

CONTENTS

<i>Contributors</i>	<i>ix</i>
<i>Preface</i>	<i>xi</i>
1. Analysis of Protein Interactions by Surface Plasmon Resonance	1
Dennis G. Drescher, Dakshnamurthy Selvakumar, and Marian J. Drescher	
1. Introduction	2
2. Methodology	5
3. Applications	10
4. Future Directions	23
Acknowledgment	26
References	26
2. Using TR-FRET to Investigate Protein-Protein Interactions: A Case Study of PXR-Coregulator Interaction	31
Wenwei Lin and Taosheng Chen	
1. Introduction	33
2. Materials	43
3. Methods	43
4. Results and Discussion	47
5. Conclusions	59
Acknowledgments	59
References	59
3. Protein-Protein Interaction Modulators for Epigenetic Therapies	65
Bárbara I. Díaz-Eufracio, J. Jesús Naveja, and José L. Medina-Franco	
1. Introduction	66
2. PPI Modulators in Epigenetic Drug Discovery	67
3. Peptides in Drug Discovery	73
4. Peptides as Modulators of Epigenetic-Related PPIs	77
5. Conclusions and Perspectives	80
Acknowledgments	80
References	80

4. Intrinsic Disorder, Protein-Protein Interactions, and Disease	85
Vladimir N. Uversky	
1. (Almost) Everything You Learned About Proteins From the Textbooks Is Wrong (or At Least Incomplete)	86
2. IDPs: Interaction Specialists	94
3. IDPs and Disorder-Based Interactions in Human Diseases	100
4. Concluding Remarks	106
References	106
 5. Targeting Protein-Protein Interactions in the Ubiquitin-Proteasome Pathway	 123
Maria Gaczynska and Pawel A. Osmulski	
1. Introduction	124
2. Targeting the Polyubiquitination Cascade	126
3. Targeting the Proteasome	135
4. Conclusion	153
Acknowledgment	154
References	154
 6. Probing the Protein-Protein Interaction Network of Proteins Causing Maturity Onset Diabetes of the Young	 167
P. Sneha, D. Thirumal Kumar, Jose Lijo, M. Megha, R. Siva, and C. George Priya Doss	
1. Introduction	168
2. Materials and Methods	170
3. Results	171
4. Overall Protein Interaction of the Proteins	191
5. TFs of the <i>MODY</i> Causing Proteins	192
6. Discussion	192
7. Conclusion	197
Acknowledgment	197
References	198
Further Reading	202

7. Structural Prediction of Protein-Protein Interactions by Docking: Application to Biomedical Problems 203

Didier Barradas-Bautista, Mireia Rosell, Chiara Pallara,
and Juan Fernández-Recio

1. Importance of Protein-Protein Interactions in Cell	204
2. Protein-Protein Interactions and Human Disease	205
3. Structural Approach to Protein-Protein Interactions	215
4. Computational Modeling of Protein-Protein Interactions	218
5. Application of Computational Docking to Biomedicine	231
Acknowledgments	236
References	236

8. Computational Resources for Predicting Protein-Protein Interactions 251

Himani Tanwar and C. George Priya Doss

1. Introduction	252
2. Prediction of PPIs	254
3. Computational Tools for PPI Visualization	256
4. PPI Databases	259
5. Role of Molecular Dynamics in Predicting PPIs	265
6. Types of Interactions Between Proteins	265
7. Discussion	266
8. Conclusion	269
Acknowledgment	270
References	270