

Contents in Brief

| | | |
|-----------------|--|------------|
| 1 | Studying the Nervous System | 1 |
| UNIT I | Neural Signaling | 31 |
| 2 | Electrical Signals of Nerve Cells | 33 |
| 3 | Voltage-Dependent Membrane Permeability | 47 |
| 4 | Ion Channels and Transporters | 61 |
| 5 | Synaptic Transmission | 79 |
| 6 | Neurotransmitters and Their Receptors | 105 |
| 7 | Molecular Signaling within Neurons | 137 |
| 8 | Synaptic Plasticity | 159 |
| UNIT II | Sensation and Sensory Processing | 179 |
| 9 | The Somatosensory System: Touch and Proprioception | 181 |
| 10 | Pain | 201 |
| 11 | Vision: The Eye | 219 |
| 12 | Central Visual Pathways | 245 |
| 13 | The Auditory System | 265 |
| 14 | The Vestibular System | 287 |
| 15 | The Chemical Senses | 303 |
| UNIT III | Movement and Its Central Control | 335 |
| 16 | Lower Motor Neuron Circuits and Motor Control | 337 |
| 17 | Upper Motor Neuron Control of the Brainstem and Spinal Cord | 359 |
| 18 | Modulation of Movement by the Basal Ganglia | 385 |
| 19 | Modulation of Movement by the Cerebellum | 403 |
| 20 | Eye Movements and Sensorimotor Integration | 421 |
| 21 | The Visceral Motor System | 437 |
| UNIT IV | The Changing Brain | 461 |
| 22 | Early Brain Development | 463 |
| 23 | Construction of Neural Circuits | 491 |
| 24 | Circuit Development: Intrinsic Factors and Sex Differences | 521 |
| 25 | Experience-Dependent Plasticity in the Developing Brain | 541 |
| 26 | Repair and Regeneration in the Nervous System | 563 |
| UNIT V | Complex Brain Functions and Cognitive Neuroscience | 591 |
| 27 | Cognitive Functions and the Organization of the Cerebral Cortex | 593 |
| 28 | Cortical States | 609 |
| 29 | Attention | 633 |
| 30 | Memory | 645 |
| 31 | Emotion | 665 |
| 32 | Thinking, Planning, and Deciding | 687 |
| 33 | Speech and Language | 705 |
| | Appendix A1 | |
| | Atlas: The Human Central Nervous System | AT1 |