

KISS1, neuropeptide FF, prolactin-releasing peptide and QRFP

Overview: KISS1, neuropeptide FF (NPFF), prolactin-releasing peptide (PrP) and QRFP receptors (provisional nomenclature) respond to endogenous peptides with an arginine-phenylalanine-amide (RFamide) motif. Kisspeptin-54 (KP54, originally named metastin), KP13 and KP10 are biologically active peptides cleaved from the *KISS1* gene product (ENSG00000170498), while a single propeptide precursor (ENSG00000139574) generates the octapeptides NPFF (FLFQPQRF-NH₂, neuropeptide FF or F-8-F-amide) and NPSF (SLAAPQRF-NH₂, neuropeptide SF) and the octadecapeptide NPAF (AGEGLSPFWSLAAPQRF-NH₂, neuropeptide AF or A-18-F-amide). NPFF and NPAF were originally isolated from bovine brain (Yang *et al.*, 1985). The precursor (ENSG00000071677) for PrRP generates 31 and 20-amino-acid versions. QRFP (named after a pyro-glutamylated arginine-phenylalanine-amide peptide) is a 43 amino-acid peptide derived from ENSG00000188710 and is also known as P518 or 26RFa. RFRP is an RF amide-related peptide (Hinuma *et al.*, 2000) derived from a FMRFamide-related peptide precursor (ENSG00000105954), which is cleaved to generate neuropeptide NPSF (neuropeptide RFRP-1), neuropeptide RFRP-2 and neuropeptide NPVF (neuropeptide RFRP-3).

Nomenclature	KISS1	NPFF1	NPFF2	PrRP	QRFP
Other names	hOT7T175 (Ohtaki <i>et al.</i> , 2001), GPR54, metastin, hypogonadotropin	Neuropeptide FF 1, GPR147 (Bonini <i>et al.</i> , 2000), OT7T022	Neuropeptide FF 2, GPR74 (Bonini <i>et al.</i> , 2000), HLWAR77	Prolactin-releasing peptide, GPR10 (Hinuma <i>et al.</i> , 1998), hGR3, UHR-1	SP9155 (Jiang <i>et al.</i> , 2003), AQ27 (Fukusumi <i>et al.</i> , 2003), P518
Ensembl ID	ENSG00000116014	ENSG00000148734	ENSG00000056291	ENSG00000119973	ENSG00000186867
Principal transduction	G _{q/11} (Kotani <i>et al.</i> , 2001; Muir <i>et al.</i> , 2001)	G _{q/11}	G _{i/o} (Mollereau <i>et al.</i> , 2005)	G _{q/11} (Langmead <i>et al.</i> , 2000)	G _{q/11} , G _{i/o} (Fukusumi <i>et al.</i> , 2003)
Potency order	–	FMRF, NPFF > NPAF > NPSF, QRFP, PrP31 (Gouardères <i>et al.</i> , 2007)	NPAF, NPFF > PrP31 > FMRF, QRFP > NPSF (Gouardères <i>et al.</i> , 2007)	PrRP20, PrRP31 (Langmead <i>et al.</i> , 2000)	–
Selective agonists	KP54, KP13, KP10 (Kotani <i>et al.</i> , 2001; Ohtaki <i>et al.</i> , 2001)	NPFF	NPFF	PrRP	QRFP
Selective antagonists	–	–	–	Neuropeptide Y (Lagerstrom <i>et al.</i> , 2005)	–
Probes	[¹²⁵ I]-KP10 (Kotani <i>et al.</i> , 2001), [¹²⁵ I]-KP13 (Mead <i>et al.</i> , 2007), [¹²⁵ I-Tyr ⁴⁵]-KP15 (Ohtaki <i>et al.</i> , 2001)	[¹²⁵ I]-NPFF, [¹²⁵ I]-YVP (Gouardères <i>et al.</i> , 2002)	[¹²⁵ I]-NPFF, [¹²⁵ I]-EYF (Gouardères <i>et al.</i> , 2002)	[¹²⁵ I]-PrRP20 (Langmead <i>et al.</i> , 2000)	[¹²⁵ I]-QRFP (Takayasu <i>et al.</i> , 2006)

An orphan receptor GPR83 (ENSG00000123901) shows sequence similarities with NPFF1, NPFF2, PrRP and QRFP receptors. The antagonist RF9 is selective for NPFF receptors, but does not distinguish between the NPFF1 and NPFF2 subtypes (pK_i 7.1 and 7.2, respectively, Simonin *et al.*, 2006).

Abbreviations: RF9, adamantylcarbonyl-arginyl-phenylalaninamide

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