

3. Malaria Parasite Jumped from Gorillas to Humans

Prelims: Science & Technology

Mains: GS-III- Science and Technology- Developments and their applications and effects in Everyday Life; Awareness in the field of Biotechnology

Why in News?

- ▶▶ Experts have found that African great apes were the original host to the parasite Plasmodium falciparum – the type the researchers studied, which accounts for most cases of Malaria.

Highlights:

- ▶▶ Malaria is caused by a parasite that gets into the bloodstream when an infected mosquito bites humans – or animals.
- ▶▶ There are lots of different strains of parasite and one of the most important ones, which now affects only humans, is Plasmodium falciparum.
- ▶▶ Falciparum is one of seven species of parasite that can cause malaria in a family known as the Laverania.
- ▶▶ The study says that the parasite switched host from gorillas at about the same time as the first migration of humans out of Africa, some 40,000 to 60,000 years ago. The DNA sequence included a gene that produced a protein called RH5 that can bind to human red blood cells.

Zoonosis:

- ▶▶ When diseases, such as influenza or malaria, jump from animals to humans in this way it is known as a zoonosis. It occurs when pathogens that are already able to infect an animal host acquire genetic material that enables them to also infect humans.
- ▶▶ In the case of falciparum malaria, it is thought that the genetic transfer of the rh5 gene occurred when a gorilla cell became infected with two species of Plasmodium parasite simultaneously – an event known as an introgression. When an introgression occurs, genetic material is swapped from one species to another.
- ▶▶ In the history of mankind, Plasmodium falciparum malaria has arguably been responsible for more human deaths than any other disease.
- ▶▶ The scientists have discovered not only how a species host switch has occurred, but the individual mutation which has then restricted P. falciparum to a single host species.