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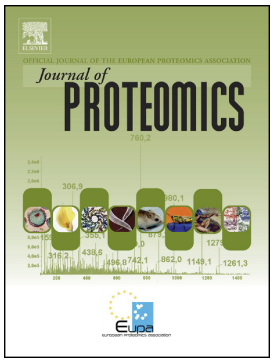

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Proteomic Identification of Virulence-Related Factors in Young and Aging *C. elegans* infected with *Pseudomonas aeruginosa*

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Abstract

The molecular mechanisms that distinguish immunosenescence from general age-related decline are poorly understood. We addressed this by exposing Day 1 and Day 5 adults of *Caenorhabditis elegans* to *Pseudomonas aeruginosa* strain PA01, an opportunistic pathogen. Day 5 adult *C. elegans* exhibited greater vulnerability to infection as compared to Day 1 *C. elegans*. Using TMT^6-plex isobaric labeling and reductive dimethylation, we identified 55 proteins whose levels were altered following infection of Day 1 and Day 5 adults. Proteins whose levels changed in response to infection at both ages were strongly enriched for locomotory functions underscoring the importance of pathogen avoidance mechanisms. In Day 1 *C. elegans*, proteins with reproductive functions were highly enriched, whereas, Day 5 worms showed elevated levels of factors representing stress response pathways such as unfolded protein response (UPR) and metabolic functions. We also found that PA01 infection is associated with elevated protein carbonylation, an irreversible marker for oxidative stress. We explored the