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**DNA** Concentration Due To Migration Under Parallel Fields RYAN MONTES, ANTHONY LADD, JASON BUTLER, Univ of Florida -Gainesville — Pressure driven flow of DNA solutions through a microchannel (100-400 micron) in the presence of an opposing electric field, generates a net migration of DNA towards the walls. Over time a strongly inhomogeneous distribution of DNA develops in the channel with almost all the DNA localized within 10 micron of the walls. Near the walls the electrophoretic velocity drives a return flux of DNA towards the inlet. Thus despite an average fluid velocity that is at least 10 times the electrophoretic velocity, almost all the DNA remains trapped within the device. Experimental observations have provided unambiguous evidence that DNA migration occurs as outlined above, and that the migration is necessary for trapping. The mechanism inducing this DNA migration has been attributed to hydrodynamic interactions induced by the electric field. Migration due to viscoelasticity is another possibility, but a series of experiments systematically varying the ionic strength of the buffer solution verify that the electrically-induced flow, not the viscoelasticity, is the cause of the migration. This migration mechanism can be used to purify and concentrate DNA within micro-TAS devices.

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