Isomorphic Fluorescent Nucleosides

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The photophysics of RNA and DNA is unique among biomolecules that possess aromatic building blocks. Unlike proteins, which contain intrinsically fluorescent amino acids, the canonical nucleosides, and hence nucleotides and oligonucleotides, are practically non-emissive. We develop emissive nucleoside surrogates that facilitate the monitoring of nucleoside-, nucleotide- and nucleic acid-based transformations at a "nucleobase-resolution" in real time (Figure). The lecture will articulate the fundamental challenges and will present the design, synthesis and photophysical features of emissive nucleosides as well as selected examples for their utilization in fluorescence-based biophysical and discovery assays.

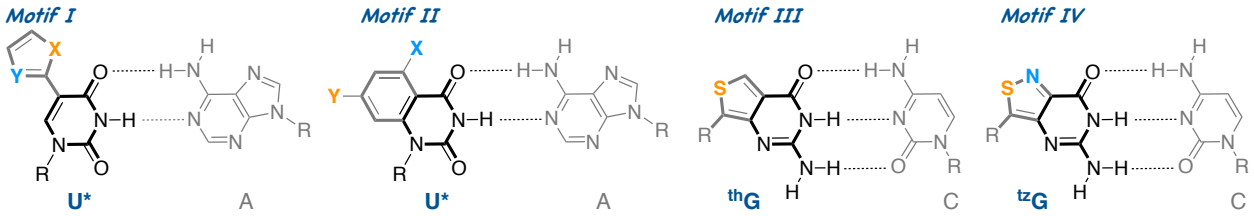

Figure. Fluorescent nucleoside analogs (R=D-ribose, 2'-deoxy-D-ribose)

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Isomorphic Fluorescent Nucleosides
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