세미나 초록

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발표 주제	The construction of DNA-encoded library for drug discovery
발표 내용	The importance of novel screening platforms in the discovery of lead compounds for new drug development is well established. In particular, the screening of hundreds of thousands of compounds from small-molecule libraries serves as a critical starting point that can determine the ultimate success of drug development efforts. However, the construction of high-throughput screening (HTS) systems for large-scale compound evaluation is often hindered by financial and spatial limitations, which vary depending on the size and type of the compound library. To address these challenges, DNA has been employed as a molecular barcode through its conjugation with small-molecule compounds. This innovation led to the emergence of DNA-encoded library (DEL) technology, which allows for rapid and efficient screening of vast chemical spaces. First conceptualized by Brenner and Lerner in 1992, DEL technology has since undergone extensive development and is now widely adopted by pharmaceutical companies in conjunction with HTS to identify promising drug candidates. For example, RIPK1 and soluble epoxide hydrolase (sEH) inhibitors developed by GSK during clinical trials were selected through chemical optimization of hit compounds originally identified via DEL screening. Despite its potential, current synthetic methodologies for constructing DELs remain limited in scope. In this study, we report a novel synthetic approach for the incorporation of N-acylsulfonamide and N-sulfonylamidine moieties into DNA-encoded libraries. These compounds were synthesized via copper-catalyzed reactions using simple and commercially available alkynes and sulfonyl azides, with suitable nucleophiles such as water or amines. This method offers a practical and versatile alternative for DEL construction, potentially expanding the chemical diversity accessible through this platform.