

**lifitegrast**  
<https://www.xiidra.com>  
[www.xiidra-ecp.com](http://www.xiidra-ecp.com)

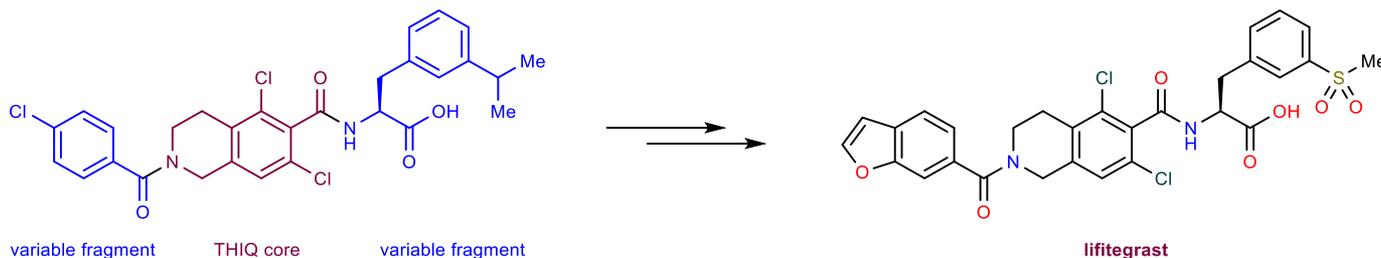


- Xiidra is prescribed for the treatment of signs and symptoms of dry eye disease-DED (administered as eye drops, \$553.54 for a 30-day prescription).
- Dry eyes symptoms (itching, burning...) are related to insufficient production of tears (help lubricate and protect the eye surface). This causes inflammation of the eye due to immune system response to stress, toxins, bacteria, irritation...
- Artificial tears are commonly used for lubricating the eyes. Xiidra is used if the problem persists and is able to alleviate the symptoms in several weeks.
- In 2008, it was estimated that 30 million Americans have symptoms consistent with dry eye disease.
- Xiidra was initially developed by SARcode Bioscience, which was acquired by Shire in 2013, which was acquired by Takeda in 2018. In 2019, Novartis purchased assets associated with the drug.
- FDA approval was granted in 2016.
- The drug amassed 400 million dollars in revenue in 2018.

Keating, G. M. *Drugs*, **2017**, 77, 201. <https://doi.org/10.1007/s40265-016-0681-1>  
Ahmad, A. J. *Pharmacol. Pharmacother.* **2016**, 7, 194. [doi:10.4103/0976-500X.195920](https://doi.org/10.4103/0976-500X.195920)  
Zhong, M. *ACS Med. Chem. Lett.* **2012**, 3, 203. <https://doi.org/10.1021/ml2002482>



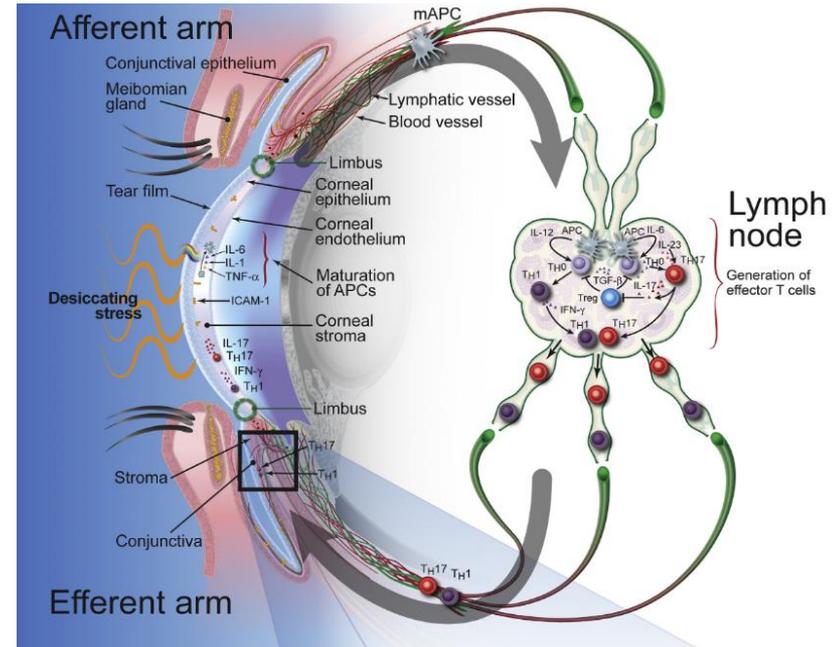
## Structure-Activity Relationship



[Full story](#)

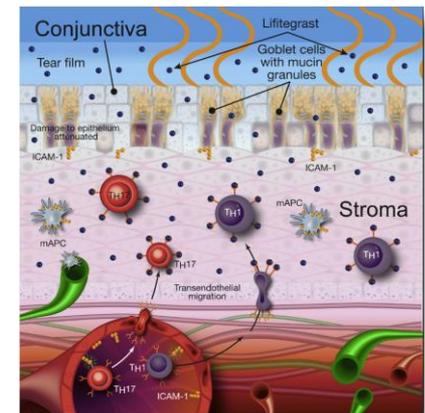
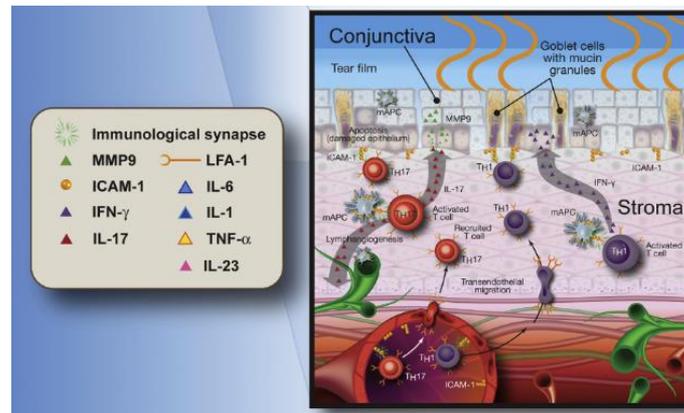
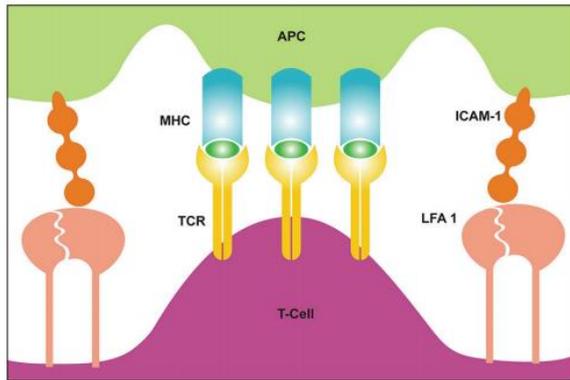
## Mode of action

- The pathology of DED is not completely understood.
- It is known that T-cell mediated inflammatory pathways play an important role.
- Integrins are receptors located on T-cells that help them in activation, adhesion to extracellular matrix, migration, proliferation and differentiation following an inflammatory signal.
- Integrin LFA-1 (lymphocyte function-associated antigen 1) helps in the migration process of T-cells to the inflammatory site by binding to ICAM-1 (intercellular adhesion molecule 1) located on antigen-presenting cells (APC).
- The formed immunological synapse facilitates release of inflammatory mediators which further intensify and perpetuate inflammation in ocular tissues.
- Lifitegrast is a competitive antagonist of binding of LFA-1 to ICAM-1, thus inhibiting T-cell activation and cytokine release decreasing the ocular inflammatory cycle. It binds to both active and inactive T-cells.

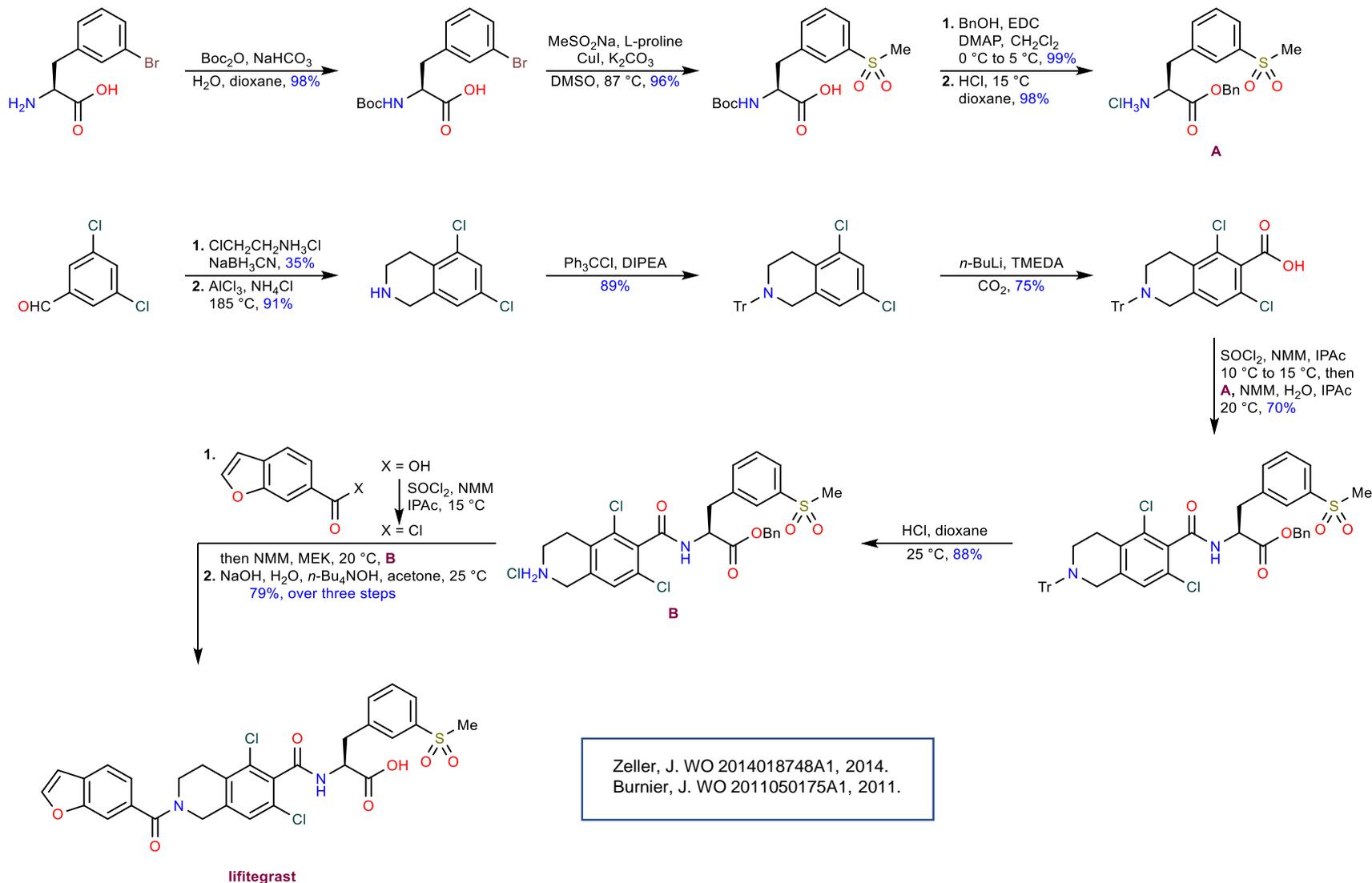


Perez, V. L. *The Ocular Surface*, 2016, 14, 207. <https://doi.org/10.1016/j.jtos.2016.01.001>

## Animation



## Synthesis:



Zeller, J. WO 2014018748A1, 2014.  
Burnier, J. WO 2011050175A1, 2011.