

Calibrating Mechanical Amplifiers of DNA Bend Dynamics

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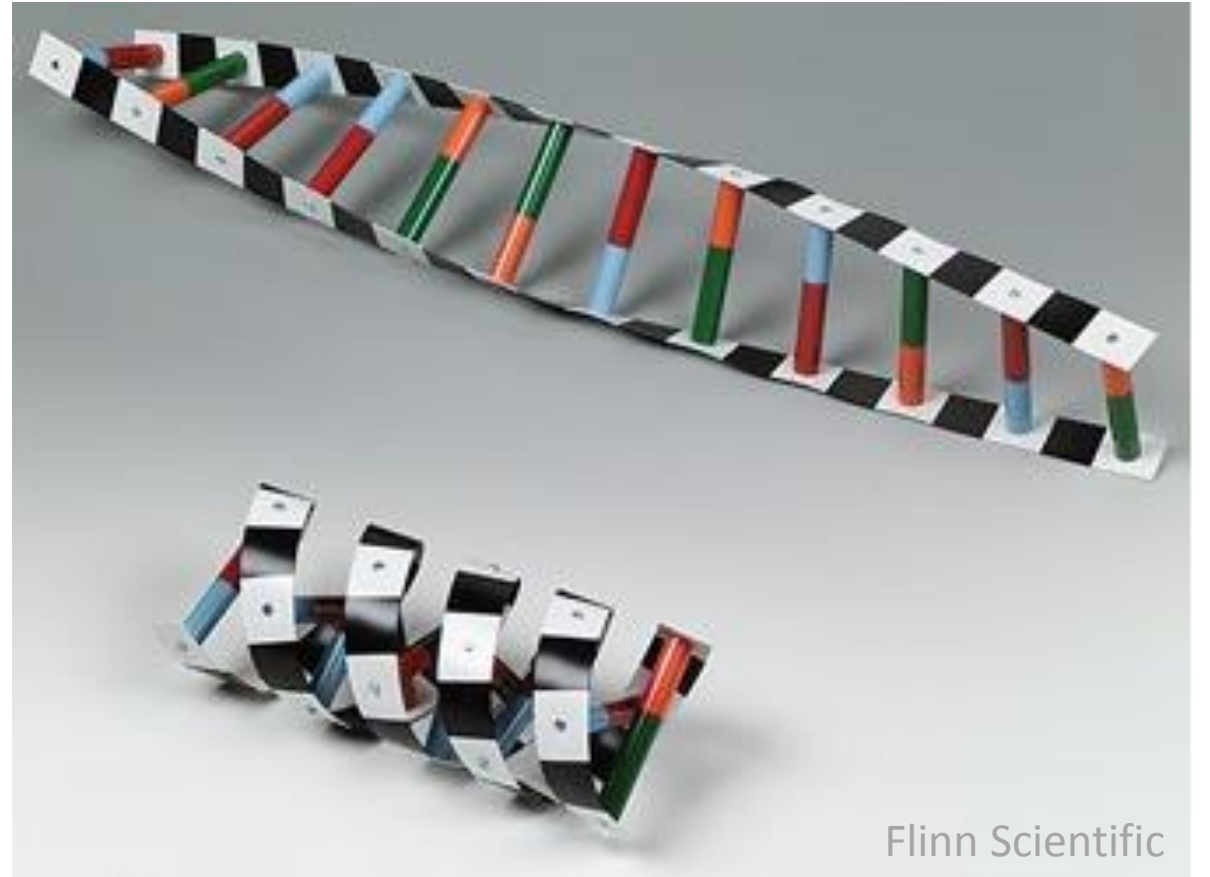
Physics Department



DNA Bending Affects Information Storage



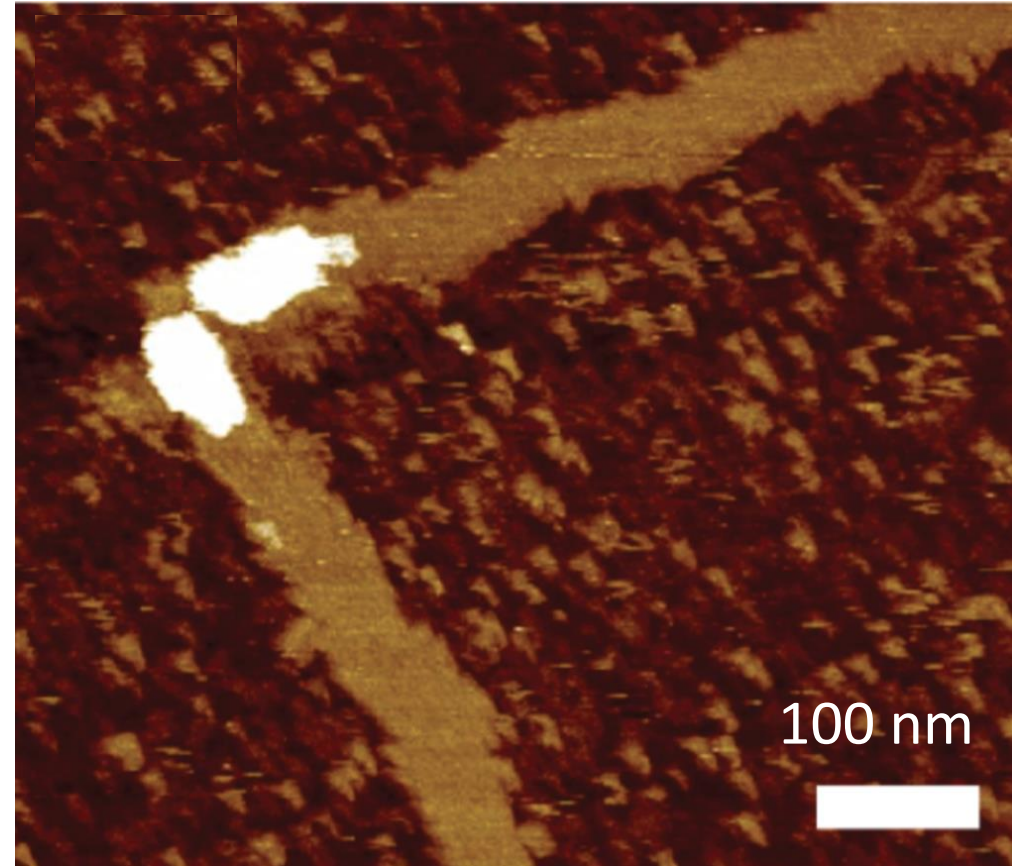
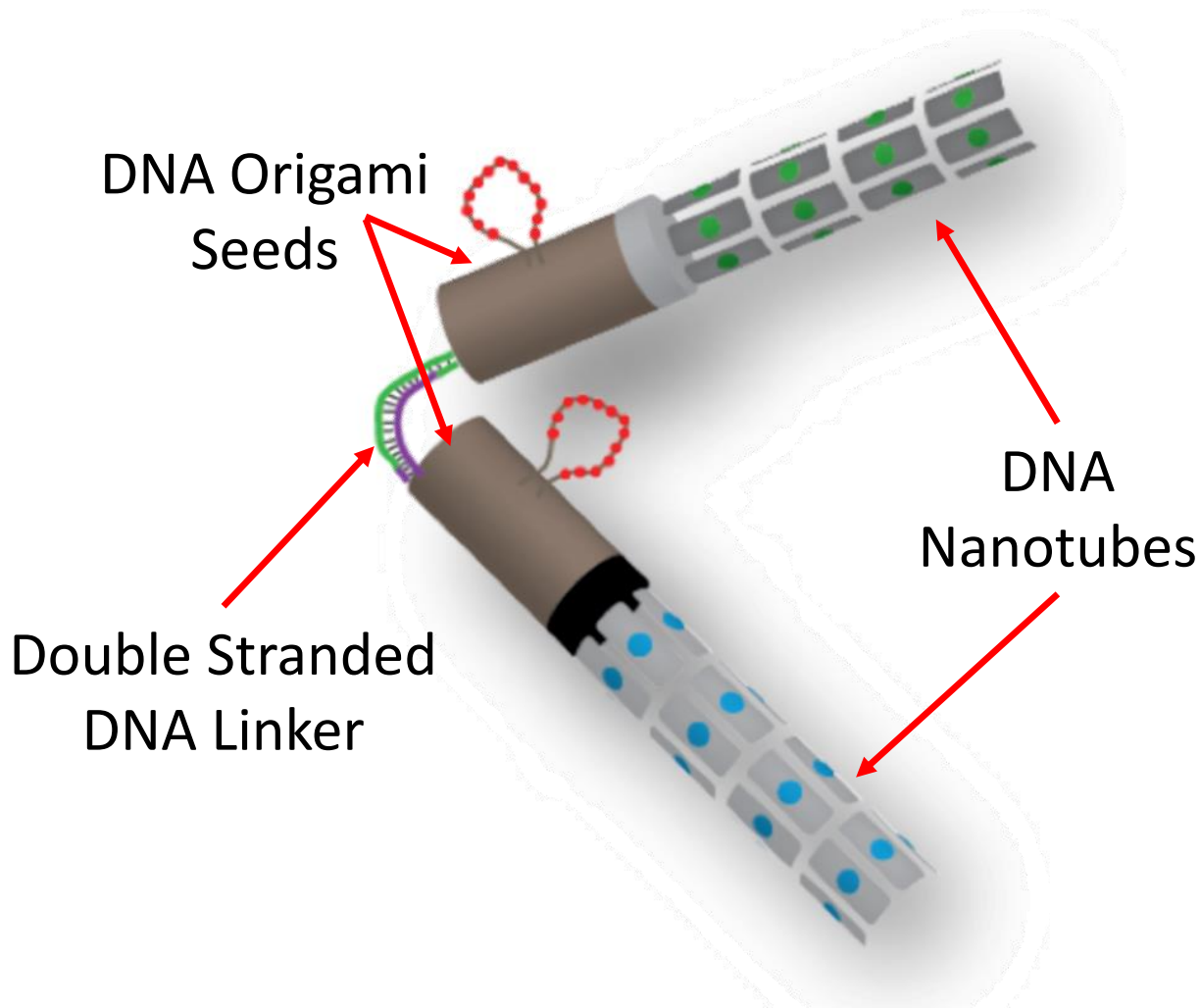
Yellow < A
Green > T
Blue < C
Red > G



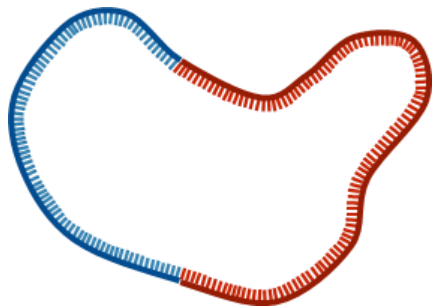
Genetic Code

Storage

DNA Nunchucks Allow Us to Visualize Bending



Building Seeds with DNA Origami



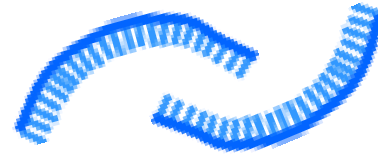
ssM13 DNA

+

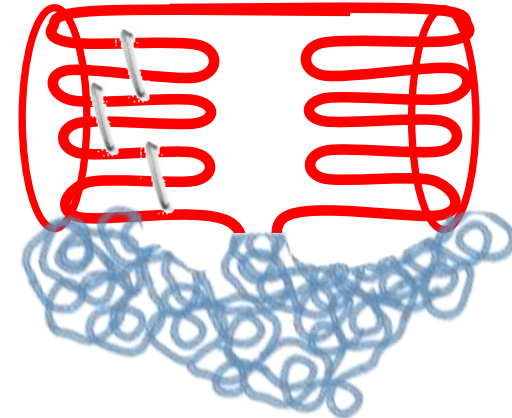


ssDNA Staple Strands

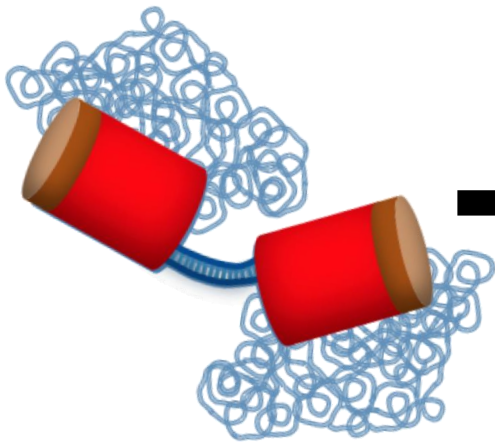
+



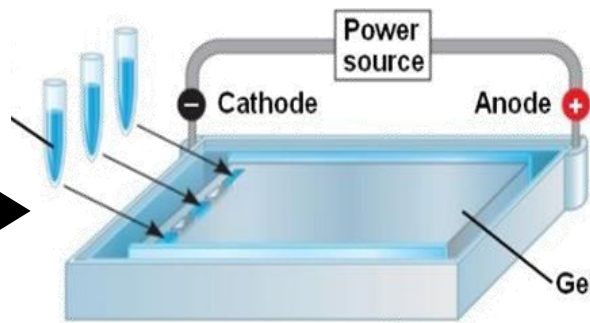
Linker Strands



Anneal to Fold



Dimer Seeds



Purify Seeds
(Gel Electrophoresis)

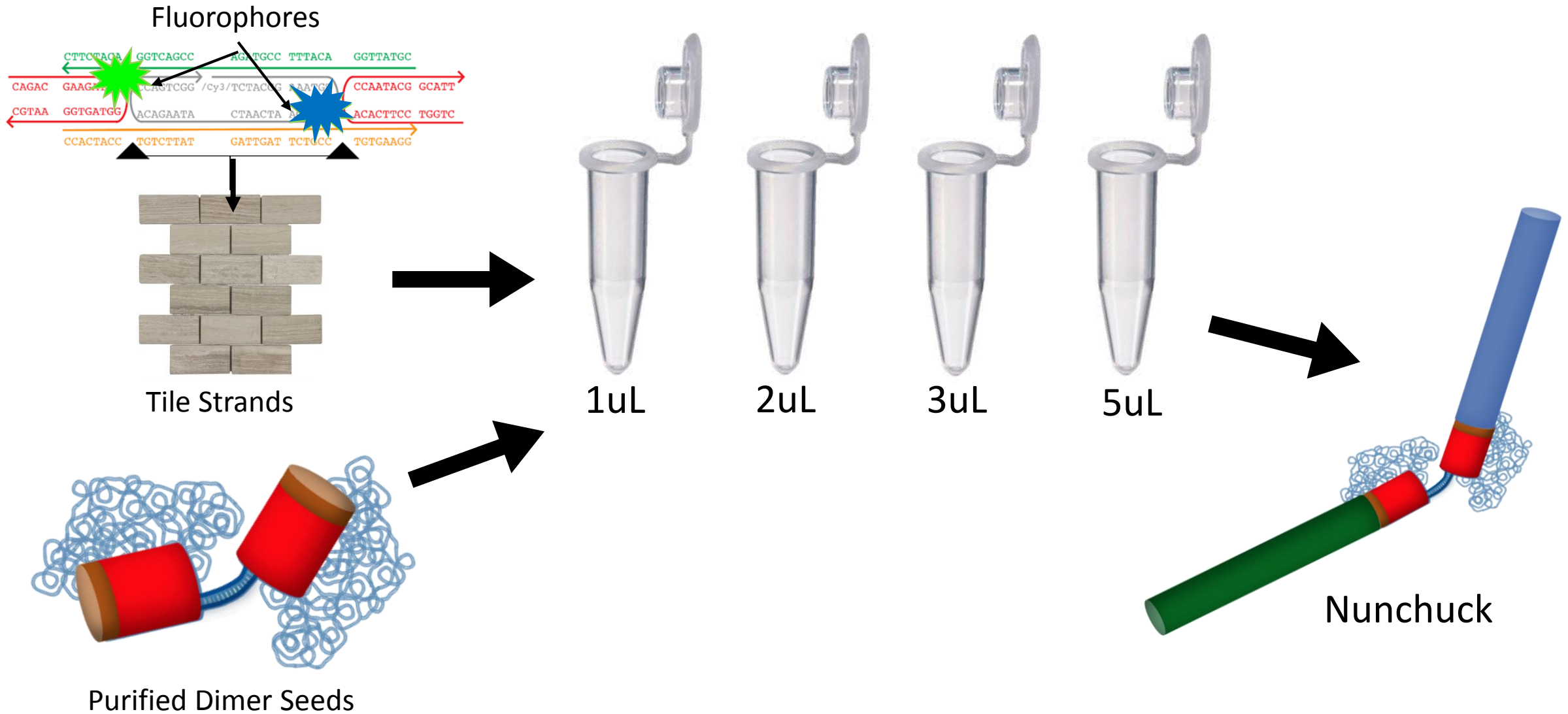


Unknown Concentration

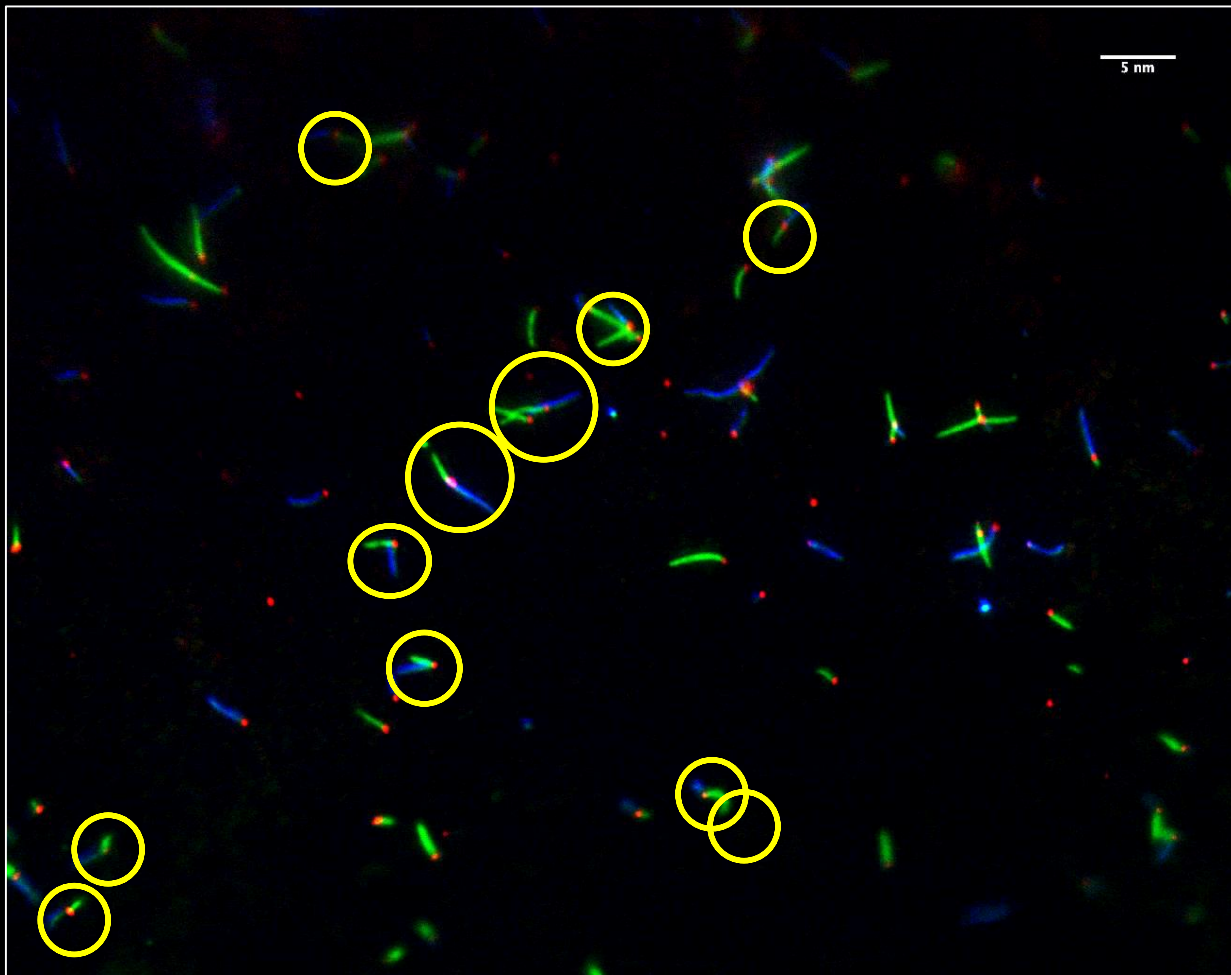


Qubit Fluorometer

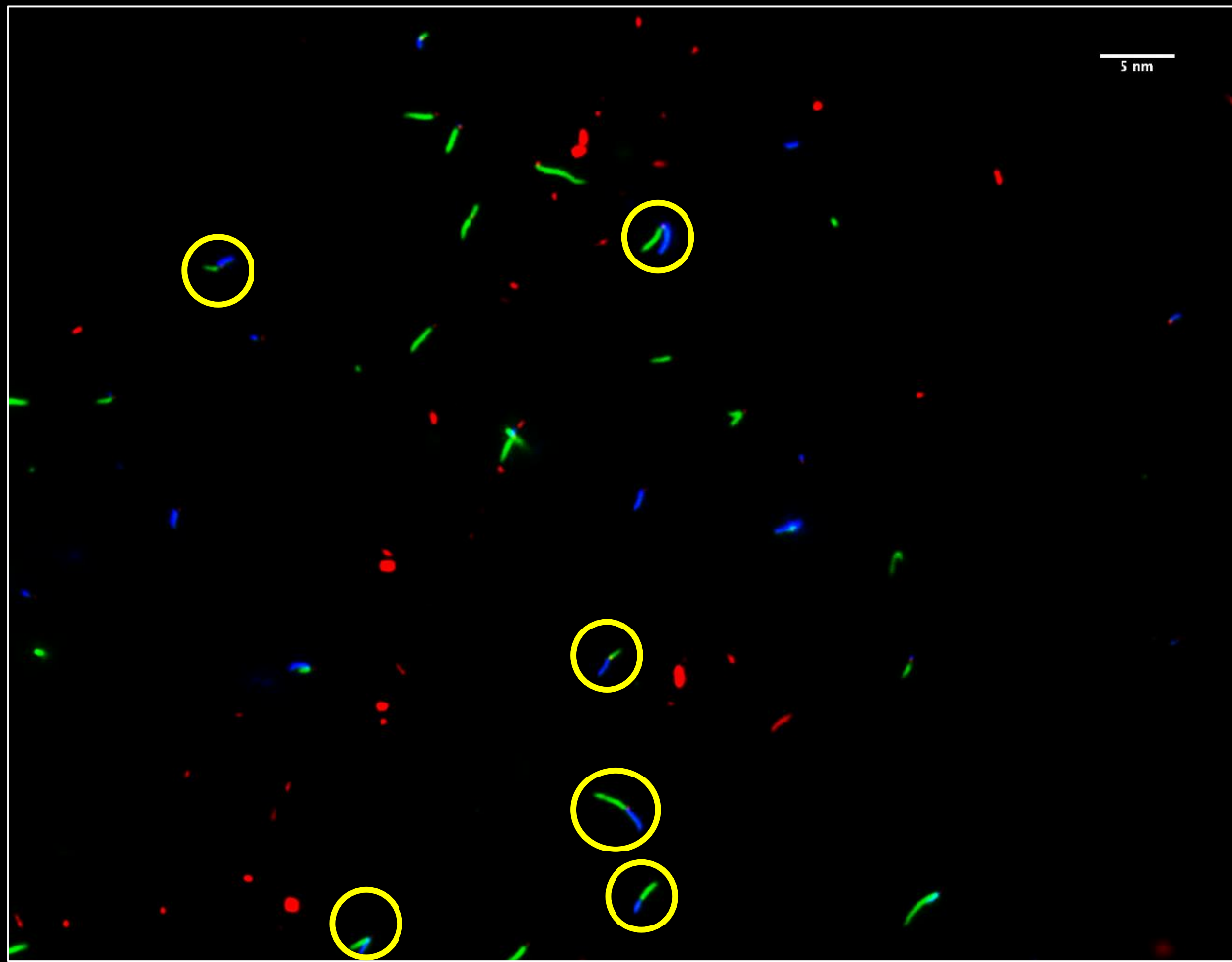
Current Seed Sweep Procedure is Inefficient



1uL of Seeds Added

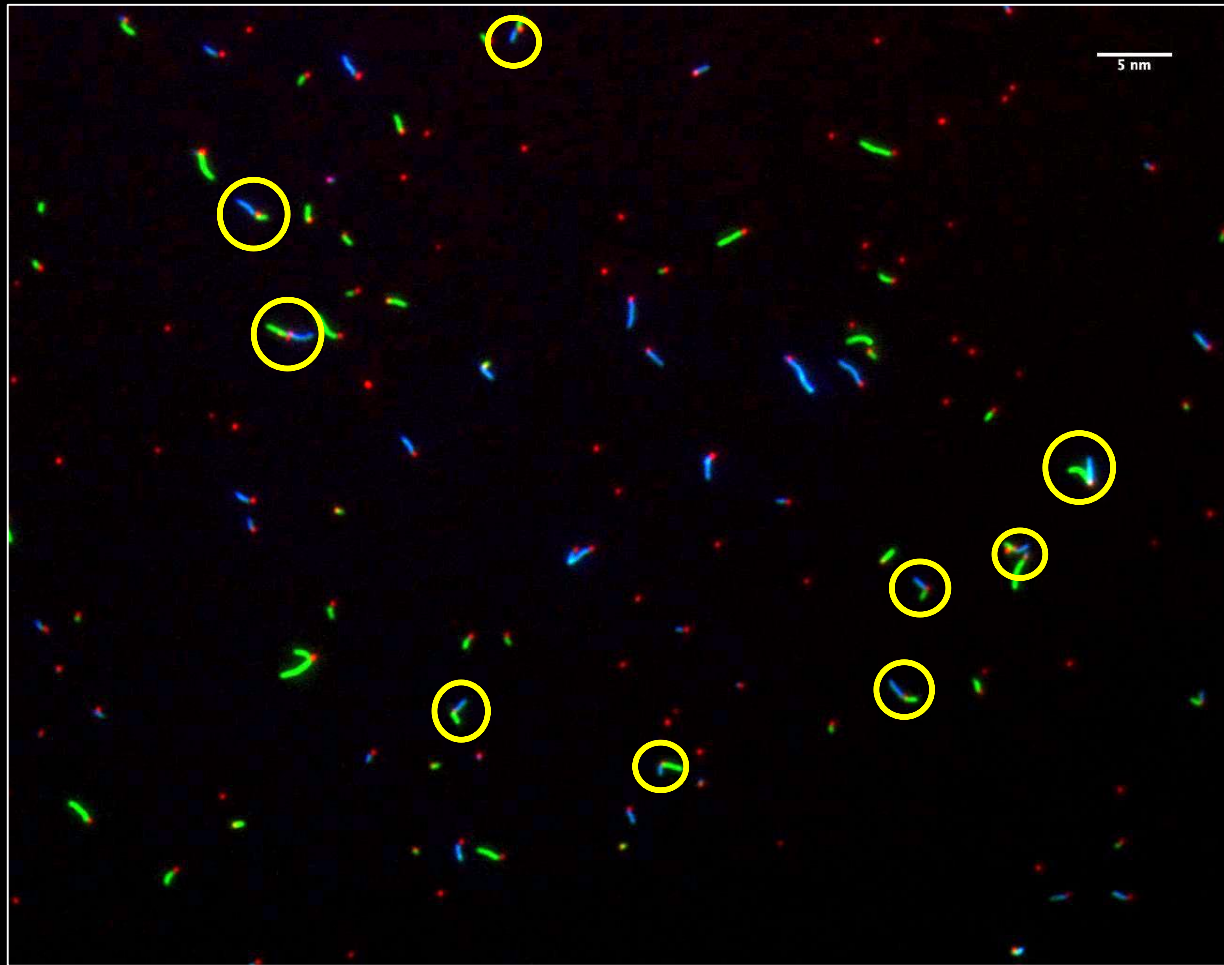


Batch 1: 352 ng/mL of double stranded DNA
(26% yield)

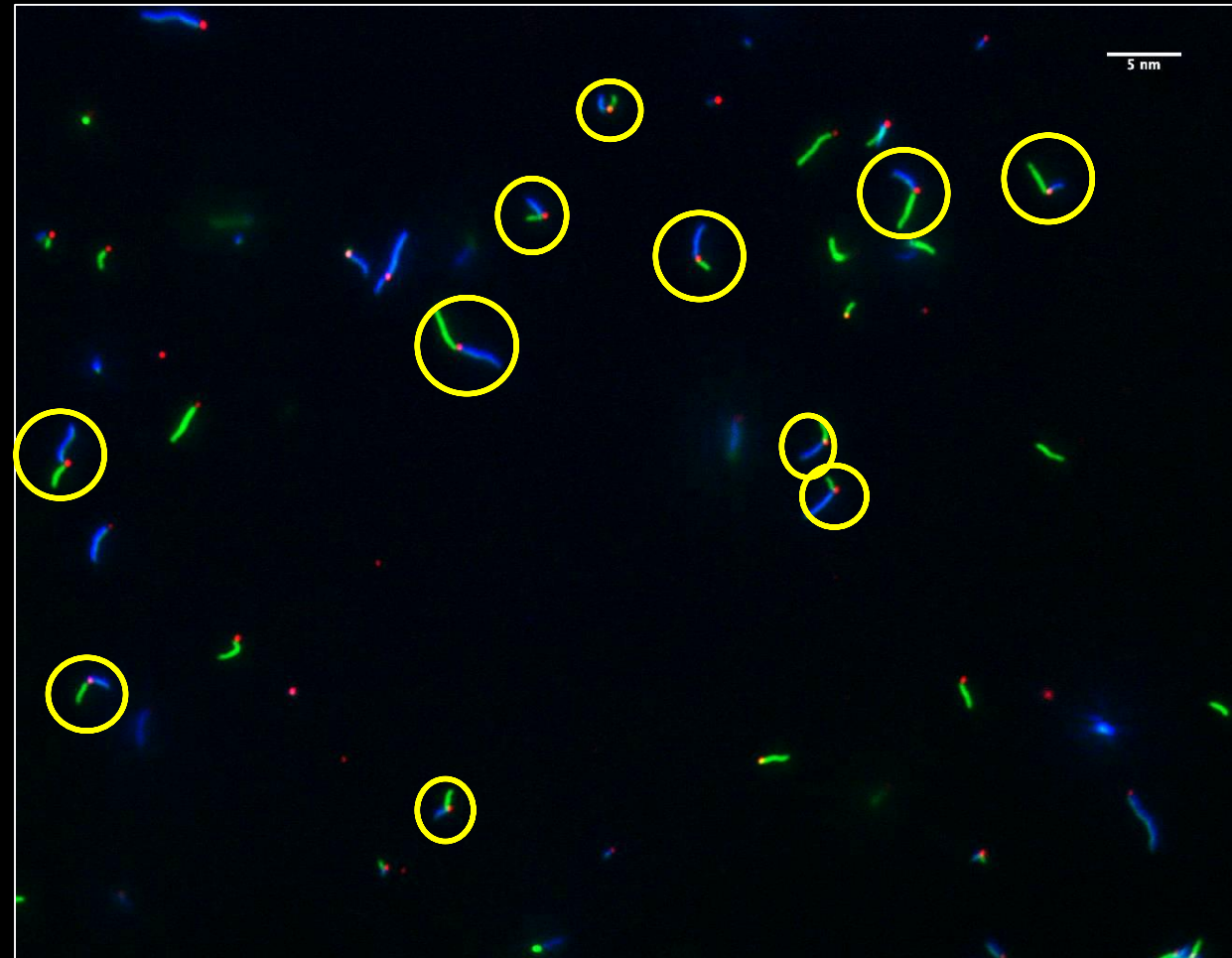


Batch 2: 203 ng/mL of double stranded DNA
(6% yield)

3uL of Seeds Added

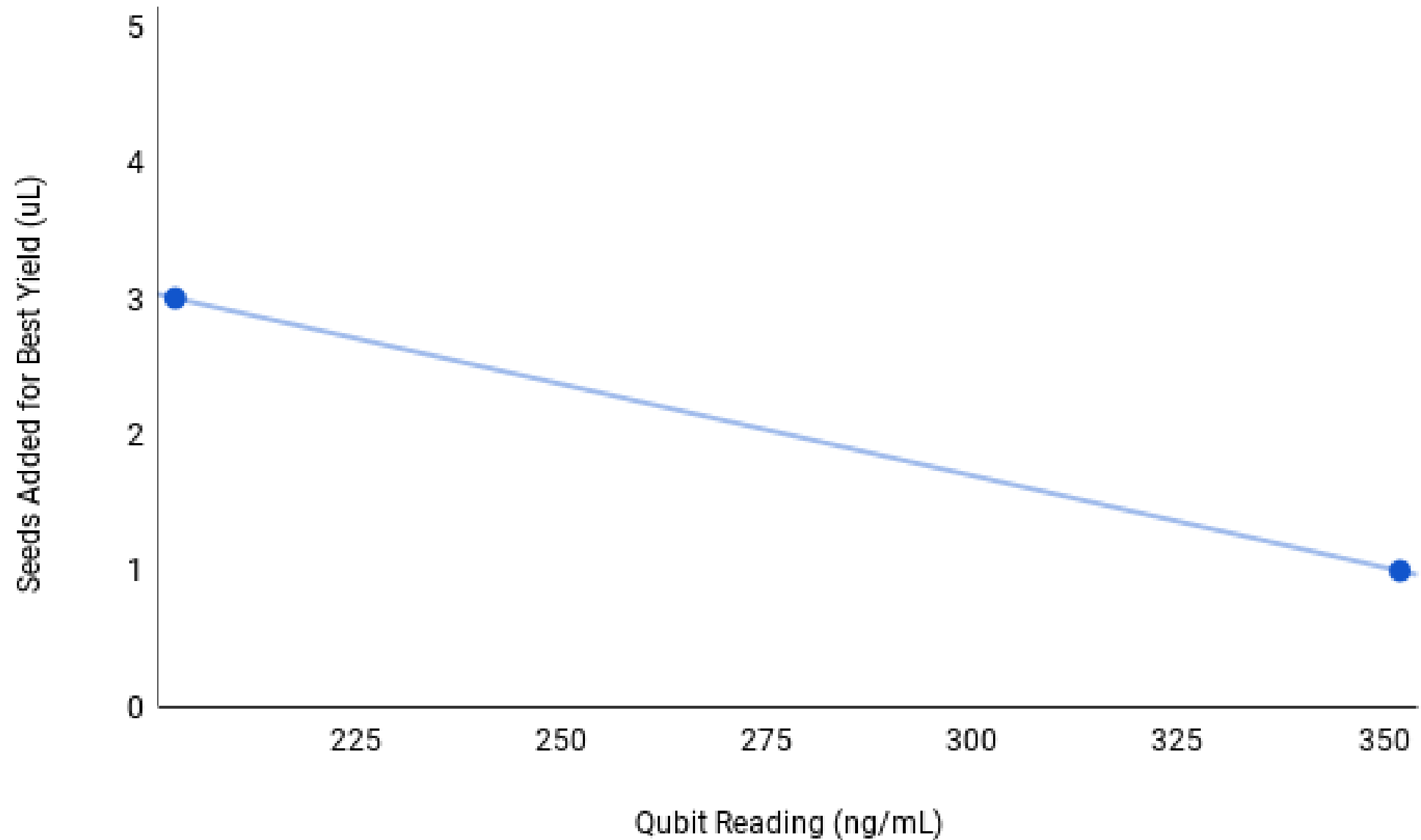


Batch 1: 352 ng/mL of double stranded DNA
(8% yield)



Batch 2: 203 ng/mL of double stranded DNA
(34% yield)

Calibrating Seed Amount to Qubit Readings



Using Calibration for Efficient Dynamic Imaging



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