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An approach to sequence DNA without tagging

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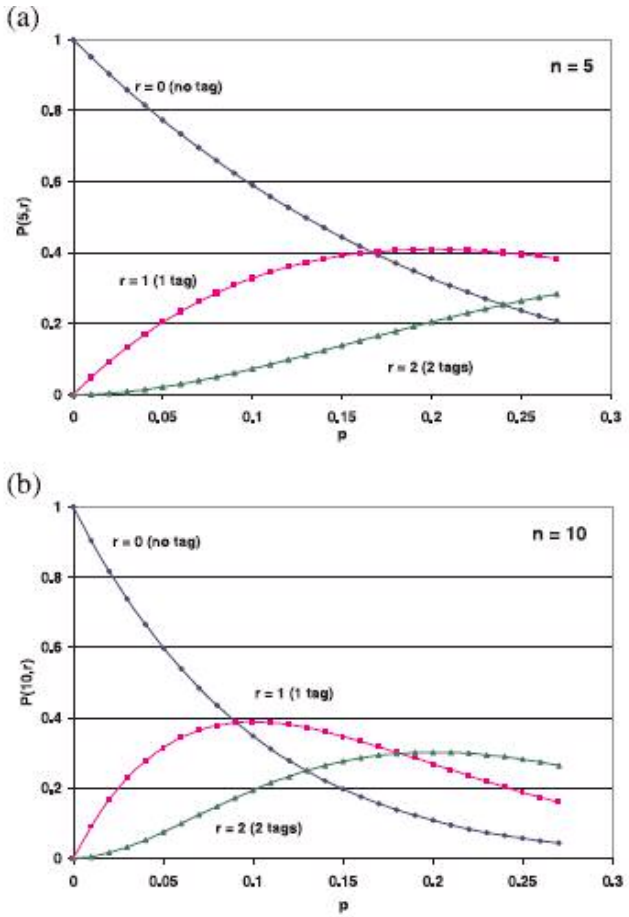

Figure 1. Number fraction of DNA synthesized in PCR with n nucleotides that may be tagged. As the p increases, the fraction of untagged nucleotide decreases monotonically. However, the number fraction for $r > 0$ has a maximum.

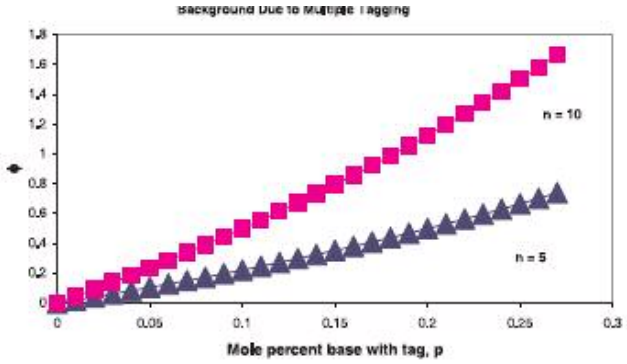

Figure 3. The background due to multiple tagging increases monotonically as p increases.

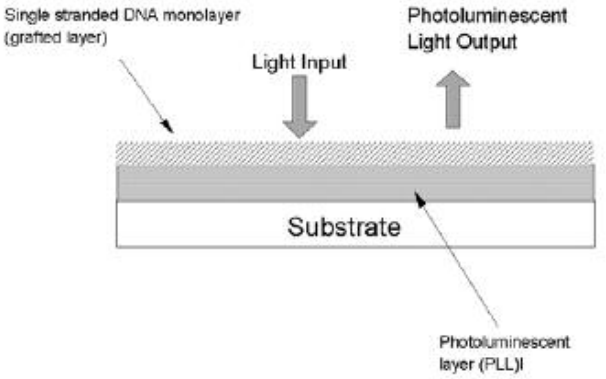

Figure 4. The basic element of the DNA chip device is shown. For the study described, the substrate is an Si wafer and the photoluminescent layer is an organic material.

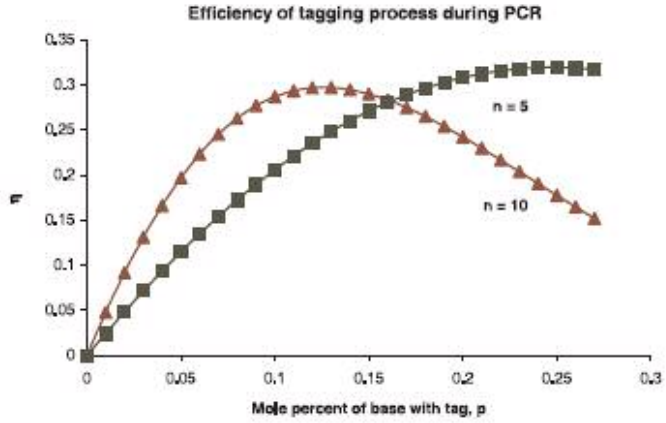

Figure 2. The η increases with p since more tagged bases are available for insertion. When the number of sites (i.e. n) increases, the probability of DNA with multiple tags also increases. Thus η exhibits a maximum at $n = 10$. The maximum for $n = 5$ occurs at a larger p.

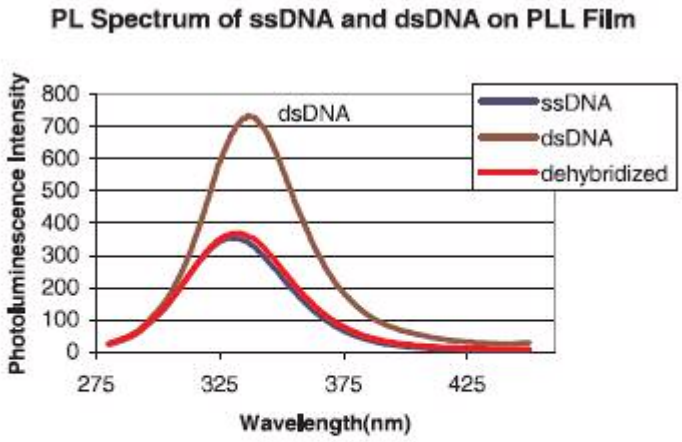

Figure 5. PL spectrum from PLL with the top DNA layer being, ssDNA, dsDNA and denatured back to ssDNA. The change in intensity, $I_{PL,ds}/I_{PL,ss} = 2.35 \pm 0.25$.

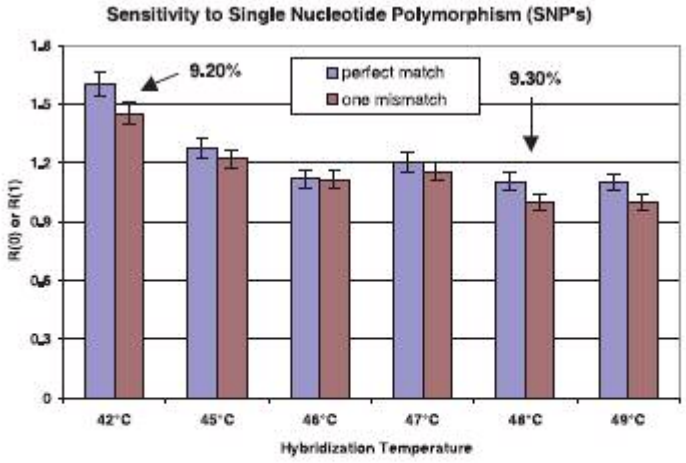

Figure 6. Behaviour of hybridization temperature on DNA binding exhibits <2 °C sensitivity. $R(x) > 1$ indicating that the PL increases upon DNA hybridization as seen in figure 5.