

Canadian scientists develop new, quicker technique for genomic analysis

Scientists from McGill University and the Génome Québec Innovation Centre say they have achieved a technical advance that could result in speedier diagnosis of cancer and various prenatal conditions. Their discovery, which is described online (“Convex lens-induced nanoscale templating”) in the Proceedings of the National Academy of Sciences (PNAS), lies in a new tool developed by Sabrina Leslie, PhD, and Walter Reisner, PhD, of McGill’s physics department and their collaborator, Rob Sladek, PhD, of the Génome Québec Innovation Centre.

According to the team, it allows researchers to load long strands of DNA into a tunable nanoscale imaging chamber from above in ways that maintain their structural identity and under conditions that are similar to those found in the human body.

“To overcome the challenges faced by classical nanofluidic technology, we have developed a new approach for introducing tunable nanoscale confinement to trap and align DNA molecules for optical analysis,” wrote the investigators. “Our confinement-based imaging technology combines nanotemplated substrates with a single-molecule imaging technique called convex lens-induced confinement (CLIC).”

CLIC will permit researchers to rapidly map large genomes while at the same time clearly identifying specific gene sequences from single cells with single-molecule resolution, a process that is critical to diagnosing diseases like cancer, explained Leslie. The CLIC tool can sit on top of a standard inverted fluorescence microscope used in a university lab. Existing tools used for genomic analysis rely on side-loading DNA under pressure into nanochannels in the imaging chamber, a practice that breaks the DNA molecules into small pieces, making it a challenge to reconstruct the genome, continued Leslie.

Read the full, original story: [Novel diagnostic genomic analysis technique developed](#)