

## New biomaterials for the measurement of the Vitamin-D-synthetic capacity of sunlight and artificial UV sources.

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### Abstract

The present study summarizes the results of our research on Provitamin D photochemistry in various media directed on the development of reliable method for an in situ monitoring of the Vitamin-D-synthetic capacity (and 'antirachitic' UV dosimetry) of sunlight and artificial UV radiation. Such measurements are especially important given the essential role of vitamin D in maintaining health, as well as the observed pandemic of vitamin D deficiency among the world's population. The original UV biodosimeter is based on the same photoreaction in vitro by which vitamin D is synthesized in human skin from initial Provitamin D via photo- and thermo-induced monomolecular isomerizations. The targets for UV photons in the biodosimeter are the 7-Dehydrocholesterol (Provitamin D3) molecules embedded in specially designed UV transparent and stable matrix. The dosimeter response to UV radiation is photoinduced conversion of Provitamin into Previtamin D (immediate precursor of vitamin D), and antirachitic UV biodose is determined by the amount of accumulated previtamin D. Effect of a reaction medium on the Provitamin D photochemistry was studied in polymer and hydrogel films, in micelles and in liquid crystalline matrices. Specificity of interaction of provitamin D molecules with different microenvironment affecting its photoconversions is considered.

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### Biography

Irina Terenetskaya has got M.D.in Physics from the Kiev State University and has completed her PhD at the age of 29 years from the Institute of Physics NAS Ukraine. In 2006 she has got degree Doctor of Sci. and in 2010 the scientific title of professor. She heads the Molecular Photonics group at the

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