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 Terpyridine-Cu(II) Targeting Human Telomeric DNA to Produce Highly Stereospecific G-quadruplex DNA Metalloenzyme
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Copper/DNA G-Quadruplex-Catalyzed Diels–Alder Reaction

Significance: A terpyridine–copper(II) complex supported on human telomeric G-quadruplex DNA (**HT-21-A**) was prepared by treatment of **HT-21** with the copper–terpyridine complex **A** in the presence of NH_4Cl . **HT-21-A** catalyzed the enantioselective Diels–Alder reaction of azachalcones with cyclopentadiene to give the corresponding products in >99% conversion, $\leq 99:1$ endo/exo selectivity, and $\leq 99\%$ ee.

Comment: The formation of **HT-21-A** was confirmed by CD-spectroscopic analysis, UV melting, and ITC experiments. In the reaction of 3-phenyl-1-(pyridin-2-yl)prop-2-en-1-one with cyclopentadiene, **HT-21-A** promoted the enantioselective Diels–Alder reaction with about a 73-fold rate acceleration compared with the copper complex **A** alone.

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