Toll-like family

Overview: Toll-like receptors are single TM cell-surface proteins with multiple leucine-rich regions in the extracellular portion, which participate in the innate immune response to microbial agents, the stimulation of which leads to activation of intracellular protein kinases and regulation of gene transcription. As well as responding to exogenous infectious agents, it has been suggested that selected members of the family may be activated by endogenous ligands, such as hsp60 (Ohashi *et al.*, 2000).

Nomenclature	Other names	Ensembl ID	Selective agonists
TLR2	CD282	ENSG00000137462	Peptidoglycan (Schwandner *et al.*, 1999; Yoshimura *et al.*, 1999)
TLR3	CD283	ENSG00000164342	PolyIC (Alexopoulou *et al.*, 2001)
TLR4	CD284	ENSG00000136869	LPS (Poltorak *et al.*, 1998), taxol (Kawasaki *et al.*, 2000)
TLR5	–	ENSG00000187554	Flagellin (Hayashi *et al.*, 2001)
TLR7	–	ENSG00000196664	R848 (Hemmi *et al.*, 2002), imiquimod (Hemmi *et al.*, 2002)
TLR8	–	ENSG00000101916	R848 (Hemmi *et al.*, 2002), imiquimod
TLR9	CD289	ENSG00000173366	CpG (Hemmi *et al.*, 2000)

Members of the family appear to interact in the recognition of many ligands such that the potency of ligands is altered with different combination patterns (e.g. TLR1/2 and TLR2/6, Takeuchi *et al.*, 2001; 2002).

Further members of the family, which includes TLR1 (Toll/interleukin-1 receptor-like protein, CD281, ENSG00000174125), TLR6 (ENSG00000174130), TLR10 (ENSG00000174123) and TLR11 (ENSMUSG00000051969), have been less well characterised.

Abbreviations: CpG, DNA enriched in cytosine : guanosine pairs; **imiquimod**, 1-(4-amino-imidazo[4,5-*c*]quinolin-1-yl)-2-methylpropane, also known as R837; **LPS**, lipopolysaccharide derived from Gram-negative bacteria; **polyIC**, polyinosine-polycytosine; **R848**, 1-(4-amino-2-ethoxymethyl-imidazo[4,5-*c*]quinolin-1-yl)-2-methyl-propan-2-ol, also known as resiquimod and S28463

Further Reading

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