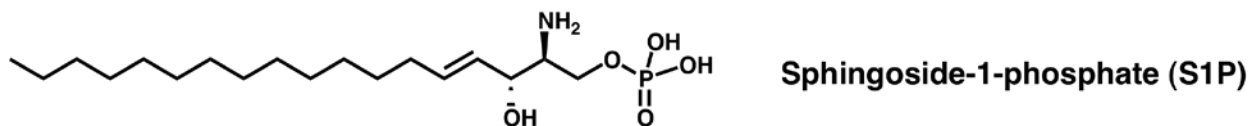
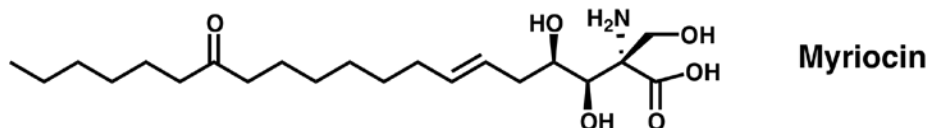


Organic chemistry, combined with other sciences, improves human existence.

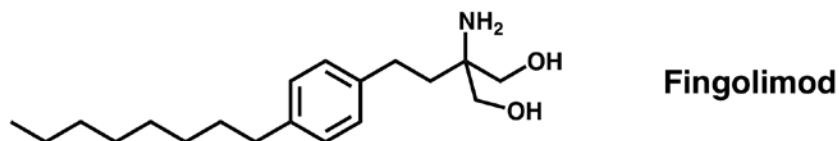
Example: Fingolimod, a drug recently approved to treat multiple sclerosis (MS).



S1P is a natural phospholipid that sends crucial signals within the human body. One key role of S1P is to control the movement of immune cells among different sites in the body. Inhibiting this movement can have a therapeutic effect for people who suffer from autoimmune diseases or who have received transplanted organs.



Myriocin is produced by a type of fungus. This molecule was first reported by Canadian researchers in 1972, when it was discovered as an antifungal agent. Nearly simultaneous work by Italian researchers identified the same molecule, but this time named "thermozymocidin", again based on antifungal activity. Japanese chemists reported the "rediscovery" of this compound (now designated "ISP-1") in 1994 on the basis of its immunosuppressive activity.



The Japanese group set out to discover simpler molecules that would display comparable immunosuppressive activity but fewer "side effects" (i.e., lower toxicity). Studies described in 1995 identified the molecule now known as "fingolimod." This compound was approved as a drug for treatment of MS in 2010.

Scientific publications that illustrate the methods necessary to determine the structure of myriocin and to synthesize related compounds such as the one that became known as fingolimod may be found under "in the news" on the course website.