

SCIENCE CENTRE NEWS LETTER

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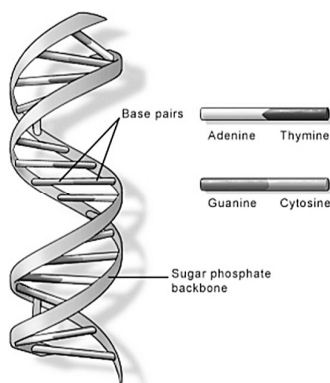


SCIENCE CENTRE

WHAT'S NEW IN SCIENCE

New software can verify someone's identify by their DNA in minutes

Researchers at Columbia University, New York and the New York Genome Center have developed a method for quickly and accurately identify people by identifying cell lines from their DNA. The technology could have multiple applications, from identifying victims in a mass disaster to analyzing crime scenes. But most immediate use could be to flag mislabeled or contaminated cell lines in cancer experiments.

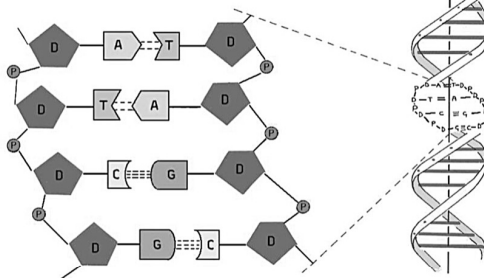


"Our method opens up new ways to use the technology to benefit society", said the study's senior author Yaniv Erlich, a computer science professor at Columbia Engineering.

The software is designed to run on the MinION, an instrument of the size of a credit card that pulls in strands of DNA through

its microscopic pores and reads out sequences of nucleotides, or the DNA letter A, T, C, G. In an innovative two-step process, the researchers first use the MinION to sequence random strings of DNA, from which they select individual variants, which are nucleotides that vary from person to person and make them unique. Then, they use a Bayesian algorithm to randomly compare this mix of variants with corresponding variants in other genetic

profiles on file. With each cross-check, the algorithm updates the likelihood of finding a match, rapidly narrowing the search. Tests show the method can validate an individual's identity after cross-checking between 60 and 300 variants. Researchers call this re-identification technique 'MinION Sketching'.



Courtesy : St.Thomas Higher Secondary English Medium School

SCIENTIST OF THE MONTH

Har Gobind Khorana

Har Gobind Khorana was born on January 9, 1922 at Raipur in Punjab. He obtained his B.Sc., M.Sc. from Punjab University, Lahore. He got his Ph.D. in 1948 from Liverpool. Har Gobind Khorana is one of the renowned biochemists of the world. In 1968, his contribution in the genetic research on the interpretation of the genetic code earned him a Nobel Prize, which he shared with Robert W. Holley and Marshall Nirenberg. In 1970, he joined the Massachusetts Institute of Technology as 'Alfred



P. Solan Professor on Biology'. Dr Khorana visited India in 1969 and was awarded the Padma Bhushan by the Government of the India. He has written about 300 papers on the subject of Genetic Research. He got American Academy Achievement Award in 1971, William Gibbs Medal in 1974 and National Medal of Science in 1987 from President Ronald Reagan. Khorana died of natural causes on 9 November, 2011 in Concord, Massachusetts, aged 89.

Courtesy : St.Thomas Higher Secondary English Medium School

SCIENCE FACTS JANUARY 2017



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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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 Cottrell (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.

Answers: 1.D 2.C 3.A 4.C 5.C

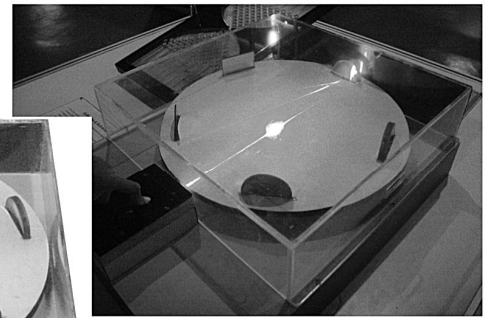
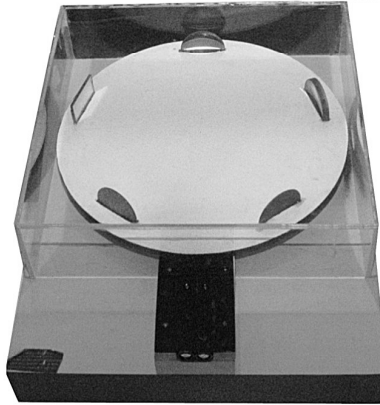
KNOW THE EXHIBIT AT FUN SCIENCE GALLERY

Reflection and Refraction

Press the switch turn the disk slowly and observe how parallel rays travel through different optical devices.

Reflection: Reflection of light is the return of the ray of light after strike on the object's surface. Reflection is the change in direction of a wave front at an interface between two different media so that the wave front returns into the medium from which it originated. Observe how plane mirror reflects light and how rays diverge after reflecting from convex mirror and how they converge after reflecting from concave mirror.

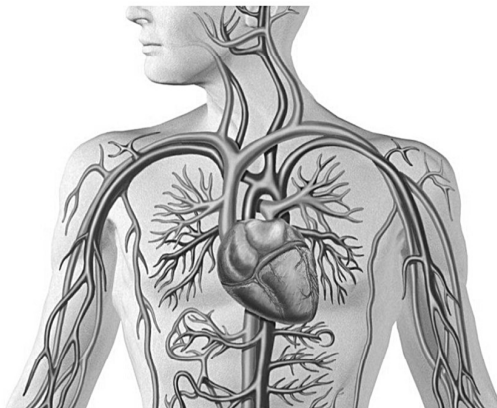
Refraction : When light changes medium it bends, this property is called Refraction. In different medium light bends differently, a Convex lens converges parallel rays to a point called its Focus. Concave lens make parallel rays diverge.



SCIENTIFIC QUESTION

WHAT IS THE IMPORTANCE OF BLOOD?

Each and every part of our body requires blood for its life. Blood is composed of many different materials and cells. It is the fluid part of the blood, called the 'Plasma', which contains these materials. Carbohydrates, such as sugars, dissolved in the blood, give the body energy. Fats and salts are also there in the blood to meet the body's needs. The blood plasma carries food from the stomach and intestine to the cells. It also carries waste from the cells to the kidneys and the intestine. The blood gets its colour from the red cells which are present in it. These cells contain a substance called 'haemoglobin', which combines easily with gases such as oxygen and carbon dioxide. The red cells carry the oxygen in the arteries and capillaries to all cells of the body. The blood also contains white cells called 'leucocytes', which destroy bacteria. Another category of white cells called 'lymphocytes' help our body in fighting infections. There are other white blood cells, called 'monocytes' take care of dead material and dirt that may get into



the body. Our blood also contains certain cells called 'platelets', which help to form clots when a blood vessel is cut, so that we do not lose much blood. Thus, blood performs many important

functions within the body including:

- Supply of oxygen to tissues
- Supply of nutrients such as glucose, amino acids and fatty acids
- Removal of waste such as carbon dioxide, urea and lactic acid
- Immunological functions, including circulation of white blood cells and detection of foreign material by antibodies
- Coagulation, the response to a broken blood vessel, the conversion of blood from a liquid to a semisolid gel to stop bleeding
- Messenger functions, including the transport of hormones and the signaling of tissue damage
- Regulation of core body temperature



Science Quiz

1. Who proposed the cell theory?

A) Robert Hook B) Francis Crick C) Max Plank D) Schwann

2. Which is the most energetic food?

A) Fat B) Glucose C) Carbohydrates D) Protein

3. What does Chemical Symbol O_3 represent?

A) Ozone B) Photosynthesis C) Ozomia D) Incholoro

4. What do you call a Scientist that studies the stars?

A) Meteorologist B) Superstarologist C) Astronomer D) Starologist

5. How fast do bees wings beat?

A) 5 times per second B) 50 times per second C) 180 times per second D) 25 times per second

Science Project

Surat Municipal Corporation in collaboration with Surat Smart City Development Ltd. had organized "Science Fair" at ground floor of Art Gallery, Science Centre, Surat from 21st to 22nd July 2017. St. Thomas Higher Secondary English Medium School presented their project on 'AIIMS (Artificial Intelligence In Medical Service)'. This project is about the artificial intelligence that we can use in medical service like hydraulic lift in hospitals, CO_2 sensors used during the time of natural calamities like earthquake to save people. There is a management for traffic so that ambulance can reach the hospital as early as possible in less time. Project has a system to generate electricity on sea side using reverse polarity. This project also includes smart buildings where maximum people can live in less space.



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, Textile Gallery, Cosmos Gallery and Polar Science Gallery are under development.

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		Planetarium
Above 18 Years	Rs. 60	Tuesday to Friday
3 Years to 18 Years	Rs. 40	Saturday, Sunday & Public Holidays
Science Centre + Planetarium + Museum + Diamond Gallery + 3D Show		09:30 to 10:20 English
Above 18 Years	Rs. 120	10:30 to 11:20 Gujarati
3 Years to 18 Years	Rs. 80	11:30 to 12:20 Gujarati
Planetarium		12:30 to 01:20 English
Above 18 Years	Rs. 50	01:30 to 02:20 Gujarati
3 Years to 18 Years	Rs. 40	12:30 to 01:20 English
3D Show		01:30 to 02:20 Hindi
Above 18 Years	Rs. 60	02:30 to 03:20 Hindi
3 Years to 18 Years	Rs. 40	03:30 to 04:20 Gujarati
		04:30 to 05:20 English
		05:30 to 06:20 Gujarati