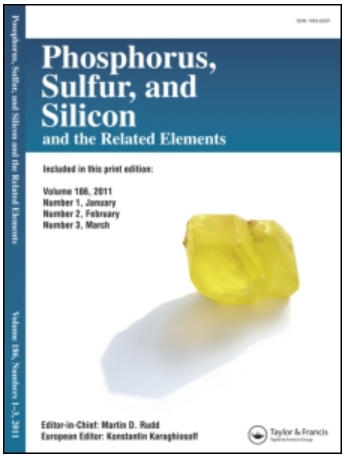

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Designing and Synthesis of Site-Specific DNA Cleavage Reagents

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DESIGNING AND SYNTHESIS OF SITE-SPECIFIC DNA CLEAVAGE REAGENTS

Hai Liu,[a] *Xiqing Li,*[b] *Bo Tan,*[a] *Yang Zhao,*[a] *Changde Lu,*[b] *and Yu-Fen Zhao*[a]
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In the past decade, studies on nucleic acids site-specific cleavage reagents, which consist of cleavage and recognition systems, had been received significant attention in the field of chemistry, biochemistry, and molecular biology. Previously it has been found that the dipeptide seryl-histidine (Ser-His) and related oligopeptides can cleave DNA, protein, and the ester p-nitrophenyl acetate (p-NPA) over wide ranges of pH and temperature.[1] Denaturing polyacrylamide gel electrophoresis (PAGE) of 50-end labeled DNA samples incubated with Ser-His reveals a pattern of two bands per nucleotide position, consistent with the generation of both 30-hydroxyl and 30-phosphate DNA cleavage fragments, as would be expected of phosphodiester hydrolysis by Ser-His. In order to confirm its hydrolysis mechanism and develop novel site-specific cleavage reagents, three different kinds of cleavage reagent consisted with recognition chain and cleavage active-site have been designed and synthesized. All of the recognition chains are made up of antisense oligonucleotide. The synthesis involved 10 steps. Further investigations on the cleavage mechanism and biological activities are current in progress.

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[1] Li Yunsheng, Yu-Fen Zhao, Scott Hatfield, and Rong Wan, *Bioorganic & Medicinal Chemistry*, **8,** 2675–2680 (2000).

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