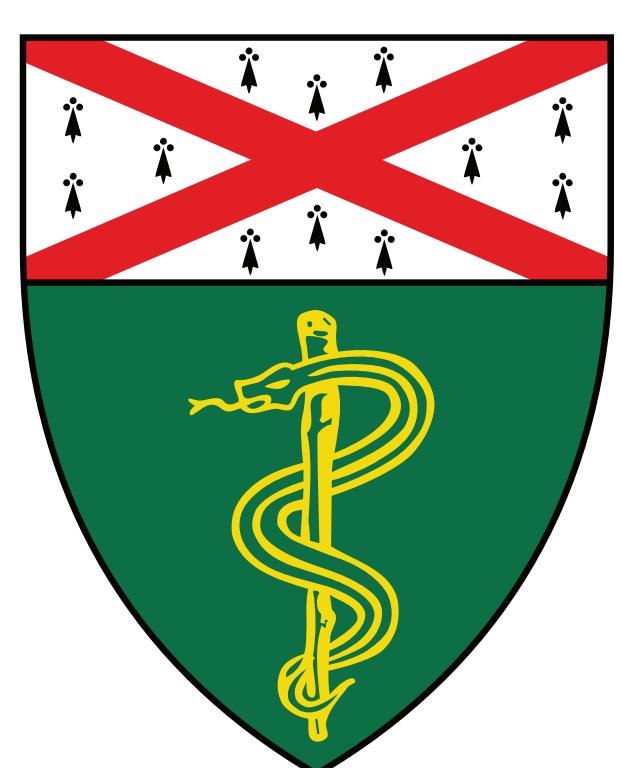




# The Alon Lab

## Structural pharmacology and drug discovery of enigmatic membrane receptors



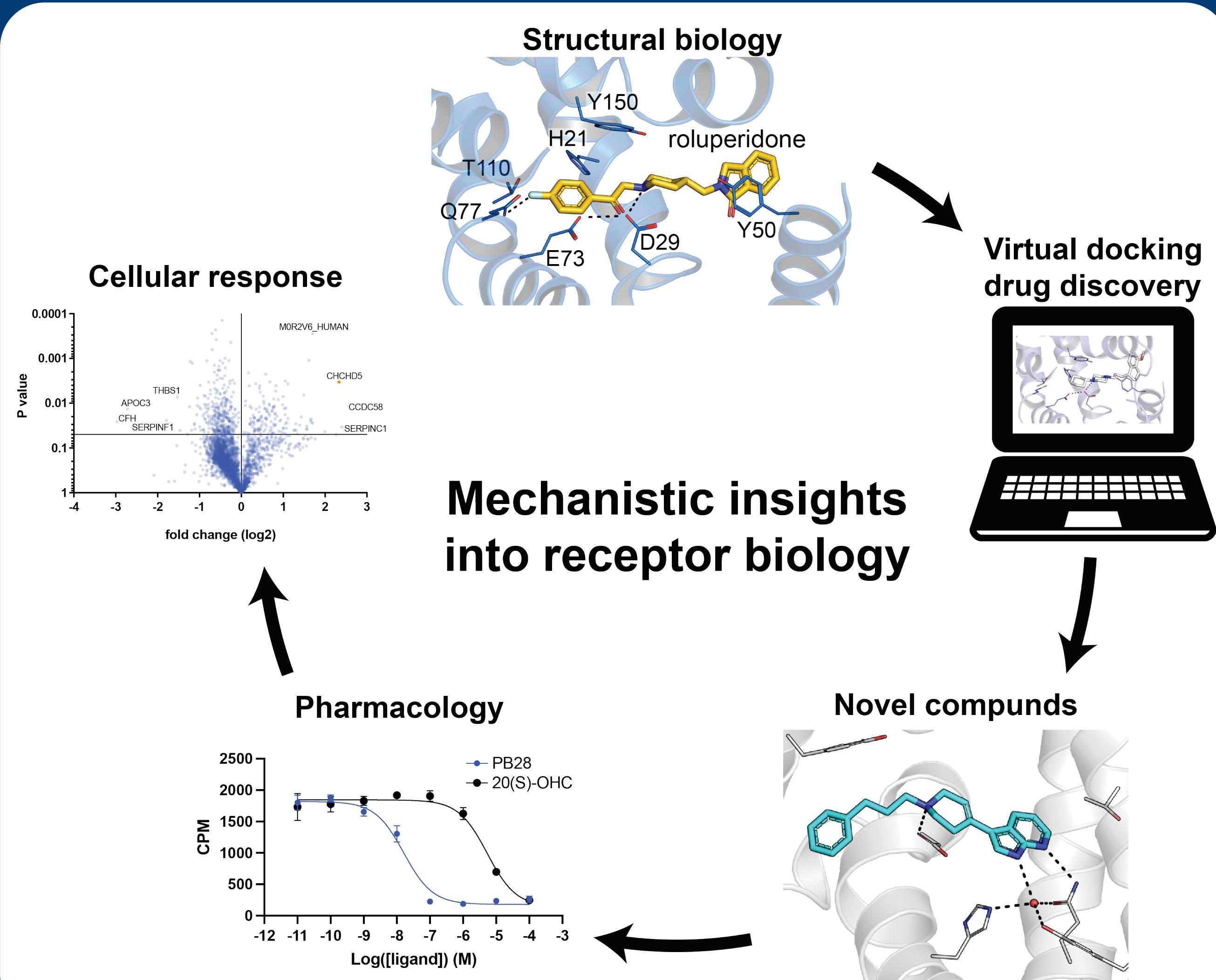
Our laboratory is dedicated to unraveling the molecular intricacies of receptor pharmacology through an integrated approach combining structural biology, pharmacology, biochemistry, cell biology, and computational methods. We are particularly focused on investigating two structurally distinct novel protein families, EXPERA (EXPanded EBP superfamily) and PAQR (progesterin and adipoQ receptors). These families are linked to a range of pathologies, including cancer, Alzheimer's disease, schizophrenia, and neuropathic pain, yet their natural ligands remain unidentified and their signaling pathways are poorly understood.

To address these knowledge gaps, we employ a suite of advanced techniques:

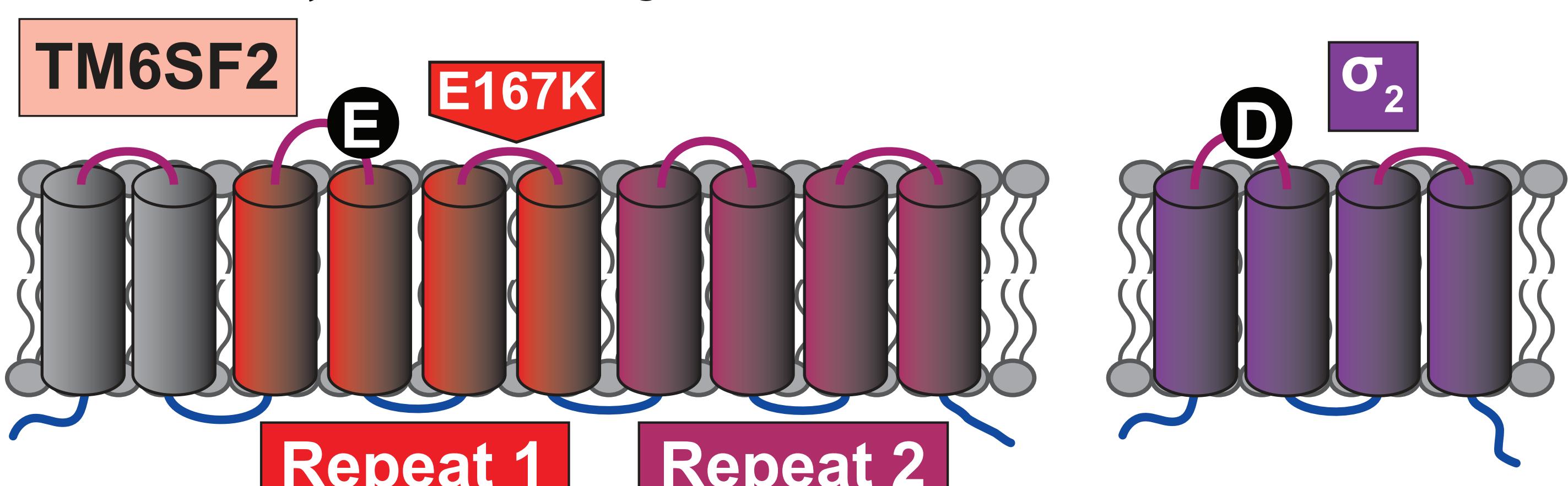
- Protein Crystallography and Cryo-Electron Microscopy (Cryo-EM): For high-resolution structural analysis.
- Virtual Docking: To predict how known ligands interact with these receptors and to identify novel ligands.
- CRISPR-Cas9 Genome Editing: To investigate receptor function in cellular contexts.

Our goal is to 'deorphanize' these receptors — to identify their endogenous ligands — and to elucidate the mechanisms of their signaling and cellular functions.

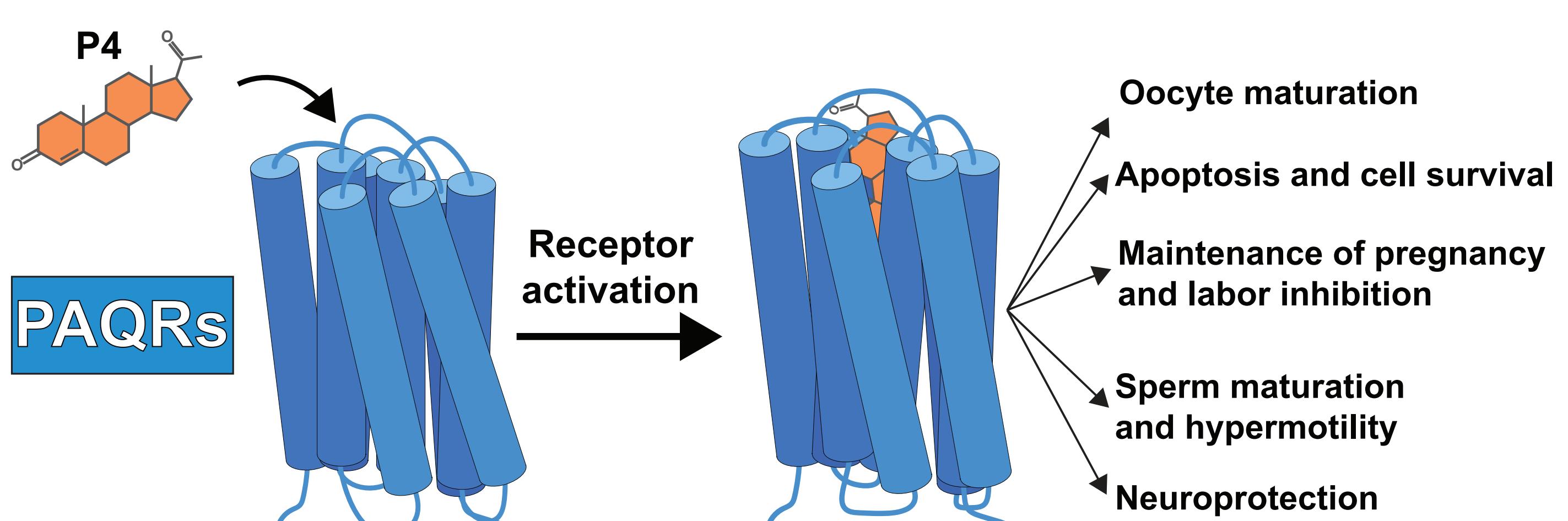
By doing so, we aim to open new avenues for understanding and potentially treating diseases associated with these receptors.



### EXPERA family - sterol sensing and homeostasis



### PAQRs - membrane receptors for rapid response to progesterone



### Inverse docking to identify new targets for old drugs

