

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/44243> holds various files of this Leiden University dissertation.

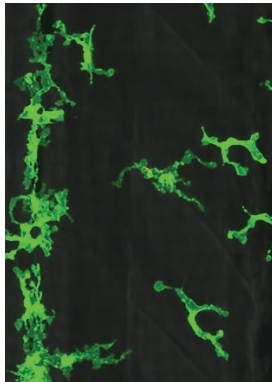
Author: Torraca, V.

Title: Exploitation of host chemokine signalling by pathogenic mycobacteria

Issue Date: 2016-11-17

**Exploitation of host chemokine signalling by
pathogenic mycobacteria**

Vincenzo Torraca



Cover: Macrophages (green) in the trunk of a 2-day-old zebrafish embryo. One (centre) has phagocytosed a *Mycobacterium marinum* cell (yellow) which was injected 1 hour before the image was taken.

ISBN: 978-94-6328-090-7

Printed by: Wöhrmann Print Service, Zutphen, The Netherlands

Exploitation of host chemokine signalling by pathogenic mycobacteria

Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden,
op gezag van Rector Magnificus prof. mr. C.J.J.M Stolker,
volgens besluit van het College voor Promoties
te verdedigen op donderdag 17 november 2016
klokke 16:15 uur

door

Vincenzo Torraca

Geboren te Salerno, Italië
op 6 september 1987

Promotiecommissie

Promotores: Prof. dr. Annemarie H. Meijer
Prof. dr. Herman P. Spaink

Promotiecommissie: Prof. dr. Ariane Briegel
Prof. dr. Johannes M. F. G. Aerts
Prof. dr. Annemieke Geluk
Dr. Serge Mostowy (Imperial College London)

*“Humans are not the pinnacle of evolutionary progress
but only an aberrant side branch of fish evolution”*

Peter B. Moyle,
Distinguished Professor Emeritus,
University of California, Davis

Table of contents

Chapter 1	Introduction and thesis outline.....	1
Chapter 2	Macrophage-pathogen interactions in infectious diseases: new therapeutic insights from the zebrafish host model.....	27
Chapter 3	The CXCR3-CXCL11 signalling axis mediates macrophage recruitment and dissemination of mycobacterial infection.....	57
Chapter 4	Disruption of chemotactic signalling primes the lysosomal function of macrophages to counteract mycobacterial parasitism.....	97
Chapter 5	CRISPR/Cas9 mutagenesis of zebrafish Cxcr3.3 suggests opposing functions of atypical and canonical Cxcr3 paralogues on mycobacterial infection control.....	121
Chapter 6	The chemokine receptor CXCR4 promotes granuloma formation by sustaining a mycobacteria-induced angiogenesis programme.....	155
Chapter 7	The inflammatory chemokine Cxcl18b exerts neutrophil specific chemotaxis via the promiscuous chemokine receptor Cxcr2 in zebrafish.....	173
Chapter 8	General discussion and final conclusions.....	193
	Summary.....	221
	Dutch summary / Samenvatting.....	225
	List of abbreviations.....	230
	Nomenclature of zebrafish chemokine ligands.....	232
	Nomenclature of zebrafish chemokine receptors.....	235
	<i>Curriculum vitae</i>	237
	List of publications.....	238