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WHAT'S NEW IN SCIENCE?

Malaria and Kala-azar Parasites Depend on a Human Protein

Scientists at Jawaharlal Nehru University (JNU), Delhi, have made an interesting discovery. They removed a human protein called p38-MAPK from human cells grown in a laboratory. They found that the parasites responsible for malaria and kala-azar struggled to survive when this protein was removed. However, simply switching off the protein did not have the same effect.

Why is this discovery important?

Malaria is caused by a tiny parasite called Plasmodium. It spreads to humans through the bite of an infected female Anopheles mosquito. Over time, malaria parasites have developed resistance to some medicines. For example, chloroquine, which was once widely used to treat malaria, is now ineffective against many malaria parasites in several parts of the world.



To find a new approach, JNU scientists studied a human protein called p38-MAPK. This protein helps send messages inside our cells, and the parasites appear to depend on it. When the scientists removed this protein from human cells in the laboratory, both malaria and kala-azar parasites struggled. This suggests that the protein could be a possible target for developing new treatments.

However, this research is still at an early stage. No animals or human patients have been treated using this approach yet. The findings were published in the scientific journal Communications Biology on 11 June 2026.

What is PROTAC?

Most medicines work by blocking a protein and stopping it from doing its job. This is similar to stopping a machine from working by blocking one of its parts. PROTAC is a different approach. Instead of simply blocking a protein, it helps the cell destroy the unwanted protein completely. PROTAC stands for Proteolysis-Targeting Chimera. It works like a tiny tool with two hands:

First hand: It identifies and attaches to the protein that needs to be destroyed.

Second hand: It attaches to another protein that helps mark the unwanted protein for removal.

The cell then uses a natural system called the proteasome to break down the unwanted protein. The proteasome acts like a tiny shredder inside the cell. In simple terms, PROTAC helps the cell identify an unwanted protein and destroy it instead of merely stopping its activity.

What could this mean for the future?

If further research proves successful, this approach could help scientists develop new ways to fight malaria and kala-azar. It may also offer a new strategy for dealing with drug-resistant parasites.

However, more research is needed to determine whether this method is safe and effective in animals and humans.

Source:https://www.indiatoday.in/science/story/kala-azar-treatment-malaria-drug-resistance-new-research-human-protein-jnu-protac-anand-ranganathan-3013363-2026-10-09

Author: Radifah Kabir

SCIENTIST OF THE MONTH

Dr. Verghese Kurien

Dr. Verghese Kurien was born on November 26 in 1921 at Calicut in Kerala. He obtained a B.Sc. degree in physics in 1940 and later degree in mechanical engineering from the University of Madras. Master's degree in mechanical engineering at Michigan State University, in 1948



Known as the father of 'Operation Flood' and 'White Revolution' in India.

Dr. Verghese Kurien is responsible for the Kaira District Co-operative Union's later on transformed as AMUL phenomenal increase in membership and turnover. The Kaira District Cooperative Union has put on market products like milk powder, condensed milk, baby food, cheese and curd. Many state governments and the central government asked for his advice before starting similar organisations in other parts of the country, due to his outstanding success in the Kaira Union.

Dr. Kurien received the Raman Magsaysay Award for Community Leadership in 1963, the Padma Shri Award in 1965, Padma Bhushan Award in 1966, and Padma Vibhushan Award in 1999. He passed away at the age of 91 in 2012.

Main Source: 101, Great Indian Scientists Book, By Shyam Dum

SCIENCE FACTS NOVEMBER 2026

1 November 1950	:	American Physicist Robert B. Laughlin (Co-winner of the 1998 Nobel Prize in Physics for their explanation of the fractional quantum Hall effect) was born.
5 November 1948	:	American Physicist William Deniel Phillips (Co- winner of the 1997 Nobel Prize in Physics for development of methods to cool and trape atoms with laser light) was born.
5 November 1854	:	French Chemist Paul Sabatier (Co- winner of the 1912 Nobel Prize in Chemistry for his work improving the hydrogenation of organic species in the presence of metals) was born.
7 November 1929	:	Austrian neuroscientist Eric R. Kandel (o- winner of the 2000 Nobel Prize in Physiology/Medicine for his research on the physiological basis of memory storage in neurones) was born.
9 November1897	:	British Chemist Ronald George Wreyford Norrish (Co-winner of the 1967 Nobel Prize in Chemistry for their study of extremely fast chemical reactions) was born.
9 November 1921	:	Albert Einstein was awarded the Nobel Prize in Physics for his work on the photoelectric effect.
9 November 1952	:	British Biologist Jack W. Szostak (Co- winner of the 2009 Nobel Prize in Physiology/ Medicine for the discovery of how chromosomes are protected by telomeres and the enzyme telomerase) was born.
10 November 1918	:	German Chemist Ernst Otto Fischer (Co-winner of the 1973 Nobel Prize in Chemistry for his work on Organometallic Compounds) was born.
12 November 1842	:	English Physicist John Strutt, 3rd Baron Rayleigh (Winner of the 1904 Nobel Prize in Physics for his investigations of the densities of the most important gases and for his discovery of Argon in connection with these studies) was born.
14 November 1863	:	Flemish- American Chemist Leo Hendrik Beakeland (Inventor of the first Synthetic Plastic, Bakelite) was born.
18 November 1897	:	British Physicist Patrick Blackett (Winner of the 1948 Nobel Prize in Physics for investigation of cosmic rays using his invention of the counter- controlled cloud chamber) was born.
18 November 1906	:	American Scientist George Wald (Co-winner of the 1967 Nobel Prize in Physiology or Medicine for his discoveries in the field of vision) was born.
18 November 1939	:	American Neuroscientist John O'keef (Co-winner of the 2014 Nobel Prize in Physiology/ Medicine for their discoveries of cells that constitute a positioning system in the brain) was born.
19 November 1936	:	Taiwanese born Chemist Yuan T. Lee (Co-winner of the 1986 Nobel Prize in Chemistry for their contributions to the dynamics of chemical elementary processes) was born.
19 November 1998	:	The first module of the International Space Station , Zarya, was launched.
22 November 1904	:	French Physicist Louis Neel (Co-winner of the 1970 Nobel Prize in Physics for his pioneering studies of the magnetic properties of solids) was born.
23 November 1837	:	Dutch Physicist Johannes Diderk van der Waals (Winner of the 1910 Nobel Prize in Physics for his work on the equation of state for gases and liquids) was born.
23 November 1957	:	American Scientist William G. Kaelin Jr.(Co-winner of the 2019 Nobel Prize in Physiology/Medicine for their discoveries of how cells sense and adapt to oxygen availability) was born.
26 November 1948	:	Australian- American Biochemist Elizabeth H. Blackburn (Co- winner of the 2009 Nobel Prize in Physiology/ Medicine for the discovery of how chromosomes are protected by telomeres and the enzyme telomeraze) was born.
27 November 1903	:	Norwegian Chemist Lars Onsager (Winner of the 1968 Nobel Prize in Chemistry for the discovery of the reciprocal relations bearing his name, which are fundamental for the thermodynamics of irreversible process) was born.
28 November 1950	:	American Physicist Russell Alan Hulse (Co-winner of the 1993 Nobel Prize in Physics for the discovery of a new type of pulsar, a discovery that has opened up new possibilities for the study of gravitation) was born.
29 November 1803	:	Austrian Physicist Christian Doppler (Formulated the principle- known as the Doppler effect) was born.

WHO – World Health Organization

UNESCO – United Nations Educational Scientific & Cultural Organization

Answer: 1. B 2. D 3. C 4. A 5. A

Timings

Tuesday to Sunday
& Public Holidays
9.30 am to 4.30 pm

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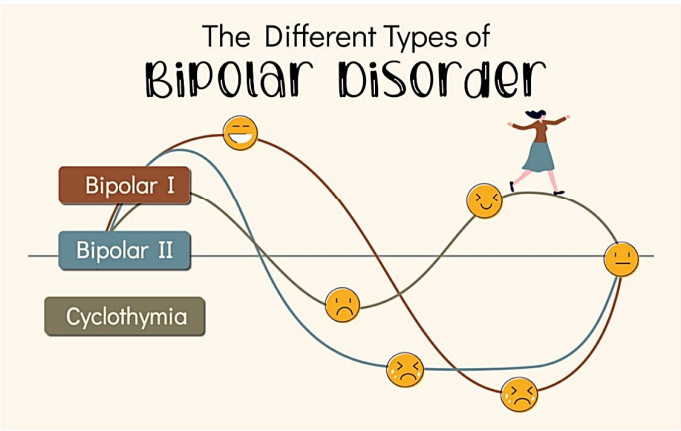
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SCIENTIFIC QUESTION

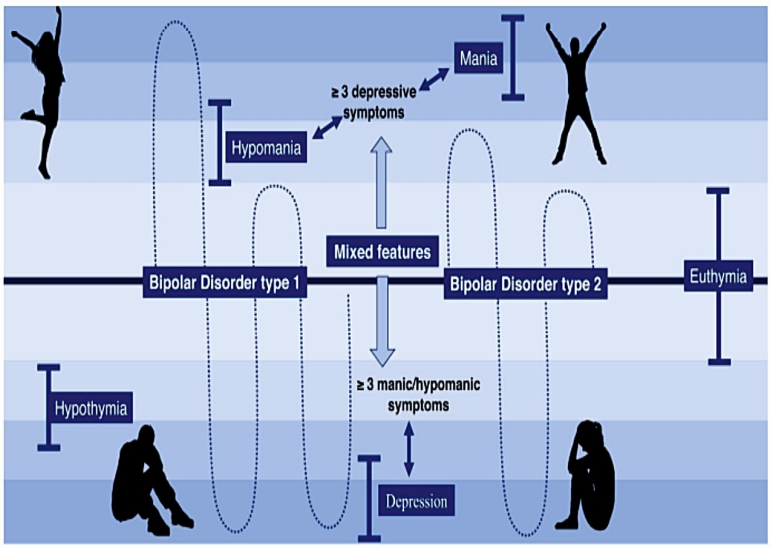
What is Mental Disorders? - Type - 2

Mood disorders are a category of mental health conditions primarily characterized by severe, persistent disturbances in a person's emotional state. Unlike standard anxiety disorders-which center around severe fear and worry- mood disorders distort a person's core emotional baseline, swinging between severe sadness (depression) and extreme elation of irritability (manix). They fundamentally impair an individual's ability to function in daily life, work and social relationships.



A. Primary Types of Mood disorders:

1. Major Depressive disorder (MDD)
2. Bipolar I disorder
3. Bipolar II disorder (Hypomania)
4. Persistent depressive disorder (Dysthymia)
5. Cyclothymiacs disorder
6. Disruptive Mood Dysregulation disorder CDMDD)



B. Core Symptom:

1. Depressive Episode - Chronic sadness, feeling of worthlessness, fatigue, changes in appetite insomnia and thoughts of self harm.

2. Manic / Hypo manic Episode - Decreased need for sleep, grandiosity, extreme talkativeness, raving

3. Thoughts and High- risk behaviors

C. Main causes and Risk factors:

A combination of internal and external factors causes mood disorders:

1. Biological Imbalance - Disruptions in chemical messengers like serotonin, norepinephrine and dopamine.

2. Genetic Predisposition - A significantly higher likelihood of occurrence if immediate family members are diagnosed.

3. External life stressors - Trauma, major life upheavals, grief or chronic stress can trigger underlying risks.

4. **Substance and Medical Influences** - Certain physical illnesses or substance withdrawal can mirror or cause mood shifts.

D. Treatment:

1. Psychotherapy - Modalities like cognitive Behavioral Therapy (CBT) or Interpersonal Therapy (IPT) hdp individuals build coping mechanisms and regulate emotional patterns.

2. **Pharmacology** - Psychiatrists routinely utilize antidepressants (like SSRLS) for depression or mood stabilizers (like lithium) and atypical antipsychotics to manage Bipolar disorder.

3. **Advanced Brain Stimulation** - For treatment resistant variations, clinicians ay utilize options such as Electro convulsive Therapy (ECT) or Transcranial agnetic Stimulation (TMS).

Main Source and Image: http://en.wikipedia.org, http://www.psychiatry.org

KNOW THE ENTERING INTO SPACE GALLERY EXHIBIT

Space shuttle - Discovery (1984-2011)



Discovery flew 39 missions. The most of any space shuttle. Some of the major payloads it released included the Hubble Space Telescope, the Sun-bound Ulysses Space craft and the Upper Atmosphere Research Satellite. It even flew Mercury Astronaut John Glennat age 77, the oldest person to fly in Space.

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

PROJECT





Surat Municipal Corporation had organized "Science Fair-2026" at Art Gallery, Science Centre Surat on 12th and 13th August, 2026 for students of Std. 8 to 12. J.H.B. Sardar Primary School had participated in Science Fair 2026 with their project on "Smart Drainage System". under the sub-theme of Technology to build a Sustainable Future.

The aim of the project was to monitor the water level and automatically control the flow of water to help reduce flooding, prevent water logging and improve drainage management efficiently.

The water level sensor continuously measures the water level, the circuit receive the data LED and buzzer indicates the water condition in real time Alarm buzzes when the water level becomes dangerous.

QUIZ

1. Approximately how many years ago did humans begin agriculture?

A. 100 years ago B. 10,000 years ago C. 20,000 years ago D. 50,000 years ago

2**. What is the importance of food in living organisms?**

A. To Sustain life
B. For growth and development
C. To provide energy for various activities
D. All of the above

3. Green plants are autotrophic (self-nourishing) because...

A. They absorb only water from the soil.
B. They obtain water and minerals from the soil.
C. They synthesize their own food through photosynthesis.
D. They obtain CO_2 from the atmosphere.

4**. Which of the following food is a sources of carbohydrates for energy requirements?**

A. Wheat, maize, barley, pearl millet
B. Pearl millet, black gram, soybean,
C. Soybean, mustard, pigeon pea
D. Flaxseed, green gram, maize

5. Which of the following is a cereal plant?

A. Barley B. Lentil C. Mustard D. Soybean

Main Source: Navneet MCQs Science and Technologies. Std 9 (semester II)