ATTACHING MAGNETIC QUANTUM DOTS TO DNA ORIGAMI STRUCTURE FOR POTENTIAL DRUG DELIVERY

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DNA origami can be used as a medium of transportation of drugs and other payloads to cells at the molecular level. The purpose of this experiment is to identify how to attach magnetic quantum dots to the single-stranded overhangs of this DNA origami structure and study the bond strengths between a biotinilated ssDNA oligomer and single-stranded overhangs of varying number and length on the bottom of the structure. The procedure includes mixing 5nM, 0.5 nM, and 0.05nM DNA origami with the magnetic quantum dots to find optimum binding conditions. Different trials are being conducted to find the optimum buffer conditions where the greatest amount of binding will occur. Transmission Electron microscopy is being used to verify attachment of magnetic quantum dots to the structure and Total Internal Reflection Fluorescence microscopy is being used to visualize attachment of the structure to a biotinilated oligomer attached to a glass cover slip.