

---

# Contents

<i>Series Preface</i> . . . . .	<i>v</i>
<i>Overview</i> . . . . .	<i>vii</i>
PART I BASIC CONCEPTS	
1 Extracellular and Intracellular Recordings . . . . . <i>Nicholas Graziane and Yan Dong</i>	3
2 Electrical Theory. . . . . <i>Nicholas Graziane and Yan Dong</i>	17
3 Amplifiers . . . . . <i>Nicholas Graziane and Yan Dong</i>	33
4 Salt Environment . . . . . <i>Nicholas Graziane and Yan Dong</i>	55
5 Patch Pipettes (Micropipettes) . . . . . <i>Nicholas Graziane and Yan Dong</i>	69
6 Spatiotemporal Effects of Synaptic Current . . . . . <i>Nicholas Graziane and Yan Dong</i>	79
7 Perforated Patch . . . . . <i>Nicholas Graziane and Yan Dong</i>	91
PART II RECORDING OF SYNAPTIC CURRENT	
8 Isolation of Synaptic Current . . . . . <i>Nicholas Graziane and Yan Dong</i>	101
9 Fast and Slow Synaptic Currents . . . . . <i>Nicholas Graziane and Yan Dong</i>	111
10 Measuring Kinetics of Synaptic Current. . . . . <i>Nicholas Graziane and Yan Dong</i>	121
11 Measuring Presynaptic Release Probability. . . . . <i>Nicholas Graziane and Yan Dong</i>	133
12 Long-Term Measurements . . . . . <i>Nicholas Graziane and Yan Dong</i>	145
13 Measuring Reversal Potentials . . . . . <i>Nicholas Graziane and Yan Dong</i>	157
PART III BASIC EXPERIMENTATIONS OF SYNAPTIC TRANSMISSION	
14 Amplitude. . . . . <i>Nicholas Graziane and Yan Dong</i>	165
15 Pre vs. Post synaptic Effect . . . . . <i>Nicholas Graziane and Yan Dong</i>	175

16 Run-Up and Run-Down . . . . . 187  
*Nicholas Graziane and Yan Dong*

17 Kinetics of Synaptic Current . . . . . 193  
*Nicholas Graziane and Yan Dong*

PART IV EXPERIMENTATIONS WITH COMPUTATIONAL COMPONENTS

18 Measurement of a Single Synapse . . . . . 209  
*Nicholas Graziane and Yan Dong*

19 Measurement of Silent Synapses . . . . . 217  
*Nicholas Graziane and Yan Dong*

20 Dendritic Patch. . . . . 225  
*Nicholas Graziane and Yan Dong*

PART V EXPERIMENTATIONS WITH MOLECULAR AND VISUAL COMPONENTS

21 Electrophysiological and Visual Tags . . . . . 235  
*Nicholas Graziane and Yan Dong*

PART VI IN VIVO RECORDINGS

22 Extracellular Recordings . . . . . 249  
*Nicholas Graziane and Yan Dong*

*Index* . . . . . 259



<http://www.springer.com/978-1-4939-3273-3>

Electrophysiological Analysis of Synaptic Transmission

Graziane, N.; Dong, Y.

2016, XII, 263 p. 89 illus., 46 illus. in color., Hardcover

ISBN: 978-1-4939-3273-3

A product of Humana Press