Accepted Manuscript

The effects of IL-1β, IL-8, G-CSF and TNF-α as molecular adjuvant on the immune response to an *E. tarda* subunit vaccine in flounder (*Paralichthys olivaceus*)

Ming Guo, Xiaoqian Tang, Xiuzhen Sheng, Jing Xing, Wenbin Zhan

PII: S1050-4648(18)30194-3

DOI: 10.1016/j.fsi.2018.04.009

Reference: YFSIM 5225

To appear in: *Fish and Shellfish Immunology*

Received Date: 11 December 2017

Revised Date: 25 March 2018

Accepted Date: 3 April 2018

Please cite this article as: Guo M, Tang X, Sheng X, Xing J, Zhan W, The effects of IL-1β, IL-8, G-CSF and TNF-α as molecular adjuvant on the immune response to an *E. tarda* subunit vaccine in flounder (*Paralichthys olivaceus*), *Fish and Shellfish Immunology* (2018), doi: 10.1016/j.fsi.2018.04.009.

The effects of IL-1β, IL-8, G-CSF and TNF-α as molecular adjuvant on the immune response to an *E. tarda* subunit vaccine in flounder (*Paralichthys olivaceus*)

Ming Guo[a], Xiaoqian Tang[a, b], Xiuzhen Sheng[a], Jing Xing[a, b], Wenbin Zhan[a, b, *]

[a] Laboratory of Pathology and Immunology of Aquatic Animals, KLMME, Ocean University of China, Qingdao 266003, China

[b] Laboratory for Marine Fisheries Science and Food Production Processes, Qingdao National Laboratory for Marine Science and Technology, Qingdao 266235, China

*Corresponding author: Wenbin Zhan

Email: wbzhan@ouc.edu.cn