B/MYELOID CELL SIGNATURES IN FLAVOBACTERIUM PSYCHROPHILUM-RESISTANT AND -SUSCEPTIBLE GENETIC LINES OF RAINBOW TROUT.

Catherine Moore¹, Greg Wiens², and Patty Zwollo ¹§

¹Department of Biology, College of William and Mary, Williamsburg, VA 23185.; ²National Center for Cool and Cold Water Aquaculture, USDA-ARS, Kearneysville, WV 25430

ABSTRACT

The common aquaculture pathogen Flavobacterium psychrophilum (Fp) causes bacterial cold water disease (BCWD) in the rainbow trout (Oncorhyncus mykiss). For this project, we examined whether resistance to Fp is associated with differences in B/myeloid cell signatures in rainbow trout. The National Center for Cool and Cold Water Aquaculture has bred two genetic lines of rainbow trout: a line of Fp-resistant fish (ARS-Fp-R or R-line fish) and a line of susceptible fish (ARS-Fp-S, or S-line) having similar genetic background. Earlier studies from our lab have shown that 1) R-line fish have larger spleens than S-line fish, 2) R-line fish have a lower abundance of B lineage cells, and 3) R line fish have a higher abundance of EBF⁺ progenitors. Together, this might suggest that R-line fish have a more robust innate immune response compared to S line fish. To begin testing this hypothesis, we examined whether R-line fish had a higher abundance of myeloid cells than S-line fish, using antibodies against B/myeloid specific markers in a flow cytometric assay. Using myeloid marker Q4E in combination with early B lymphoid marker EBF, no significant differences between the two fish lines was observed (N~10). However, using myeloid markers Pu1 and Q4E, and B-cell marker Pax5, potential differences were detected between between lines: S-line fish had higher percentages of Pu1⁺/Q4E⁻/Pax5⁻ cells. We are currently analyzing additional fish and testing additional markers to better characterize myeloid lineage populations. This should shed light on the immunological mechanism by which R-line fish are better able to survive Fp-challenges than S-line fish.

KEYWORDS:

BCWD
Transcription factors
B cell development
Myeloid development
Rainbow trout

§Corresponding author. Tel +17572211969
Email address:pxzwol@wm.edu