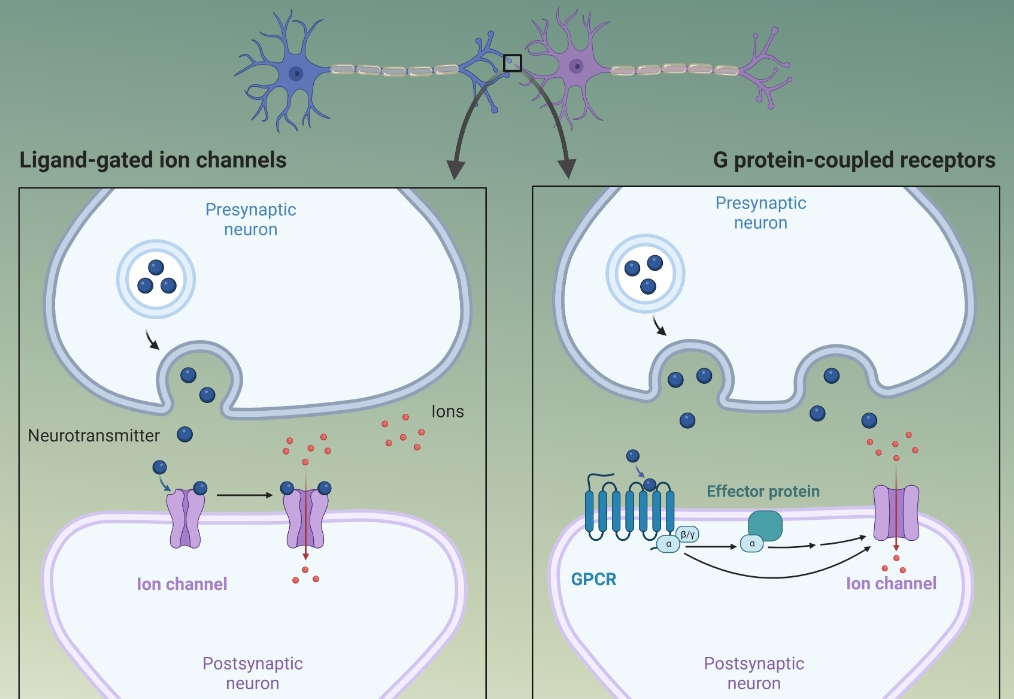


# Neuronal Signaling Related Ligands

Effective neural communication is essential for all aspects of the nervous system's operation, spanning from its role in development and throughout the entire lifespan, including health and disease. Investigation of neuronal signaling pathways is essential for advancing our understanding of brain function, identifying the mechanisms underlying neurological and psychiatric disorders, and developing effective treatments and therapies.

Neurotransmitter receptors are mainly divided into ionotropic and metabotropic. Ionotropic indicates that ions can pass through the receptor, whereas metabotropic indicates that a second messenger inside the cell passes the message. Several kinds of metabotropic receptors, such as G protein-coupled receptors (including 5-HT receptor, histamine receptor, opioid receptor, etc.) as well as various ionotropic receptors (ligand-gated ion channels) are important therapeutic targets in neuronal signaling. Notch signaling also impacts to central nervous system including regulating neural stem cell proliferation, survival, self-renewal, and differentiation.

**Neuronal Signaling Related Ligands Library** contains 1727 small ligands, some representative molecules are given below:  
Acetylcholine (associated with Alzheimer's disease and

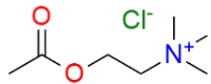


Mechanism of action of ionotropic (at left) and metabotropic (at right) neurotransmitter receptors (created by BioRender.com)

myasthenia gravis), Gabapentin (epilepsy and seizures), Dopamine (Parkinson's disease) and Serotonin (depression).

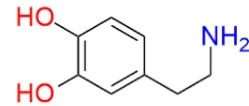
# Highlights

*Related terms: GPCR, ligand-gated IC, voltage-gated IC, catecholamine turnover, acetylcholine turnover, SLC6 neurotransmitter transporter family, GABA, CAMK, NAK*



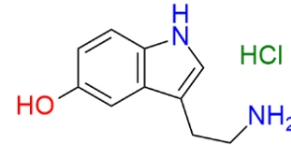
EBC-26152  
CAS: 60-31-1

Acetylcholine chloride, potent cholinergic agonist



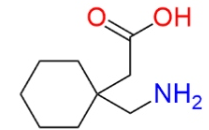
EBC-26106  
CAS: 51-61-6

Dopamine, a neurotransmitter



EBC-13726  
CAS: 153-98-0

Serotonin, an endogenous agonist at 5-HT receptors



EBC-03348  
CAS: 60142-96-3

Gabapentin, analogue of  $\gamma$ -aminobutyric acid

# Library Composition

Name	Occurrence in the library, times
G protein-coupled receptors	1710
Ligand-gated ion channels	782
Voltage-gated ion channels	255
Catecholamine turnover	207
Acetylcholine turnover	191
SLC6 neurotransmitter transporter family	104
Sigma receptors	64
Endocannabinoid turnover	43
Receptor tyrosine kinases (RTKs)	36
CAMK: Calcium/calmodulin-dependent protein kinases	17
Carrier proteins	15

AA: Aspartic (A) Peptidases	•	14
Alpha kinase family	•	11
NAK family	•	7
Orphan and other 7TM receptors	•	4
Ceramide turnover	•	2
Adenosine turnover	•	2