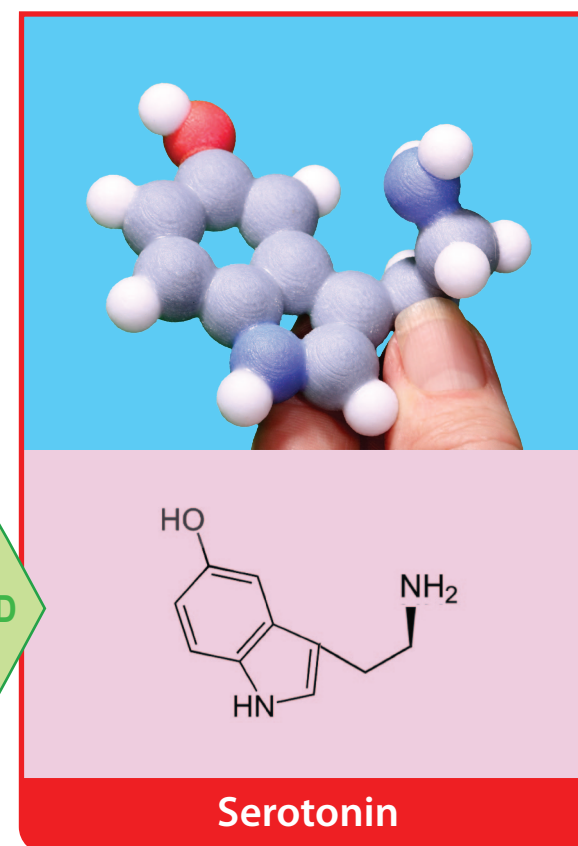
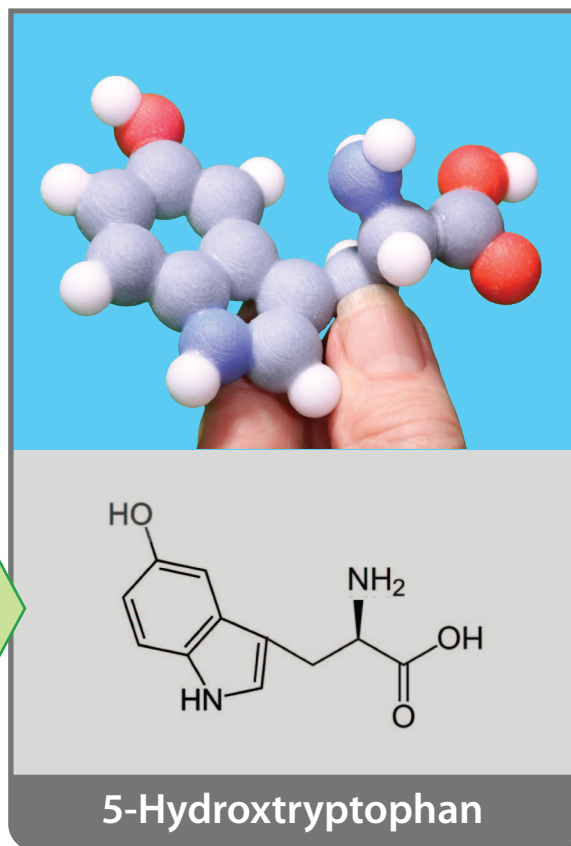
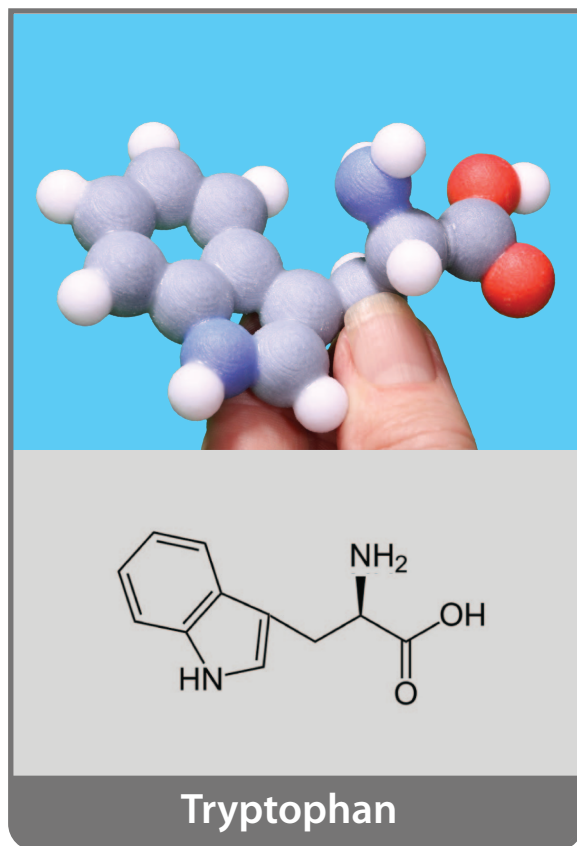




Serotonin Biosynthesis Model Guide

Neurotransmitters Module: The Beery Twins' Story[©]
A Project-Based Learning Activity



Tryptophan (Trp or W) is one of the 20 standard amino acids and is an essential amino acid that cannot be synthesized by the human body. Tryptophan is composed of the standard amino acid backbone with an indole ring side chain.

5-Hydroxytryptophan, an intermediate molecule in the serotonin biosynthesis pathway, is formed by the addition of a hydroxyl (OH) group to the fifth carbon of the indole ring of tryptophan.

The final step in the serotonin biosynthesis pathway requires the removal of the carboxylic acid group (COOH) from the backbone of 5-hydroxytryptophan to form the neurotransmitter **serotonin**.

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<http://cbm.msOE.edu>

- Neurotransmitter (Serotonin)
- TPH** Tryptophan Hydroxylase
(requires tetrahydrobiopterin as a cofactor)
- AAAD** Aromatic L-Amino Acid Decarboxylase
(requires vitamin B6 as a cofactor)

Model Color Key

- Oxygen
- Carbon
- Hydrogen*
- Nitrogen

* Hydrogens not shown in chemical drawings



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