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Using Microcontact Printing as a Novel Method for Patterned Dyeing of Surface-adsorbed DNA[1] EMILY SHEA, Smithtown High School East, JULIA BUDASSI, KE ZHU, JONATHAN SOKOLOV, Stony Brook University — We use microcontact printing (MCP)[1] to stain individual DNA molecules adsorbed and combed onto a polymer-coated silicon surface. Polydimethylsiloxane (PDMS) stamps with micron-sized features have been used to selectively stain lambda DNA molecules with SyBr Gold dye. DNA was deposited out of dilute solution onto polymethylmethacrylate (PMMA) layers, 70nm thick, spun-coated on Si wafers, producing linearly stretched and aligned molecules. The stamps were soaked in dye solutions for one minute, followed by wiping of excess solution with a swap. The stamp was pressed onto the surface, varying the pressure and time of application (typically 5-10 minutes) to control the staining. The DNA molecules were imaged with a fluorescence microscope equipped with a cooled CCD camera. Single molecules of DNA were successfully dyed and imaged with stamps having a grating pattern either parallel to or perpendicular to the DNA orientation. Supported by NSF-DMR MRSEC program.

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