dog burials at American Indian sites dating to about 700 years ago. Dogs actually had been in the Americas for thousands of years before Europeans arrived in the 16th and 17th centuries.

Using skeletal evidence, archaeologists generally accepted a date of 10,000 to 14,000 years ago for the appearance of the domesticated dog. Research using DNA analysis, however, indicates that the human/dog relationship may go back a lot longer than that.

An international team of geneticists studied DNA samples from

wolves, coyotes, jackals and 67 breeds of dogs. They were looking at genetic mutations. If there are few mutations separating the animals, then their common ancestor would be more recent. If there are a lot of mutations, then their common ancestor would be much longer back in time.

The geneticists found that 10,000 to 14,000 years ago was much too recent to account for the number of mutations they observed in the samples. They concluded that dogs may have been domesticated as long as 100,000 years ago.

There is some controversy surrounding this time frame, and some scientists think dogs were domesticated only 50,000 years ago.

A date of 100,000 years ago, or even 50,000 years ago, makes the dog the earliest domesticated animal — earlier than the cow, horse, sheep, goats and, yes, even cats. Cats have only been domesti-

On the Internet

- **Dog domestication and evolution:** www.nationalgeographic.com/expeditions/lessons/08/g912/dogsevolution.html
- **NOVA:** www.pbs.org/wgbh/nova/wolves

cated for about 5,000 years. Maybe this explains why they remain so aloof and independent no matter how many little furry mice you ply them with.

So, dog people, enjoy your friend, knowing that you are in a long line of dog lovers — a line almost as long as humanity itself.

Virginia Science Standards of Learning: K.9 a, b; 4.5 f; LS.13; LS.14; BIO; 2 b, e; BIO.6 e

Elizabeth Moore is the curator of archaeology and collections manager at the Virginia Museum of Natural History in Martinsville.

PHARMACY - joe graedon and dr. teresa graedon

Moral stance may conflict with a drug's benefit

A person recently wrote to you about pharmacists refusing to fill birth-control prescriptions because of their religious beliefs. You didn't mention that many women are prescribed birth-control pills for reasons that have little or nothing to do with actual birth control. Oral contraceptives are often prescribed for painful menstrual cramps and ovarian cysts, among other problems.

A. You raise an interesting issue. Many medications have multiple uses, and most people would be outraged if the pharmacist quizzed them about intimate details of their lives.

Pharmacists are divided on this

controversy. A recent survey from the pharmacy publication *Drug Topics* (June 1, 2005) found that only 13 percent feel that "the actions of a small group of pharmacists have given a black eye to the rest of the profession."

Many (31 percent) feel that those with moral concerns have "a legitimate right to refuse to dispense these products." Almost as many (30 percent) think that pharmacists who won't fill contraceptive prescriptions should refer patients to someone who will.

Q. I've been using Renova cream for wrinkles, and I wonder if using it in the summer will make my wrinkles worse.

We go to the beach once in a

while and go out in the sun every day. Should I stop using the cream in the summer?

A. The active ingredient in Renova, tretinoin, was originally developed as Retin-A to treat acne. Dermatologists discovered that this topical form of vitamin A also had the surprising side effect of smoothing fine wrinkles and reducing damage from sun exposure.

One problem with tretinoin is increased sensitivity to sunburn. A strong sunscreen, a hat and protective clothing are essential. Frequent sun exposure causes premature aging, reversing the benefits of Renova. Please discuss this issue with your dermatologist.

Q. I have a problem with flatulence. I haven't been able to find any pattern in what I eat that might cause this, so I'm looking to you for help. What can I do to avoid this embarrassing situation? Are there certain foods or

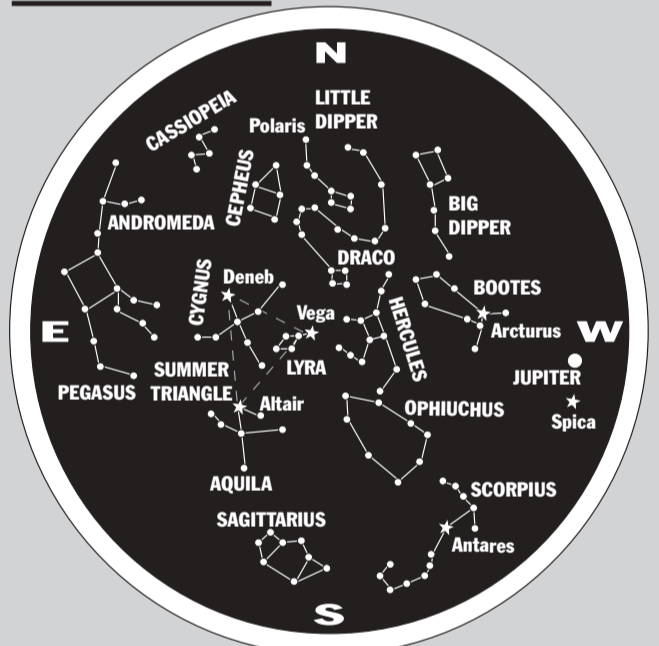
drinks I should avoid?

A. Some people are more susceptible to gas-producing foods. While beans are notorious, other foods, such as pretzels, bagels, broccoli and brussels sprouts, can be equally problematic. Milk sugar causes many people trouble. Such lactose intolerance often goes undetected because lactose is found in so many products, including pills.

Some readers report that natural products such as fennel-seed tea (1 teaspoon slightly crushed fennel seeds per cup of hot water) or Angostura bitters (found in the drink-mix section of the supermarket) can help with flatulence.

Joe Graedon is a pharmacist. Dr. Teresa Graedon is a medical anthropologist and nutrition expert. Write to them in care of King Features Syndicate, 888 Seventh Ave., New York, NY 10019 or e-mail them at peoplespharmacy@gmail.com or via their Web site at www.peoplespharmacy.org. © King Features

July 2005 Sky Watch



A monthly feature prepared by Ken Wilson of the Science Museum of Virginia.

To use the sky chart: The chart shows the brightest stars and planets that can be seen two to three hours after sunset. The edge of the circle represents the horizon, and the center is the point of the sky directly overhead. Hold the chart so that the direction you are facing is at the bottom.

■ **CONSTELLATIONS:** You'll find the Big Dipper, which has a flat bottom and bent handle, in the northwestern sky. Officially, the Big Dipper's seven stars belong to the much larger group known as the constellation Ursa Major, the big bear.

Follow the curve of the Big Dipper's handle away from the bowl to a star called Arcturus. Arcturus is the brightest star of Boötes, the herdsman. When connected, the stars of Boötes look like a kite. The tail attaches to the kite at Arcturus.

Other stellar symbols of the season are the three stars of the Summer Triangle (Vega, Deneb and Altair) high in the eastern sky. Brightest is Vega in the tiny constellation Lyra, the harp. Deneb anchors one end of a cross-shaped star pattern known as Cygnus, the swan. Lowest of the triangle stars, Altair, is the brightest star in Aquila, the eagle.

Two other important summer constellations lounge along the southern horizon. The hook-shaped constellation called Scorpius, the scorpion, has a bright reddish star called Antares. Following the scorpion to the left is the teapot-shaped arrangement of stars known as Sagittarius, the archer. From a dark location, you'll see what looks like a cloud of steam escaping from the teapot and stretching across the sky to the northeast. This fuzzy band of light is the Milky Way.

■ **PLANETS:** Venus is low in the west-northwest at the end of dusk. Mercury is low in the west-northwest right after sunset during the first half of the month. Look for Jupiter high in the west-southwest right after sunset. Mars rises in the east around midnight.

■ **CELESTIAL EVENTS:** Earth reaches aphelion (its farthest point to the sun) on July 5. Mercury and Venus are close together at dusk on July 6. Mercury reaches greatest eastern elongation on July 8. The moon is near Jupiter on the evening of July 13. On July 27, the moon is near Mars and the South Delta Aquarid meteor shower peaks.

■ **MOON PHASES:**
● New Moon, Wednesday, July 6 ● First Quarter, Thursday, July 14
● Full Moon, Thursday, July 21 ● Last Quarter, Wednesday, July 27

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TIMES-DISPATCH

Blood update

■ **Types needed:** All blood types and platelet donors are needed.

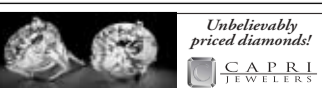
■ **Blood facts:** Blood shortages historically follow long holiday weekends. There is an immediate need for donations in the Richmond area before the Fourth of July holiday.

■ **For more details:** Call Virginia Blood Services at 359-5100, ext. 11, or visit www.vablood.org to schedule an appointment to donate.

Sunday's Parade



Share your world: Simple tips are offered to set up an on-line Web log.



Grove Ave.

Registration will begin a half-hour before each program. To register, call 254-9895 by tomorrow.

ABIL support group

Agoraphobics Building Independent Lives holds support-group meetings at different times and locations for people suffering from anxiety and panic disorders. For details, call 353-3964.

Medical-care decisions

"Medical Care Decisions — What You Need to Know" will be the topic of a free program on advance directives. The meeting is Tuesday from 10 to 11:30 a.m. at Bon Secours St. Mary's Hospital, 5801 Breemo Road, in the education center auditorium. To register, call 627-5010.

Menopause program

"Has Anyone Seen My Hormones? Finding the Best Health Strategies for Menopause and Beyond" will be the topic of a program Tuesday at 5:30 p.m. and again at 7:30 p.m. in the boardroom at Retreat Hospital, 2621

mendedh/meetings.html.

Gluten intolerance

The latest information on gluten intolerance will be the topic of the West End Gluten Intolerance Group meeting next Thursday at 7 p.m. at Trinity United Methodist Church, 903 Forest Ave.

For details, call Madelyn Smith at 968-4111 or e-mail twe-gig@comcast.net.

Free massages

ShawnMarie Kerley, a certified massage therapist with Whole-Is-tics Health in Powhatan County, is offering free care to cancer patients. They can receive up to one

hour of massage care per month with a doctor's written referral and prescription. She also will offer a free mini-massage-care class to a friend or family member of someone with muscular dystrophy. The individual must be willing to perform massage care at least three times per week on the muscular-dystrophy patient.

A doctor's referral also is needed to qualify for this type of massage care.

For details, call ShawnMarie Kerley at 677-0805.

Items for Health Notes should be sent at least one week before publication. They can be sent to Pauline Clay, Richmond Times-Dispatch, P.O. Box 85333, Richmond, VA 23293 or e-mailed to tdhealthnotes@timesdispatch.com.

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