# BeadStudio GT Module System Information and Benchmark Performance

System information and benchmark performance data to be used as a guide for determining hardware, software, and memory requirements for analysis of Illumina DNA BeadChips.

## INTRODUCTION

This document includes the following information:

- **Hardware, operating system, and memory requirements** for Illumina DNA BeadChip analysis using the BeadStudio Genotyping Module
- **Project creation guidelines** to optimize genotyping projects for performance or project size
- **Report file sizes** to determine storage needs for final reports and locus summary reports
- **Benchmark performance data** for common operations performed on computers with different specifications

## HARDWARE REQUIREMENTS

Illumina recommends the following hardware for your BeadStudio genotyping projects.

### TABLE 1: HARDWARE REQUIREMENTS

| MINIMUM SYSTEM | RECOMMENDED SYSTEM |
|---|---|
| Intel Pentium IV or newer processor | Intel Pentium IV or newer processor |
| 32-bit system | 64-bit system |
| 4GB RAM | 8GB RAM |
| 100+ GB hard drive | 100+ GB hard drive |

## OPERATING SYSTEM REQUIREMENTS

Illumina recommends the following operating systems for your BeadStudio genotyping projects.

- 32-bit Windows XP
- 64-bit Windows XP
- 32-bit Windows Vista

Illumina has not fully tested BeadStudio on 64-bit Windows 2003 Server, but it has been demonstrated to work.

## PROJECT CREATION GUIDELINES

At project creation, use the following guidelines to optimize a BeadStudio genotyping project for faster performance or for larger project size: For faster performance, use memory-based storage. For larger project size, use file-based storage.

### TABLE 2: PROJECT CREATION GUIDELINES

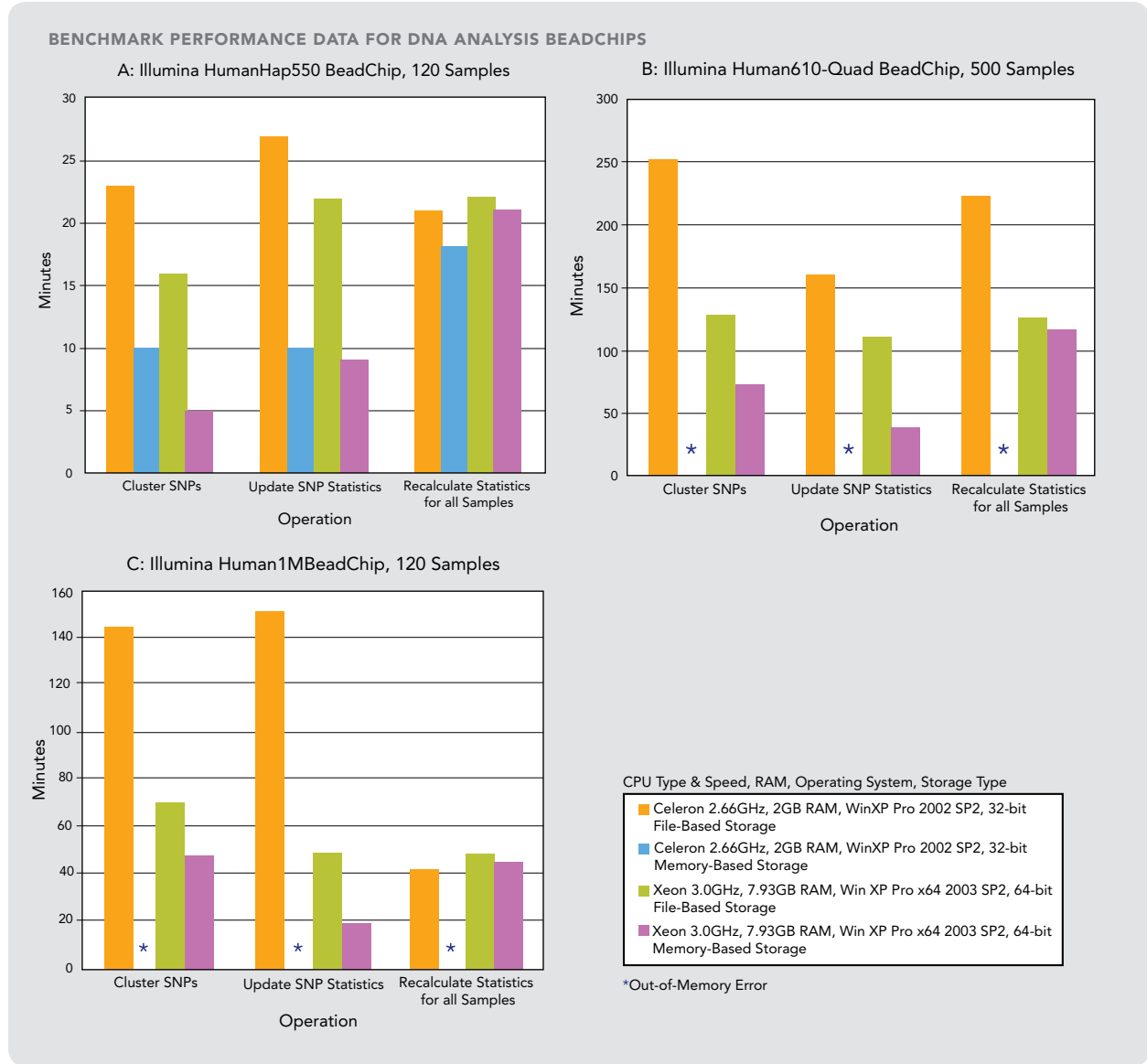| | STORAGE MODE | CALCULATION MODE |
|---|---|---|
| Fastest Performance | Memory-based | Pre-calculated |
| | Memory-based | Real-time calculation |
| | File-based | Pre-calculated |
| Larger Project Size | File-based | Real-time calculation |

## REPORT FILE SIZES

Report file sizes vary based on the Illumina BeadChip used and the number of samples in a project.

### TABLE 3: FINAL REPORT AND LOCUS SUMMARY REPORT FILES SIZES

| BEADCHIP # SAMPLES | FINAL REPORT FILE SIZE (MB) | LOCUS SUMMARY REPORT FILE SIZE (MB) |
|---|---|---|
| HumanHap550 BeadChip 120 Samples | 1927 (16 per sample) | 97 |
| Human1M BeadChip 120 Samples | 4650 (39 per sample) | 187 |
| Human610-Quad BeadChip 500 Samples | 9196 (18 per sample) | 108 |

illumina®

## BENCHMARK PERFORMANCE

The following graphs provide benchmark performance data for operations commonly performed in the BeadStudio Genotyping Module on data generated from Illumina BeadChips.

**BENCHMARK PERFORMANCE DATA FOR DNA ANALYSIS BEADCHIPS**



A: Illumina HumanHap550 BeadChip, 120 Samples

B: Illumina Human610-Quad BeadChip, 500 Samples

C: Illumina Human1MBeadChip, 120 Samples

CPU Type & Speed, RAM, Operating System, Storage Type

- Celeron 2.66GHz, 2GB RAM, WinXP Pro 2002 SP2, 32-bit File-Based Storage
- Celeron 2.66GHz, 2GB RAM, WinXP Pro 2002 SP2, 32-bit Memory-Based Storage
- Xeon 3.0GHz, 7.93GB RAM, Win XP Pro x64 2003 SP2, 64-bit File-Based Storage
- Xeon 3.0GHz, 7.93GB RAM, Win XP Pro x64 2003 SP2, 64-bit Memory-Based Storage

*Out-of-Memory Error

## ADDITIONAL INFORMATION

For more information about Bead-Studio system information, contact Technical Support at the phone number or email at right. To learn more about Illumina's software solutions, please visit www.illumina.com.

Illumina, Inc.
**Customer Solutions**
9885 Towne Centre Drive
San Diego, CA 92121-1975
1.800.809.4566 (toll free)
1.858.202.4566 (outside North America)
techsupport@illumina.com
www.illumina.com

**FOR RESEARCH USE ONLY**

illumina®