Enhancing Transient Transfection Methods Using DMSO Treatment in HEK 293 Cells

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The purpose of this project was to create a better transfection rate and produce better efficiency and yield so more cells can be studied through the transfection. Six 2mm dishes were treated with gelatin and transferred. All cells were transfected with 400µl 2X HBS, 345 µl diH2O, 40 µl 2M CaCl2, 7 µl TAg, 8 µl GFP. Cells were incubated for four hours at 37 degrees in the incubator, and after 4 hours, 3 untreated cell dishes were washed with PBS. The remaining 3 cell dishes were treated with DMSO differing concentrations ranging from 0%, 2%, 5%, 10%, and 15%. They were then studied to show that 10% gave the best transfection rate and yield using the fluorescence microscope because the cells showed up greenest. The time of exposure of DMSO was tested using 10% DMSO at 0 min, 5 min, 10 min, 15 min, and 20 min. The best time was 10% DMSO at 5 min, giving the best transfection rate. Using this, it was applied to a previous temperature experiment in the lab, and the treated cells were incubated at different temperatures. The temperatures were 37 degrees, 33 degrees, and 37 degrees the first day moved down to 33 degrees the second day. The cells photographed the next day showed that DMSO treated cell cultures of 10% DMSO at 5 minutes incubated at 37 degrees the first day and moved down to 33 degrees the next day gave the best transfection rate and yield. Materials were autoclaved to ensure no hazardous materials were left.