Hicks, B.W. (ed.): **Green Fluorescent Protein - Application and Protocols.** - Humana Press, Totowa 2002. 393 pp. USD 89.50. ISBN 0-89603-905-6.

New volume of the series Methods of Molecular Biology deals with one of the important contemporary tools of molecular biology of eucaryotes, the green fluorescent protein gene, which has been first cloned in 1992 and now it is widely used already for ten years as generally applicable reporter gene of transgenosis. The editor of this book says in the preface: "GFP from *Aequorea victoria* is a fluorescent marker protein, and there are certainly other useful fluorophore markers. The wild-type GFP is not generally used by researchers today. In fact, the acronym GFP has become somewhat misleading because of many spectral variants are now available. All of the work described in this volume takes advantage of the mutant GFPs with altered spectral characteristics or with great cellular expression". The book consists of 29 articles which deal with different applications of GFP based gene constructs and is divided into four parts: I. Manipulation of GFP structure at the genetic level, II. The imaging of GF proteins, III. GFP to monitor protein distribution and trafficking, IV. GFP in transgenic organisms V. GF proteins as biosensors and, last but not least, VI. Viral application of GFPs.

The use of GFP variants generated by gene engineering is uncreadibly broad. Six new green fluorescent protein-like proteins from five species of *Anthozoa* are available, including one red light emitting variant. There are also fluorescent protein genes *cobA* from the bacterium *Propionibacterium freudenreichii* or *cysGA* truncated gene from *Escherichia coli*, which exhibit bright red fluorescence. Gene engineering methods were used in attempts to obtain new variants of GFP in generating circular permutations of GFPs, circular mRNA encoding for monomeric and polymeric GFPs and different chimeric proteins consisting of GFP as integral part. GFPs in living cells have been studied by contemporary biophysical methods like fluorescence lifetime imaging (FLIM), fluorescence resonance energy transfer (FRET) or bioluminiscence resonance energy transfer (BRET). GFP in combination with monoclonal antibodies helps to endow human tumors with specific, detectable spatial markers for more precise diagnostics.

GFP also help to solve contemporary problems of plant molecular genetics. One of the articles describes nuclear targeting of plant light-signalling proteins, phytochrome A and phytochrome B. In the light, the chimeric proteins which carried also GFP have been located in discrete areas of the plant nuclei, which was obvious consequence of the binding to chromosomal region of light-activated genes coding for photosynthesis associated protein. In the dark, there was uniform distribution of the chimeric protein in the cytoplasm. The expression of GFP in transgenic rape, *Brassica napus* has been described. Another interesting transgenic species described in this book is zebrafish. Very interesting fusion protein gene, consisting of GFP and silk fibroin light chain has been introduced into silkworm genome. Glycosylphosphatidylinositol-anchored enhanced GFP (EGFP-GPI) has been introduced into transgenic mice and this principle, *i.e.* labeling of specific cells by GFP, is considered for perspective use as a tool for cancer gene therapy. Because GFP is originally a jellyfish protein, it should be antigenic in mammals. If EGFP-GPI expression could be virtually delivered specifically to tumor lesions, some degree of inflammation might occur and induce a series of tumor-rejection reactions. GFP DNA or cDNA sequences can also be introduced into viruses and used to monitor plant and animal virus spread, persistance and also transduction of animal and human tissues by retroviral vectors.

It is not possible to describe here all the numerous uses of GFP and GFP genes described in the book in a brief outline. The main importance of the book is in the complex attitude to the use of GFP in molecular biology and in the detailed descriptions of methods used, which exceeds that given in most of journal publication. The figures in the book are in black and white, but CD which shows color pictures in high quality and videos from most of chapters is attached. The book is designed to aid researchers who understand broad aspects of the topic to gain expertise in different narrow experimental portions of it. It certainly will be most useful to postdoctoral researchers and graduate students who are actually performing the experimental work with GFP or considering to use this system to solve their experimental problems by this new attitude in the near future.

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