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Exploitation of host chemokine signalling by pathogenic mycobacteria

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List of abbreviations

AB/TL	AB/Tupfel long fin
AC	Adenylyl cyclase
Ackr	Atypical chemokine receptor
AGM	Aorta, gonads and mesonephros
AJ	Ashkenazi Jewish
ASMase	Acid sphingomyelinase
BALB/c	Bagg Albino/c
BCA	Bicinchoninic acid
<i>Bcc</i>	<i>Burkholderia cenocepacia</i>
BCG	Bacillus of Calmette–Guérin
bHLH	Basic helix-loop-helix
BLT1	Leukotriene B4 receptor 1
bZip	Basic Leucine zipper
C/ebp β	CCAAT enhancer-binding protein β
cAMP	Cyclic adenosine monophosphate
Cas9	CRISPR-associated protein 9
Ccl1	Cys-Cys motif chemokine ligand
Ccr1	Cys-Cys motif chemokine receptor
Cdc42	Cell division control protein 42 homologue
CFU	Colony forming unit
CHT	Caudal haematopoietic tissue
CLEAR	Coordinated lysosomal expression and regulation
Coro-1a	Coronin 1a
COX	Cyclooxygenase
CRISPR	Clustered regularly interspaced short palindromic repeats
CV	Caudal vein
Cx3cl	Cys-X3-Cys motif chemokine ligand
Cx3cr	Cys-X3-Cys motif chemokine receptor
Cxcl	Cys-X-Cys motif chemokine ligand
Cxcr	Cys-X-Cys motif chemokine receptor
Cxl	Cys-X motif chemokine ligand
Cxr	Cys-X motif chemokine receptor
CYPD	Cyclophilin D
DAG	Diacylglycerol
DARC	Duffy antigen chemokine receptor
DC	Dendritic cell
DMSO	Dimethyl sulfoxide
Dpf	Days post fertilisation
Dpi	Days post infection/injection
DRY	Asp-Arg-Tyr
dsDNA	Double-stranded DNA
DUOX	Dual oxidase
<i>Ec</i>	<i>Escherichia coli</i>
ECM	Extracellular matrix
eGFP	Enhanced Green fluorescent protein
Eif	Eukariotic initiation factor
ELR	Glu-Leu-Arg
ENA78	Epithelial-derived neutrophil-

	activating peptide 78
ER	Endoplasmic reticulum
ERP	Exported repeated protein
ESAT-6	Early secretory antigenic target 6 kDa
ESX-1	ESAT-6 secretion system 1
FACS	Fluorescence-activated cell sorting
Fli1a	Friend leukemia integration 1a
GCP2	Granulocyte chemotactic protein 2
Gcsf	Granulocyte colony stimulating factor
GDP, GTP	Guanosine 5'-diphosphate, triphosphate
GEF	Guanine nucleotide exchange factor
GPCR	G-protein-coupled receptor
GPR35	G-protein-coupled receptor 35
GR	Glucocorticoid receptor
Grb2	Growth factor receptor-bound protein 2
GRO α , GRO β , GRO γ	Growth-regulated protein alpha, beta, gamma
HA	Human influenza haemagglutinin
HB	Hindbrain
HEXA,	Hexosaminidase A, B
HEXB	
Hif-1 α , Hif-2 α	Hypoxia-inducible factor 1 alpha, 2 alpha
Hpf	Hours post fertilisation
Hpi	Hours post infection/injection
Hpw	Hours post wounding
HSPC	Haematopoietic stem and progenitor cell
I-TAC	Interferon-inducible T-cell alpha chemoattractant
Ifny	Interferon gamma
Il1 β , Il8, Il13	Interleukin 1 beta, 8, 13
iNOS	Inducible nitric oxide synthase
IP-10	Interferon gamma-inducible protein 10
IP3	inositol 1,4,5-trisphosphate
Irf8	Interferon regulatory factor 8
Irg1	Immunoresponsive gene 1
JAK	Janus kinase
kDa	kilo Dalton
Kdrl	Kinase insert domain receptor-like
KO	Knockout
Lamp3	Lysosomal associated membrane protein 3
Lc3	Microtubule-associated protein 1A/1B-light chain 3
Lck	Lymphocyte cell-specific protein-tyrosine kinase
Lp/Lcp1	Leukocyte plastin/ Lymphocyte

	cytosolic protein 1
LSD	Lysosomal storage disorder
Lta4h	Leukotriene A4 hydrolase
LTB4	Leukotriene B4
Lyz	Lysozyme
M(Φ)	Monocyte/macrophage
MAPK	Mitogen-activated protein kinases
MIF	Macrophage migration inhibitory factor
MIG	monokine induced by interferon γ
miRNA	Micro RNA
Mitf	Microphthalmia-associated transcription factor
MLCK	Myosin light-chain kinase
<i>Mm</i>	<i>Mycobacterium marinum</i>
Mmp 9	Matrix metalloproteinase 9
Mpeg1	Macrophage expressed gene 1
mPTPC	Mitochondrial permeability transition pore complex
Mpx	Myeloperoxidase
<i>Mtb</i>	<i>Mycobacterium tuberculosis</i>
Myd88	Myeloid differentiation primary response gene 88
M Φ	Macrophage
NADPH	Nicotinamide adenine dinucleotide phosphate
NAI	Nfkb activation inhibitor
NAP2	Neutrophil-activating peptide 2
Nfkb	Nuclear factor kappa-light-chain-enhancer of activated B cells
NK	Natural killer cell
Nlr	Nod-like receptor
NSAID	Non-steroid antinflammatory drug
N Φ	Neutrophil
P/DAMP	Pathogen and Damage-associated molecular pattern
PAM	Protospacer adjacent motif
PBS, PBSTx	Phosphate buffer saline, triton x
pC3	Previously chromosome 3
PCR	Polymerase chain reaction
PDIM	Phthiocerol dimycocerosate
PGL	Phenolic glycolipid
PGP	Pro-Gly-Pro
PH	Plekstrin homology
PHOX	Phagocytic oxidase
PI3K	Phosphatidylinositol-4,5-bisphosphate 3-kinase
PIP2	Phosphatidylinositol 4,5-bisphosphate
PIP3	Phosphatidylinositol (3,4,5)-trisphosphate
PITPNM3	Phosphatidylinositol transfer protein, membrane-associated 3
PKC	Protein kinase C
PLA, PLC	Phospholipase A, C
Ppiab	Peptidylprolyl isomerase ab
PRR	Pattern recognition receptor
PTK	Protein tyrosine kinase

Ptpn6/Shp1	Protein tyrosine phosphatase, non-receptor type 6/ Src homology region 2 domain-containing phosphatase 1
Ptpcr/Cd45	Protein tyrosine phosphatase receptor type C/Cd45
PTU	Phenylthiourea
PVP	Polyvinylpyrrolidone
qRT-PCR	Quantitative real time polymerase chain reaction
Rac1	Ras-related C3 botulinum toxin substrate
RD1	Region of difference 1
RhoA	Ras homologue gene family member A
RNS	Reactive nitrogen species
ROCK	Rho-associated protein kinase
ROS	Reactive oxygen species
shgRNA	Short guide RNA
SNARE	Soluble NSF attachment protein receptor
Spi1/Pu.1	Spleen Focus Forming Virus (SFFV) Proviral Integration Oncogene 1/Pu.1
Sqstm1/p62	Sequestosome 1/Ubiquitin-binding protein of 62 kDa
ssDNA	Single-stranded DNA
<i>St</i>	<i>Salmonella enterica</i> Serovar Typhimurium
STAT	Signal transducer and activator of transcription
SV40pA	Simian virus 40 polyadenylation signal
T3SS	Type III secretion system
T7SS	Type VII secretion system
TALEN	Transcription activator-like effector nuclease
TB	Tuberculosis
Tfeb, Tfec, Tfe3	Transcription factor E, C, 3
Tg	Transgenic
Tiam1	T-lymphoma invasion and metastasis-inducing protein 1
Tlr	Toll-like receptor
TM	Transmembrane
TMT	Transmembrane transporter
Tnfa	Tumour necrosis factor alpha
Traf6	TNF receptor-associated factor 6
UAS	Upstream activating sequence
Vegf	Vascular endothelial growth factor
Vegfr	Vascular endothelial growth factor receptor
WGD	Whole genome duplication
WHO	World health organisation
Wt	Wildtype
Xcl	X- Cysteine motif chemokine ligand
Xcr	X- Cysteine motif chemokine receptor
YPD	Yeast extract peptone dextrose
ZFN	Zinc finger nuclease

Nomenclature of zebrafish chemokine ligands

Name in this thesis	Ensembl gene name	zfin gene name	Ensembl gene ID/Alignment position	Ensembl protein ID	Previous /synonymous names and notes
ccl18ab	CR762483.1	-	ENSDARG00000074487	ENSDARP00000101228	-
ccl19aa	ccl19a.1	ccl19a.1	ENSDARG00000058389	ENSDARP00000090385	ccl-c5a, dr-scNA10579-CCL19-34.3%-DN, si:ch211-89f7.4
ccl19ab	ccl19a.2	ccl19a.2	ENSDARG00000035632	ENSDARP00000051667	ccl-c5b, DrUn_WGA13047_1_39000, WGA710_1_710182, zgc:194112, zgc:194121
ccl19b	ccl19b	ccl19b	ENSDARG00000039351	ENSDARP00000114954	ccl19, ccl-c10a, Dr10_WGA780_1_413112, si:dkey-20015.2
ccl20aa	-	-	unmappable	no protein assigned	-
ccl20ab	ENSDARG00000100432	-	ENSDARG00000100432	ENSDARP00000138620	-
ccl20ac	ccl20a.3	ccl20a.3	ENSDARG00000101040	ENSDARP00000138701	chemokine-1, CH73-320117.1, LOC100004509GN, zgc:195209, zgc:195195
ccl20ad	-	-	2:45319950-45317434 (-)	no protein assigned	Incomplete sequence/pseudogene
ccl20b	ccl20b	ccl20b	ENSDARG00000094511	ENSDARP00000122800 ENSDARP00000122912	ccl20, ccl-c24a, Dr24_WGA1806_1_416955, dr-chr24-CCL20-34.6%-DN, si:dkey-150a13.1
ccl25a	CU693369.1	-	ENSDARG00000089534	ENSDARP00000111107	-
ccl25b	ccl25b	ccl25b	ENSDARG00000070873	ENSDARP00000095178	ccl21, ccl-c11a, Dr11_WGA839_1_159228, dr-chr11-CCL21-36.7%-DN
ccl27a	ccl27a	ccl27a	ENSDARG00000058570	ENSDARP00000075898 ENSDARP00000137864	ccl1, Dr8_WGA606_1_66363, wu:fa96a04
ccl27b	ccl27b	ccl27b	ENSDARG00000079713	ENSDARP00000104032	ccl-c10b, Dr9_WGA697_1_854420, dr-chr9-CCL13-28.2%-DN, dr-chr9-CCL17-22.3%-DN
ccl32ab	ccl32a.2	ccl32a.2	ENSDARG00000095049	ENSDARP00000122846 ENSDARP00000141410	ccl-c2c, Dr7_WGA489_1_245599, si:ch211-122124.2
ccl32ac	-	-	2:40365520-40370475 (+)	no protein assigned	-
ccl32ad	-	-	2:40387422-40388412 (+)	no protein assigned	-
ccl32ae	-	-	unmappable	no protein assigned	-
ccl32bc	CT574575.1	-	ENSDARG00000098656	ENSDARP00000137910 ENSDARP00000140796	-
ccl32ca	-	-	KN149905:570-1 (-)	no protein assigned	-
ccl32cb	-	-	KN149905:2766-1821 (-)	no protein assigned	-
ccl32d	-	-	KN150005:21462-23168 (+)	no protein assigned	-
ccl33aa	-	-	25:25106427-25106501 (+)	no protein assigned	Incomplete sequence/pseudogene
ccl33ab	ccl33.2	ccl33.2	ENSDARG00000102519	ENSDARP00000130735 ENSDARP00000138153 ENSDARP00000138433	ccl-c25h, dr-chr25-CCL8-35.6%-EP41974b, si:ch211-149o7.6
ccl33ac	ccl33.3	ccl33.3	ENSDARG00000099401	no protein assigned	ccl-c25a, ccl-c25g, Dr25_WGA1873_1_709505, Dr25_WGA1872_1_17999, dr-chr25-CCL8-30.8-EP41974a, chr25-CCL24-35.6-DN, si:ch211-149o7.4
ccl34aa	-	-	unmappable	no protein assigned	-
ccl34ab	-	-	unmappable	no protein assigned	-
ccl34ac	ccl34a.3	ccl34a.3	ENSDARG00000094983	no protein assigned	ccl-c2e, Dr11_WGA879_1_762108, Dr11_WGA879_1_759152, Dr11_WGA879_1_755946, si:ch211-122124.5
ccl34ad	ccl34a.4	ccl34a.4	ENSDARG00000090873	no protein assigned	ccl-c2d, CC-Chemokine, dr-chr11-CCL19-33.7%-DN, dr-chr11-CCL19-32.7%-DN, si:ch211-122124.4
ccl34ba	ccl34b.1	ccl34b.1	ENSDARG00000093608	ENSDARP00000116086 ENSDARP00000136441	ccl-c24m, Dr22_WGA1631_1_283786, dr-chr22-CCL19-30.3%-DN, si:dkey-25o1.6
ccl34bb	-	-	24:27327959-27327535 (-)	no protein assigned	-
ccl34bb	-	-	unmappable	no protein assigned	-

Nomenclature of zebrafish chemokine ligands

Name in this thesis	Ensembl gene name	zfin gene name	Ensembl gene ID/Alignment position	Ensembl protein ID	Previous /synonymous names and notes
ccl34bc	ccl34b.3	ccl34b.3	ENSNDARG00000032993	ENSNDARP000000041769	ccl-c24k, DrUn_WGA7827_1_9830, dr-scNA5340-CCL19-30.5%-DN, si:dkey-25o1.9
ccl34bd	ccl34b.4	ccl34b.4	ENSNDARG00000094002	ENSNDARP00000117348 ENSNDARP00000136530	ccl-c24j, DrUn_WGA7827_1_17321, si:dkey-25o1.5
ccl34be	CR383669.1	-	ENSNDARG00000099782	ENSNDARP00000137755	-
ccl34bf	CR383669.2	-	ENSNDARG00000100520	ENSNDARP00000137901	-
ccl34bg	-	-	KN150005:21462-21536 (+)	no protein assigned	-
ccl34bh	ccl34b.8	ccl34b.8	ENSNDARG00000093098	ENSNDARP00000121266	ccl-c24c, si:dkey-25o1.4
ccl34bi	ccl34b.9	ccl34b.9	ENSNDARG00000078205	ENSNDARP00000098604	ccl-c24b, si:dkey-25o1.3
ccl34bl	-	-	24:27403153-27402859 (-)	no protein assigned	Incomplete sequence/pseudogene
ccl34bm	-	-	24:27411537-27411245 (-)	no protein assigned	Incomplete sequence/pseudogene
ccl34bn*	si:dkey-25o1.7	si:dkey-25o1.7	ENSNDARG00000093570	ENSNDARP00000121438 ENSNDARP00000130107 ENSNDARP00000135013	-
ccl34ea	CABZ01001434.1	-	ENSNDARG00000098602	ENSNDARP00000133785 ENSNDARP00000133418	-
ccl34eb	-	-	unmappable	no protein assigned	-
ccl35aa	ccl35.1	ccl35.1	ENSNDARG00000103466	ENSNDARP00000132604	ccl-c25y, Dr1_WGA6_1_97332, dr-chr1-CCL26-33.3%-EP26489, zgc:193743, zgc:193706
ccl35ab	ccl35.2	ccl35.2	ENSNDARG00000070378	ENSNDARP00000093979	ccl-c25ab, DrUn_WGA2406_1_18581, Dr25_WGA1872_1_197377, zgc:193706
ccl36aa	-	-	7:39442461-39442771 (+)	no protein assigned	Incomplete sequence/pseudogene
ccl36ab	BX908792.2	-	ENSNDARG00000105263	ENSNDARP00000138949	-
ccl38aa	ccl38.1	ccl38.1	ENSNDARG00000041919	ENSNDARP00000061433 ENSNDARP00000113398 ENSNDARP00000128783	ccl-c20g, Dr20_WGA1544_1_1446828, dr-chr20-CCL7-40.0%-DN, si:dkey-217m5.3
ccl38ac	-	ccl38a.3	unmappable	no protein assigned	ccl-c20e, Dr20_WGA1544_1_375272, Dr20_WGA1544_1_390316, dr-chr20-CCL14-32.9%-DN, si:dkeyp-59a8.5
ccl38ad	ccl38a.4	ccl38a.4	ENSNDARG00000041917	ENSNDARP00000061431	ccl-c20d, Dr20_WGA1544_1_386533, zgc:171266, si:dkeyp-59a8.3
ccl2 (ccl38ae)	ccl38a.5	ccl38a.5	ENSNDARG00000041835	ENSNDARP00000061310	ccl-c20c, Dr20_WGA1544_1_382837, si:dkeyp-59a8.2
ccl38af	ccl38.6	ccl38.6	ENSNDARG00000041923	ENSNDARP00000061436 ENSNDARP00000120680 ENSNDARP00000123921	ccl-c20b, Dr20_WGA1544_1_380308, Dr20_WGA1544_1_390316, dr-chr20-CCL7-35.6%-DN, wu:fj16d01, si:dkeyp-59a8.1
ccl39aa	ccl39.1	ccl39.1	ENSNDARG00000101041	ENSNDARP00000130968	ccl-c25q, dr-chr25-CCL13-38.9%-DN, si:dkeyp-55h4.5
ccl39ab	ccl39.2	ccl39.2	ENSNDARG00000102945	ENSNDARP00000138051 ENSNDARP00000141835	ccl-c25p, dr-chr25-CCL2-37.5%-DN, si:ch211-149o7.5
ccl39ac	ccl39.3 (ch. 25)	ccl39.3	ENSNDARG00000100295	ENSNDARP00000141922 ENSNDARP00000138620	ccl-c25o, dr-chr25-CCL13-35.9%-DN, si:dkeyp-55h4.6
ccl39ad	ccl39.4	ccl39.4	ENSNDARG00000104002	ENSNDARP00000130829 ENSNDARP00000138036	ccl-c25n, Dr25_WGA1872_1_141073, dr-chr25-CCL11-31.2%-DN, si:dkeyp-55h4.7
ccl39ae	ccl39.5	ccl39.5	ENSNDARG00000098460	ENSNDARP00000141305	ccl-c25m, dr-chr25-CCL2-35.0%-DN, dr-chr25-CCL2-36.4%-DN, si:dkeyp-55h4.8
ccl39af	ccl39.6	ccl39.6	ENSNDARG00000105089	ENSNDARP00000132580	ccl-c25l, si:dkeyp-55h4.9
ccl39ag	ccl39.7	ccl39.7	ENSNDARG00000099982	ENSNDARP00000133318 ENSNDARP00000138980	ccl-c25k, Dr25_WGA1873_1_857912, si:dkeyp-55h4.10
ccl39ah	CR450808.1	-	ENSNDARG00000100484	ENSNDARP00000135517	-
ccl39ai	-	-	25:12816818-12816285 (-)	no protein assigned	Incomplete sequence/pseudogene
ccl39aj*	ccl39a.10	ccl39a.10	ENSNDARG00000096060	ENSNDARP00000125562	ccl-c25z, si:ch211-202c4.2
ccl39ba*	ccl39.3 (ch. 6)	-	ENSNDARG00000101499	ENSNDARP00000130440	Incomplete sequence/pseudogene
ccl44	ccl44	ccl44	ENSNDARG00000074772	ENSNDARP00000101027	-
cxcl8a	CT826376.2	cxcl8a	ENSNDARG00000104795	ENSNDARP00000137520	ccl-c11b, Dr11_WGA839_1_233313
cxcl8ba	-	-	7:7671156-7665921 (-)	no protein assigned	cxcl8a, cxcl-c1a, CXCL8_L1_chrl, dr-chr1-CXCL8, si:dkey-151b16.2

Name in this thesis	Ensembl gene name	zfin gene name	Ensembl gene ID/Alignment position	Ensembl protein ID	Previous /synonymous names and notes
cxcl8bb	cxcl8b.1	cxcl8b.1	ENSDARG00000102299	ENSDDARP00000131403 ENSDDARP00000136965	iil82, cxcl8_l2_chr17
cxcl8bc	cxcl8b.3	cxcl8b.3	ENSDARG00000099169	ENSDDARP00000136707	cxcl-c13d, CXCL8_l2_chr7, dr-scNA16716-CXCL8
cxcl11aa	CXCL11 (1 of many)	cxcl11.1	ENSDARG00000100662	ENSDDARP00000135444	cxcl11l, cxcl-c5d, dr-chr5-CXCL11, vig7, SCYB9B, b-R1, IP-9, H174, SCYB11, I-TAC
cxcl11ab	-	cxcl11.2	5:42290344-42290046 (-)	no protein assigned	dr-chr5-CXCL11-27.4-DN Incomplete sequence/pseudogene
cxcl11ac	ENSDARG00000102514	cxcl11.3	ENSDARG00000102514	ENSDDARP00000136965	cxc-66, cxcl-c5e, dr-chr5-CXCL11-37.2-EK12810
cxcl11ad	CXCL11 (1 of many)	cxcl11.4	ENSDARG00000101138	ENSDDARP00000133434	cxcl11l2, cxc-56, cxcl-c5f, dr-chr5-CXCL9-35.1-EK43819, SCYB9B, b-R1, IP-9, H174, SCYB11, I-TAC
cxcl11ae	cxcl11.5	cxcl11.5	ENSDARG00000092423	ENSDDARP00000115162 ENSDDARP00000136838	cxcl-c5g, dr-chr1-CXCL11-37.1-DN, si:ch211-202a12.7
cxcl11af	cxcl11.6	cxcl11.6	ENSDARG00000094706	ENSDDARP00000112794	cxcl-c5h, si:ch211-202a12.8
cxcl11ag	cxcl11.7	cxcl11.7	ENSDARG00000093779	ENSDDARP00000116772	cxcl-c5i, dr-chr1-CXCL9-37.2-EK42273, si:ch211-202a12.9
cxcl11ah	cxcl11.8	cxcl11.8	ENSDARG00000095747	ENSDDARP00000123477	cxc-64, cxcl-c5b, dr-chr5-CXCL11-25.2-EP22087, si:dkey-58f10.5
cxcl12a	cxcl12a	cxcl12a	ENSDARG00000037116	ENSDDARP00000053945	cxcl12, sdf1, sdf1a, umm t30516, umm t30516, wu:fa55e10, wu:fc16h12, wu:ff84c02
cxcl12b	cxcl12b	cxcl12b	ENSDARG00000055100	ENSDDARP00000071878	sdf1b, zgc:136720
cxcl13	si:dkey-58f10.3	-	ENSDARG00000095112	no protein assigned	-
cxcl14	cxcl14	cxcl14	ENSDARG00000056627	ENSDDARP00000109550	scyba, fb67g04, wu:fb67g04
cxcl18aa	-	-	13:30566063-30568522 (+)	no protein assigned	Incomplete sequence/pseudogene
cxcl18b	cxcl18b	cxcl18b	ENSDARG00000075045	ENSDDARP00000102296	cxcl-c1c, dr-chr25-CXCL11-28.0-EP27297, si:ch73-6k14.1GN
cxcl19	cxcl19	cxcl19	ENSDARG00000102776	ENSDDARP00000135787	cxcl-c13d, dr-scNA11550-CXCL2-36.0%-DN
cxcl20b	cxcl20	cxcl20	ENSDARG00000075163	ENSDDARP00000102486	cxcl-c5c, dareCXcC, dr-chr5-CXCL10-28.6%-DN
cxcl32ba	cxcl32b.1	cxcl32b.1	ENSDARG00000071499	ENSDDARP00000096549	cxcl-c24e, si:ch211-260d11.1, scNA16670-CCL8-33.3-DN
cxcl32bb	CT574575.2	-	ENSDARG00000099822	ENSDDARP00000131333	-
cxl34bj	-	-	24:27385246-27384292 (-)	no protein assigned	-
cxl34bk	cxl34b.11	cxl34b.11	ENSDARG00000092283	ENSDDARP00000115786	cxl-c24a, cxl1, si:dkey-25o1.2
cxl34c	cxl34c	cxl34c	ENSDARG00000096664	ENSDDARP00000126667	cxl-c12a, wu:fb09d09, si:ch211-125g7.3
cxl34d	-	-	7:57100469-57102607 (+)	no protein assigned	-
cxl32aa	cxl32a.1	cxl32a.1	ENSDARG00000093906	ENSDDARP00000118951	cxl-c2a, si:ch211-122124.3

Notes: Comparison of the nomenclature applied in this work (column 1) with the nomenclature used in Ensembl and zfin databases or elsewhere in literature (columns 2-6). The nomenclature adopted here essentially reflects the systematic classification suggested by Nomiyama *et al.*, *Genes Cells*. 2013. Exceptions are made for genes where other names are largely in use (for these cases the name according to Nomiyama *et al.*, 2013 is reported in brackets in column 1). Names followed by asterisks (*) indicate sequences which were not annotated in Nomiyama *et al.*, 2013. Rows highlighted in grey represent either incomplete sequences or previously reported genes that cannot be mapped on the current version of the zebrafish genome (Ensembl, GRCz10, September 2016).

Nomenclature of zebrafish chemokine receptors

Name in this thesis	Ensembl gene name	zfin gene name	Ensembl gene ID/Alignment position	Ensembl protein ID	Previous /synonymous names and notes
ackr2/d6*	CU633991.1	-	ENSDARG000000086314	ENSDARP000000108059	-
ackr3a/cxcr7a	ackr3 (1 of many)	ackr3a	ENSDARG000000062478	ENSDARP000000084847	drRDC1a, si:dkey-191g15.12, si:dkeyp-74a11.11
ackr3b/cxcr7b	ackr3b	ackr3b	ENSDARG000000058179	ENSDARP000000063664	drRDC1b, sb:cb900, si:dkey-96h14.2
ackr4a/ccr11a	ackr4a	ackr4a	ENSDARG000000078729	ENSDARP000000116973	zfCCR11-1
ackr4b/ccr11b	ackr4b	ackr4b	ENSDARG000000040133	ENSDARP000000058702	drCCR11b, zfCCR11-2, sb:eu250
ackr6/pitpnm3*	pitpnm3	pitpnm3	ENSDARG000000055255	ENSDARP000000072049	wu:fk08b02, fk08b02
ccr4laa	ccr8.1	ccr8.1	ENSDARG000000095789	ENSDARP000000125541	ccr411, dr-chr16-CCR4-43.1-EK47490, zfCCR8-1
ccr4lab	CABZ01093075.1	CABZ01093075.1	ENSDARG000000086616	ENSDARP000000105159	zfCCR8-2
ccr4lac	ccr8	si:cabz01093077.1	ENSDARG000000105467	ENSDARP000000142256	GPR-CY6, CMKB88, TER1, CY6, CKR-L1, CDw198, CMKBRL2
ccr6a	ccr6a	ccr6a	ENSDARG000000087474	ENSDARP000000106824	zfCCR6-2, si:bx813304.1, zgc:86782, si:dkey-47g2.1
ccr6b	ccr6b	ccr6b	ENSDARG000000038968	ENSDARP000000128924 ENSDARP000000056883	zfCCR6-1, wu:fk31f08
ccr7	ccr7	ccr7	ENSDARG000000044561	ENSDARP000000118528	zfCCR7, zgc:165629
ccr9a	ccr9a	ccr9a	ENSDARG000000055186	ENSDARP000000071978	ccr9, zfCCR9-1, dr-chr2-CCR9-44.2-EK8447, sb:eu630
ccr9b	ccr9b	ccr9b	ENSDARG000000099738	ENSDARP000000134711 ENSDARP000000137365	ccr9l, dr-chr9-CCR9-39.2-EK48843, zfCCR9-2, LOC100006078
ccr10	ccr10	ccr10	ENSDARG000000040643	ENSDARP000000099267	zgc:91924
ccr11aa	ccr11.1	ccr11.1	ENSDARG000000070755	ENSDARP000000094951 ENSDARP000000142387	cx3cr11, zfCCR2-1, dr-chr21-CX3CR1-40.7%-EK41814,
ccr2 (ccr11ab)	si:ch211-207g17.2	si:ch211-207g17.2	ENSDARG000000079829	ENSDARP000000142081 ENSDARP000000094958	-
ccr11ac	si:ch211-207g17.3	si:ch211-207g17.3	ENSDARG000000105363	ENSDARP000000142057	-
ccr12a	ccr12a	ccr12a	ENSDARG000000038541	ENSDARP000000122747	ccr12.3, zfCCR3-3, si:ch211-106n13.2
ccr12ba	ccr12b.1	ccr12b.1	ENSDARG000000059410	ENSDARP000000126464	ccr12.1, zfCCR3-1, si:dkey-225n22.5
ccr12bb	ccr12b.2	ccr12b.2	ENSDARG000000026417	ENSDARP000000066871	ccr5.2, ccr12.2, CCR12bb, CCR5-35.0%-EK36093, zfCCR3-2
cxcr1 (cxcr1ba)	si:ch73-54b5.2	si:ch73-54b5.2	ENSDARG000000052088	ENSDARP000000068360	zmp:0000001086
cxcr2 (cxcr1bb)	cxcr2	cxcr2	ENSDARG000000054975	ENSDARP000000071727	si:ch73-54b5.1
cxcr3.1 (cxcr3ab)	cxcr3.1	cxcr3.1	ENSDARG000000007358	ENSDARP000000137552	dr-chr16-CXCR3-41.8-EK27498, sb:eu378
cxcr3.2 (cxcr3l)	cxcr3.2	cxcr3.2	ENSDARG000000041041	ENSDARP000000122984	dr-chr16-CXCR3-37.5-EK27053, zgc:92301
cxcr3.3 (cxcr3aa)	cxcr3.3	cxcr3.3	ENSDARG000000070669	ENSDARP000000119122	si:dkey-269d20.3
cxcr4a	cxcr4a	cxcr4a	ENSDARG000000057633	ENSDARP000000074800 ENSDARP000000123851	cb824
cxcr4b	cxcr4b	cxcr4b	ENSDARG000000041959	ENSDARP000000061498	cxcr4, odysseus, ody, cb403, drCXCR4b1, zgc:109863
cxcr5	cxcr5	cxcr5	ENSDARG000000010514	ENSDARP000000010091	MDR15, BLR1, CD185
cxcr8a/gpr35a*	ENSDARG000000075877	-	ENSDARG000000075877	ENSDARP000000103013	-
cxcr8ba/gpr35ba*	gpr35.1	gpr35.1	ENSDARG000000074633	ENSDARP000000133176 ENSDARP000000103106	zgc:171586
cxcr8bb/gpr35bb*	ENSDARG000000086776	gpr35.2	ENSDARG000000086776	ENSDARP000000111768	zmp:0000001226
xcr1aa	xcr1a.1	xcr1a.1	ENSDARG000000054847	ENSDARP000000071590 ENSDARP000000103498	xcr1, xcr1a
xcr1ab	si:ch73-217b7.4	xcr1a.2	ENSDARG000000054846	no protein assigned	Incomplete sequence/pseudogene

Name in this thesis	Ensembl gene name	zfin gene name	Ensembl gene ID/Alignment position	Ensembl protein ID	Previous /synonymous names and notes
xcr1ac	si:ch73-217b7.3	xcr1a.3	ENSDARG00000087978	no protein assigned	Incomplete sequence/pseudogene
xcr1ba	CABZ01053221.1	xcr1b.2	ENSDARG00000058774	ENSDARP00000076150	drXCR1b
xcr1be	XCR1 (1 of many)	xcr1b.1	ENSDARG00000052988	ENSDARP00000069429	xcr1b, GPR5, CCXCR1, zmp:0000001090
xcr1bd	CABZ01053219.1	xcr1b.3	ENSDARG00000089840	ENSDARP000000110709	ccr8.3, zfcCR8-3

Notes: Comparison of the nomenclature applied in this work (column 1) with the nomenclature used in Ensembl and zfin databases or elsewhere in literature (columns 2-6). The nomenclature adopted here essentially reflects the systematic classification suggested by Nomiyama *et al.*, *Genes Cells*. 2013. Exceptions are made for genes where other names are largely in use (for these cases the name according to Nomiyama *et al.*, 2013 is reported in brackets in column 1). Names followed by asterisks (*) indicate sequences which were not annotated in Nomiyama *et al.*, 2013. Rows highlighted in grey represent either incomplete sequences or previously reported genes that cannot be mapped on the current version of the zebrafish genome (Ensembl, GRCz10, September 2016).

Curriculum vitae

Vincenzo Torraca was born on September 6th, 1987 in Salerno, Italy. He obtained his high school diploma and professional certificate in Industrial and Food Chemistry in 2006, at the Technical and Industrial Institute B. Focaccia, in Salerno. At Salerno University, he obtained his bachelor degree in 2009 (*summa cum laude*) in computational and molecular biology, after completing an internship on the molecular characterisation of different natural and commercial accessions of *Origanum vulgare* (CRA-ORT, research centre for the horticulture, Battipaglia, Italy, under supervision of dr. F. Campanile and dr. M. Zaccardelli) and on the catalytic activity of genomic DNA for the Michael reaction (Salerno University, under supervision of dr. M. De Rosa and prof. dr. A. Soriente). In 2010, he was selected for the European Erasmus summer school “multidisciplinary approaches to microarray data analysis”, Ascea Italy. In 2011, he obtained his master degree (*summa cum laude*) in Biology by Salerno University, after having carried a research internship at Leiden University (the Netherlands), through the European LLP-Erasmus exchange program. Under the supervision of dr. A. Chatzopoulou, dr. M.J. Schaaf (Leiden University) and prof. dr. E.A. Illingworth (Salerno University), he investigated the function of an alternative splicing isoform of the glucocorticoid receptor, using the zebrafish (*Danio rerio*) model. In 2011, he obtained the national qualification as professional senior biologist, by the University of Sannio (Benevento, Italy). In 2012, he joined the group of prof. dr. A.H. Meijer (Institute of Biology, Leiden University) as a PhD candidate, funded by the Marie Skłodowska-Curie Initial Training Network FishForPharma. During his PhD he obtained extensive training on the zebrafish *in vivo* model for infectious diseases and specifically analysed in-depth the function of host chemokine signalling during infection with *Mycobacterium marinum*. In 2016, he was awarded with an individual Marie Skłodowska-Curie postdoctoral fellowship to join the group of dr. S. Mostowy (Imperial College London, UK), where he will continue his research on the zebrafish-*M. marinum* host-pathogen model and study the function of cytoskeleton dynamics during mycobacterial infections.

List of publications

Torraca V, in't Veld E, Meijer AH. Disruption of chemotactic signaling primes the lysosomal function of macrophages to counteract mycobacterial parasitism. *Manuscript in preparation.*

Tulotta C, Stefanescu C, Torraca V, Meijer AH, Snaar-Jagalska BE. CXCR4 signaling in the tumor microenvironment orchestrates experimental metastasis formation by controlling myeloid cell motility and response to malignant cells. *Manuscript in preparation.*

Torraca V, Otto NA, Tavakoli-Tameh A, Meijer AH. The inflammatory chemokine Cxcl18b exerts neutrophil-specific chemotaxis via the promiscuous chemokine receptor Cxcr2 in zebrafish. *Submitted manuscript.*

Torraca V, Tulotta C, Snaar-Jagalska BE, Meijer AH. The chemokine receptor CXCR4 promotes granuloma formation by sustaining a mycobacteria-induced angiogenesis program. *Submitted manuscript.*

Torraca V and Mostowy S. Septins and Bacterial Infection. *Front Cell Dev Biol. In press.*

Masud S, Torraca V, Meijer AH. Modeling infectious diseases in the context of a developing immune system. *Curr Top Dev Biol. In press.*

Torraca V, Cui C, Boland R, Bebelman JP, van der Sar AM, Smit MJ, Siderius M, Spaink HP, Meijer AH. The CXCR3/CXCL11 signaling axis mediates macrophage recruitment and dissemination of mycobacterial infection. *Dis Model Mech.* 2015, 8:253-69.

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