

Abstracts of papers presented
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Arranged by

Richard Myers, *Stanford University*

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STOP-START DNA SYNTHESIS IN THE BASE ADDITION SEQUENCING SCHEME (BASS)

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The base addition sequencing scheme (BASS) is a novel DNA sequencing approach where 3'-protected dNTPs are used to repetitively terminate DNA synthesis. Incorporation of the tagged complement base into the growing primer strand is identified followed by the subsequent removal of the 3'-protecting/ reporting group.

A number of 3'-modified deoxynucleotide-5'-triphosphates (dNTPs) were challenged against a variety of commercially available DNA polymerases. Several 3'-modified-dNTPs have been identified that act as DNA terminators in a limited group of DNA polymerases (manuscript submitted). In particular, we have observed that 3'-O-(2-nitrobenzyl)-dATP terminated *Bst* DNA synthesis. 3'-O-(2-nitrobenzyl)-dATP is an ultraviolet light sensitive compound. Recently, we showed a complete BASS cycle of DNA synthesis termination, deprotection, and continued base addition using 3'-O-(2-nitrobenzyl)-dATP. Also, data showing two base incorporations using 3'-O-(2-nitrobenzyl)-dATP against a polydeoxythymidine template was presented. We now present data investigating the efficiencies of each step in a BASS cycle in a five cycle 3'-O-(2-nitrobenzyl)-dATP BASS addition to estimate the length on DNA sequencing reads. Furthermore, we explored the termination of *Bst* DNA synthesis by 3'-O-(2-nitrobenzyl)-dTTP. The results of this investigation are presented.