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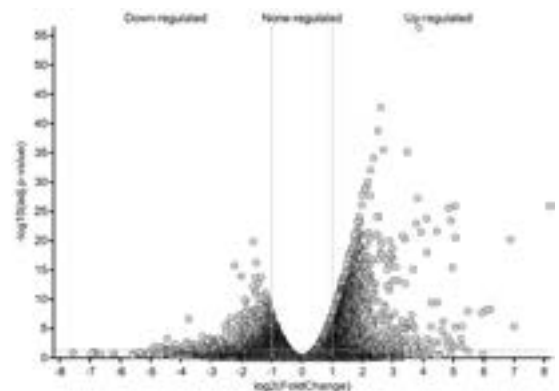
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Transcriptomic analysis of immunity in rainbow trout (*Oncorhynchus mykiss*) gills infected by *Ichthyophthirius multifiliis*Khairul Syahputra¹, Per W Kania¹, Azmi Al-Jubury¹, Rzgar M Jafaar¹, Ron P Dirks² and Kurt Buchmann¹¹University of Copenhagen, Denmark²Future Genomics Technologies BV, The Netherlands

The parasite *Ichthyophthirius multifiliis* infecting skin, fins and gills of a wide range of freshwater fish species, including rainbow trout, is known to induce a protective immune response in the host. Although a number of studies have reported activation of several immune genes in infected fish host, the immune response picture is still considered incomplete. In order to address this issue, a comparative transcriptomic analysis was performed on infected versus uninfected rainbow trout gills and it showed that a total of 3,352 (7.2%) out of 46,585 identified gene sequences were significantly regulated after parasite infection. Of differentially expressed gene sequences, 1,796 genes were up-regulated and 1,556 genes were down-regulated. A total of 268 (6.86%) regulated gene sequences were known to take part in 16 immune-related pathways. These involved pathways related to the innate immunity such as the Chemokine signaling pathway, Platelet activation, Toll-like receptor signaling pathway, NOD-like receptor signaling pathway, and Leukocyte transendothelial migration. Elevated transcription of genes encoding the TLR 8 gene and chemokines (CCL4, CCL19, CCL28, CXCL8, CXCL11, CXCL13, and CXCL14) was recorded indicating their roles in recognition of *I. multifiliis* and subsequent

induction of the inflammatory response, respectively. A number of upregulated genes in infected gills were associated with antigen processing/presentation and T and B cell receptor signaling (including B cell marker CD22 involved in B cell development). Overall the analysis supports the notion that *I. multifiliis* induces a massive and varied innate response upon which a range of adaptive immune responses are established which may contribute to the long lasting protection of immunized rainbow trout.

**Biography**

Khairul Syahputra is enrolled PhD at Department of Veterinary and Animal Science, University of Copenhagen, Denmark. He is a researcher at Research Institute for Fish Breeding, Subang, Indonesia. He has published more than 5 papers in reputed journals.

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