

Supporting Information

Hybridization efficiency of molecular beacons bound to gold nanowires: effect of surface coverage and target length

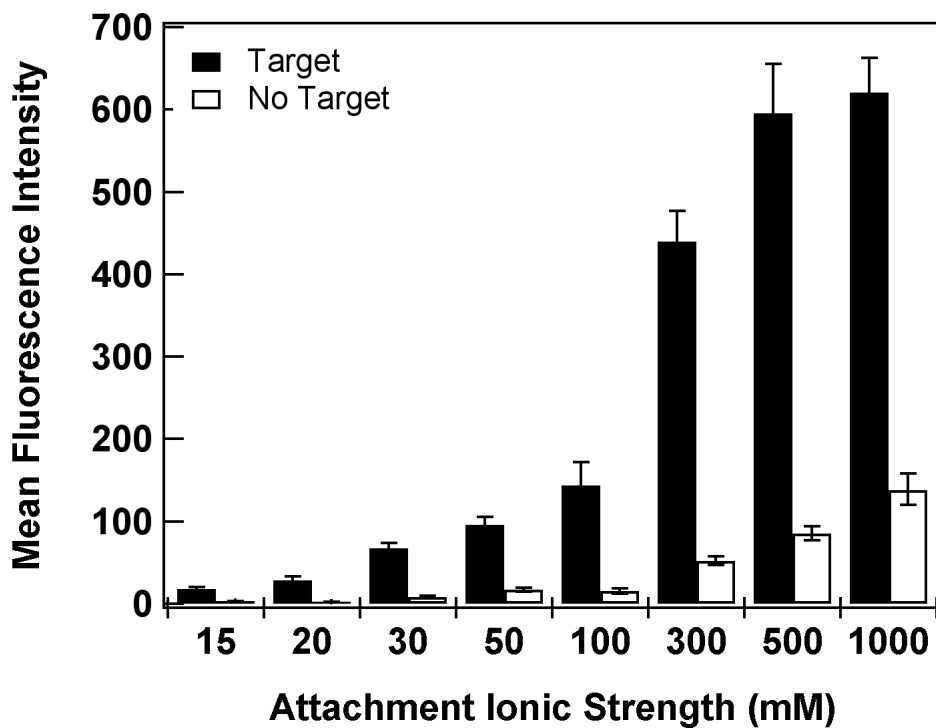
*Kristin B. Cederquist and Christine D. Keating**

Department of Chemistry, The Pennsylvania State University, University Park, PA 16802.

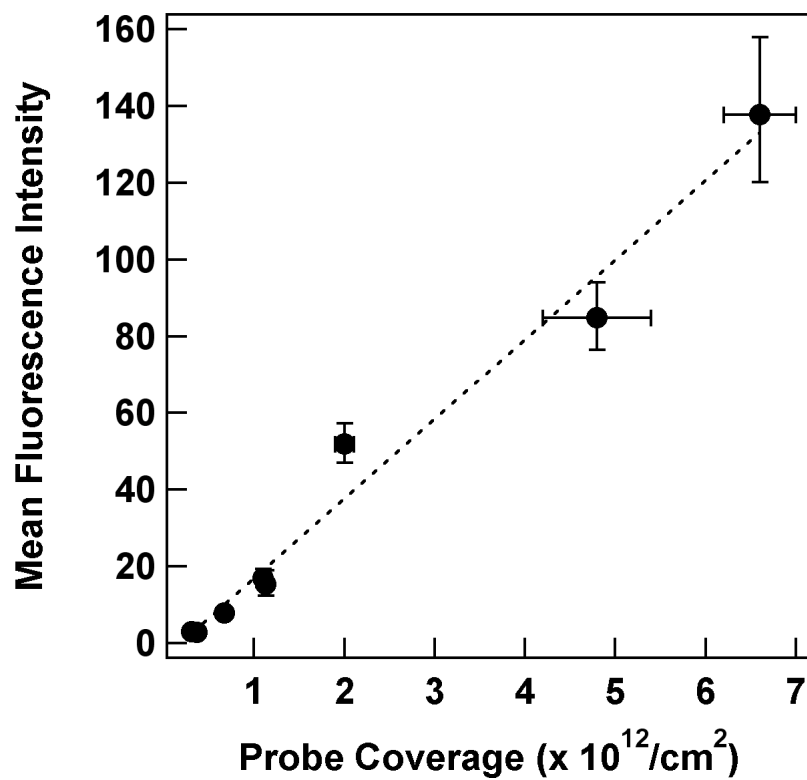
keating@chem.psu.edu

Supporting Table 1. Surface Coverages, Footprints, and Hybridization Efficiencies for Hairpin Probes Attached in Different Ionic Strength Buffers

Attachment Buffer (mM)	Hairpin I Coverage (probes/cm ²)	Surface	Footprint (nm ²)	T _{comp} Coverage (/cm ²)	Surface T _{NC} Coverage (/cm ²)	Surface Hybridization Efficiency (%)
15	$(3.1 \pm 0.3) \times 10^{11}$		300 ± 30	$(1.7 \pm 0.1) \times 10^{11}$	$(1.5 \pm 0.4) \times 10^{11}$	17 ± 7
20	$(3.7 \pm 0.2) \times 10^{11}$		270 ± 15	$(2.9 \pm 0.2) \times 10^{11}$	$(1.6 \pm 0.3) \times 10^{11}$	32 ± 11
30	$(6.7 \pm 0.4) \times 10^{11}$		149 ± 9	$(4.4 \pm 0.6) \times 10^{11}$	$(2.6 \pm 0.4) \times 10^{10}$	61 ± 9
50	$(1.10 \pm 0.07) \times 10^{12}$		91 ± 6	$(7.6 \pm 0.2) \times 10^{11}$	$(1.5 \pm 0.2) \times 10^{10}$	67 ± 5
100	$(1.13 \pm 0.02) \times 10^{12}$		89 ± 2	$(1.11 \pm 0.04) \times 10^{12}$	$(1.4 \pm 0.1) \times 10^{11}$	86 ± 4
300	$(2.0 \pm 0.1) \times 10^{12}$		50 ± 3	$(1.96 \pm 0.08) \times 10^{12}$	$(1.2 \pm 0.1) \times 10^{11}$	90 ± 7
500	$(4.8 \pm 0.6) \times 10^{12}$		21 ± 3	$(9.1 \pm 0.6) \times 10^{11}$	$(2.1 \pm 0.9) \times 10^{10}$	18 ± 3
1000	$(6.6 \pm 0.4) \times 10^{12}$		15 ± 1	$(1.2 \pm 0.5) \times 10^{12}$	$(2.5 \pm 0.8) \times 10^{10}$	17 ± 7



Supporting Figure 1. Effect of probe coverage (plotted as attachment solution ionic strength) on pre- and post-hybridization fluorescence of **HP** probes bound to metal nanowires. Quantification of probe coverage for each ionic strength is shown in Supporting Table 1. Filled and open bars represent fluorescence signal in the presence or absence of complementary target T_{comp} , respectively. Error bars represent the 95% confidence level.



Supporting Figure 2. HP fluorescence in the absence of oligonucleotide target (these values can be read from the open bars in Supporting Figure 1) as a function of HP coverage. The dashed line represents a linear fit.