

The growth of DNA databases is expected to continue at a fast pace in the attempt to sequence the human genome completely by the year 2005. Parallel processing is a viable solution to handle searching through the ever-increasing volume of data. During Phase I, genQuest—the sequence comparison server portion of the GRAIL system—will be parallelized for shared-memory platforms and will use PVM¹ for the development of genQuest servers on networks of PCs and workstations and other innovative, high-performance computer architectures.

Prototype graphical interface systems for Macintosh, NT Windows, and Windows 95 that mimic the function and operation of the current GRAIL-genQuest clients will en-

able a larger portion of biotechnology companies to make use of the GRAIL suite of analysis tools. Parallel genQuest servers will improve response time for searches and increase user capacity per server. Such fast shared- and distributed-memory computing solutions will improve the cost-performance ratio and make parallel searches more affordable to the biotechnology community using general multipurpose hardware.

DOE Grant No. DE-FG02-95ER81923.

¹The Parallel Virtual Machine (PVM) message-passing library allows a collection of UNIX-based computers to function as a single multiple-processor supercomputer.