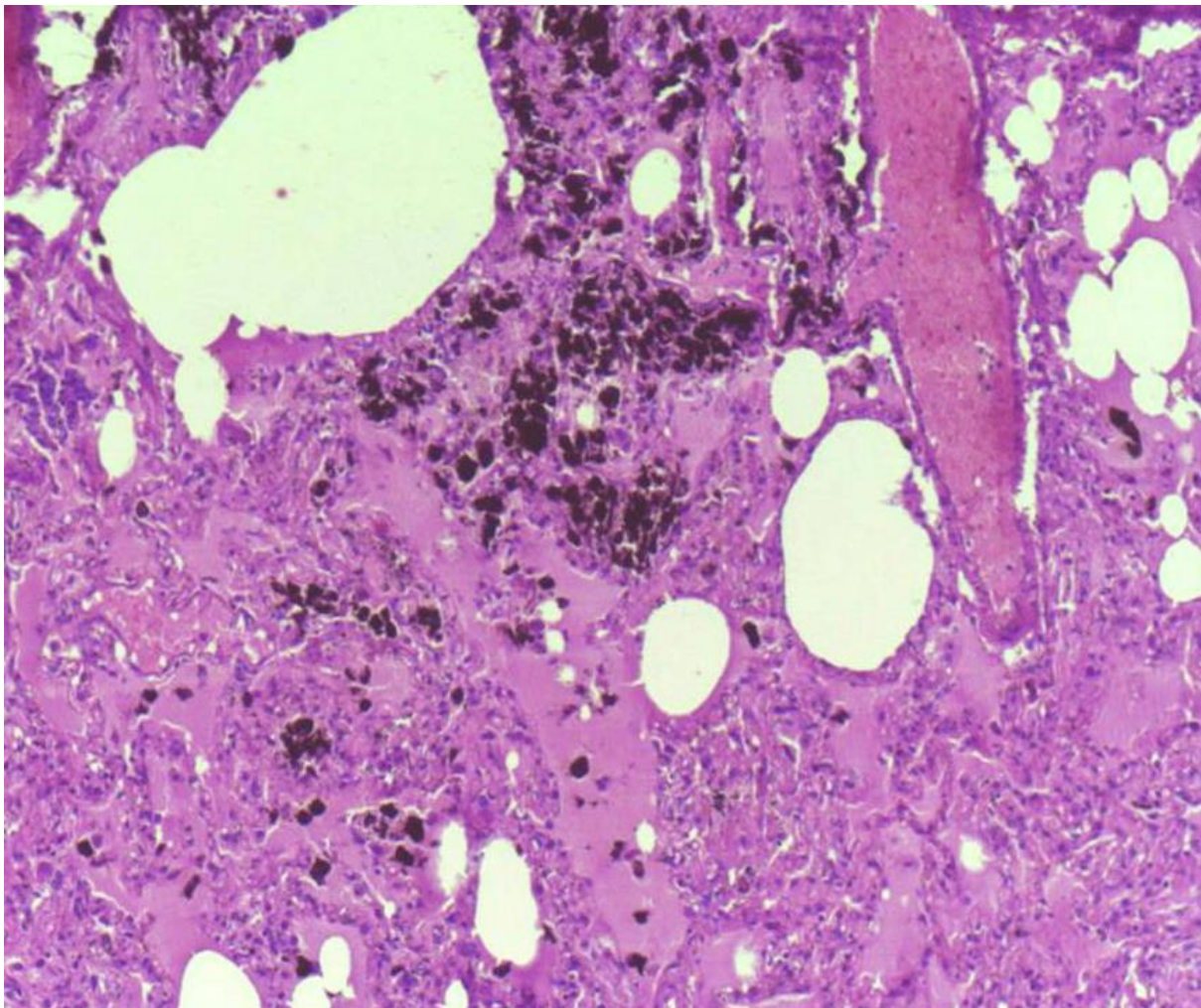


DBT-NIBMG scientists working to find new ways to fight infection

New Delhi, Nov 26: We have an immune system that fights for us to clear different kinds of infection. Sometimes we do not even realize that we have any infection. Immune system is made up of special types of cells and many different proteins. It is like a national defence system which protects us from foreign invaders (bacteria, fungus, viruses) through a surveillance system (immune cells like macrophages and dendritic cells) and eliminate them when they enter like military and police forces do (proteins like antibody, cytokines and chemokine).



Interferons (IFNs) are proteins (cytokines) that are produced by our body in response to viral infections. Interferons are of three types; Type 1 interferons include 20 different types of IFN- α , IFN- β , IFN- ϵ , IFN- κ , and IFN- ω . Type 2 interferons are represented by a single member i.e. IFN- γ . Type 3 interferons are represented by IFN- λ 1-4. Interferon lambda belongs to the IL10 super family and they were previously called IL29, IL28a and IL28b. Later studies showed that they had characteristics of interferon and were renamed to Lambda IFNs or type 3 IFNs.

In 2009, a Genome-wide association study on clearance of HCV infections reported a dinucleotide variant present upstream of IFNL3. In 2013 this variant led to the discovery of a new gene called IFNL4 by causing a frame-shift mutation. The production of IFNL4 protein is associated with reduced clearance of chronic HCV infection. Within the IFNL4 gene, a non-synonymous mutation leads to a substitution of proline to serine at position 70, which leads to a lower expression of interferon-stimulated genes (ISGs), but better clearance of HCV. Another IFNL4 mutation found in African population leads to a strong increase in secretion and functional activity of IFNL4.

Although lambda locus came to limelight in HCV infections, the list of associations with it locus has grown to include a number of more infectious and inflammatory disorders like Fibrosis NAFLD, Hashimoto's thyroid, Asthma and COPD. Additionally, IFNL4 variants were also found to be associated with prostate cancer as well as with malaria. IFNL4 is a strong antiviral cytokine but its role in inflammation may be different. A team of researchers at the DBT-National Institute of Biomedical Genomics (DBT-NIBMG) are working to find out which cells are responsible for IFN- λ 4 production in humans and how IFN- λ 4 and its mutants act in immune modulation.

Contact details: Seema Bharatiya (sb9@nibmg.ac.in), Dr Arindam Maitra (am1@nibmg.ac.in)

Institute website: <https://www.nibmg.ac.in/>