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Small-molecule microarrays

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Microarray technologies have been developed to measure differences in mRNA or protein expression levels, but few approaches have addressed the issue of functional enzymatic activity on a genome-wide scale. In the Early Edition of the [Proceedings of the National Academy of Sciences](#), Winssinger *et al.* describe an innovative microarray application that exploits small molecules to monitor protein function ([Proc Natl Acad Sci USA 2002, 10.1073/pnas.172286899](#)). They used libraries of small molecules, each tethered to a [peptide nucleic acid \(PNA\)](#) tag, that can be detected by hybridization to an oligonucleotide microarray. They predict that this technology could be used to screen 400,000 enzyme activity probes in a 300 μ l volume. To demonstrate proof-of-principle, they monitored caspase activity upon experimentally induced apoptosis and showed that the small molecule inhibitor they identified could prevent cell death.

References

1. *Proceedings of the National Academy of Sciences*, [<http://www.pnas.org>]
2. Profiling protein function with small molecule microarrays., [<http://www.pnas.org/cgi/content/abstract/172286899v1>]
3. Peptide nucleic acids and their potential applications in biotechnology.