



ZOOLOGICA



NEWSLETTER FROM THE DEPARTMENT OF ZOOLOGY QUEEN MARY'S COLLEGE

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VASUKI INDICUS - THE LONGEST KNOWN SNAKE ON EARTH

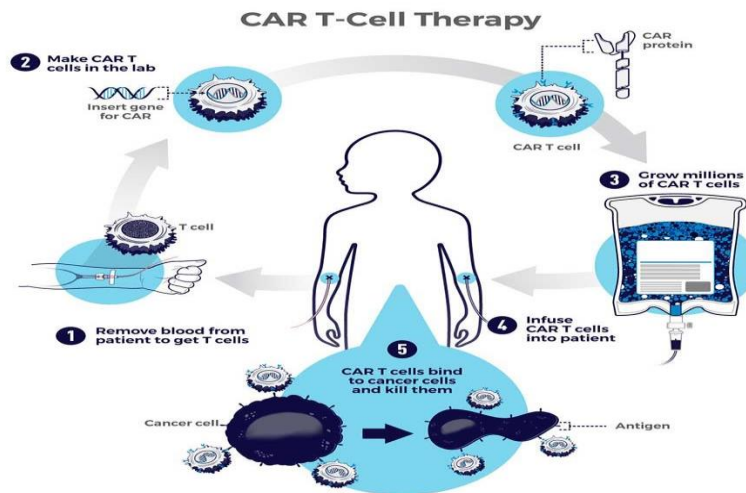
Paleontologists have discovered fossil remains of an ancient giant snake species *Vasuki indicus* dating back to 47 million years old from a lignite mine in India's Gujarat state, and used them to model the estimated actual length of the snake to somewhere between 10.9 to 15.2 metres. It is known to be the longest snake that have ever lived on earth. *V. indicus* flourished in forested swamps of the now arid Kutch region. *V. indicus* belonged to the now extinct madtsoiidae snake family from 100 million years ago, a relic of the Late Cretaceous to the Late Pleistocene geological era. It lived across a broad geographical range including Africa, Europe, and India. The reptile is closely related to other large madtsoiid snakes (*Madtsoia pisdurensis*) from the Late Cretaceous of India and the Late Eocene of North Africa (*Gigantophis garstini*). Since this group was dominated by madtsoiids from India and Vasuki was the most primitive ancestor in the family tree, scientists inferred that this group of snakes originated in India.



PROPOSED STRUCTURE OF *VASUKI INDICUS*

CAR T-Cell GENE THERAPY LAUNCHED IN IIT BOMBAY

The President of India, Smt Droupadi Murmu launched India's first home-grown gene therapy for cancer at IIT Bombay on 5th April 2024. Chimeric Antigen Receptor-T cell therapy (CAR-T cell therapy) has demonstrated remarkable success in long-term remission of relapsed or refractory B-cell precursor Acute Lymphoblastic Leukemia (B-ALL). T cells which help in the immune response by direct killing of pathogen infected cells are the backbone of CAR T-cell therapy. Efforts have been initiated to customize CAR T-cell therapies for each individual patient. They are made by collecting T cells from the patient and re-engineering them in the



CAR T-cell therapy is a type of treatment in which a patient's T cells are genetically engineered in the laboratory so they will bind to specific proteins (antigens) on cancer cells and kill them. (1) A patient's T cells are removed from their blood. Then, (2) the gene for a special receptor called a chimeric antigen receptor (CAR) is inserted into the T cells in the laboratory. The gene encodes the engineered CAR protein that is expressed on the surface of the patient's T cells, creating a CAR T cell. (3) Millions of CAR T cells are grown in the laboratory. (4) They are then given to the patient by intravenous infusion. (5) The CAR T cells bind to antigens on the cancer cells and kill them.

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laboratory to produce proteins on their surface called chimeric antigen receptors, or CARs. The CARs recognize and bind to specific proteins, or antigens, on the surface of cancer cells. After, the revamped T cells are "expanded" into the millions in the laboratory, they're then infused back into the patient. The CAR T cells will continue to multiply in the patient's body and, with guidance from their engineered receptor, recognize and kill any cancer cells that harbor the target antigen on their surfaces.

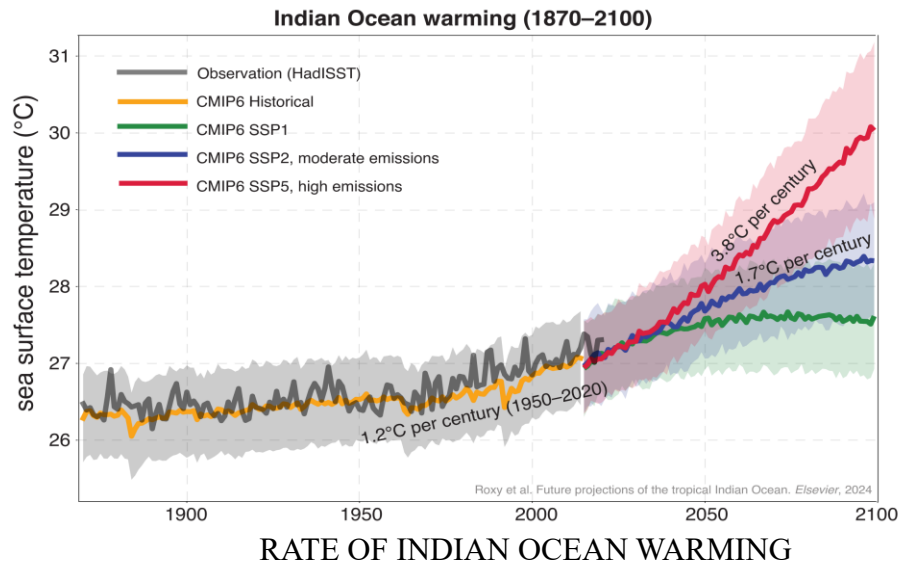


CAR-T-CELL THERAPY LAUNCH BY THE HON'BLE PRESIDENT

Smt. DRAUPADI MURMU

TROPICAL INDIAN OCEAN SURVEY BY IITM, PUNE

A study led by Dr. Roxy Mathew Koll of the Indian Institute of Tropical Meteorology (IITM), Pune, tells us about the evolving climate of the Indian Ocean and its future projections. While, the Indian Ocean warmed at a rate of 1.2°C per century during 1950–2020, climate models predict accelerated warming, at a rate of 1.7°C–3.8°C per century during 2020–2100. The rapid warming in the Indian Ocean is not limited to the surface. The heat content of the Indian Ocean, from surface to 2000 meters deep, is currently increasing at the rate of 4.5 zetta-joules per decade, and is predicted to increase at a rate of 16–22 zetta-joules per decade in the future. Marine heatwaves, periods of extremely high temperatures in the ocean, are expected to increase from 20 days per year to 220–250 days per year. This will push the tropical Indian Ocean into a near-permanent heatwave state. Marine heatwaves cause habitat destruction due to coral bleaching, seagrass destruction, and loss of kelp forests, affecting the fisheries sector adversely. They also lead to rapid intensification of cyclones, where a cyclone could intensify from a depression to a severe category in a few hours. The surface chlorophyll and net primary productivity is predicted to decline, with the strongest decrease of about 8–10% in the western Arabian Sea.



SNOW LEOPARDS IN INDIA

Snow leopards are medium-sized cats standing about 24 inches at the shoulder and weighing around 30-55kg. Their exquisite, smoky-grey fur is patterned with dark-grey to black rosettes which helps to camouflage them against rocky slopes. The species usually mate between January and March, a time when both sexes mark their territories intensively leaving signs such as scrapes, faeces, urine and scent-spray in prominent locations along their travel routes. Snow leopards live in the mountainous regions of Central and Southern Asia. In India, their geographical range encompasses a large part of the western Himalayas, including the Union Territories of Jammu and Kashmir and Ladakh, Himachal Pradesh, Uttarakhand and Sikkim and Arunachal Pradesh in the eastern Himalayas. In India, the snow leopard is listed under Schedule I of the Wildlife (Protection) Act, 1972, giving it the highest protection status under the country'



PANTHERA UNCIA (SNOW LEOPARD)