



for Gene Technology



Using the same technology that drives inkjet printers, a Kirkland, Washington-based bioinformatics company is developing sophisticated DNA microarrays that may help researchers measure and analyze gene expression faster, more economically, and with greater precision than ever before possible. These small glass slides may revolutionize the field of toxicogenomics, helping scientists target new drugs, discover gene functions, determine biologic pathways, and better understand illnesses such as cancer, cystic fibrosis, and cardiovascular disease at the molecular level.

The FlexJet™ system, as the microarray product is known, was pioneered by the group of scientists who founded Rosetta Inpharmatics—Stephen Friend, Leland Hartwell, Leroy Hood, and Jasper Rine—along with Alan Blanchard, who heads Rosetta's FlexJet technology development team. The system combines modern printing technology with DNA synthesis techniques to print tiny arrays of thousands of different gene sequences onto a single glass slide. An "inkjet synthesizer" propels molecular strands of DNA onto the surface of a slide, "printing" arrays of DNA molecules in a process not unlike the manner in which an inkjet printer deposits ink onto paper, forming distinct patterns of characters and images.

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The dizzying possibilities offered by such sophisticated microarrays call into question some long-accepted conventions in the world of science. In the past, researchers have tended to conduct experiments, derive conclusions, then go on to the next project, sometimes without saving data that might prove quite valuable to the next researcher down the line. Friend believes scientists haven't yet learned how to connect with each other to create core databases accessible to others who are interested in similar questions. "There needs to be a coordinated effort. Scientists have not found rewards sufficient to make them eager to link together," Friend laments. The unfortunate result, he says, is that "a lot of the power of technology gets reduced simply to being a separate finding."

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Radich echoes this concern: "How do you make sense of the data? How do you extract the information from the noise?" Still, he is enthusiastic about the promise the FlexJet microarrays show in his research on leukemia treatments. "It's changed the way we look at things," he reflects. With the microarray technology, scientists not only find answers to their initial queries, but they also find patterns in genes that they weren't looking for at all. Such discoveries could lead down new roads toward altogether new destinations and yield important answers to questions scientists haven't yet thought of posing. "The potential is fantastic," Radich says. "We'll probably understand what the patterns of . . . genes mean before we actually find out how they work together."

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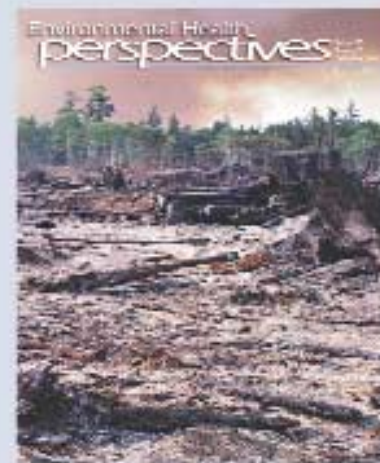
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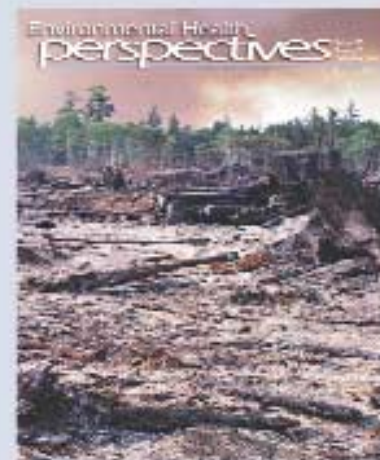
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