Special Issue for Current Pharmaceutical Biotechnology

CURRENT BIOTECHNOLOGICAL APPROACHES FOR STUDYING G PROTEIN COUPLED RECEPTOR STRUCTURE, FUNCTION AND SIGNALING

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Aims & Scope:

G-protein -coupled receptors (GPCRs) are the largest class of cell-surface receptors and mediate most of our physiological responses to hormones, neurotransmitters, as well as being responsible for vision, olfaction and taste. They carry out a multitude of tasks in the central nervous system (CNS) and the periphery. Numerous diseases and disorders have been linked to mutations and polymorphisms in GPCRs, and they are the targets of an increasingly large number of therapeutic agents. Great progress has been made over the past three decades in understanding diverse GPCRs, from pharmacology to functional characterization in vivo. Recent high-resolution structural studies have provided insights into the molecular mechanisms of GPCR activation and constitutive activity. In this special issue of Current Pharmaceutical Biotechnology, we encourage our colleagues in the G protein coupled receptor (GPCR) field to submit review articles related to biotechnological approaches currently used in the field for studying GPCR structure, function, and signaling.

The special interests include but are not limited to:

1. Using experimental approaches, such as, crystallography, Nuclear magnetic resonance (NMR), Cryo-electron microscopy (cryo-EM), etc. for GPCR structure determination.
2. Using computational approaches, such as, homology modeling, loop prediction, ab initio, for GPCR structure prediction.
3. Using experimental and computational approaches, such as, Cysteine cross-linking, FRET, single molecule photobleaching, protein docking, and Brownian or molecular dynamics simulations, etc. to study GPCR dimerization or oligomerization.
4. Using experimental and computational approaches, such as, radio labeling, NMR, molecular docking, etc. to study ligand-receptor interaction.
5. Using experimental approaches, such as, two-electrode voltage clamp (TEVC), cAMP cell-based assay, Epac assay, and calcium mobilization assay, etc. to characterize of GPCR signaling pathways.
6. Using computational approaches, such, molecular dynamics, adiabatic biased molecular dynamics, metadynamics, etc. to study GPCR activation and dynamics.

Key words:

GPCR, Dimerization, Signaling pathway, Molecular modeling, Molecular Dynamics, Structure and Function, Ligand-receptor interaction

Subtopics:

11- GPCR structure determination
2- GPCR structure prediction
3- GPCR dimerization
4- GPCR and ligand interaction
5- GPCR signaling pathways
6- GPCR dynamics

Approximate Schedule:

Manuscript Submission Deadline: 11/30/2013
Peer Review Due: 1/10/2014
Revision Due: 03/10/2014
Notification of Acceptance By Guest Editor: 04/10/2014
Final Manuscripts Due: 04/30/2014