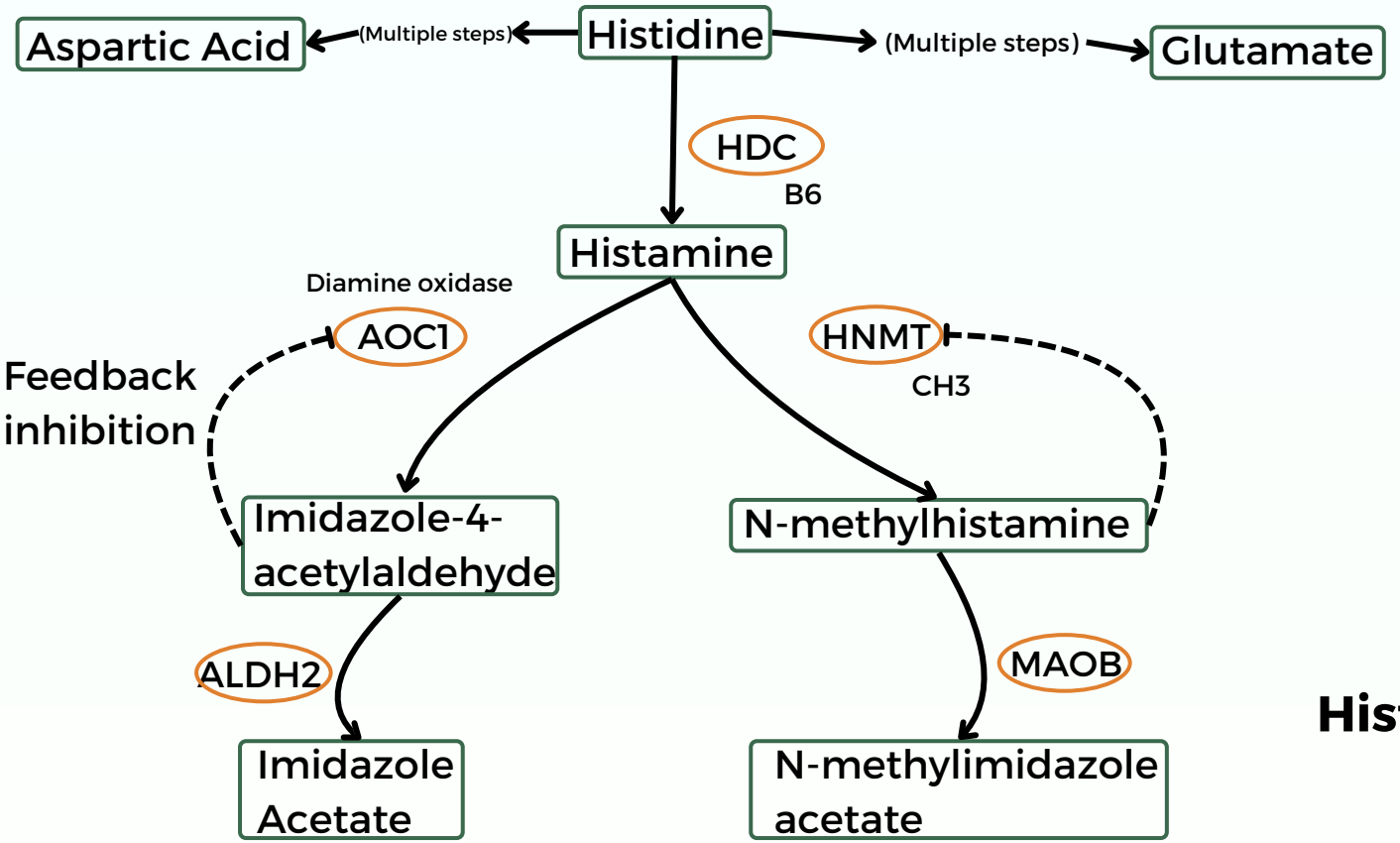
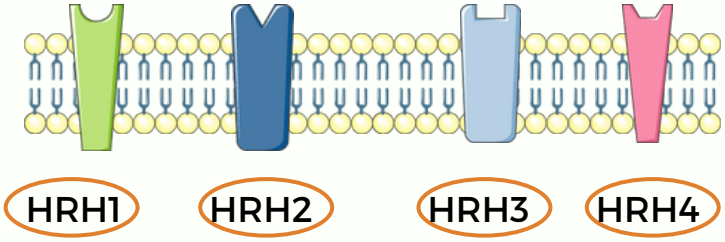
Histamine Synthesis and Degradation



Histamine Receptors



Receptor activation triggers cellular reactions

Refs:
PMC6027508
PMC8549891
PMC8087988
PMC8836602
PMC8144513

Images:
Servier Medical Art

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Histamine Related Genes

HDC

- Histidine decarboxylase
- Enzyme that converts L-histidine to histamine in a pyridoxal phosphate (P5P, vitamin B6) dependent manner.
- Widely expressed in all tissues

AOC1

- Amine oxidase copper containing 1
- Commonly known as diamine oxidase
- Enzyme that metabolizes histamine and other biogenic amines
- Primarily expressed in the intestines, placenta, and kidneys

HRH1

- Histamine receptor H1
- G protein-coupled receptor
- Causes contraction of smooth muscles, increased capillary permeability, neurotransmitter release, and allergy symptoms.
- Widely expressed

HRH2

- Histamine receptor H2
- Commonly known as diamine oxidase
- Regulates gastrointestinal motility, intestinal secretion, heart rhythm
- Expressed in the stomach, intestines, heart, and throughout the body

HNMT

- Histamine N-methyltransferase
- Enzyme that converts histamine to n-methylhistamine with the addition of a methyl group (CH3)
- Widely expressed in all tissues

MAOB

- Monoamine oxidase B
- Enzyme that breaks down biogenic amines and neuroactive amines
- Widely expressed in all tissues

HRH3

- Histamine receptor H3
- G protein-coupled receptor
- Regulates neurotransmitter release, smooth muscle contractions
- Mainly expressed in brain, bladder, and testes

HRH4

- Histamine receptor H4
- G protein-coupled receptor
- Regulates immune system, mast cell activation, itching
- Mainly expressed in bone marrow, white blood cells, skin, brain

Ref: **NIH Gene**, Human Protein Atlas