

## Poster Presentation

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### *Structural basis of SOSS1 complex assembly and recognition of ssDNA*

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The SOSS1 complex comprising SOSSA, SOSSB1 and SOSSC senses single-stranded DNA (ssDNA) and promotes repair of DNA double-strand breaks (DSBs). But how SOSS1 is assembled and recognizes ssDNA remains elusive. Crystal structure of the N-terminal half of SOSSA (SOSSAN) in complex with SOSSB1 and SOSSC showed that SOSSAN serves as a scaffold to bind both SOSSB1 and SOSSC for assembling the SOSS1 complex. The structures of SOSSAN/B1 in complex with a 12nt ssDNA and SOSSAN/B1/C in complex with a 35nt ssDNA showed that SOSSB1 interacts with both SOSSAN and ssDNA via two distinct surfaces. Recognition of ssDNA with a length up to nine nucleotides is solely mediated by SOSSB1 while neither SOSSC nor SOSSAN are critical for ssDNA binding. These results reveal the structural basis of SOSS1 assembly and provide a framework for further studying the mechanism governing longer ssDNA recognition by the SOSS1 complex during DSB repair.

**Keywords:** DNA double-strand breaks, SOSS1 complex, ssDNA- binding protein