

Abstract Submitted
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Confinement-induced Molecular Templating and Controlled Ligation DANIEL BERARD, MARJAN SHAYEGAN, FRANOIS MICHAUD, GIL HENKIN, SHANE SCOTT, JASON LEITH, SABRINA LESLIE, McGill University, LESLIE LAB TEAM — Loading and manipulating long DNA molecules within sub-50 nm cross-section nanostructures for genomic and biochemical analyses, while retaining their structural integrity, present key technological challenges to the biotechnology sector, such as device clogging and molecular breakage. We overcome these challenges by using Convex Lens-induced Confinement (CLiC) technology to gently load DNA into nanogrooves from above. Here, we demonstrate single-fluorophore visualization of custom DNA barcodes as well as efficient top-loading of DNA into sub-50 nm nanogrooves of variable topographies. We study confinement-enhanced self-ligation of polymers loaded in circular nanogrooves. Further, we use concentric, circular nanogrooves to eliminate confinement gradient-induced drift of stretched DNA.

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