

TABLE 19.1
Opioid Receptor Ligands

Receptor	Agonist	Antagonist	Agonist Effect(s)
μ	Morphiceptin DAGO Normorphine Sufentanyl	Naloxone	Analgesia Respiratory depression Miosis Reduced gastrointestinal motility Nausea Vomiting Euphoria
δ	Deltorphan II DPDPE DADLE	ICI 154,126 ICI 174,864	Supraspinal analgesia
κ	U50,488	MR2266	Analgesia (spinal level) Trifluadom Miosis (weak) Respiratory depression (weak) Dysphoria

Note: DAGO, Tyr-D-Ala-Gly-MePhe-Gly-ol; DPDPE, [D-Pen², D-Pen⁵]enkephalin; Pen, penicillamine; DADLE, [D-Ala², D-Leu⁵]enkephalin; deltorphan II, Tyr-D-Ala-Phe-Glu-Val-Val-Gly-NH₂; morphiceptin, β -casomorphin-(1–4)-amide or Tyr-Pro-Phe-Pro-NH₂.

TABLE 19.2
Endogenous Opioid Peptides

Precursor	Opioid Peptide Product	Amino Acid Sequence
Pro-enkephalin	[Met]-enkephalin	YGGFM
	[Leu]-enkephalin	YGGFL
Pro-opiomelanocortin Prodynorphin	Peptide E	YGGFMRRVGRPEWMDYQKRYGGFM
	BAM 22P	YGGFMRRVGRPEWMDYQKRYG
	Metorphamide	YGGFMRRVNH₂
	β -Endorphin	YGGFMTSEKSQTPLVTLFKNAIIKNAYKKGE
	Dynorphin A	YGGFLRRIRPKLKWDNQ
	Dynorphin A(1–8)	YGGFLRRI
	Dynorphin B	YGGFLRRQFKVVT
	α -Neoendorphin	YGGFLRKYPK
	β -Neoendorphin	YGGFLRKYP
	Pronociceptin	Nociceptin
Orphanin-FQ	Orphanin-FQ	
	Endomorphin-1	YPWF-NH ₂
	Endomorphin-2	YPPF-NH ₂
Prodermorphin and prodeltorphan ^a	Dermorphin	Y(D)AFGYPS-NH ₂
	Deltorphan	Y(D)MFHLM-D-NH ₂
	Deltorphan I	Y(D)AFDVVG-NH ₂
	Deltorphan II	Y(D)AFEVVG-NH ₂

Note: The pentapeptide sequences corresponding to [Met]-enkephalin and [Leu]-enkephalin contained in other opioid peptides are shown in bold. Note that β -endorphin and most of the opioid peptides derived from proenkephalin contain [Met]-enkephalin at their N-termini, whereas the sequence of [Leu]-enkephalin is present in those peptides derived from prodynorphin.

^a Dermorphin and deltorphan are derived from multiple precursors and all have a naturally occurring D-amino acid in position 2.