

Toll-like receptors

Recognition of microbial products through Toll-like receptors						
	Receptor	Chromosome	Ligands	Microorganisms recognized	Cells carrying receptor	Cellular location of receptor
I	TLR1:TLR2 heterodimer	4	Lipopeptides	Bacteria	Monocytes, dendritic cells, eosinophils, basophils, mast cells	Plasma membrane
			Glycosylphosphatidylinositol	Parasites		
	TLR2:TLR6 heterodimer		Lipoteichoic acid	Gram-positive bacteria	Monocytes, dendritic cells, eosinophils, basophils, mast cells	Plasma membrane
			Zymosan	Fungi		
	TLR10 homodimer and heterodimers with TLR1 and 2		Unknown		Plasmacytoid dendritic cells, basophils, eosinophils, B cells	Unknown
	TLR4 homodimer	9	Lipopolysaccharide	Gram-negative bacteria	Macrophages, dendritic cells, mast cells, eosinophils	Plasma membrane
II	TLR7 homodimer	X	Single-stranded viral RNAs	RNA viruses	Plasmacytoid dendritic cells, NK cells, eosinophils, B cells	Endosomes
	TLR8 homodimer		Single-stranded viral RNAs	RNA viruses	NK cells	Endosomes
	TLR9 homodimer	3	Unmethylated CpG-rich DNA	Bacteria DNA viruses	Plasmacytoid dendritic cells, B cells, eosinophils, basophils	Endosomes
III	TLR3 homodimer	4	Double-stranded viral RNA	RNA viruses	NK cells	Endosomes
IV	TLR5 homodimer	1	Flagellin, a protein	Bacteria	Intestinal epithelium	Plasma membrane

Figure 3.29 The human Toll-like receptors allow the detection of different types of infection. Each of the known Toll-like receptors (TLRs) seems to recognize one or more characteristic features of microbial macromolecules, but TLR5 is the only one for which direct interaction with a microbial product, the bacterial protein flagellin, has been demonstrated. The 10 human TLR genes encode distinctive TLR polypeptides. Some TLRs are heterodimers of two polypeptides; others, such as TLR4, are homodimers. The Toll-like receptors take their name from their structural similarities to a receptor called Toll in the fruitfly *Drosophila melanogaster*, which is involved in the adult fly's defense against infection.