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Elucidating the mechanisms of constitutive interferon (IFN) expression in Egyptian Rousette bats

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Interferons (IFN) are a crucial family of cytokines that rapidly trigger antiviral responses upon infection by inducing the expression of IFN-stimulated genes (ISGs). Contradictory findings regarding constitutive IFN expression have been reported for Egyptian Rousette bats (ERB). To address this discrepancy, we established qPCR to quantify IFN transcripts in human and ERB cells. We observed significantly higher bat IFN transcript numbers in both primary and immortalized cells. To determine the presence of functional IFN proteins, we evaluated the basal expression of downstream ISGs by Western blotting. Consistently, we observed higher levels of ISG proteins in ERB cells under resting conditions. This strongly suggests that their expression is driven by constitutive IFN signaling. To confirm the secretion of IFN proteins, we tested various protocols to detect IFN in the supernatants by mass spectrometry (MS). A total of around 500 proteins were identified, most of which were extracellular, demonstrating the efficiency of our enrichment protocol. Unfortunately, no IFN peptides were detected. To validate IFN secretion, we are currently establishing an IFN ELISA and generating IFN reporter cell lines as complementary approaches. Finally, to elucidate which IRF contributes to constitutive IFN expression, ERB cells deficient of individual IRF were generated. We are currently evaluating the roles of different IRFs in IFN expression under both basal conditions and upon infection.

Keywords

`Interferon, IFN-stimulated genes, Interferon-regulatory factor, Egyptian Rousette bats,`

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Professional Status of the Speaker

`Senior Scientist`

Junior Scientist Status

`No, I am not a Junior Scientist.`

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