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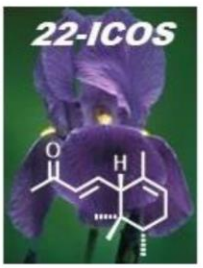

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Purine Hybrids Containing Five-Membered Heterocycles: Synthesis and Photophysical Properties

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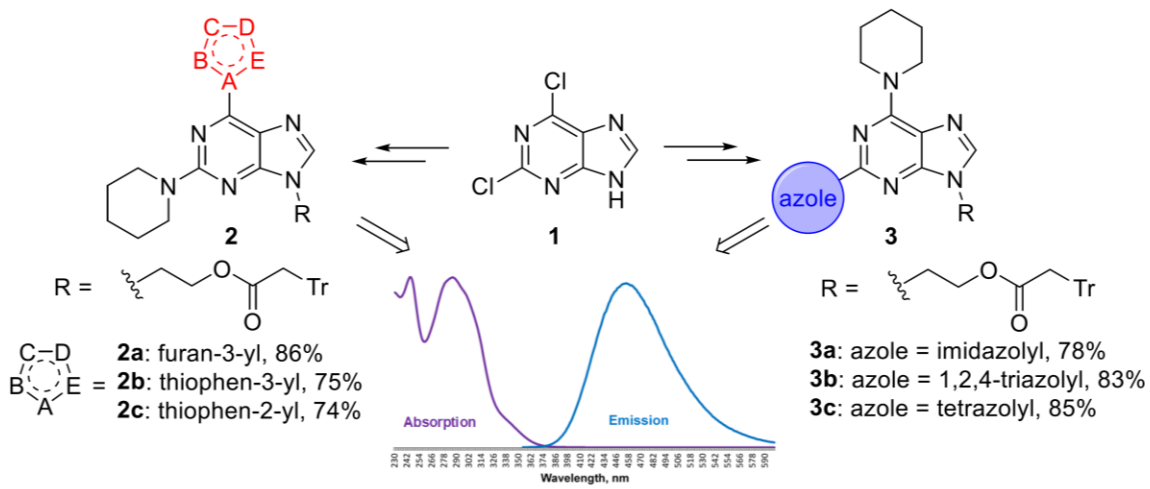
Fluorescent organic compounds have potential applications in organic light-emitting diodes [1,2], biosensors [3] and cell imaging [4].

Previously, we developed a method for the synthesis of 2,6-bistriazolyl purine nucleosides, studied their reactivity towards *N*- and *S*-nucleophiles, proved that triazolyl ring at C6 position is acting as good leaving group and discovered that products are fluorescent and show good quantum yields, reaching up to 53% [5].

Here we report design and synthesis of fluorescent purine derivatives with amorphous properties and their potential applications in the OLED technology. For this purpose, we have introduced different five-membered heterocycles and piperidine at C6/C2 positions of purine and different amorphous groups at N9 position. We used boric acid derivatives to obtain furan-3-yl, thiophen-2-yl and thiophen-3-yl compounds **2** and simple S_NAr procedure for imidazolyl, 1,2,4-triazolyl and tetrazolyl compounds **3**. All synthetic routes were elaborated from the 2,6-dichloropurine **1** by varying sequences of Mitsunobu, S_NAr, Suzuki and cyclization reactions. The final products **2** and **3** were obtained with different regioselectivity in 74-86% yields.

Results on photophysical properties of the obtained products both in the solution and in the thin films will be discussed.



Scheme. General synthetic route for target compounds **2** and **3**

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