

Neurotransmitters (Disclaimer: This document is a work in progress with information obtained from various sources. It is revised as new findings become available.)

Structural Family	Neurotransmitter	Receptor Subtypes	Agonists	Antagonists	Characteristics/Notes/Functionality	Neurotransmitter Removal
AMINES						
Biogenic amine, Cholinergic	Acetylcholine (ACh)	Nicotinic	Nicotine	Curare	ionotropic, excitatory	AChEase
		Muscarinic	Muscarine	Atropine	G-protein coupled metabotropic, excitatory or inhibitory	AChEase
Monoamines Catecholamines			cocaine (blocks transport)			Transporters, MAO, COMT
	Dopamine (DA)			neuroleptics (most)	D2=reward	
	Norepinephrine (NE)	alpha ₁ , alpha ₂	Phenylephrine SNRIs	Phenoxybenzamine	metabotropic	
		beta ₁ , beta ₂	Isoproterenol	Propranolol	metabotropic	
	Epinephrine (Epi) (adrenaline)	Numerous adrenergics throughout body			receptors throughout body, brain	
Monoamines Indolamines						
	Serotonin (5HT)	5HT ₁ -5HT ₁₅	SSRIs		excitatory	Transporters, MAO
	Melatonin (Mel)					
	Phenylethylamine					
	Octopamine				replaces norepinephrine in SNS with chronic use of MAOs	
	Tyramine	TA1			may be blood pressure regulator	
AMINO ACIDS						
	Glutamate	AMPA	AMPA	CNQX	predominantly excitatory	Transporters
	Aspartate				predominantly excitatory	
	Glycine				predominantly inhibitory	Transporters
	GABA	GABA _A	Muscimol	Bicuculline	ionotropic, predominantly inhibitory	Transporters
		GABA _B	Baclofen	Phacolfen	metabotropic, predominantly inhibitory	Transporters
		GABA _C				
		NMDA	NMDA	AP5	predominantly excitatory	Transporters
	Histamine (H)	H ₁ -H ₄			excitatory also part of immune system	enzymes and transporters
	Gamma- hydroxybutyrate acid	GHB			endogenous in CNS and produced artificially as "date rape drug." Role in CNS unknown	
NEUROPEPTIDES Opioid Peptides		μ ₁ , μ ₂ , κ, δ, σ			excitatory, inhibitory, G-protein coupled action on GABAergic system	Proteases
	Metenkephalins	μ and δ			endogenous opioid	
	Leu-enkephalin	δ				

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	Endorphins	α -, β -, γ -			opioid	
	Dynorphin	κ opioid			may be cocaine antagonist	
	Kyotorphin					
SOLUABLE GASES						
	Nitric oxide					Spontaneous oxidation
	Carbon monoxide					
CANNABINOID Lipid Neurotransmitter	Anandamide 2-arachidonylglycerol (2-AG)	CB1 (brain) CB2 (immune)	THC		retrograde G-protein coupled metabotropic	Hydrolysis
ATP	adenosine triphosphate	P ₁₋₂ P2Y ₁₋₁₅ P2X ₁₋₇			excitatory signaling; main energy source for cells; roles in endocytosis and exocytosis	Hydrolysis
PEPTIDE HORMONES						
	Corticotropin (ACTH)					
	Oxytocin					
	Substance P					
	Cholecystokinin (CCK)					
	Vasopressin					
	Neuropeptide Y (NPY)					
	Gastrin Releasing Peptide (GRP)					
	Gastrin					
	Hypothalamic releasing horm					
	Secretin					
	Motilin					
	Glucagon					
	Vasoactive intestinal peptide					
	Growth hormone-releasing factor					
	Somatostatins					
	Bombesin					
	Bradykinin					
	Carnosine					
	Neurotensin					
	Delta sleep factor					
	Galanin					
	Oxerin					
	Lipotropin					

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	Thyroid stimulating hormone (TSH)					
	Prolactin					
HYPOTHALAMIC RELEASING HORMONES						
	Corticotropin releasing factor (CRH)					
	Gonadotropin releasing hormong (GnRH)					
	Somatostatin					
	Thyrotropin releasing hormong (TRH)					
CIRCULATING HORMONES						
	Angiotensin					
	Calcitonin					
	Glucagon					
	Insulin					
	Leptin					
	Atrial natriuretic factor					
	Estrogens					
	Androgens					
	Progestins					
	Thyroid hormones					
GUT HORMONES						
	Cholecystokinin (CCK)					
	Gastrin					
	Motilin					
	Pancreatic polypeptide					
	Secretin					
	Vasoactive intestinal peptide (VIP)					

Key to Greek symbols:

α alpha

β beta

ω omega

γ gamma

δ delta

ε epsilon

θ theta

κ kappa

λ lambda

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μ mu

σ sigma

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