

Chapter 1: Definition, History, Nosology, and Classification

Introduction and Definition
Brief History of PD
Nosology and Classification Scheme
Classification Level 1
Classification Level 2
Ambiguities and Future Directions
Conclusion

Chapter 2: Epidemiology

Introduction
Prevalence
Incidence
Mortality
Risk Factors
Implications for Understanding Etiopathogenesis and the Future Burden of PD

Chapter 3: Pathology

Introduction
The Aging Brain
Gross Pathology, Lewy Pathology, and α -Synucleinopathy
Substantia Nigra Pars Compacta Pathology
Idiopathic Lewy Body Disease (iLBD)
The Braak et al. Staging System
Synucleinopathy Outside the Brain
Non-Synuclein Pathologies

Chapter 4: Pathophysiology I - Basal Ganglia Architecture and the Standard Model

Introduction
Basic Basal Ganglia Architecture
The "Standard" Model of Basal Ganglia Pathophysiology
Complexities of Basal Ganglia Architecture
Conclusion

Chapter 5: Pathophysiology II - Neurotransmitter System Dysfunctions

Introduction
Nigrostriatal Dopamine Signaling Functions
Habit Formation and Chunking
Cholinergic Projection System Dysfunctions
Serotonergic System Dysfunctions
Conclusions and Future Challenges

Chapter 6: Genetics of Parkinson Disease

Introduction
Dominant Forms of PD
Recessive Forms of PD
GBA
PD Genetic Risk Factors
Implications of PD Genetic Research

Chapter 7: Pathogenesis

Neuronal Vulnerability
Alpha-Synuclein
The Prion-Like Hypothesis

Mitochondrial Dysfunction
Oxidative Stress
Endolysosomal Dysfunction
Neuroinflammation
Neuroprotection Trials
Conclusions

Chapter 8: Prodromal Parkinson Disease

Introduction
REM Sleep Behavior Disorder
Observational Studies
REM Sleep Behavior Disorder Cohort Studies
Genetic Cohort Studies
Autonomic Failure
Future Directions

Chapter 9: Clinical Features I - Initial Evaluation

Presentation Features
Nature of Diagnosis and Diagnostic Criteria
History and Examination
Differential Diagnosis
Treatment Responsiveness
Diagnostic Accuracy

Chapter 10: Clinical Features II - Non-Motor Features

Introduction
Cognitive Impairments
Neuropsychiatric Disorders
Sleep Disorders
Pain
Fatigue
Autonomic Disorders
Visual Disorders
Oral Health
Conclusion

Chapter 11: Clinical Features III - Natural History

Introduction
Assessing PD Progression
PD Progression - Clinically Salient Features
Subgroups
Natural History Summary
Continuing Care
End of Life Care

Chapter 12: Pharmacology I - L-Dopa Pharmacokinetics and Pharmacodynamics

Introduction
Dopaminergic Neurotransmission
L-Dopa Pharmacokinetics
L-Dopa Pharmacodynamics
Peak Dose Dyskinesias
Interactions of L-Dopa Pharmacokinetics, Pharmacodynamics, and Disease Progression
Summary and Future Directions

Chapter 13: Pharmacology II - Treating Parkinson Disease

Introduction

Using L-Dopa

When the Honeymoon Is Over

L-Dopa Adjuncts

Dopamine Agonists

Cholinergic Agents

Other Symptomatic Therapies

Future Directions

Chapter 14: Surgery

Introduction

Deep Brain Stimulation: Rationale and Possible Mechanisms

Deep Brain Stimulation: Procedures

Deep Brain Stimulation: STN DBS Benefits

Deep Brain Stimulation: GPi DBS Benefits and STN vs GPi DBS

Deep Brain Stimulation: Adverse Events

Lesional Procedures

Cell-Based and Gene Therapies

Future Directions

Coda: Looking Ahead