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The Function of Toll-like receptor 2 in Infection and Inflammation

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Citation

Hu, W. (2021, December 16). *The Function of Toll-like receptor 2 in Infection and Inflammation*. Retrieved from <https://hdl.handle.net/1887/3247321>

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List of abbreviations

AB/TL: AB/Tupfel long fin

CFU : colony-forming units

CLSM: confocal laser scanning microscopy

DEGs: differential expressed genes

Dpf: days post fertilization

Dpi: days post injection

EGPF: enhanced Green fluorescent protein

FDR: false discovery rate

FACS: Fluorescence-activated cell sorting

GSEA: Gene-Set Enrichment Analysis

HDT: host-directed therapies

Hpfi: hours post fertilization

Hpi: hours post injection

Hpwi: hours post wounding

Mpeg1: macrophage expressed gene 1

Mpx: Myeloperoxidase

Mm: *Mycobacterium marinum*

Mtb: *Mycobacterium tuberculosis*

MAC: *Mycobacterium avium complex*

NMD: non-sense mediated mRNA decay

NTM: nontuberculous mycobacteria

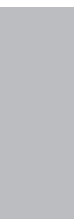
qPCR: quantitative polymerase chain reaction

RNAseq: Deep sequencing of cDNA derived from polyA RNA

SNEA: Sub-Network Enrichment Analysis

TB: tuberculosis

Tg: transgenic

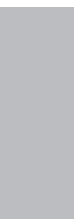


Curriculum vitae

Wanbin Hu was born on May 8th, 1991 in Luoyang, Henan, China. After graduating from Luoyang No. 3 High School in 2010, she started a Bachelor's program in Biotechnology at the Faculty of Life Science at Henan Normal University, Xinxiang, China. In 2014, she obtained her BSc degree.

In 2014, she started to pursue a Master's degree at Dalian Ocean University, Dalian, China. In her first year of graduate school, she was hired as an assistant graduate counselor. In 2016, she was awarded the "Third Prize of Excellent Paper" in the 2016 Dalian China-Japan-Korea Graduate Student Academic Forum. In the same year, she was awarded the "National Scholarship for Postgraduates". She was awarded twice the "Three Merits Student award", and awarded twice the "First Class Academic Scholarship" of Dalian Ocean University during her master's education. As a graduate student, her study mainly focused on the impact of environmental stress on morphology and physiology in marine life. In 2017, she was awarded "Outstanding Graduates in Dalian" and "Outstanding Graduate of Dalian Ocean University" certificates based on her master thesis "Transcriptome study on the response of sea urchin larvae to seawater acidification".

After completion of her MSc degree in 2017, she was awarded a scholarship from the China Scholarship Council (CSC) to carry out a PhD research project at the Institute of Biology of Leiden University under the supervision of Prof. Herman P. Spaink and Prof. Fons J. Verbeek. In this thesis, she investigated the function of toll-like receptor 2 in the innate immune system by using the zebrafish infectious model and zebrafish inflammatory model. The results of the research were published in BMC Genomics, British Journal of Pharmacology, and Frontiers in Cell and Developmental Biology. Currently, she is working as a postdoc at the Institute of Biology Leiden on non-tuberculous mycobacterial infections funded by the Innovative Medicines Initiative (IMI) of the European Union.



Publication list

1. **Hu W**, van Steijn L, Li C, Verbeek FJ, Cao L, Merks RM, Spaijk HP. A novel function of TLR2 and MyD88 in the regulation of leukocyte cell migration behavior during wounding in zebrafish larvae. *Frontiers in cell and developmental biology*. 2021;9.
2. Van Wijk RC, **Hu W**, Dijkema SM, van den Berg DJ, Liu J, Bahi R, Verbeek FJ, Simonsson US, Spaijk HP, Van der Graaf PH, Krekels EH. Anti-tuberculosis effect of isoniazid scales accurately from zebrafish to humans. *British journal of pharmacology*. 2020 Dec;177(24):5518-33.
3. **Hu W**, Yang S, Shimada Y, Münch M, Marín-Juez R, Meijer AH, Spaijk HP. Infection and RNA-seq analysis of a zebrafish *tlr2* mutant shows a broad function of this toll-like receptor in transcriptional and metabolic control and defense to *Mycobacterium marinum* infection. *BMC genomics*. 2019 Dec;20(1):1-8.