

Genes of Whales

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Why in news?

- The findings highlight the role of four genes — **GHSR**, **IGFBP7**, **NCAPG**, and **PLAG1** — and suggest that they promote large body sizes.
- The researchers performed molecular evolutionary analysis on nine candidate genes: five genes from the growth hormone, and four genes associated with increased body size in hoofed animals. They assessed these genes in 19 species of whale.

The role of four genes:

- **GHSR** is a gene involved in releasing growth hormone through the pituitary gland, body weight, energy metabolism, appetite and fat accumulation. It also is associated with controlling cell proliferation and programmed cell death. Tumors essentially are formed by runaway cell growth.
- **IGFBP7** is a gene involved in promoting cell growth and division. There is evidence it acts as a cancer suppressor in prostate, breast, lung and colorectal tumors.

- **NCAPG**, a gene associated with growth in people, horses, donkeys, cattle, pigs and chickens, is linked to increased body size, weight gain, cell proliferation and cell life cycles.
- **PLAG1**, a gene associated with body growth in cattle, pigs, and sheep, is involved in embryo growth and cell survival.

Whales:

- **Cetaceans**, the marine mammal group encompassing whales, dolphins and porpoises, evolved around 50 million years ago from vaguely wolf-like land-based ancestors that belonged to a mammalian assemblage called artiodactyls that includes today's cows, pigs, sheep and many others.
- **Basilosaurus**, a toothed apex predator from about 40 million years ago, was the largest-known early whale. The baleen whale lineage dates to roughly 36 million years ago, starting modest in size.
- **Blue whales** can reach about 100 feet (30 meters) long, fin whales about 80 feet (24 meters), sperm and bowhead whales about 60 feet (18 meters), humpback and right whales about 50 feet (15 meters) and gray whales about 45 feet (13.5 meters).

Q1) What is a gene?

A gene is the basic physical and functional unit of heredity. Genes are made up of DNA. Some genes act as instructions to make molecules called proteins. However, many genes do not code for proteins. In humans, genes vary in size from a few hundred DNA bases to more than 2 million bases.

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