Neuropeptide Y receptors in GtoPdb v.2023.1

Annette G. Beck-Sickinger¹, William F. Colmers², Helen M. Cox³, Henri N. Doods⁴, Herbert Herzog⁵, Dan Larhammar⁶, Martin C. Michel⁷, Remi Quirion⁸, Thue Schwartz⁹ and Thomas Westfall¹⁰

1. Universität Leipzig, Germany
2. University of Alberta, Canada
3. Kings College London, UK
4. Dr Karl Thomae GmbH, Germany
5. St. Vincent Hospital, Australia
6. Uppsala University, Sweden
7. Johannes Gutenberg University, Germany
8. McGill University, Canada
9. University of Copenhagen, Denmark
10. St. Louis University, USA

Abstract

Neuropeptide Y (NPY) receptors (nomenclature as agreed by the NC IUPHAR Subcommittee on Neuropeptide Y Receptors [158]) are activated by the endogenous peptides neuropeptide Y, neuropeptide Y-(3-36), peptide YY, PYY-(3-36) and pancreatic polypeptide (PP). The receptor originally identified as the Y3 receptor has been identified as the CXCR4 chemokine receptor (originally named LESTR, [139]). The y6 receptor is a functional gene product in mouse, absent in rat, but contains a frame-shift mutation in primates producing a truncated non-functional gene [84]. Three-dimensional structures have been determined for subtype active receptors Y1, Y2 and Y4 [211, 114] and inactive antagonist bound Y1 and Y2 receptors [240, 210]. Many of the agonists exhibit differing degrees of selectivity dependent on the species examined. For example, the potency of PP is greater at the rat Y4 receptor than at the human receptor [62]. In addition, many agonists lack selectivity for individual subtypes, but can exhibit comparable potency against pairs of NPY receptor subtypes, or have not been examined for activity at all subtypes. [¹²⁵I]-PYY or [¹²⁵I]-NPY can be used to label Y1, Y2, Y5 and y6 subtypes non-selectively, while [¹²⁵I]cPP(1-7), NPY(19-23), Ala⁳¹, Aib⁳², Gln⁴³]hPP may be used to label Y5 receptors preferentially (note that cPP denotes chicken peptide sequence and hPP is the human sequence).

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**Database links**

**Neuropeptide Y receptors**
https://www.guidetopharmacology.org/GRAC/FamilyDisplayForward?familyId=46

**Introduction to Neuropeptide Y receptors**
https://www.guidetopharmacology.org/GRAC/FamilyIntroductionForward?familyId=46

**Receptors**
- \( Y_1 \) receptor
  https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=305
- \( Y_2 \) receptor
  https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=306
- \( Y_4 \) receptor
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- \( Y_5 \) receptor
  https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=308
- \( y_6 \) receptor
  https://www.guidetopharmacology.org/GRAC/ObjectDisplayForward?objectId=683

**References**


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