



Biomolecular Alterations Post EPV Infection

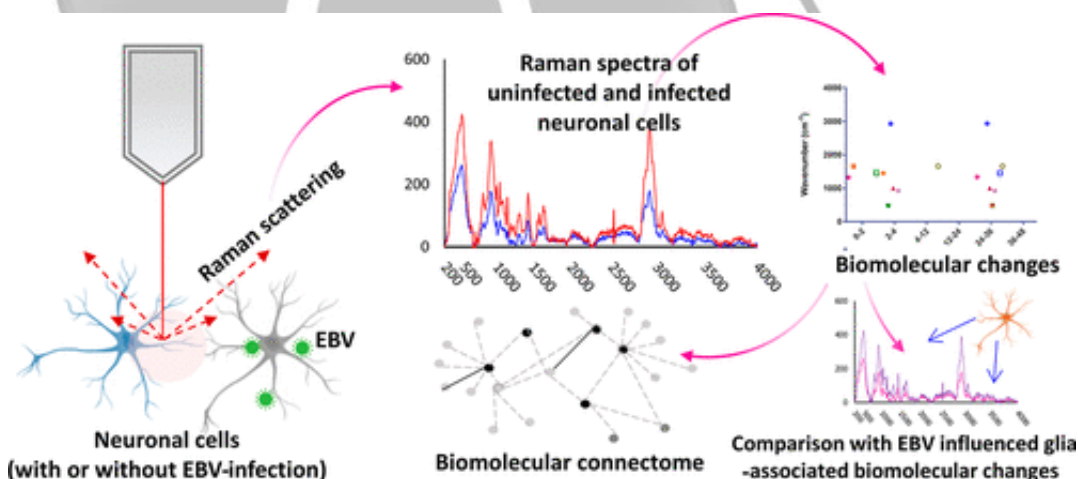
Why in News?

Scientists have found that **cancer**-causing virus **Epstein Barr Virus (EBV)** can infect the neuronal cells and drive various changes in biomolecules.

- A researchers utilized the **Raman Microspectroscopy Technique**, under **FIST (Fund for Improvement of S&T Infrastructure)** scheme to explore the **possible impacts of a cancer-causing virus on brain cells**.
- Biomolecules are an organic molecule that includes carbohydrates, protein, lipids, and nucleic acids.

What is Raman microspectroscopy?

- Raman is a **light scattering technique, whereby a molecule scatters incident light from a high intensity laser light source**.
 - Most of the scattered light is at the same wavelength (or color) as the laser source and does not provide useful information - this is called Rayleigh Scatter. However, **a small amount of light (typically 0.000001%) is scattered at different wavelengths (or colors), which depend on the chemical structure of the analyte - this is called Raman Scatter**.
- Raman microspectroscopy is a **vibrational spectroscopy technique used for investigating molecular fingerprints** of a wide range of liquid or solid samples.
- The technique can be efficiently utilized to understand virus-mediated cellular changes and could **provide valuable insights into specific biomolecular alterations**.



What is EBV?

- EBV is a **virus in the herpesvirus family** that can infect humans.

- EBV virus has been found to be widely present in the human population. It usually does not cause any harm, but the **virus gets reactivated inside the body in some unusual conditions like immunological stress or immunocompetence.**
- This may further lead to various complications like **a type of blood cancer called Burkitt's lymphoma, stomach cancer, multiple sclerosis, and so on.**

What are the Findings?

- It can change biomolecules such as **fatty acids, carbohydrates, and protein components, leading to diseases of the central nervous system** as well as brain cancer.
 - Earlier studies provided links of **EBV involvement in various neurodegenerative diseases.** However, how this virus can affect the cells of brain and manipulate them is still unexplored.
- There may be **timely and gradual changes in various biomolecules in the neuronal cells under viral influence.**
 - Additionally, these changes were distinct when compared to the changes observed in other supportive brain cells (that is, astrocyte and microglia).
- The lipid, cholesterol, proline, and glucose molecules **are increased in the cells under viral influence.**
- These biomolecular entities can ultimately **play pivotal roles in the viral seizure of cells.**

What is FIST Scheme?

- The "Fund for Improvement of S&T Infrastructure (FIST)" of the Department of Science & Technology (DST) is intended to provide basic infrastructure and enabling facilities for promoting R&D activities in new and emerging areas and attracting fresh talents in universities & other educational institutions.
- It is considered as complimentary support for enabling Departments/ Centres/ Schools/ Colleges to pursue research activities more effectively and efficiently.
- The current emphasis on the immensely successful FIST programme is for orienting it towards the goal of Atmanirbhar Bharat by providing accessibility of the R&D infrastructure facilities not only for research activities in academic organizations but also for use by the start-ups/ manufacturing industries/ MSMEs.
- The duration of support for each FIST Project is for a period not exceeding 5 years.

[Source: PIB](#)

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