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| Nota di bibliografia    | Includes bibliographical references and index.  |
| Nota di contenuto       | Ligand Design for G Protein-coupled Receptors; Contents; Preface; A Personal Foreword; List of Contributors; 1 G Protein-coupled Receptors in the Human Genome; 1.1 Introduction; 1.2 The Adhesion Family; 1.3 The Secretin Family; 1.4 The Frizzled/Taste 2 Family; 1.4.1 The Frizzled Receptor Cluster; 1.4.2 The Taste 2 Receptor Cluster; 1.5 The Glutamate Family; 1.6 The Rhodopsin Family; 1.6.1 The Rhodopsin - Group; 1.6.1.1 The Prostaglandin Receptor Cluster; 1.6.1.2 The Amine Receptor Cluster; 1.6.1.3 The Opsin Receptor Cluster; 1.6.1.4 The Melatonin Receptor Cluster<br>1.6.1.5 The MECA Receptor Cluster1.6.1.6 Other Rhodopsin - Receptors; 1.6.2 Rhodopsin -Group; 1.6.3 Rhodopsin -Group; 1.6.3.1 The SOG Receptor Cluster; 1.6.3.2 The Melanocyte Concentrating Hormone Receptor Cluster; 1.6.3.3 The Chemokine Receptor Cluster; 1.6.3.4 Other Rhodopsin -Receptors; 1.6.4 The Rhodopsin -Group; 1.6.4.1 The MAS-related Receptor Cluster; 1.6.4.2 |

The Glycoprotein Receptor Cluster; 1.6.4.3 The Coagulation Factor Receptor Cluster; 1.6.4.4 The Purinergic Receptor Cluster; 1.6.4.5 The Olfactory Receptor Cluster; 1.6.4.6 Other Rhodopsin -Receptors; 1.7 Other GPCRs

1.8 Future PerspectiveReferences; 2 Why G Protein-coupled Receptors Databases are Needed; 2.1 Introduction; 2.2 A Non-exhaustive List of the GPCR Data Models; 2.3 Using the Central Dogma of Biology; 2.4 Using the Tree of Life; 2.5 Using a Chemogenomic Approach; 2.6 Conclusion; References; 3 A Novel Drug Screening Assay for G Protein-coupled Receptors; 3.1 Introduction; 3.1.1 History; 3.1.2 Nuclear Translocation of Endogenous GPCRs; 3.1.3 The MOCA Method; 3.2 The MOCA Strategy Demonstrated with the D1 Dopamine Receptor; 3.2.1 Development of the Assay

3.2.2 Concentration-dependent Antagonist Blockade of Nuclear Transport3.2.3 Measurement of Receptor Cell Surface Expression: Antagonist Binding of Receptors at Cell Surface; 3.3 Development of Quantitative Methodology Suitable for High Throughput Analysis; 3.3.1 Nuclear Translocation of Orphan GPCRs; 3.4 Discussion of the MOCA Method; 3.5 Conclusion; References; 4 Importance of GPCR Dimerization for Function: The Case of the Class C GPCRs; 4.1 Introduction; 4.2 Class C GPCRs are Multidomain Proteins; 4.2.1 The VFT; 4.2.2 The CRD; 4.2.3 The HD; 4.2.4 C-Tail

4.3 Class C GPCRs are Constitutive Dimers4.4 Agonists Activate Class C GPCRs by Stabilizing the Closed State of the VFT; 4.5 Dimeric Functioning of the Dimer of VFTs; 4.5.1 Agonist Stoichiometry: Symmetry or Asymmetry?; 4.6 The Heptahelical Domain, the Target of Positive and Negative Allosteric Modulators, Behaves in a Manner Similar to Rhodopsin-like Class A GPCRs; 4.7 Allosteric Coupling Between the Extracellular and Heptahelical Domains within the Dimer; 4.7.1 Molecular Determinants of the Coupling Between the VFT and the HD; 4.7.2 Cis- and Trans-activation Can Exist within Class C GPCRs

4.8 Asymmetric Functioning of the HD Dimer

## Sommario/riassunto

G protein-coupled receptors (GPCRs) are one of the most important target classes in pharmacology and are the target of many blockbuster drugs. Yet only with the recent elucidation of the rhodopsin structure have these receptors become amenable to a rational drug design. Based on recent examples from academia and the pharmaceutical industry, this book demonstrates how to apply the whole range of bioinformatics, chemoinformatics and molecular modeling tools to the rational design of novel drugs targeting GPCRs. Essential reading for medicinal chemists and drug designers working with this