

# Photoinduced Processes in Nucleic Acids: From Prebiotic Synthesis to Stability of Genetic Code

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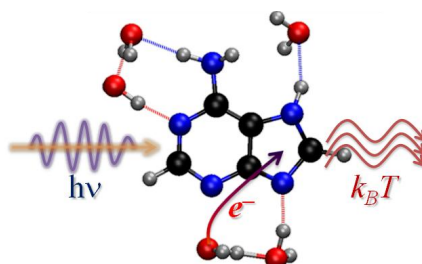
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Nucleic acids are efficient UV chromophores and their exposition to solar irradiation may lead to deleterious photochemical reactions. Photoinduced processes in nucleic acids constitute a complex field of research [1], covering from photoexcitation of isolated nucleobases and base pairs, where ultrafast internal conversion dominates; to DNA *in vivo*, where enzymatic photo-repair efficiently fix photochemical impairments.

In the last years, we have worked on diverse topics within this field, including internal conversion mechanisms in isolated nucleobases in the gas phase [2] and in water [3] (figure), isomerization effects [4], damage and repair of thymine dimers [5], and the impact of UV radiation on prebiotic synthesis of nucleotides [6]. This research has been based on quantum chemical methods, including nonadiabatic dynamics simulations.

In this talk, I will discuss our most recent results and critically appraise the strengths and limitations of the available theoretical methods [7] to deal with these phenomena.



## References:

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