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Method for selection of DNA molecules with a desired nucleotide sequenceAndrey Pichugin⁴, Markozashvili D.¹, Nesterov A.¹, Bardin A.¹, Kim E.¹, Langin S.¹, Maharova M.¹, Barinov A.³, and Vassetzky Y.^{4,1,2}¹Peter the Great St. Petersburg Polytechnic University, St. Petersburg, Russia²UVSQ-Inserm U1179 - End-icap, Handicap Neuromusculaire - Physiopathologie, Biothérapie et Pharmacologie appliquées, UFR des sciences de la santé Simone Veil, Université de Versailles Saint-Quentin-en-Yvelines, 2, avenue de la source de la Bièvre, 78180 Montigny-le-Bretonneux, France³INSERM, U1020, Faculté de Médecine René Descartes, Paris, France.⁴UMR8126, CNRS, Université Paris Sud Paris Saclay, Institut Gustave Roussy, Villejuif, France

New methods to produce DNA molecules with the desired nucleotide sequence are required in the field of synthetic biology. We developed an NGS-related method for selection of DNA molecules. Like in Next Generation Sequencing methods, the dNTPs are added in a sequential manner to the immobilized primed templates in order to perform DNA-polymerase-dependent elongation of primers. In our method, the templates may be released

from the solid support into a supernatant by a strand-displacement activity of DNA-polymerase. The error-free templates are obtained from the supernatant and the non-desired templates with mutations remain immobilized on the solid support. The reaction conditions have been determined and fully automated.

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