

---

# Contents

Dedication .....	v
Preface .....	vii
Contents of Companion Volume .....	xiii
Contributors.....	xv

## PART III. METHODS AND TECHNIQUES TO STUDY

### CALCIUM-BINDING PROTEINS

1	Quantitative Analysis of Ca <sup>2+</sup> -Binding by Flow Dialysis <b>Michio Yazawa</b> .....	3
2	Calcium Binding to Proteins Studied via Competition with Chromophoric Chelators <b>Sara Linse</b> .....	15
3	Deconvolution of Calcium-Binding Curves: <i>Facts and Fantasies</i> <b>Jacques Haiech and Marie-Claude Kilhoffer</b> .....	25
4	Absorption and Circular Dichroism Spectroscopy <b>Stephen R. Martin and Peter M. Bayley</b> .....	43
5	Fourier Transform Infrared Spectroscopy of Calcium-Binding Proteins <b>Heinz Fabian and Hans J. Vogel</b> .....	57
6	Steady-State Fluorescence Spectroscopy <b>Aalim M. Weljie and Hans J. Vogel</b> .....	75
7	Fluorescence Methods for Measuring Calcium Affinity and Calcium Exchange with Proteins <b>J. David Johnson and Svetlana B. Tikunova</b> .....	89
8	Surface Plasmon Resonance of Calcium-Binding Proteins <b>Karin Julenius</b> .....	103
9	Differential Scanning Calorimetry <b>Maria M. Lopez and George I. Makhatadze</b> .....	113
10	Isothermal Titration Calorimetry <b>Maria M. Lopez and George I. Makhatadze</b> .....	121
11	Multiangle Laser Light Scattering and Sedimentation Equilibrium <b>Leslie D. Hicks, Jean-René Alattia, Mitsuhiko Ikura, and Cyril M. Kay</b> .....	127

12	Small-Angle Solution Scattering Reveals Information on Conformational Dynamics in Calcium-Binding Proteins and in their Interactions with Regulatory Targets <b>Jill Trehwella and Joanna K. Krueger</b> .....	137
13	Investigation of Calcium-Binding Proteins Using Electrospray Ionization Mass Spectrometry <b>Amanda L. Doherty-Kirby and Gilles A. Lajoie</b> .....	161
14	Synthetic Calcium-Binding Peptides <b>Gary S. Shaw</b> .....	175
15	Proteolytic Fragments of Calcium-Binding Proteins <b>Richard D. Brox and Hans J. Vogel</b> .....	183
16	Electron Magnetic Resonance Studies of Calcium-Binding Proteins <b>Lawrence J. Berliner</b> .....	195
17	Cadmium-113 and Lead-207 NMR Spectroscopic Studies of Calcium-Binding Proteins <b>Teresa E. Clarke and Hans J. Vogel</b> .....	205
18	Calcium-43 of NMR of Calcium-Binding Proteins <b>Torbjörn Drakenberg</b> .....	217
19	Exploring Familial Relationships Using Multiple Sequence Alignment <b>Aalim M. Weljie and Jaap Heringa</b> .....	231
20	Structure Determination by NMR: <i>Isotope Labeling</i> <b>Monica X. Li, David C. Corson, and Brian D. Sykes</b> .....	255
21	Protein Structure Calculation from NMR Data <b>Tapas K. Mal, Stefan Bagby, and Mitsuhiro Ikura</b> .....	267
22	Shape and Dynamics of a Calcium-Binding Protein Investigated by Nitrogen-15 NMR Relaxation <b>Jörn M. Werner, Iain D. Campbell, and A. Kristina Downing</b> .....	285
23	The Use of Dipolar Couplings for the Structure Refinement of a Pair of Calcium-Binding EGF Domains <b>Jonathan Boyd, Iain D. Campbell, and A. Kristina Downing</b> .....	301
24	Vector Geometry Mapping: <i>A Method to Characterize the Conformation of Helix-Loop-Helix Calcium-Binding Proteins</i> <b>Kyoko L. Yap, James B. Ames, Mark B. Swindells, and Mitsuhiro Ikura</b> .....	317
25	Use of Calmodulin Antagonists and S-100 Protein Interacting Drugs for Affinity Chromatography <b>Ryoji Kobayashi</b> .....	325

26	Enzymatic Assays to Compare Calmodulin Isoforms, Mutants, and Chimeras <b>Michael P. Walsh, Jacquelyn E. Van Lierop, Cindy Sutherland, Ritsu Kondo, and J. David Johnson</b> .....	339
27	Gene Expression in Transfected Cells <b>Kate Hughes, Juha Saarikettu, and Thomas Grundström</b> .....	355
28	Monitoring the Intracellular Free $\text{Ca}^{2+}$ -Calmodulin Concentration with Genetically-Encoded Fluorescent Indicator Proteins <b>Anthony Persechini</b> .....	365
29	Studying the Spatial Distribution of $\text{Ca}^{2+}$ -Binding Proteins: <i>How Does it Work for Calmodulin?</i> <b>Katalin Török, Richard Thorogate, and Steven Howell</b> .....	383
	Index .....	409



<http://www.springer.com/978-0-89603-689-5>

Calcium-Binding Protein Protocols  
Volume 2: Methods and Techniques

Vogel, H.J. (Ed.)

2002, XVII, 415 p., Hardcover

ISBN: 978-0-89603-689-5

A product of Humana Press