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**NANOBIOPHOTONICS AS A PRIOR BRANCH OF**

**THE MODERN MEDICINE**

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An intense interest in nanoprojects is caused by the fact that recently nanotechnologies have a huge potential of commerce application in various fields. In the modern medicine an issue of nanotechnologies application consists in the necessity of cell's restructuring molecularly,that ultimately will let not only implement the medicinal-diagnostic programs knowledgeably, but also develop new criteria of therapeutic approach to issues solving **in practical medicine. One** prior branch is a new interdisciplinary area of the Science – ***nanobiophotonics*** which combines number of directions of photobiology, photochemistry, bioorganic chemistry, physical and chemical biology, nanobiology and photonics (Popescu G. (Ed.), 2010).

The primary object of nanobiophotonics is study of molecular machinery of the light-energy conversion and related photochemical processes as well as reactions in various model systems on molecular, submolecular and nanomolecular levels (Brown C.T. et al., 2010). In order to have a clear and more argued understanding of pure mechanism of this process, the research of physical phenomena have been conducted which determine photons interaction with nanosized structures of devices and biological objects (Popescu G. (Ed.), 2010).

The objects of this branch research are unique biological molecular transducers and converters of the quanta light energy into diverse types of chemical and physiological response, which present complex supramolecular and nanomolecular systems. They are classified as covalent (chromoproteins – retinal-containing proteins) and noncovalent (nuclear receptors of retinoic acid, retinoid-transport proteins) – complexes of retinoids with molecular protein receptors, which molecule of retinoid (derivate of vitamin A) is a unique natural photo-transforming antenna with a great variety of functions. And herewith, polyene chain geometry of retinoid molecule is a key factor that determines type of physiological response by the host organism (Khodonov А.А. et al., 2011). The new photosensitive model systems of compounds based on molecular hybrids of retinoids and phytochromes of spiropyrames and dithyenylethenes classes were explored. The final structural geometry of retinal's molecule goal analogues was established on the basis of obtained results of topography computer modeling of bacteriorhodopsin chromophore antrum as an object-bionanotarget among other retinal-containing proteins (Barachevsky V.A. et al., 2012).

**Based on the analysis of numerous published data from devoted to nanobiophotonic technologies and also according to the results of conducted research it can be concluted that creation of new original nanostructural organic and inorganic materials for transducers construction with guided optical response let to apply them widely in biomedicine.**