SCIENCE CENTRE NEWS LETTER

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SCIENCE CENTRE

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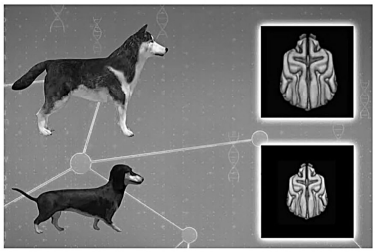
WHAT'S NEW IN SCIENCE?

How humans have shaped dog's brains?

Dog brain structure varies across breeds and is correlated with specific behaviors, according to new research published in JNeurosci. These findings show how, by selectively breeding for certain behaviors, humans have shaped the brains of their best friends.



Over several hundred years, humans have selectively bred dogs to express specific physical and behavioral characteristics. Erin Hecht and colleagues investigated the effects of this selective pressure on brain structure by analyzing magnetic resonance imaging scans of 33 dog breeds. The research team observed wide variation in brain structure that was not simply related to body size or head shape.

The team then examined the areas of the brain with the most variation across breeds. This generated maps of six brain networks, with proposed functions varying from social bonding to movement that were each associated with at least one behavioral characteristic. The variation in behaviors across breeds was correlated with anatomical variation in the six brain networks. Studying the neuronanatomical variation in dogs offers a unique opportunity to study the evolutionary relationship between brain structure and behavior.

Courtasy: J.H.B. Sardar Primary English School

SCIENTIST OF THE MONTH

Dr. Murli Manohar Joshi

Dr. Murli Manohar Joshi was born on January 5, 1934. He did his Masters in Science from the Allahabad University. He did his Ph.D also from the Allahabad University.

Both physicist and politician, Prof. Murli manohar Joshi joined R.S.S(Rashtriya Swayamsevak Sangh) at the age of ten (10) in 1944. He was elected as a member of lok sabha in 1977, 1996 and 1998. He was elected as a member of Rajya Sabha in 1992.

A Professor in physics and specialist in Spectrograph, Professor Joshi has to his credit the publishing of over 100 research papers in scientific journals. He contributed about 100 articles in journals and books. He was the professor and the Head of the Department of Physics in Allahabad University. Professor Joshi is an Honorary member, International Academy of Ecology, Man and Nature Protection Science, 2001. He was conferred the knighthood of Art, Culture and Science by the Russian Academy of Natural Science in 2001.

Courtasy: J.H.B. Sardar Primary English School

KNOW THE PARK EXHIBIT

Bird in a Cage

Turn the handle slowly. You will find picture of a bird printed on one face and picture of an empty cage on the other face of the board. Turn the handle very fast. You will now see only one picture - the bird perched inside the cage.

The retina of our eyes holds an image for about one sixteenth of a Second. If another is cast on the retina within this period, both images get mixed up and we see the combined image of the two.

SCIENCE FACTS JANUARY 2020

2 Jan 1822	German Physicist Rudolph J. E. Clausius (Who researched Thermodynamics) was born.
2 Jan 1959	Soviet Union launched first man made Satellite "Lunik - 1".
4 Jan 1643	Sir Isaac Newton, great Physicist, Mathematician and Astronomer (who invented Newton's Law of Motion) was born.
4 Jan 1797	German astronomer Wilhelm Beer (who made the first moon map) was born
4 Jan 1809	Louis Braille (inventor of a reading system for the blind) was born.
5 Jan 1859	Dewitt B. Brace (inventor of the spectrophotometer) was born.
5 Jan 1900	Physicist, Dennis Gabor (inventor of holograph) was born.
7 Jan 1610	Galileo observed first time Jupiter and its four moons with telescope.
8 Jan 1942	English Physicist Stephen Hawking (who first revealed Black Holes and Baby Universes) was born.
10 Jan 1877	Frederick Gardner Cottnell (who invented the electrostatic precipitator) was born.
12 Jan 1899	Swiss Chemist, Paul H. Muller (who perform the first open heart surgery) was born.
15 Jan 1759	"The British Museum" world's oldest and biggest museum was opened for the people.
19 Jan 1736	James Watt (Inventor of Steam Engine) was born.
21 Jan 1743	John Fitch (who invented steam boat) was born.
21 Jan 1921	Barney Clark (who was the first person to receive a permanent heart) was born.
21 Jan 1954	America launched its first Atomic power operated Submarine named "Nautilus"
24 Jan 1880	Elisabeth Achelis (who invented the world calendar) was born.
25 Jan 1627	Robert Boyle (who wrote Boyle's Law of Ideal Gases) was born.
27 Jan 1834	Dmitri Mendeleev (who invented the periodic table of the elements) was born.

Answer : 1) A, 2) B, 3) C, 4) A, 5) C .

SCIENCE CENTRE SCS SURAT

Timings

Tuesday to Friday
9.30 am to 4.30 pm

Saturday - Sunday & Public Holidays
11.00 am to 6.30 pm

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बहुजनहिताय बहुजनसुखाय

SCIENTIFIC QUESTION

How does a Refrigerator work?

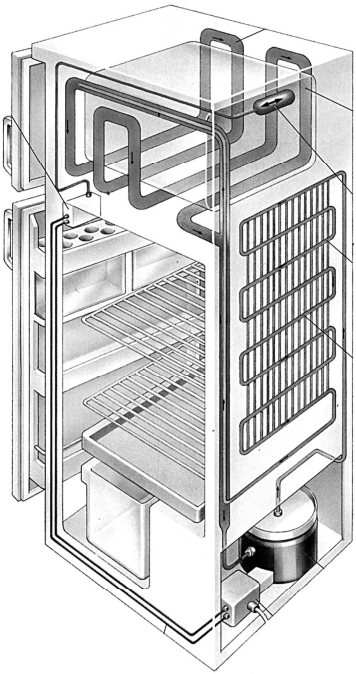
To put it simply there are 3 steps by which a refrigerator or a fridge works:

1. Cool refrigerant is passed around food items kept inside the fridge.

2. Refrigerant absorbs heat from the food items.

3. Refrigerant transfers the absorbed heat to the relatively cooler surroundings outside.

Although there were techniques that people used in ancient times to get their fill of cold water, they were certainly not as easy as opening a door of fridge at home and taking out a bottle of ice-cold water. Even if they could get cold water to drink, they certainly didn't have anything that could make their food stay fresh for days or even weeks on end. Fortunately, we have a little something that does all of these things for us a refrigerator.



• Refrigerator working principle

The working principle of a refrigerator is very simple : it involves the removal of heat from one region and it's deposition to another. When you pass a low temperature liquid close to objects that you want to cool, heat from those objects is transferred to the liquid, which evaporates and takes away the heat in the process.

You may already know that gases heat up when you compress them and cool down when they are allowed to expand.

• Parts of a Refrigerator:

A refrigerator consist of a few key components that play a vital role in the refrigeration process :

• Expansion valve

Also referred to as the flow control device. An expansion valve controls the flow of the liquid refrigerant into the evaporator. It's actually a very small device that is sensitive to temperature changes of the refrigerant.

• Compressor

The compressor consist of a motor that 'suck in' the refrigerant from the evaporator and compresses it in a cylinder to make a hot, high pressure gas.

• Evaporator

This is a part that actually cools the stuff kept inside a refrigerator. It consists of finned tubes that absorb heat blown through a coil by a fan. The evaporator absorbs heat from the stuff kept inside the refrigerator and as a result of this heat, the liquid refrigerant turns into vapor.

• Condenser

The condenser consists of a coiled set of tubes with external fins and is located at the rear of the refrigerator. It helps in the liquefaction of the gaseous refrigerant by absorbing its heat and subsequently expelling it to the surroundings.

As the heat of the refrigerant is removed its temperature drops to condensation temperature and it changes its state from vapor to liquid.

• Refrigerant

Also commonly referred to as the coolant, it's the liquid that keeps the refrigeration cycle going. It's actually a specially designed chemical that is capable of alternating between being a hot gas and a cool liquid.

Courtesy: J.H.B. Sardar Primary English School

SCIENCE QUIZ

1. What is the full from of ASLV ?

a) Augmented Satellite launch Vehicle
b) Automatic Satellite Launch Vehicle
c) Aero Space Launch Vehicle
d) Area Satellite Launch vehicle.

2. Where is the Head quarter of ISRO ?

a) Chandipur b) Bengaluru
c) Mahendragiri d) Chennai

3. Which planet has a Situation like pressure cooker ?

a) Jupiter b) Mar c) Venus d) Mercury

4. If the radius of the earth is reduced by half, then the day-night on the earth would be of

a) 6 hrs b) 12 hrs c) 18 hrs d) 36 hrs

5. Which disease of plant is known as ring disease ?

a) CitrusCanker b) Black arm of cotton
c) Wilt of Potato d) None of the above

SCIENCE PROJECT

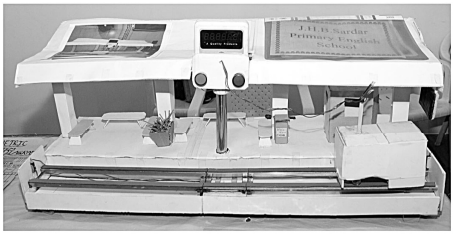
Surat Municipal Corporation had organized 'Science Fair' at Art gallery, Science Centre, Surat on 30st and 31st August 2019. J.H.B. Sardar Primary English School had presented their project on 'Weigh in Motion'.

Wight in Motion (WIM) is the process of weighing Tires of axels at normal roadway Speeds. WIM system Consist of sensors embedded on the pavement surface and a data acquisition system. Sensors signals in to weight.

This project is fabricated to measure the weight of the vehicle in the motion (WIM). For this installed a load cell under the rail strips platform to get the reading of the Weight in motion, D.C motorized vehicle was installed. When the vehicle passes through the load cell platform the load cell measure the force implied on it and generate electrical signals. These electrical Signals are amplified and converted in to digital signals. The controller further processes the signals and compares this with its pre stored calibrated data for overweight and underweight condition. At the end of this process it displays the result to LED Seven Segments display.

Advantages :

- Pavement design Monitoring and Research
- Bridge design moderating and Research
- Size and Weight enforcement
- Legislation and Regulations
- Administration and Planning



SCIENCE CENTRE

Science Centre forms the main part of the entire complex; it displays thematic galleries in the field of Science and Technology. The ground floor of Science Centre showcases 3D Theatre and Souvenir Shop. The first floor of Science Centre showcases Planetarium, Fun Science Gallery and Power of Play Gallery and second floor of Science Centre showcases Diamond Gallery, whereas Entering into Space & Astronomy Gallery will be opening soon

3d Show	Tuesday to Friday (Time)	Saturday, Sunday & Holidays (Time)
English	09:15, 11:20, 12:00, 02:40, 04:00	11:20, 12:00, 02:40, 04:00
Hindi	10:00, 10:40, 12:40, 01:20, 02:00, 03:20	12:40, 01:20, 02:00, 03:20, 04:40, 05:20, 06:00

Science Centre + Planetarium + Museum + Diamond Gallery	
Above 18 Years	Rs. 100
3 Years to 18 Years	Rs. 65
Science Centre + Museum + Diamond Gallery	
Above 18 Years	Rs. 60
3 Years to 18 Years	Rs. 40
Science Centre + Planetarium + Museum + Diamond Gallery + 3D Show	
Above 18 Years	Rs. 120
3 Years to 18 Years	Rs. 80
Planetarium	
Above 18 Years	Rs. 50
3 Years to 18 Years	Rs. 40
3D Show	
Above 18 Years	Rs. 60
3 Years to 18 Years	Rs. 40

Planetarium

Tuesday to Friday		Saturday, Sunday & Public Holidays	
09:30 to 10:20	English	11:30 to 12:20	Gujarati
10:30 to 11:20	Gujarati	12:30 to 01:20	English
11:30 to 12:20	Gujarati	01:30 to 02:20	Hindi
12:30 to 01:20	English	02:30 to 03:20	Hindi
01:30 to 02:20	Hindi	03:30 to 04:20	Gujarati
02:30 to 03:20	Hindi	04:30 to 05:20	English
03:30 to 04:20	Gujarati	05:30 to 06:20	Gujarati