

Antipsychotic drugs (aka Neuroleptics or Major Antidepressants)

A class of **psychotropic medication** primarily used to manage **psychosis** (including delusions, hallucinations, paranoia or disordered thought)

Some definitions and key notions:

Psychotropic medication: *psychoactive drug* taken to exert an effect on the chemical makeup of the brain and nervous system

Psychoactive drug: chemical substance that alters psychological functioning by modulating central nervous system (CNS) activity

Psychosis: the inability to distinguish what is or is not real

[≠ **Psychopathy** (a personality construct characterized by impaired empathy and remorse, along with bold, disinhibited, and egocentric traits)]

Psychosis is not well-understood at the neurological level, but **dopamine** (along with other neurotransmitters) is known to play an important role

Two subclasses of antipsychotic drugs exist:

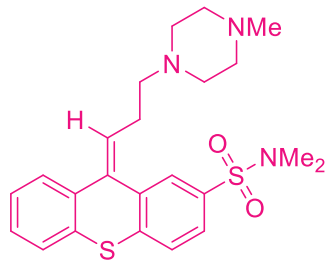
First-generation antipsychotics aka **typical antipsychotics** were first introduced in the 1950s, and others were developed until the early 1970s

Second-generation antipsychotics aka **atypical antipsychotics** arrived with the introduction of clozapine in the early 1970s followed by others.

** Both generations of medication block receptors in the brain for dopamine, but atypicals block serotonin receptors as well

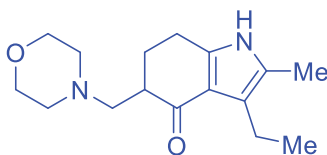
Third-generation antipsychotics were introduced in the 2000s and offer partial agonism, rather than blockade, of dopamine receptors.

Propose a (retro)synthesis route for one of the following molecules (ideally: two to be done during the exercise session)



Tiotixene

(Navane, Pfizer; 3313-26-6)

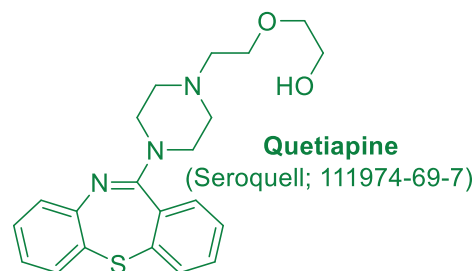


Molindone

(Moban; 7416-34-4)

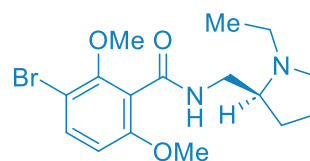
First generation (typical)

- Butyrophenones
- Diphenylbutylpiperidines
- Phenothiazines
- **Thioxanthenes**
- **Others**



Quetiapine

(Seroquell; 111974-69-7)

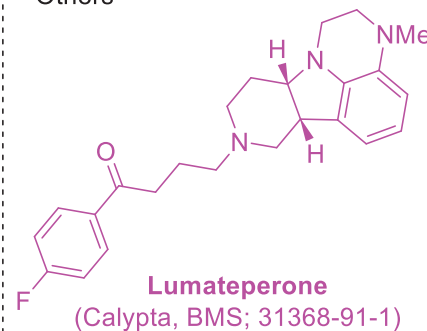


Remoxipride

(Roxiam, AZ; 80125-14-0)

Third generation

- **Butyrophenones**
- Phenylpiperazines/quinolinones/benzoxazinones
- **Others**



Lumateperone

(Calypta, BMS; 31368-91-1)

