

ZEBRAFISH HIGH THROUGHPUT SCREENING OF INNATE IMMUNE RESPONSES.

Herman Spaink¹, Ron Dirks², Jan de Sonnevile¹, Ralph Carvalho², Oliver Stockhammer^{1,2},
Ewa Snaar-Jagalska¹, Annemarie Meijer¹

¹Leiden University, Leiden The Netherlands; ²ZF-screens B.V. Leiden, The Netherlands

In recent years the zebrafish has been shown to be an excellent model for studying the mechanisms of the innate immune defense against pathogens. We have shown that transcriptome responses towards pathogens such as *Mycobacterium marinum* and *Salmonella typhimurium* are very similar to responses in mammalian systems. Using combinations of transcriptomic deep sequencing, morpholino knockdown and transgenic reporter fish technologies we have obtained new insights in the functions of key players of the innate immune system. These results are not only relevant to infectious diseases but also to the study of immune responses to cancer cells, for instance using xeno-transplantation assays. In this presentation we will show that such studies can also be extended to a high through put level. For this we have developed an injection robot that can handle up to 2000 embryos per hour. For optical screening we have employed COPAS XL flow cytometer (Union Biometrica) for reading out disease symptoms using flow-through laser scanning profiling coupled with embryo sorting. Furthermore we will show that a direct combination of morpholino and microbial injections can be used for fast screening screen for targets of infectious diseases.