**Role of epigenetic protein modifications in influenza A virus infection and flu severity**

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**Current Research:**

Influenza virus remains one of the most circulated viruses and flu remains one of the most common infectious diseases in humans, globally. This burden of influenza virus on global public health may even get worse with the co-circulation and co-infection of pandemic SARS-CoV-2. The identification of factors which govern influenza virus multiplication and determine flu severity in humans is critical to develop effective and tailored antiviral strategies. We have discovered that acetylation, an epigenetic protein modification, plays a critical role in influenza virus infection and may determine the severity of flu in humans. Current research is focused on elucidating the role of acetylation machinery in influenza virus infection. We use human lung epithelial cells as the infection model of type A influenza virus. We manipulate the expression of genes which control acetylation by tools like RNA Interference and CRISPR/Cas9 and then analyse the effect on influenza virus replication and pathogenesis and host innate immune response by techniques like RNA Sequencing, mass spectrometry, plaque assay, qRT-PCR, and western blotting.

BSc Honours research projects are available in this space. Please get in touch to discuss potential projects.

**Latest Publications:**

1. Mazhar Hussain, Farjana Ahmed, Bennett Henzeler, Matloob Husain (2022). *Anti-microbial host factor HDAC6 is antagonised by the influenza A virus through host caspases and viral PA*. The FEBS Journal, In press. [*Article Link*](https://febs.onlinelibrary.wiley.com/doi/10.1111/febs.16703)
2. Matloob Husain (2022). *Identifying Caspases and their Motifs that Cleave Proteins During Influenza A Virus Infection*. Journal of Visualized Experiments, (185), e64189, [doi:10.3791/64189](https://www.jove.com/t/64189/identifying-caspases-their-motifs-that-cleave-proteins-during)
3. Farjana Ahmed and Matloob Husain (2022). *Human N-alpha-acetyltransferase 60 promotes influenza A virus infection by dampening the interferon alpha signaling*. Frontiers in Immunology, 12:771792. [*Article Link*](https://www.frontiersin.org/articles/10.3389/fimmu.2021.771792/full)
4. Farjana Ahmed, Torsten Kleffmann, Matloob Husain (2021). *Acetylation, methylation and allysine modification profile of viral and host proteins during influenza A virus infection*. Viruses 13(7):1415. [*Article Link*](https://www.mdpi.com/1999-4915/13/7/1415/htm)