Investigating the Role of G3BP in Poliovirus Induced Stress Granule Formation

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A common response of cells to environmental stressors is the inhibition of translation of cellular mRNAs. When translation is shut down, untranslated messenger ribonucleoproteins (mRNPs) accumulate and are recruited to membraneless structures —stress granules (SGs). SGs have been implicated in a variety of disease states and SGs have been postulated to play an essential role in the anti-viral response—the host response to viral infections. During many viral infections, SGs form and many anti-viral proteins such as RIG-1 and PKR are recruited to these structures. G3BP has been identified as a gene that controls stress granule formation. This project examined the effect of two variants in the gene G3BP on poliovirus induced stress granule formation: G3BP S149E and G3BP BC. Previous literature suggested that these gene variants, when exposed to oxidative stress conditions, blocked stress granule formation. In this project, when these variants were exposed to poliovirus-infected HeLa cells, stress granule formation was not blocked, which rejected the hypothesis of the project.

Awards Won: