ANTHROPOLOGY NEWS DIARY

(AND)

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FOR UPSC CSE MAINS

This series provides compilation of daily CURRENT AFFAIRS of Anthropology. It is aimed at addressing the requirement of aspirants to add contemporary aspects of the subject to the answers. It also helps in understanding the trends of anthropology across India and the world.

NOTE: Please attempt the questions given at the end of the document and can upload on the telegram channel: Sosin for Anthropology Q&A, for peer review.
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Note - For convenience, the respective reference links have been dropped at the end of every topic.
A. BIOLOGICAL ANTHROPOLOGY

1. Junk DNA

- Researchers have recently identified a DNA region known as VNTR2-1 that appears to drive the activity of the telomerase gene, which has been shown to prevent aging in certain types of cells.

- Knowing how the telomerase gene is regulated and activated and why it is only active in certain cell types could someday be the key to understanding how humans age and how to stop the spread of cancer.

- The telomerase gene controls the activity of the telomerase enzyme, which helps produce telomeres, the caps at the end of each strand of DNA that protect the chromosomes within our cells. In normal cells, the length of telomeres gets a little bit shorter every time cells duplicate their DNA before they divide.

- When telomeres get too short, cells can no longer reproduce, causing them to age and die. However, in certain cell types -- including reproductive cells and cancer cells -- the activity of the telomerase gene ensures that telomeres are reset to the same length when DNA is copied.

- This is essentially what restarts the aging clock in new offspring but is also the reason why cancer cells can continue to multiply and form tumors.

- Almost 50% of our genome consists of repetitive DNA that does not code for protein.

- These DNA sequences tend to be considered as 'junk DNA' or dark matter in our genome, and they are difficult to study.

- The study describes that one of those units actually has a function in that it enhances the activity of the telomerase gene.

- Their finding is based on a series of experiments that found that deleting the DNA sequence from cancer cells -- both in a human cell line and in mice -- caused telomeres to shorten, cells to age, and tumors to stop growing.

- Since very short sequences were found only in African American participants, they looked more closely at that group and found that there were relatively few centenarians with a short VNTR2-1 sequence as compared to control participants.

- It is known that oncogenes -- or cancer genes -- and tumor suppressor genes don't account for all the reasons why we get cancer. The research shows that the picture is a lot more complicated than a mutation of an oncogene and makes a strong case for expanding our research to look more closely at this so-called junk DNA.

Reference:

https://www.sciencedaily.com/releases/2021/07/210723105258.htm
2. Social Life & Gene Expression

- Having friends may not only be good for the health of your social life, but also for your actual health -- if you're a hyena, that is.

- Strong social connections and greater maternal care early in life can influence molecular markers related to gene expression in DNA and future stress response, suggests a new study of spotted hyenas in the wild.

- Researchers found that more social connection and maternal care during a hyena's cub and subadult, or "teenage," years corresponded with lower adult stress hormone levels and fewer modifications to DNA, including near genes involved in immune function, inflammation and aging.

- As far back as the 1950s and 60s, laboratory research has drawn associations between early life experiences in rodents, primates and humans and behavioral and physiological differences later in life.

- One landmark study published in 2004 also showed that the offspring of rats who got licked and groomed more by their mothers had less DNA methylation in a gene involved in regulating stress response. This kick-started the desire for more evidence that early life experiences could be related to patterns of modification in genes that influence stress and health.

- Hyenas are ideal for such research as they are devoted mothers, have a strict social hierarchy and follow a consistent timeline for raising their cubs. Instead of giving birth to larger litters, they typically have one or two cubs at a time. Soon after birth, the cubs move into a communal den, where they are integrated into their peer group. For the next year, they still nurse and their mother licks and grooms them, but after that the cubs start to wander out of the den and, like teenagers, learn to start making their way in the world.

- In general, hyenas, like other vertebrates, benefit from the effects of stress hormones (e.g. cortisol) mobilizing energy, increasing their heart rate and shutting down non-essential functions, like digestion or reproduction, when escaping a dangerous situation. However, there are significant physical drawbacks to these processes occurring chronically, day after day in humans or other animals as the result of chronic stressors. That's why having a healthy stress response is so critical.

- The researchers also wanted to find out if the relationships between early life social experiences and how stress presents later in life is managed by molecular mechanisms.

- The researchers found that the maternal care hyenas received during their first year of life, as well as their social connections after den independence, corresponded to differences in DNA methylation levels.

Reference:
https://www.sciencedaily.com/releases/2021/07/210722163017.htm
B) ARCHAEOLOGICAL ANTHROPOLOGY

1. Archaeology of Climate Change

- Anthropologists, geographers and earth scientists look to the past to assess how different cultures have - and will - adapt to global warming.
- It's an interdisciplinary science that uses data from archeological digs and the paleoclimate record to study how humans interacted with their environment during past climate-change events such as the warming that followed the last ice age, more than 10,000 years ago.
- What the scientists hope to identify are the tipping points in climate history that prompted people to reorganize their societies to survive, showing how cultural diversity, a source of human resilience in the past, is just as important today as a bulwark against global warming.
- The archaeology of climate change combines the study of environmental conditions and archaeological information.
- This approach allows us to identify the range of challenges faced by people in the past, the different strategies they used to face these challenges and ultimately, whether they succeeded or not.
- For instance, studying the rapid warming that occurred between 14,700 and 12,700 years ago, and how humans coped with it as evidenced in the archeological record, can help climate specialists model possible outcomes of climate change in the future.
- Historically, people from different walks of life have found a variety of ways to adapt to the warming of their climate, and these can inform the present and help prepare for the future, the researchers say.
- For example, traditional farming practices -- many of which are still practiced today -- are valid alternatives that can be used to redesign industrial farming, making it more sustainable in the future, they say.
- Indigenous cultures have a major role to play in teaching us how to respond to climate change - in the Canadian Arctic, for instance, Indigenous people have a detailed knowledge of the environment that's key to being essential to planning a sustainable response.

Reference:
https://www.sciencedaily.com/releases/2021/07/210719153517.htm

2. Neolithic Plant Processing

- Archaeologists have analyzed a rich microbotanical assemblage from Çatalhöyük, a renowned archaeological site in central Anatolia, Turkey, best known for its Neolithic occupation dated from 7100 to 6000 BCE.
- Çatalhöyük, one of the largest and best preserved Neolithic sites in the world, is located southeast of the modern Turkish city of Konya, about 90 miles (145 km) from Mount Hasan.
- The site received worldwide attention for its large size, well-preserved mudbrick architecture, and elaborate wall paintings.
Despite the extensive research, much of what is known about agricultural practices and the use of plant resources at Çatalhöyük is based on the study of charred remains.

The researchers analyzed macrobotanical remains and use-wear traces on the surfaces of grinding tools found at three domestic contexts attributed to the Middle (6700-6500 BCE) and Late (6500-6300 BCE) periods of occupation.

Among the microscopic remains are phytoliths, from the deposition of opal silica in plant cells and cell walls, that provide clues about the presence of anatomical parts, such as the stems and husks of plants, including wheat and barley.

Another residue studied are starches, glucose compounds, created by plants to store energy, which are found in large quantities in many edible parts of plants.

By combining micro botanical evidence with use traces, we discovered processes such as grain husking, the milling of legumes, tubers and cereals, and even the use of these implements in other activities not related to plant processing.

Reference:

3. 6th Century Coin Hoard

The coin hoard was discovered during the third season of excavations, where archaeologists unearthed an amphora containing 80 copper staters (coins), whilst researching evidence of a destruction layer caused by fire from the 6th century AD.

Archaeologists believe that the burying of the hoard could be associated with several raids by the Huns or Turks, resulting in large parts of the city being torched.

Residential buildings, wineries, and public buildings perished in the fire, depositing a large amount of ash, soot, fragments of burnt wooden floors of buildings, broken dishes, and the remains of burnt grain in amphorae in the destruction layer.

A closer inspection of the coins reveals that they are mainly copper staters of the Bosporan kings of the late 3rd – early 4th century AD.

The last minting of the Bosporan coins was around AD 341, however, a huge mass of staters made of cheap copper-lead alloy continued to circulate in the Bosporus for several centuries, whilst the role of “expensive” money was played by Byzantine gold.

Reference:
**UPSC Previous year questions based on today’s concept:**

1. Ageing & Senescence  
   (10 Marks - 2002)
2. Ethno - archaeology  
   (10 Marks - 1998)

**DAILY PRACTICE QUESTION/S FOR MAINS 2021.**

Pl do not forget to upload your answer sheet for a peer review on the telegram channel: **Sosin for Anthropology Q&A**

1. Junk DNA  
   (10 Marks)