EFTU-2 and SYF-3 are required for the post-transcriptional regulation of ZIP-10

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Objectives: The mitis group streptococci are commensals of the oropharyngeal cavity; however, these organisms have shown to be opportunistic pathogens in immunocompromised patients. Studies have shown hydrogen peroxide produced by the mitis group mediates the rapid killing of the nematode *Caenorhabditis elegans*. Recently, we have identified that the BZIP-2 transcription factor ZIP-10 is required for the survival of the worms and initiates an immune response against the mitis group. Moreover, *zip-10* expression has shown to be modulated by the microRNA *mir-60* in the worm. *mir-60* processing is regulated by the protein ISY-1. Using protein interaction databases, we have identified other potential candidates EFTU-2 and SYF-3 that could partner with ISY-1 to process *mir-60*. The goal of this study was to characterize these candidates in the context of immunity in the worm in response to the mitis group streptococci.

Experimental methods: After the knockdown of *eftu-2, syf-3,* and vector control in worms expressing ZIP-10, *zip-10*-dependent gene *asp-17, and mir-60* fused to Green Fluorescent Protein (GFP), localization of ZIP-10 in the nuclei of the intestinal cells and expression of *asp-17 and mir-60* were observed. Killing assays were performed to determine the survival between the *eftu-2, syf-3* knockdown, and vector control worms on *S. gordonii*, a representative of the mitis group.

Results: Significant increases in the localization of ZIP-10::GFP and the expression of *asp-17*::GFP were observed in the *eftu-2* and *syf-3* knockdown worms*;* however*,* the expression of *mir-60* was significantly decreased in *eftu-2* and *syf-3* knockdown relative to the vector control treated worms. Moreover, a significant increase in the survival of *eftu-2* and *syf-3* knockdown worms was observed on *S. gordonii* compared to the vector control treated worms

Conclusion: Our data suggests EFTU-2 and SYF-3 are required for the expression of the microRNA *mir-60* and subsequently the modulation of the expression of *zip-10*.

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