

## DOGS, LIKE HUMANS, DISTINGUISH WORDS AND INTONATION



**BUDAPEST:** Some trained dogs involved in a study to investigate how dog brains process speech sit around a scanner in Budapest, Hungary. Scientists have found that dogs use the same brain areas as humans to process language. — AP

**WASHINGTON:** Dogs distinguish words and intonation in the same region of the brain as humans, according to a new study of how man's best friend interprets our language. Published Monday in the journal *Science*, the report by researchers at Budapest's Eotvos Lorand University shows the canine brain is capable of interpreting both what we say and how we say it.

Dogs, like humans, use the brain's left hemisphere to interpret words and regions of the right hemisphere to analyze intonation. The brain's pleasure center is activated only when words of kindness and praise are accompanied by the appropriate intonation, the researchers determined. The observations suggest that the neural mechanisms for processing words evolved much earlier than previously believed and that they are not unique to the human brain.

In surroundings with many spoken words such as a family home, understanding of word meanings can develop even in the brains of animals unable to speak, the study shows. "The human brain not only

separately analyzes what we say and how we say it, but also integrates the two types of information, to arrive at a unified meaning," says Attila Andics, a research fellow at Eotvos Lorand University. "Our findings suggest that dogs can also do all that, and they use very similar brain mechanisms," a discovery that could help facilitate communication and cooperation between dogs and humans.

The scientists studied thirteen dogs who remained lying still while a brain scanner measured their brain activity as they listened to their owners speak. They found the dogs would activate an area of the right brain to distinguish between intonation signaling kindness and neutral tones. The researchers had already identified that the same part of dogs' brains interprets non-verbal sounds that elicit emotions. The same area of the human brain plays a similar role, suggesting that the mechanisms for interpreting intonation aren't specific to speech. "What makes words uniquely human is not a special neural capacity, but our invention of using them," the scientists said. — AFP

## FREE SCHOOL MEALS IN BRAZIL HELP LOCAL FARMERS STAY ON THE LAND

### WORLD'S BIGGEST UNIVERSAL SCHOOL FEEDING PROGRAM

**BRASILIA:** At an elementary school in Brazil's capital, students are not too concerned about who has produced their food as they tuck into an afternoon snack of pineapple and watermelon. Nevertheless, they are among 45 million students benefiting from the world's biggest universal school feeding program, whose meals are helping keep Brazil's small farmers on the land. Family farmers and cooperatives have seen their fortunes rise as a result of the program, which guarantees them a local market and has helped to expand formal land rights nationwide.

"Incomes have increased significantly because of it," Amanda Venturim, agricultural adviser to a cooperative of 56 small farmers outside Brasilia, told the Thomson Reuters Foundation. "The government makes a contract with us beforehand so farmers know how much food they need to produce and how much they will receive," said Venturim, standing beside vast grain elevators on the dry savannah land that surrounds the capital. The cooperative has been selling food to the government for school meals for three years, she said, enabling farmers to invest in new equipment and to retain control of their land.

#### Local preference

First developed in the 1950s, Brazil's school feeding initiative has expanded rapidly over the past decade as part of a successful push for "zero hunger" in Latin America's most populous country. About a quarter of Brazilians receive free meals under the program as it provides food to all of the country's students enrolled in government schools. Brazil has about five million small farms, according to the UN's Centre of Excellence Against Hunger in Brasilia.

These farmers are some of the prime beneficiaries of hundreds of millions of dollars of government spending on school meals.

A 2009 law stipulates that authorities must spend at least 30 percent of their school meal budget on produce from smallholder farmers. At the elementary school in south Brasilia, nutritionist Sumara de Oliveira Santana said the law is helping farmers to stay on the land because it encourages local production. "Smallholder farmers and local producers have priority when we buy food for the schools," Santana told the Thomson Reuters Foundation, as she supervised several dozen rowdy students during snack break. For their part, the kids were not too concerned with the details of land politics. "Pineapple is my favorite fruit for a snack," said seven-year-old Anderson Souza. "For lunch I like meat, but I don't know where all the food comes from."

#### Landed farmers

Most of Brazil's food - about 70 percent of what's consumed in the country - comes from small farmers, according to the UN. About three-quarters of these small farms are owned by farmers who have official land title deeds, according to government data. Access to a guaranteed market through the feeding program allows small farmers to keep control of their land, Venturim said. Farmers say they now know roughly how much they will be earning each year and can apply for credit and other government support due to their participation in the initiative. It means they don't have to migrate to cities in search of work, unlike many farmers in the developing world who leave their land in the hopes of earn-

ing more in the city. The program also helps farmers make decisions on investing in new seeds or technology because they can plan ahead on what crops they will grow by liaising with nutritionists like Santana.

#### Unique link

Across Brazil, more than one million small farms have no formal land title deeds, according to official data. These farmers simply occupy the land where they produce or live in settlements with no formal title, but even they benefit from the program. Having a direct relationship with the state through the school feeding program helps small farmers and cooperatives to gain formal ownership over their land. Many farmers who work with Venturim on the cooperative farm lease public land from the state, but they use their earnings from school meal contracts as a springboard to gain title deeds. "We have a process going to receive final land titles," Venturim said. "Now, we have a concession, but we would rather be owners."

Formal title deeds can be difficult for small farmers to obtain; the process for formalizing land claims has been criticized as expensive, time-consuming and bureaucratic. As Brazil is mired in political crisis and suffers its worst recession since the 1930s, analysts see the school feeding program and its support for small farmers' land rights as a rare public policy bright spot. "We believe this is an excellent example for other countries," Isadora Ferreira, a UN official who monitors the program, told the Thomson Reuters Foundation. "The link with smallholder farmers is unique." — Reuters



**CALIFORNIA:** A Northern Spotted owl sits on a branch in Point Reyes, Calif. Wildlife officials say the northern spotted owl has been listed under the California Endangered Species Act. The state's Fish and Game Commission voted unanimously to add the threatened bird to the list, ending a four-year process by the Environmental Protection Information Center, or EPIC. — AP

## CANADA LEADER TOUTS AGRICULTURAL SAFETY AMID CHINA CANOLA DISPUTE

**BEIJING:** Canadian farm goods are high quality and safe, Prime Minister Justin Trudeau said in Beijing yesterday as his trade minister said Canada was working hard to resolve a canola import dispute that threatens C\$2 billion (\$1.5 billion) in business. Trudeau is seeking deeper ties with China but a the canola spat, government divisions over China policy and the case of a detained citizen could limit his gains.

China is Canada's top export market for the oilseed, and Ottawa has taken an increasingly strong line in talks on a new standard, which industry participants say would significantly raise costs for exporters. China says the standard is necessary to prevent the spread of blackleg disease from Canadian canola into Chinese crops of rapeseed, another name for the agricultural commodity.

Speaking to Chinese entrepreneurs shortly after landing in Beijing, Trudeau said Canada had always had a reputation as a safe, clean and responsible country. "In our agriculture, we use high-quality products and we create high-quality products and goods," Trudeau said, without making direct reference to the canola dispute. Trade Minister Chrystia Freeland told reporters after Trudeau's speech that Canada had made very clear what a key issue canola is. "This is a big deal for Canada," she said. Canola is the country's

second-largest trading product with China.

Canada's canola farmers are close to harvesting this year's crop, and Freeland said the government was "working really hard" to keep the China market open and find a resolution. Chinese officials in Ottawa have said the two countries were having "positive consultations" and the issue could be "resolved properly through joint efforts". Under the new standard, China will allow no more than 1 percent of foreign matter per canola shipment, down from a current maximum of 2.5 percent. There has been no reply to a request for further information or comment to China's quarantine authority, the agency that formulated the new standard.

Traders have suggested that China's real reason for a higher standard is that its domestic rapeseed oil stocks are high. Beijing sold 2.8 million tons of rapeseed oil from state reserves in the first half of the year, reducing import demand. Trudeau, who meets Chinese Premier Li Keqiang today, has also said he will raise human rights, an issue of great sensitivity in Beijing. Ottawa is pressing the case of Canadian citizen Kevin Garratt, who was indicted on charges of spying and stealing state secrets earlier this year. Yesterday, China's state-run Xinhua news agency said Canada should not let "groundless concerns" about human rights stand in the way of cooperation. — Reuters



**CARTERTON:** Cows stand in a pen before they are milked on a dairy farm near Carterton, New Zealand. New Zealand police said yesterday, that they were investigating reports of the unlikely crime at a South Island farm. Locals said 500 milking cows could have been taken from the herd of 1,300 anytime between early July, when they were last counted, and late August. The stolen cows are worth about 750,000 New Zealand dollars (\$543,000). — AP

## IRAN GOVERNMENT TO COVER INFERTILITY TREATMENT COSTS

**TEHRAN:** Iran will help couples meet the cost of infertility treatment as the government tackles a growing crisis that has seen millions of couples failing to conceive, the government announced yesterday. "As of today, all infertile Iranian couples, who number about two million couples, can enjoy the coverage of their expenses," ISNA news agency quoted deputy health minister Mohammad Aghajani as saying. State insurance will cover 85 percent of the costs, he said the first time infertility treatments have been covered-and the government has allocated around \$30 million (27 million euros) for the project. Experts believe infertility has been on the rise in Iran, and say Iran's worsening pollution is a key cause.

A study in 2012 found that 20 percent of couples were failing to conceive after trying for a year-putting the country around five to eight percentage points higher than the global average reported by the World Health Organization. Supreme leader Ayatollah Ali Khamenei has called for efforts to increase the population, currently 80 million. In recent years family

planning budgets have been cut and prevention methods like vasectomies have been banned. A growing number of clinics offer in-vitro fertilization (IVF) — fertilizing a sperm and an egg in a lab-but a cycle of treatment can cost around \$2,000, around five months' wages for the average worker, and success is not guaranteed.

Iran has a broadly progressive attitude to modern medicine, and some of the most advanced facilities in the Middle East, but such treatments remain a sensitive issue. As well as social taboos, Iranians must contend with varying instructions from religious leaders. It is illegal, for instance, to directly insert into a woman the sperm of a man who is not her husband. Using another woman's eggs is less controversial, although a "temporary marriage" is recommended between the man and female donor that can be annulled after the operation. There is a grey area, however, since some clerics say an egg that has already been fertilized in a lab-even with a third party's sperm-is considered to have its own identity and can therefore be implanted into the womb. — AFP

## GOODBYE, HERRING? BIOTECH BAIT GIVES LOBSTERMEN ALTERNATIVE

**PORTLAND:** Lobster and crab fishermen have baited traps with dead herring for generations, but an effort to find a synthetic substitute for forage fish is nearing fruition just as the little fish are in short supply, threatening livelihoods in a lucrative industry. With about \$1 million in funding from the National Science Foundation, a small company has developed "OrganoBait," a hockey puck-shaped product packed with an artificial attractant crabs and lobsters love. Commercial fishermen have long experimented with alternative baits. They have tried other fish species, processed slabs of horseshoe crab, even cow hide and pigs feet. Some products remain on the market; many have gone quickly.

No one has made commercially successful synthetic bait, and even animal-based alternatives don't always gain market acceptance, said Bob Bayer, a professor of veterinary science at the University of Maine who studies lobsters and has worked on attractants for 30 years. "If somebody comes up with a good one, it will be used," Bayer said. "If it's effective and cost effective." The lobster catch has been booming, but the fleet is suffering the most acute bait shortage facing the fishing industry. Lobster traps typically are baited with herring. However, not enough herring are being caught in the waters far off New England. If prolonged, experts say, the shortage could raise

the price and reduce the availability of lobsters and crabs.

Development of synthetic baits could cut into the \$20 billion US bait fishery, which dates to the Colonial era and plays a role in some other commercial fisheries, as well as in food products and nutritional supplements. Fishermen caught more than 200 million pounds of herring and 1.2 billion pounds of menhaden in 2014. New England fishing managers are guiding the industry through a shortage of herring offshore by limiting the number of days they can fish closer to the coast. Without the restrictions, officials say, fishermen would be at risk of exceeding quotas the government establishes to protect fish species from over-exploitation.

OrganoBait, developed by the Greensboro, North Carolina, firm Kepley Biosystems, is different from other alternative baits. It's not an animal product, but instead a calcium-based tablet made with synthetic materials that replicate the smell of decaying fish to attract lobsters and crabs. Kepley president Anthony Dellinger said the product could take pressure off forage fish, which some environmentalists say need protection. "This is an area that can benefit from some science and technology," Dellinger said. "You can just eliminate the bait sector and it will be more fish in the ocean. Less impact on sea turtles, dolphins, all of the cute little critters."

The product has been tested with blue crab fishermen off Virginia and North Carolina since 2014 and with New Jersey blue crab fishermen and Florida stone crab fishermen since last year. There was also a pilot test with lobster fishermen in Nova Scotia, and an extensive test is scheduled for November. In coastal Virginia, blue crab fisherman Malcolm Luebker is one of a handful of fishermen testing out the synthetic bait, and he said he's bracing for a future when bait fish shortages become the norm. So far, he said, the synthetic alternative seems effective. "When menhaden becomes scarce, we need an alternative, and we need one that's good," he said.

Mark Pfister, a bait dealer who intends to sell OrganoBait in Florida once it is on the market, said the early returns on stone crabs are promising. The price point for the product has not been determined, though Dellinger said it will be priced competitively with bait fish, which can cost about 30 cents per pound. "There have been baits out before, but they've all failed," Pfister said. "This one looks like it's not going to fail." Getting fishermen on board will present challenges. Stephen Train, a lobster fisherman based in Long Island, Maine, said he's more inclined to suffer high prices and volatility in bait fish availability than take a chance on an unproven alternative. "I don't know if it would fish," Train said. — AP