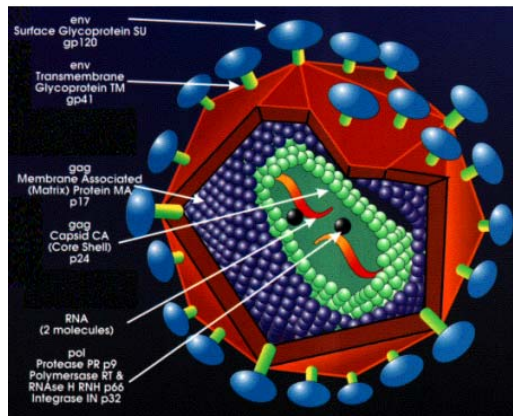
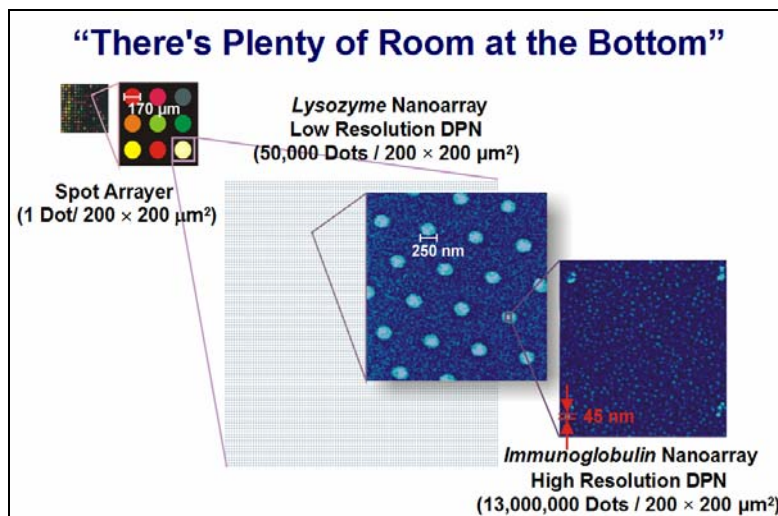


## Applying the DPN<sup>®</sup> Process to Protein Diagnostics

### DPN for HIV

HIV is an increasingly serious disease that requires more research and better diagnostic solutions. Amazingly, the Dip Pen Nanolithography<sup>®</sup> (DPN<sup>®</sup>) process is used to produce spotted nanoarrays of protein antibodies that can be treated with patient samples and then detect for the presence of HIV. The use of DPN for creating nanoarrays of biomolecules serves to miniaturize the screening experiment to the extreme. By going to the nanoscale, we leverage the power of our DPN technology to yield the following advantages:

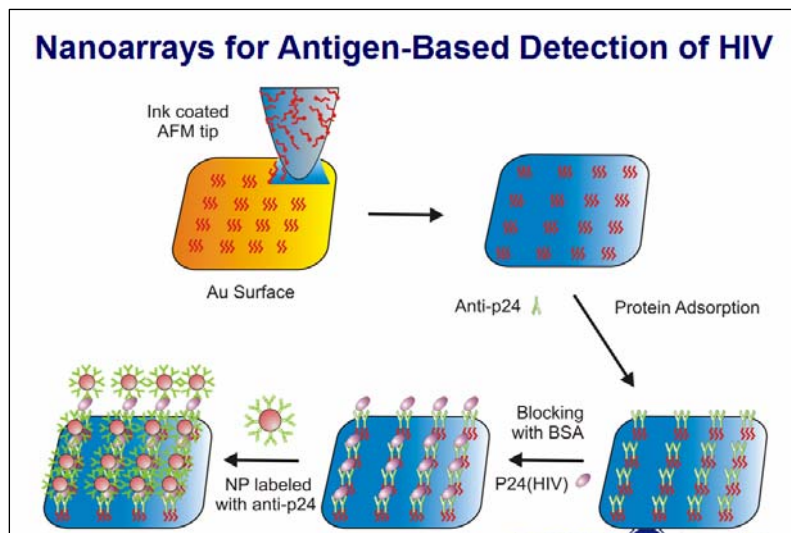
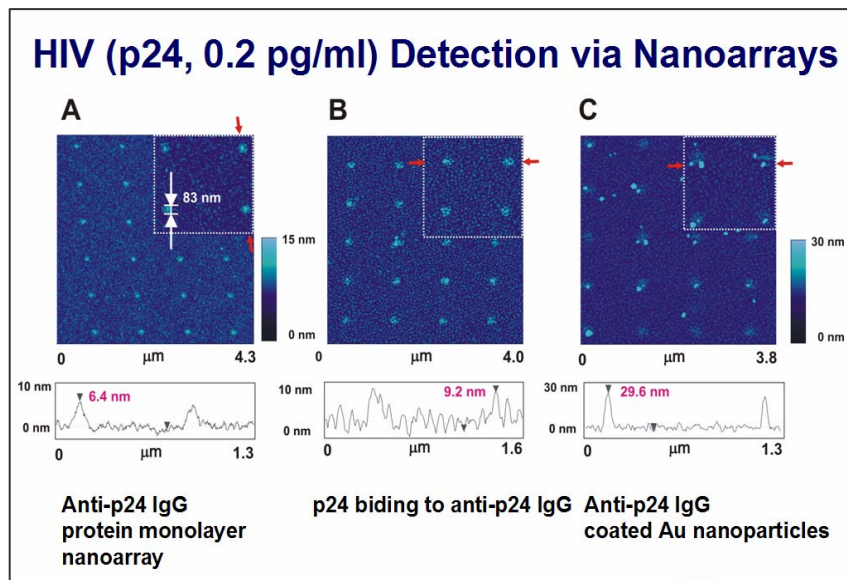
- We can detect at much lower concentrations of HIV relative to current screens (i.e., ELISA)
- We detect HIV in patient plasma with a much lower number of viral copy counts than PCR
- Ultimately, we achieve **Early Detection of HIV** relative to current ELISA and PCR methods



Method	Target	Detection Limits per ml of
PCR	HIV RNA	50 copies/ml; 50 ul
ELISA	HIV p24 antigen	5 pg/ml; 200 ul
Nano-Immunoassay	HIV p24 antigen	33 virus particles/ml, 0.2 pg/ml; 1 ul

## Discussion

The experiment is performed by first creating a nanoarray of spots of either a template of MHA molecules or by directly depositing the protein. Either way, a sandwich assay is produced by subsequent processing steps using traditional means. The scheme here shows a sandwich assay that is made using a template of alkanethiols (MHA) that are negatively charged and which attract the p24-antibody for HIV. Following the making of the sandwich, we can affirm the presence of binding by using the same tool for assay detection as we used for DPN deposition.



For more information including pricing, please contact Nanolink Sales Department at [sales@nanolink.net](mailto:sales@nanolink.net) or 1-847-679-NANO.

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