

---

# Contents

Preface .....	v
Contributors .....	xi
PART I. MANIPULATION OF GREEN FLUORESCENT PROTEIN STRUCTURE AT THE GENETIC LEVEL	
1 Amplification of Representative cDNA Samples from Microscopic Amounts of Invertebrate Tissue to Search for New Genes <b>Mikhail V. Matz</b> .....	3
2 Use of <i>cobA</i> and <i>cysG<sup>A</sup></i> as Red Fluorescent Indicators <b>Charles A. Roessner</b> .....	19
3 Circular Permutation of the Green Fluorescent Protein <b>Simon Topell and Rudi Glockshuber</b> .....	31
4 Evolutionary Design of Generic Green Fluorescent Protein Biosensors <b>Nobuhide Doi and Hiroshi Yanagawa</b> .....	49
5 Random Insertion of Green Fluorescent Protein into the Regulatory Subunit of Cyclic Adenosine Monophosphate-Dependent Protein Kinase <b>Pascal J. Baehler, Ricardo M. Biondi, Miguel van Bemmelen, Michel Véron, and Christophe D. Reymond</b> .....	57
6 Circular mRNA Encoding for Monomeric and Polymeric Green Fluorescent Protein <b>Rhonda Perriman</b> .....	69
PART II. DETECTION AND IMAGING OF GREEN FLUORESCENT PROTEIN	
7 Fluorescence Lifetime Imaging (FLIM) of Green Fluorescent Fusion Proteins in Living Cells <b>Ammasi Periasamy, Masilamani Elangovan, Elizabeth Elliott, and David L. Brautigan</b> .....	89
8 Fluorescence Resonance Energy Transfer (FRET) Applications Using Green Fluorescent Protein: <i>Energy Transfer to the Endogenous Chromophores of Phycobilisome Light-Harvesting Complexes</i> <b>Jasper J. van Thor and Klaas J. Hellingwerf</b> .....	101

9	Bioluminescence Resonance Energy Transfer Assays for Protein–Protein Interactions in Living Cells <b>Yao Xu, Carl Hirschie Johnson, and David Piston</b> .....	121
10	Whole-Body Fluorescence Imaging with Green Fluorescence Protein <b>Robert M. Hoffman</b> .....	135
PART III. GREEN FLUORESCENT PROTEIN TO MONITOR PROTEIN DISTRIBUTION AND TRAFFICKING		
11	Drug-Induced Translocation of Nucleolar Proteins Fused to Green Fluorescent Protein <b>Benigno C. Valdez and Laszlo Perlaky</b> .....	151
12	Light-Induced Nuclear Targeting of PhytochromeB–sGreen Fluorescent Protein in Plants <b>Akira Nagatani and Tomonao Matsushita</b> .....	163
13	Mechanisms of Protein Trafficking: <i>Two Different Signal Sequences Fused to Green Fluorescent Protein to Study Mitochondrial Import</i> <b>Henry Weiner</b> .....	171
14	Analysis of Nucleocytoplasmic Transport Using Green Fluorescent Protein <b>Roland H. Stauber</b> .....	181
PART IV. GREEN FLUORESCENT PROTEIN IN TRANSGENIC ORGANISMS		
15	Transgenic Bovine Embryo Selection Using Green Fluorescent Protein <b>Anthony W. S. Chan, Kowit-Yu Chong, and Gerald Schatten</b> .....	201
16	Development of Glycosylphosphatidylinositol-Anchored Enhanced Green Fluorescent Protein: <i>One-Step Visualization of GPI Fate in Global Tissues and Ubiquitous Cell Surface Marking</i> <b>Gen Kondoh</b> .....	215
17	Transgenic Zebrafish Expressing Green Fluorescent Protein <b>Ebrahim Shafizadeh, Haigen Huang, and Shuo Lin</b> .....	225
18	Transgenic Insects: <i>Expressing Green Fluorescent Protein–Silk Fibroin Light Chain Fusion Protein in Transgenic Silkworms</i> <b>Hajime Mori</b> .....	235
19	Green Fluorescent Protein in Transgenic Plants: <i>Brassica Transformation</i> <b>C. Neal Stewart, Jr., Matthew D. Halfhill, and Reginald J. Millwood</b> .....	245

## PART V. GREEN FLUORESCENT PROTEIN BIOSENSORS

- 20 Green Fluorescent Protein Calcium Biosensors:  
*Calcium Imaging with GFP Cameleons*  
**Anikó Váradi and Guy A. Rutter** ..... 255
- 21 Green Fluorescent Protein Fluobody Immunosensors:  
*Immunofluorescence with GFP-Antibody Fusion Proteins*  
**Arjen Schots and Jan M. van der Wolf** ..... 265
- 22 Green Fluorescent Protein-Based Protein Kinase  
 Biosensor Substrates  
**Scott Ulrich and Kevan Shokat** ..... 275
- 23 Green Fluorescent Protein Urea Sensors:  
*Uropathogenic Proteus mirabilis*  
**Christopher Coker, Hui Zhao, and Harry L. T. Mobley** ..... 287

## PART VI. VIRAL APPLICATIONS OF GREEN FLUORESCENT PROTEIN

- 24 Using Green Fluorescent Protein to Monitor Measles Virus  
 Cell-to-Cell Spread by Time-Lapse Confocal Microscopy  
**W. Paul Duprex and Bert K. Rima** ..... 297
- 25 Tracking and Selection of Retrovirally Transduced Murine Bone  
 Marrow Cells Using Green Fluorescent Protein  
**Jessamyn Bagley and John Iacomini** ..... 309
- 26 Green Fluorescent Protein as a Reporter of Adenovirus-Mediated  
 Gene Transfer and Expression in the Hypothalamic–  
 Neurohypophyseal System  
**Elisardo Corral Vasquez and Alan Kim Johnson** ..... 321
- 27 Enhancement of Green Fluorescent Protein Expression  
 in Adeno-Associated Virus with the Woodchuck Hepatitis Virus  
 Post-Transcriptional Regulatory Element  
**Jonathan E. Loeb, Matthew D. Weitzman,  
 and Thomas J. Hope** ..... 331
- 28 Construction of Infectious Simian Varicella Virus Expressing Green  
 Fluorescent Protein  
**Ravi Mahalingam and Donald H. Gilden** ..... 341
- 29 Green Fluorescent Protein in Retroviral Vector Constructs as Marker  
 and Reporter of Gene Expression for Cell and Gene Therapy  
 Applications  
**Nicoletta Eliopoulos and Jacques Galipeau** ..... 353
- Index ..... 373



<http://www.springer.com/978-0-89603-905-6>

Green Fluorescent Protein

Hicks, B.W. (Ed.)

2002, XIV, 394 p., Hardcover

ISBN: 978-0-89603-905-6

A product of Humana Press