**ABSTRACT**

M1 acetylcholine receptors are responsible for many action physiologically having to do with functions in the heart, gastrointestinal and nervous system.

Our target is to find ligands that may be useful pharmacologically in these systems related to inhibition of neurological, gastrointestinal disease by GenMSC Dock computational modeling of G-coupled protein receptors (GPCR’s) such as N-methylscopalamine (antagonist) and xanolamine – a potential agonist for treating Alzheimer’s disease.

By the use of selective radioactively-labelled agonist and antagonist substances, four subtypes of muscarinic receptors have been determined, named M1-M4 (using an upper case M and subscript number). For example, the drug **pirenzepine** is a muscarinic antagonist (decreases the effect of ACh) which is much more potent at M1 receptors than it is at other subtypes. The acceptance of the various subtypes has proceeded in numerical order: therefore, sources exist which only recognise the M1/M2 distinction, more recent studies tend to recognise M3, and the most recent M4. Some of the ligands to M1 receptors have orthostatic as opposed to allosteric docking characteristics.

![NMS-M1](image1.png) ![XANOMELINE-M1](image2.png)