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Dan Pinkel: Chromosome Painting

In the early 1980s, I was working with Joe Gray and a lot of other folks in a biophysics group headed by Marv Van Dilla. The group was developing cell sorting hardware and doing some imaging work, among other things. We were the physical sciences research group for Biomed. One of the things we were doing was improving the ability to separate the different human chromosomes. In fact, several people at Livermore had originally developed the technology to do it before I got to Livermore, including Joe, Tony Carrano, Rich Langlois, Phil Dean, Don Peters, and a few others.

DOE wanted to get more involved in molecular biology. A natural project was to use the unique chromosome sorting ability to make cloned libraries of all the human chromosomes. People had to develop more accurate and efficient techniques to stain chromosomes with fluorescent molecules, measure them, separate them, and isolate them to get enough DNA from each chromosome type to make the libraries. That effort eventually turned out to become a joint Livermore–Los Alamos project and was a precursor to the national labs' involvement in the Human Genome Project.

At the same time, people in several labs around the world were starting to show results with hybridizing DNA to cells and chromosomes and detecting the hybridization with fluorescence techniques. People in the field were meeting every couple of years and reporting good progress.