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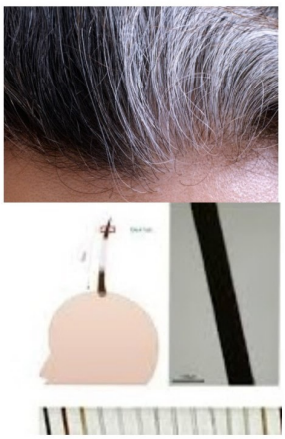
WHAT'S NEW IN SCIENCE?

Stress can turn hair gray and its reversible, researchers find

A new study offers quantitative evidence linking psychological stress to graying hair in people. Legend has it that French Queen Marie Antoinette's hair turned gray overnight in 1794.

Though the legend is inaccurate- hair that has already grown out of the follicle does not change colour. A new study from researchers at Columbia University Vagelos College of Physicians and Surgeons is the first to offer quantitative evidence linking psychological stress to graying hair in people and while it may seem intuitive that stress can accelerate graying, the researchers were surprised to discover that hair colour can be restored when stress is eliminated, a finding that contrasts with a recent study in mice that suggested that stressed-induced gray hairs are permanent.



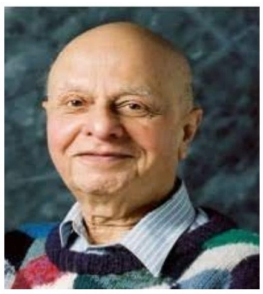
The study published in e-life, has broader significance than confirming age-old speculation about the effects of stress on hair colour, says the study's Senior author Martin Picard, associate professor of behavioural medicine at Columbia University Vagelos College of Physician and Surgeons, " Just as the rings in a tree trunk hold information about past decades in the life of tree, our hair contains information about our biological history, when hairs are still under the skin as follicles, they are subject to the influence of stress hormones and other things happening in our mind and body. Once hairs grow out of the scalp, they harden and permanently crystallize these exposures into a stable form".

Ayelet Rosenberg, first author on the study developed a new method for capturing highly detailed images of tiny slices of human hair to quantify the extent of pigment loss (graying) in each of those slices. Each slice about 1/20th of a millimetre wide, represents about an hour of hair growth. "Under a high-resolution scanner, you see small, subtle variations in colour" Picard says. When hairs were aligned with stress diaries, striking associations between stress and hair graying were revealed and in some cases, a reversal of graying with the lifting of stress. The researchers analysed individual hairs from 14 volunteers. The results were compared with each volunteer's stress diary, in which individuals were asked to review their calendars and rate each week's levels of stress. The investigators immediately noticed that some gray hairs naturally regain their original colour, which had never been quantitatively documented.

SCIENTIST OF THE MONTH

Arvind Joshi

Arvind Krishna Joshi was born on August 5, 1929 at Pune. Joshi studied at Pune University where he was awarded a B.E in electrical engineering. Joshi was awarded PhD in 1960 from Pennsylvania University.



He was Professor of Computer and cognitive Science in the Computer Science department of the University of Pennsylvania. Joshi defined the tree-adjoining grammar (it is the context-free grammars used in computer science which is abstract data type that simulates a hierarchical tree structure) formalism which is often used in computational linguistics and natural language processing. He was the co-founder and co-director of the Institute for Research in Cognitive Science.

He was the fellow of the Institute of Electrical and Electronics Engineers (IEEE) in 1976, Association for computing Machinery in 1998. He won the best paper award at the National Conference on Artificial Intelligence in1987. He was first to be awarded Association for Computational Linguistics (ACL) Lifetime achievement award at the 40th anniversary meeting of ACL in 2002. He was also awarded the Rumelhart Prize in 2003 and Benjamin Franklin Medal in Computer and Cognitive Science in 2005. He was died on December 31, 2017 at the age of 88.

SCIENCE FACTS AUGUST 2022

2 August 1861	Indian Scientist Sir Prafullchandra Ray was born.
4 August 1956	India's first Nuclear Reactor "Apsara" was estlablished at ' Trombay' (BARC-Bhabha Atomic Research Centre)
5 August 1930	Neil Alden Armstrong (First person to set foot upon the moon) was born.
6 August 1881	Prof. Alexander Fleming (discoverer of Penicillin) was born.
7 August 1976	"Viking 2" Spacecraft of America entered into Orbit of Mars.
8 August 1901	Ernest Lawrence (inventor of Cyclotron) was born.
12 August	International Youth Day. (by U.N.)
12 August 1919	Well known Indian Scientist Dr.Vikaram Ambalal Sarabhai was born.
14 August1888	Johan Logie Baird (inventor of colour Television) was born.
17 August 1870	Frederick Russell (inventor of first successful typhoid fever vaccine) was born
21 August 1754	William Murdoch (inventor of Gas lighting) was born
22 August 1920	Denten Cooley (who conducted the first artificial heart transplant) was born.
25 August 1989	Space Craft 'Voyager 2's closest approach to Planet Neptune was noted.
26 August 1906	Albert Sabin (inventor of oral polio vaccine) was born
29th August	International Day against Nuclear Tests. (by U.N.)
	U. N. : United Nations

Ans:- 1) b, 2) d, 3) a, 4) d, 5) a, 6) a, 7) a, 8) a

Timings
Tuesday to Sunday
& Public Holidays
9.30 am to 4.30 pm

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बहुजनहिताय बहुजनसुखाय

SCIENTIFIC QUESTION

Insomnia

Insomnia is a sleep disorder in which you have trouble falling and/or staying a sleep. The condition can be short-term (acute) or can last a long time (chronic). It may also come and go. Acute insomnia lasts from 1 night to a few weeks. Insomnia is chronic when it happens at least 3 nights a week, or 3 months or more.

Type of Insomnia: There are two type of insomnia: Primary and Secondary. Primary insomnia means your sleep problems aren't linked to any other health condition or problem. Secondary insomnia means you have trouble sleeping because of a health condition (like asthma, depression, arthritis, cancer or heart burn), pain, medication or substance use (like alcohol).

Insomnia Causes: Causes of primary insomnia include:

• Stress related to big life events, like a job loss or change, the death of a loved one, divorce or moving.

•Things around you like noise, light or temperature.

•Changes to your sleep schedule like jet lag, a new shift at work, or bad habits you picked up when you had other sleep problems.

Causes of Secondary insomnia include:

•Mental health issues like depression and anxiety.

•Medication for colds, allergies, depression, high blood pressure and asthma.

•Pain or discomfort at night.

•Caffeine, tobacco or alcohol use.

•Hyperthyroidism and other endocrine problems.

Insomnia symptoms:

Symptoms of insomnia include sleepiness during the day, fatigue, Grumpiness and problems with concentration or memory.

Insomnia diagnosis:

Doctor does a physical exam and asks about medical history and sleep history. They might tell to keep a sleep diary for a week or two, keeping track of your sleep patterns and how it feels during the day.

Insomnia treatment:

Acute insomnia may not need treatment. If it's hard for you to do everyday activities because you're tired, your doctor may prescribe sleeping pills for a short-time. Medicines that work quickly but can help little to avoid next day's problems like drowsiness.

For chronic insomnia you'll need treatment for the conditions or health problems that are keeping you awake. Doctor suggests behavioural therapy.

Insomnia complications:

Our bodies and brains need sleep so they repair themselves. It's also crucial for learning and keeping memories. If insomnia is keeping you awake, you could have:

•A higher risk of health problems like high blood pressure, obesity and depression.

•A higher risk of falling, if you're an older women.

•Trouble focusing

•Anxiety

•Grumpiness

Insomnia prevention:

Good sleep habits, also called sleep hygiene, can help you beat insomnia. Some tips are as follows:

•Go to sleep at the same time each night and get up at the same time each morning. Try not to take naps during the day, because they may make you less sleep at night.

•Don't use phones or e-books before bed. Their light can make it harder to fall asleep.

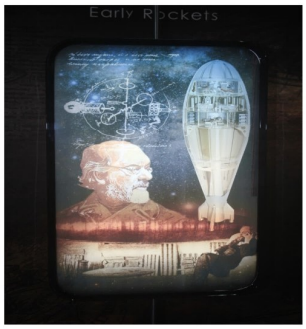
•Avoid caffeine, nicotine and alcohol late in the day. Caffeine and nicotine are stimulants and can keep you from falling asleep. Alcohol can make you wake up in the middle of the night and hurt your sleep quality.

•Don't eat heavy meal late in the day. But a light snack before bedtime may help you sleep.

•Follow a routine to relax before bed. Read a book, listen to music or take a bath.

KNOW THE EXHIBIT

Early Rockets: Part-3



This Exhibit is situated at "Entering Space Gallery" between Fun Science Gallery and Power of Play Gallery at the first floor of Science Centre

European countries like France, Germany and Russia learned rocket making process directly or in directly from the Mongols. In 1792, IIyder Ali, Ruler of Mysore developed first prototype of sturdier, explosive filled rockets with the help of his French Allies. During 2nd Anglo-Mysore war in 1780 his son, Tipu Sultan charged these rockets on British infantry from a distance of 2 km!!! British military had never seen anything like this before and had literally no idea about what hit them. Terrified they, named these rockets as 'Flying Plague'. After the fall of Srirangapattana, British army found 600 launchers and 9000 rockets from his fort. Much later, eminent scientist and former President Dr. A. P. J. Abdul Kalam compared these rockets with modern missiles in his book 'Wings of Fire'. On the other hand, Space research was going through a paradigm shift in Russia under the leadership of Konstantin Tsiolkovsky (1857-1935). Using simple 18th century Physics and Math Tsiolkovsky formulated the equation of aviation, which is followed till date. Tsiolkovsky was the first to determine the Escape Velocity from Earth (8 km/sec). He also designed the prima facie model of multistage liquid fuelled space rockets, space stations and airlocks for spaceships. Fascinated by the Eiffel tower he even went to design space elevator. It was Tsiolkovsky who for the first time scientifically conceptualize a proper way to go beyond the Earth. To honour his contribution, Tsiolkovskyhas been named as 'Father of Rocketry'.

QUIZ

1. Which is the first transgenic plant to be produced?
a) Brinjal b) Tobacco `c) Rice d) Cotton

2. Which is the fastest enzyme?
a) DNA gyrase b) Pepsin c) DNA polymerase d) Carbonic Anhydrase

3. What is produced in combustion?
a) Both heat and light b) Only heat c) Only light d) None

4. Sound cannot travel through?
a) Air b) Water c) Fluid d) Vacuum

5. Which plant is called morning star or evening star?
a) Venus b) Mars c) Jupiter d) Mercury

6. What is Orion?
a) Constellation b) Star c) Planet d) Satellite

7. from where silk is derived?
a) Cocoon b) Pupa c) Egg d) Moth

8. Which is not the unit of energy?
a) Kilowatt b) Kilowatt hour c) Joule d) Newton meter