## Contents

- I Introduction, 3
- 2 Cellular Foundations of Neuropharmacology, 9
  CVTOLOGY OF THE NERVE CELL, 9
  BIOELECTRIC PROPERTIES OF THE NERVE CELL, 20
  APPROACHES, 36
  IDENTIFICATION OF SYNAPTIC TRANSMITTERS, 37
  THE STEPS OF SYNAPTIC TRANSMISSION, 43
- 3 | Metabolism in the Central Nervous System, 47
- 4 | Receptors, 61
  DEFINITION, 64
  ASSAYS, 64
  IDENTIFICATION, 66
  KINETICS AND THEORIES OF DRUG ACTION, 67
- 5 Acetylcholine, 77
  ASSAY PROCEDURES, 77
  SYNTHESIS, 78
  HYDROLYSIS, 83
  THE GENESIS OF THE CHOLINERGIC TRIAD IN NEURONS, 88
  UPTAKE, SYNTHESIS, AND RELEASE OF ACH, 89
  CHOLINERGIC PATHWAYS, 96
  THE CHOLINERGIC RECEPTOR, 100
  DRUGS THAT AFFECT CENTRAL CHOLINERGIC SYSTEMS, 102
  ACH IN DISEASE STATES, 103
- Catecholamines I: General Aspects, 109
   METHODOLOGY, 109
   DISTRIBUTION, 125
   LIFE CYCLE OF THE CATECHOLAMINES, 128

## x Contents

AXONAL CATECHOLAMINE TRANSPORT, 161 NEUROTRANSMITTER ROLE, 163 PHARMACOLOGY OF CATECHOLAMINE NEURONS, 166

## 7 Catecholamines II: CNS Aspects, 173 SYSTEMS OF CATECHOLAMINE PATHWAYS IN THE CNS, 175 CATECHOLAMINE METABOLISM, 182 BIOCHEMICAL ORGANIZATION, 185 PHARMACOLOGY OF CENTRAL CATECHOLAMINE-CONTAINING NEURONS, 188 PHARMACOLOGY OF DOPAMINERGIC SYSTEMS, 192 SPECIFIC DRUG CLASSES, 196 CATECHOLAMINE THEORY OF AFFECTIVE DISORDER, 211 DOPAMINE HYPOTHESIS OF SCHIZOPHRENIA, 216

- 8 | Serotonin (5-Hydroxytryptamine), 223 BIOSYNTHESIS OF SEROTONIN, 224 PINEAL BODY, 230 CELLULAR EFFECTS OF 5-HT, 236
- 9 Amino Acids, 249
  GABA, 249
  GLYCINE, 280
  GLUTAMIC ACID, 286
  TAURINE, 290
- Neuroactive Peptides, 295

  SOME BASIC QUESTIONS, 295

  PEPTIDES OF THE HYPOTHALAMUS, 304

  PEPTIDES OF THE BRAIN AND GUT, 309

  A READER'S GUIDE TO PEPTIDE POACHING, 317
- 11 | Endorphins, 321
  MOLECULAR STUDIES, 324
- 12 | Cyclic Nucleotides, Prostaglandins, and Histamine, 335 CYCLIC NUCLEOTIDES, 335 PROSTAGLANDINS, 347 HISTAMINE, 352

Index, 361