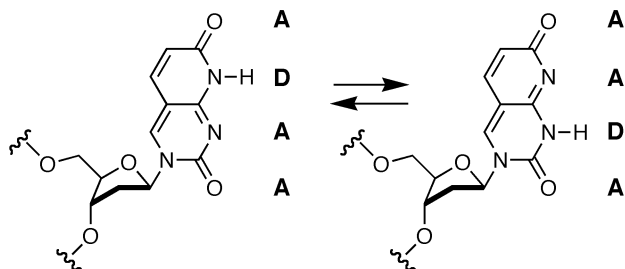


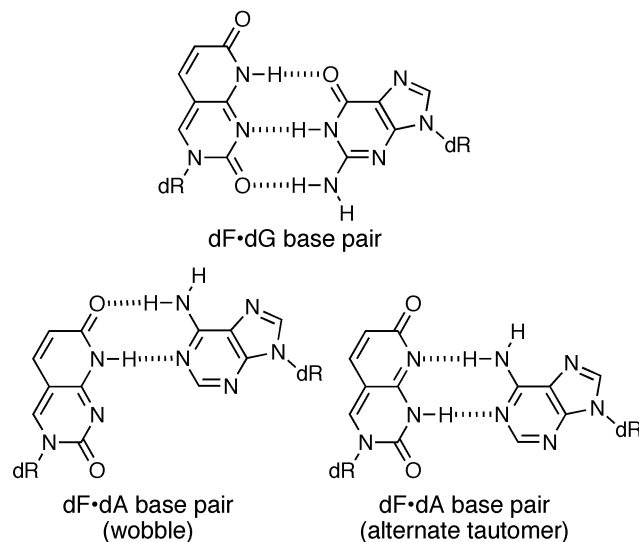
## dF CEP

Nucleosides bearing a pyrido[2,3-*d*]pyrimidine-2,7(8*H*)-dione base, known variously as "dF", "F", or "P", have been prepared and found to be fluorescent (Figure 1).<sup>1,2</sup> The ribofuranosyl version fluoresces at 385 nm. The dF heterocycle offers interesting alternate base pairing schemes, since evidence suggests that two tautomers may be involved.<sup>3,4</sup>



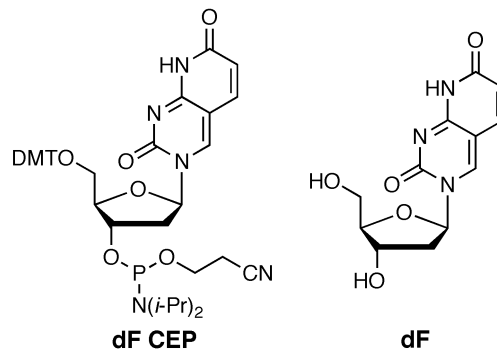
**Figure 1.** Base-pairing schemes offered by dF. A = hydrogen-bond acceptor, D = hydrogen-bond donor.

When incorporated into oligonucleotides, dF was found to pair selectively with G and A in double-helical DNA ( $G > A \gg C$  or T), resulting in higher and lower melting temperatures, respectively, than the corresponding C-G and T-A pairs.<sup>5</sup> It has been proposed that dF forms a Watson-Crick base pair with G much as C does, but can, via a backbone shift, form a wobble base pair with A (Figure 2).<sup>5</sup> Alternatively, dF may hydrogen bond with A via an alternate tautomer as shown.<sup>3,4</sup> In triple helices, dF recognizes A-T base pairs with high selectivity.<sup>3,4</sup> It can participate in parallel as well as antiparallel triplex formation, perhaps due to the availability of both heterocycle tautomers.<sup>4</sup> It has been proposed that triplex-forming oligonucleotides bearing dF may be useful for measuring triplex formation by quenching of the fluorescence of the heterocycle.<sup>4</sup>



**Figure 2.** Pyrido[2,3-*d*]pyrimidine-2,7(8*H*)-dione nucleosides are fluorescent and may act as C or A replacements in double- or triple-helical DNA.

Oligonucleotides containing dF nucleotides may be prepared using the phosphodiester<sup>5</sup> or phosphoramidite solid-phase methods.<sup>3,4</sup> We now offer the phosphoramidite dF CEP (Figure 3). Standard synthesis protocols and reagents may be employed, except that it has been suggested that dmf-dG CEP and room temperature deprotection with 30%  $\text{NH}_4\text{OH}$  should be used to minimize potential degradation of the dF heterocycle.<sup>4</sup> The nucleoside dF is also available.



**Figure 3.** dF products.

## References

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## dF CEP - Ordering Information

Item	Catalog No.	Size/pack	Price (USD)
dF CEP	BA 0238	50 $\mu$ mol	\$395.00
		0.25 g	\$975.00
dF (nucleoside only)	PYA 11100	10 mg	\$95.00
		100 mg	\$245.50

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