**Identifying Novel Triggers of The Intracellular Pathogen Response (IPR) In C. Elegans**

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The intracellular pathogen response (IPR) is a cell signaling pathway found in C. elegans that is triggered when pathogenic microorganisms invade, and immune responses attempt to eliminate the threat. Due to the relative simplicity of C. elegans, they are an excellent model organism to analyze the cell signaling pathways triggered by various pathogens. They lack the complex immune systems of larger organisms, making it easier to study the involved cell signaling pathways.   Past studies have shown that the IPR can also be triggered via intestinal wounding.  Heat stress, viral infection, and proteasome stress are all known triggers of the IPR.  The long-term goal of this project is to generate potential new triggers, the response of which will be compared to the response generated by known triggers.  The IPR will be quantified by measuring nanoluciferase expression, which is driven by an IPR gene.  The immediate goal of this project is to develop this nanoluciferase assay system to generate IPR activity data in a high-throughput fashion.  We hope to eventually be able to relate our findings to similar pathways in humans and other vertebrates. While humans do not have the IPR that is found in C. elegans, they have similar pathways that perform equivalent functions. In particular, we are interested in how intestinal damage could be related to activation of innate immunity.  This information could be used to gain a better understanding of gastrointestinal diseases, specifically inflammatory bowel diseases.