

1. Multiple Sclerosis

Why in News?

- Scientists have recently fabricated monolayers of pure Myelin Basic Protein (MBP).

Highlights

- Multiple Sclerosis (MS) is a chronic autoimmune disease that affects the central nervous system (CNS).
- In MS, the immune system attacks and damages the myelin sheath, a protective covering that surrounds the nerve fibers in the brain and spinal cord, causing a range of symptoms
- MBP is a major protein component of the myelin sheath, a protective membrane that wraps around the axon of nerve cells and acts as a model protein in studying diseases like multiple sclerosis (MS).
- A person may have difficulty emptying their bladder or need to urinate frequently or suddenly Bowel problems, Fatigue, Dizziness, and damaged nerve fibers in the spinal cord.
- Since symptoms are common, people don't often recognise the disease early and often takes many years for someone to be diagnosed, as it is impossible to determine a specific cause or trigger
- The researchers studied how the protein behaved in different levels of acidity, by looking at different parts of the layer formed on top of the water.
- They found that the stiffness of the layer was related to the specific patterns formed and the space they occupied on the water surface.
- The researchers have created a tightly packed layer of MBP using Langmuir-Blodgett (LB) technique.
- The Langmuir-Blodgett (LB) technique is a process used to create monolayers of molecules, including proteins, at air-water and air-solid interfaces.
- This layer can be used to study the different properties of MBP in 2D and how it interacts with other proteins.
- The researchers also found that the layer can act as a template for other proteins to crystallize on, which can help in studying their structures.
- Overall, this research helps us better understand the role of MBP in our bodies and how it interacts with other molecules