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## Characterization and Isolation of GFP Protein

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### Abstrakt

Osamu Shimomura got the Nobel Prize in Chemistry in 2008, for the discovery and development of the green fluorescent protein. GFP was isolated from the jellyfish *Aequorea victoria*. This protein is composed of 238 amino acid residues. GFP is commonly used as molecular imaging tool in biology, chemistry, genetics and medicine. The GFP gene has been introduced and expressed in many bacteria, yeast, fungi, fish, plant and mammalian cells. The enormous flexibility as non-invasive marker in living cells allows for numerous applications, such in cancer studies. Some residues of this protein have been modified by mutagenesis to produce blue fluorescent protein (EBFP, EBFP2, Azurite, mKalamal), cyan fluorescent protein (ECFP, Cerulean, CyPet), and yellow fluorescent protein derivatives (YFP, Citrine, Venus, YPet). The availability of GFP and its derivatives has thoroughly redefined fluorescence microscopy. Only those cells in which the tagged gene is expressed, or the target proteins are produced, will fluoresce when observed under fluorescence microscopy.



This allows researchers to optically detect specific types of cells in vitro, or even in vivo. Biosensors based on GFP fusion proteins are powerful tools for observing real-time events within living cells. Insertion of GFP within another protein has produced biosensors capable of signaling intracellular events through intrinsic fluorescence changes, fluorescence resonance energy transfer (FRET), and changes in sub-cellular localization.

**pátek 09. 05. 2014, od 14:00**

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