

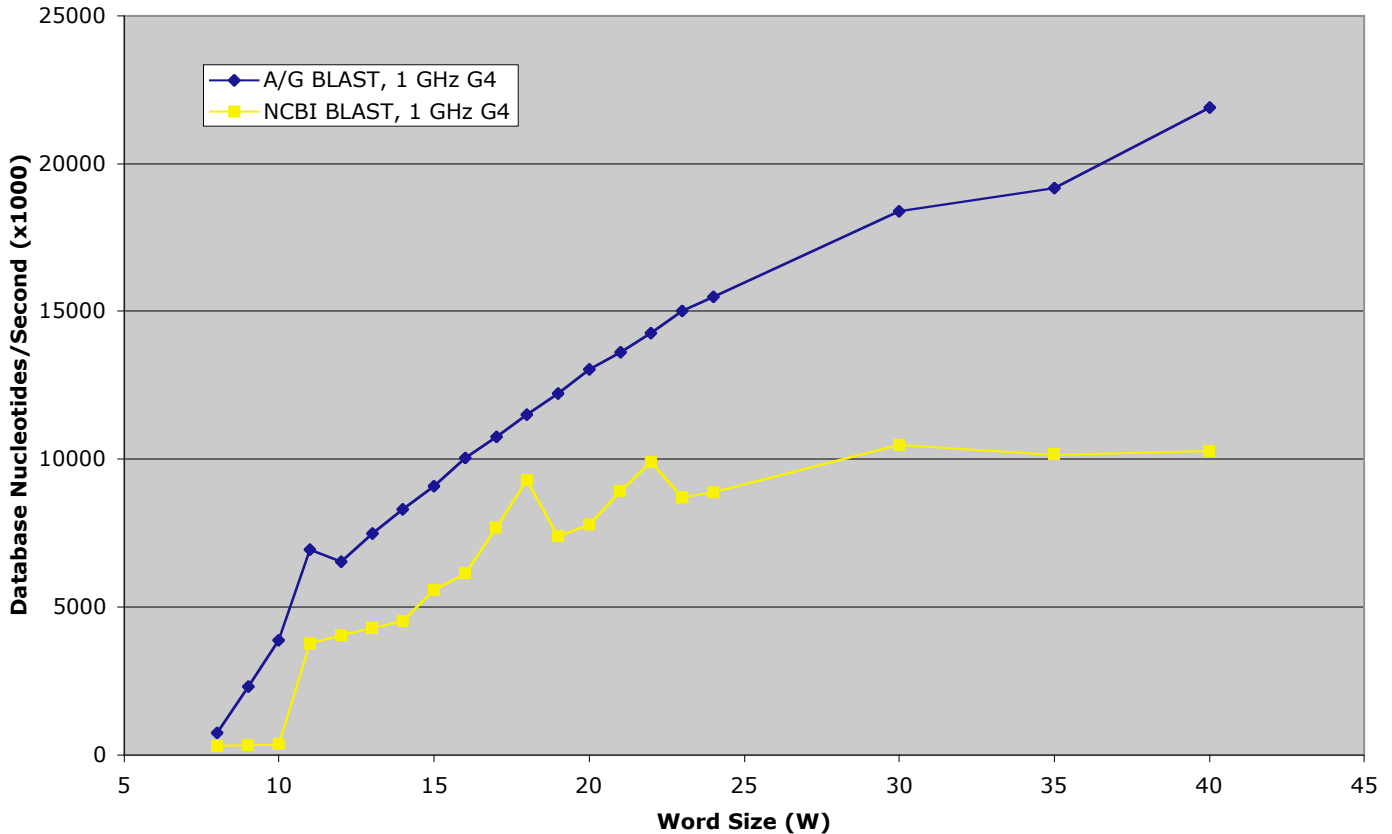
Apple/Genentech BLAST performance data. The following graphs were generated to exemplify the performance one can expect for real-world, real-laboratory sequence queries. Clearly visible is the strong W -dependence of the processing rate (W is the nucleotide word size). For example, the final graph shows that at $W = 10$, the 1 Ghz G4 speed is 10 times that of a 2 Ghz. Pentium IV, while the asymptotic gain with the G4 exceeds 2x. Note also the relative smoothness of the G4 performance curves, which smoothness is related to the enhanced accuracy of reporting matches.

Advanced Computation Group

Apple Computer

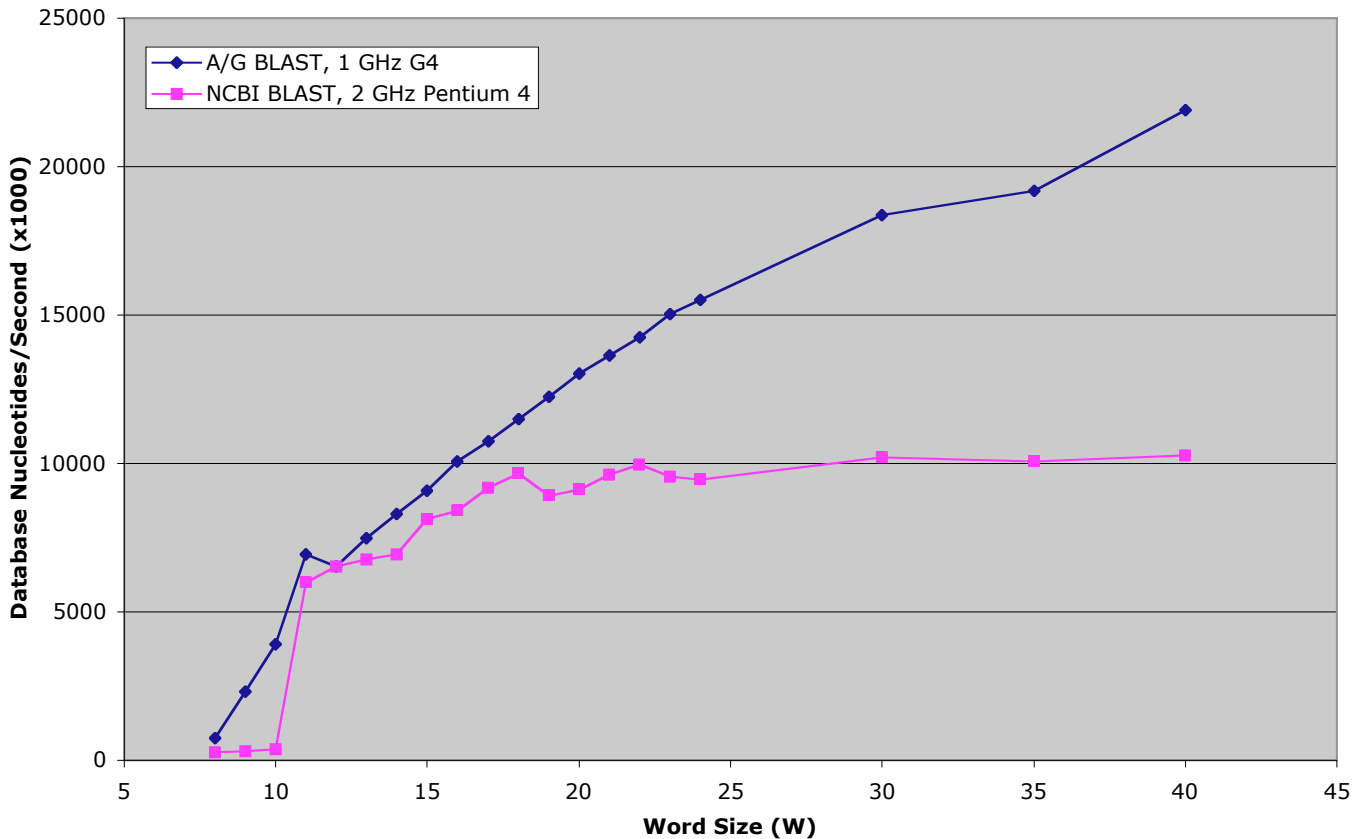
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BLAST Performance



Apple/Genentech BLAST performance relative to standard NCBI distribution code. The above graph was generated by querying the “nt” database, a non-redundant set of all public DNA sequences (~5 billion nucleotides), with a query of 13 random sequences from the chimpanzee genome (~38,000 nucleotides). To eliminate less significant matches, all alignments with an expectation greater than 10^{-8} were discarded. Queries were performed on a 1 GHz PowerMac G4 with 512 MB of RAM. Both executables were compiled with gcc 2.95.2 at level 3 optimization. (Note: no dual-processor data are shown; the G4 timings are for a solitary 1 Ghz. processor.)

BLAST Performance



Performance of Apple/Genentech BLAST on 1 GHz G4 vs. NCBI BLAST on 2 GHz Pentium

4. The above graph was generated by querying the “nt” database, a non-redundant set of all public DNA sequences (~5 billion nucleotides), with a query of 13 random sequences from the chimpanzee genome (~38,000 nucleotides). To eliminate less significant matches, all alignments with an expectation greater than 10^{-8} were discarded.

Macintosh platform configuration: 1 GHz Power Mac G4 (solitary processor only), 512 MB RAM, running OS X 10.1.2, executable compiled with gcc 2.95.2, level 3 optimization.

Pentium 4 Platform Configuration: 2 GHz Dell Dimension 8200, 512 MB RAM, running Mandrake Linux 8.1. Executable compiled with gcc 2.96, level 3 optimization.