

TOLL-LIKE RECEPTOR 10

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BMI5904 - Reconhecimento Molecular pelo Sistema Imune (2025)

13/02/2025

MAIN CHARACTERISTICS

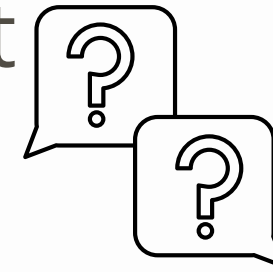
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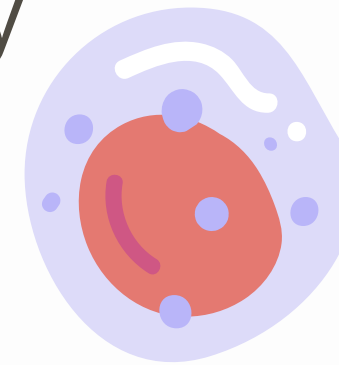
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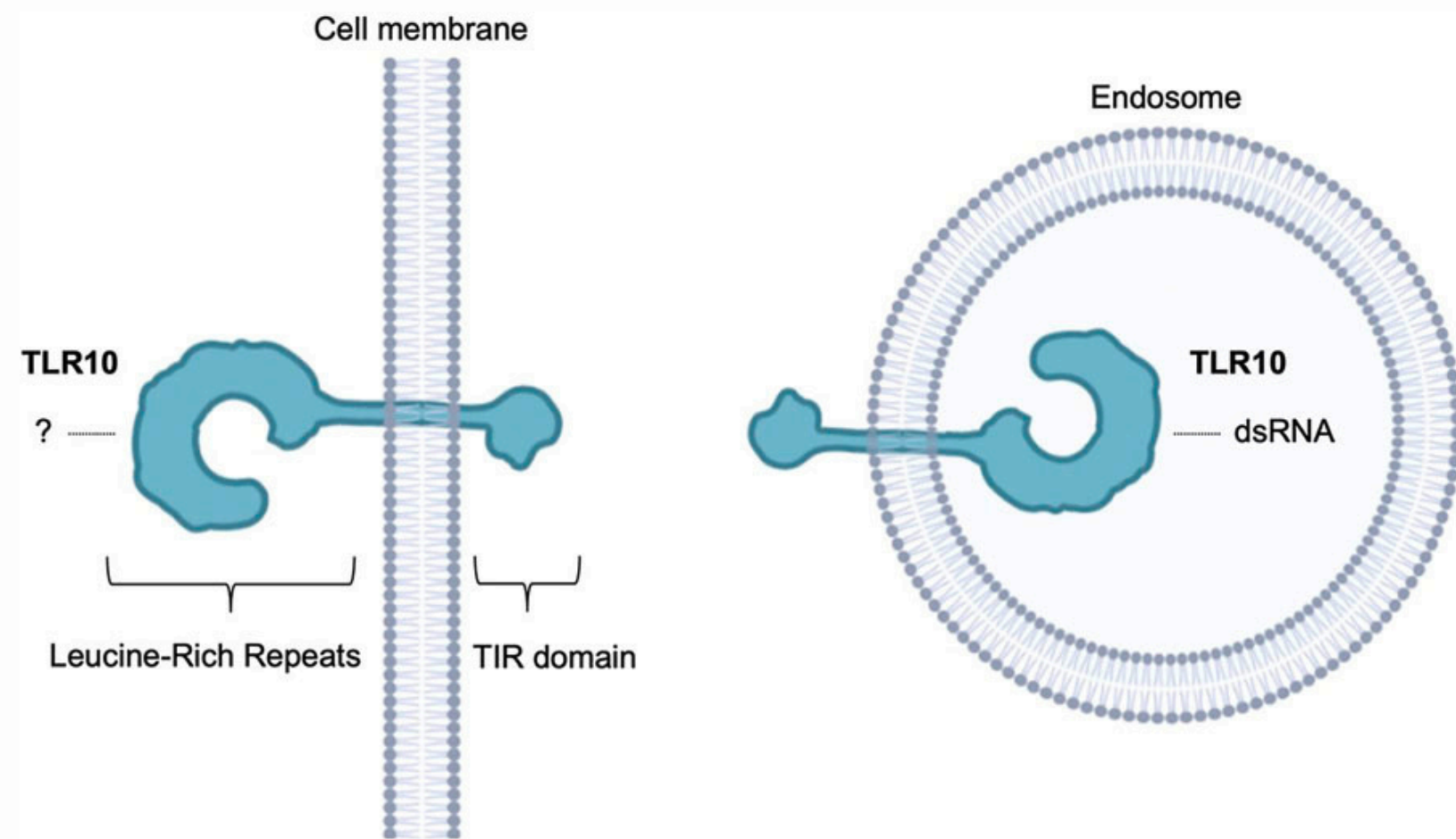


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- TLR10 is a pseudogene in mice - so, it’s not functional.

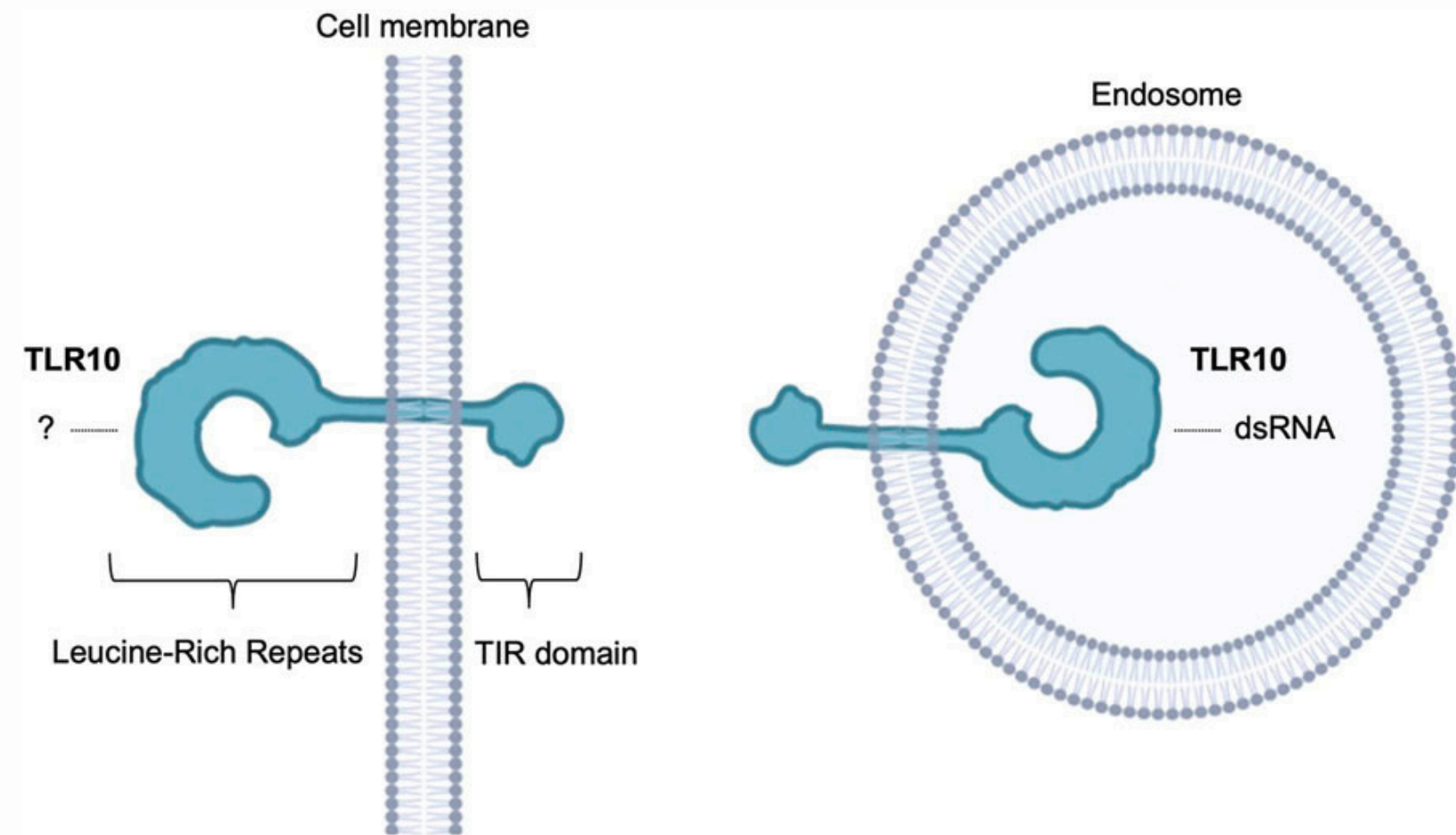


STRUCTURE AND PATHWAY

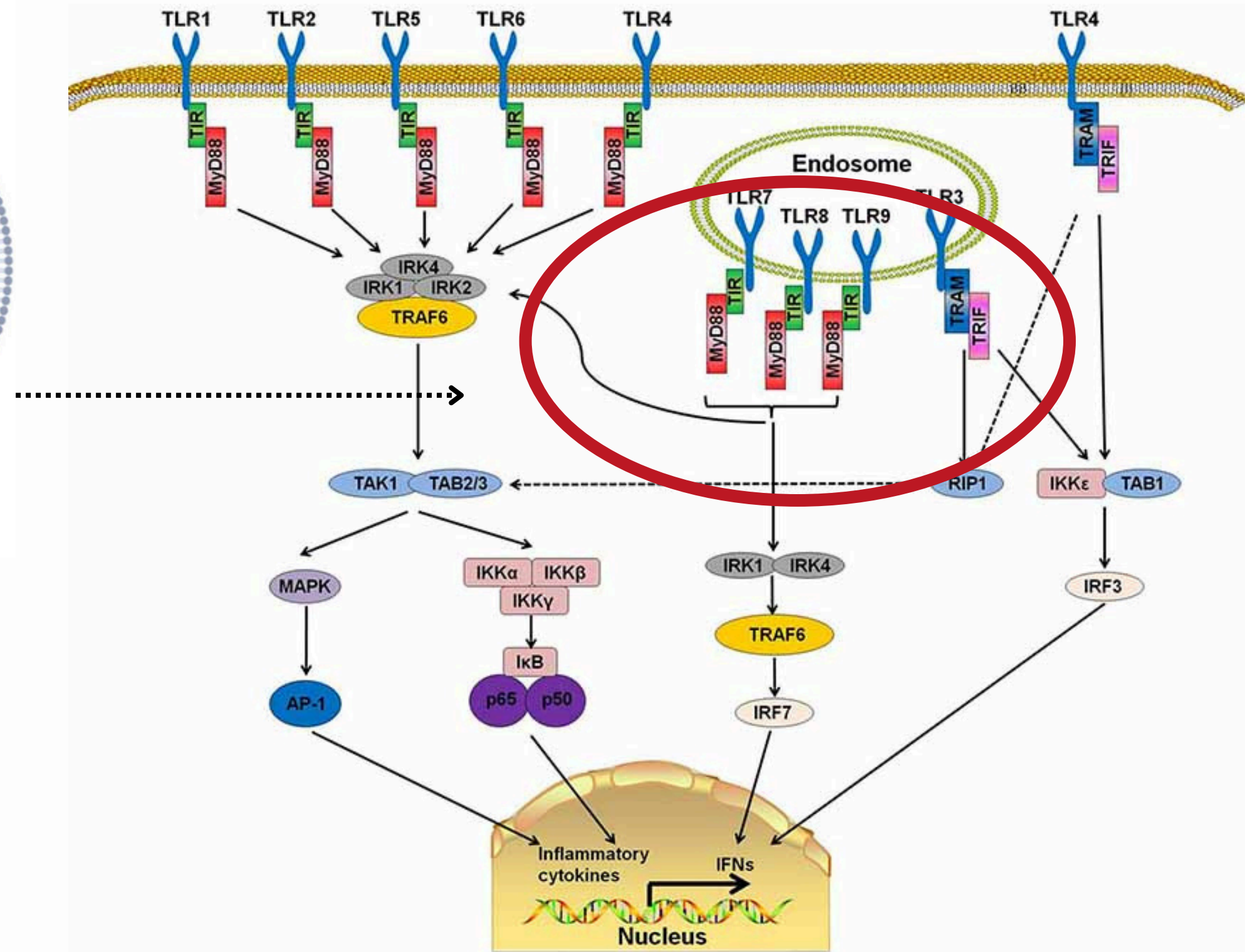


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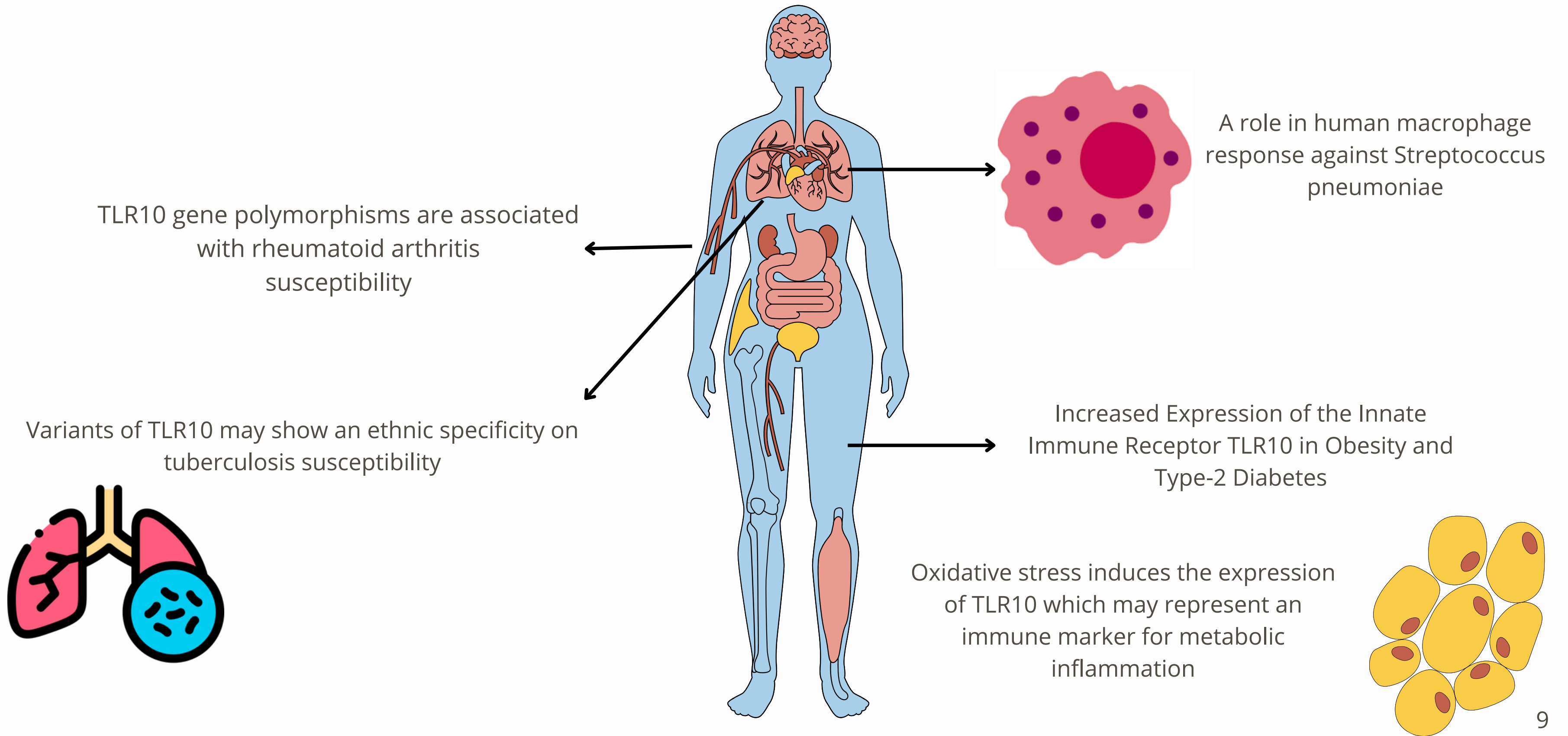
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ROLE IN DISEASES



REFERENCES

M. Oosting, S. Cheng, J.M. Bolscher, R. Vestering-Stenger, T.S. Plantinga, I.C. Verschueren, P. Arts, A. Garritsen, H. van Eenennaam, P. Sturm, B. Kullberg, A. Hoischen, G.J. Adema, J.W.M. van der Meer, M.G. Netea, & L.A.B. Joosten, Human TLR10 is an anti-inflammatory pattern-recognition receptor, *Proc. Natl. Acad. Sci. U.S.A.* 111 (42) E4478-E4484, <https://doi.org/10.1073/pnas.1410293111> (2014).

Hess NJ, Jiang S, Li X, Guan Y, Tapping RI. TLR10 Is a B Cell Intrinsic Suppressor of Adaptive Immune Responses. *J Immunol.* 2017 Jan 15;198(2):699-707. doi: 10.4049/jimmunol.1601335. Epub 2016 Dec 12. PMID: 27956526; PMCID: PMC5225023.

Hasan U, Chaffois C, Gaillard C, et al. Human TLR10 is a functional receptor, expressed by B cells and plasmacytoid dendritic cells, which activates gene transcription through MyD88. *J Immunol.* 2005;174(5):2942-2950. doi:10.4049/jimmunol.174.5.2942

Le HV, Kim JY. Stable Toll-Like Receptor 10 Knockdown in THP-1 Cells Reduces TLR-Ligand-Induced Proinflammatory Cytokine Expression. *Int J Mol Sci.* 2016;17(6):859. Published 2016 Jun 1. doi:10.3390/ijms17060859

Liu L., Botos I., Wang Y., Leonard J.N., Shiloach J., Segal D.M., Davies D.R. Structural basis of toll-like receptor 3 signaling with double-stranded RNA. *Science* (80-.) 2008;320:379–381. doi: 10.1126/science.1155406.

Wang Y, Zhang MM, Huang WW, et al. Polymorphisms in Toll-Like Receptor 10 and Tuberculosis Susceptibility: Evidence from Three Independent Series. *Front Immunol.* 2018;9:309. Published 2018 Feb 23. doi:10.3389/fimmu.2018.00309

Balachandran Y, Singh B. Toll-like receptor 10 has a role in human macrophage response against *Streptococcus pneumoniae*. *Cell Tissue Res.* 2022;390(1):51-57. doi:10.1007/s00441-022-03671-4

He Y, Chen H, Li M, et al. Analysis of TLR10 gene polymorphisms in patients with rheumatoid arthritis. *Int Immunopharmacol.* 2024;138:112565. doi:10.1016/j.intimp.2024.112565

Sindhu S, Akhter N, Kochumon S, et al. Increased Expression of the Innate Immune Receptor TLR10 in Obesity and Type-2 Diabetes: Association with ROS-10 Mediated Oxidative Stress. *Cell Physiol Biochem.* 2018;45(2):572-590. doi:10.1159/000487034

REFERENCES

Lai N, Qian Y, Wu Y, et al. Toll-like receptor 10 expression in B cells is negatively correlated with the progression of primary Sjögren's disease. *Clin Immunol.* 2022;237:108989. doi:10.1016/j.clim.2022.108989