**University of Minnesota Genomics Center (UMGC) Resources**

The UMGC is a multi-facility resource encompassing services for sequencing, single-cell genomics, spatial genomics, genotyping, gene expression analysis, epigenomics, RNAi knockdown, ddPCR, oligonucleotide synthesis, microbiome studies, and CLIA-based NGS, as well as pre-analytical services.

**STAFF AND LABORATORIES**: 40 scientists are housed in a total of 6 laboratories spanning the Twin Cities campuses. Together, these core facilities encompass roughly 18,000 square feet. The UMGC has a budget of > $12M per year and hundreds of internal and external clients.

**Next-generation Sequencing:** Illumina NovaSeq 6000. Illumina NextSeq 2000. Six Illumina MiSeqs. One Illumina iSeq 100.

**Long-read Technologies:** PacBio Sequel II System. Oxford Nanopore GridION X5.

**Next-generation Sequencing Library Prep Devices:** Covaris S220 Acoustic DNA Shearing Device. Sage Biosciences PippinPrep and ELF automated gel-sizing devices. Fluidigm Access Array system for amplification-based NGS library creation.

**Single-cell Genomics:** 10X Genomics Chromium X platform for high-throughput single-cell transcriptomics.

**Spatial Genomics:** NanoString GeoMx Digital Spatial Profiler platform with NGS (Illumina) and NanoString (nCounter) downstream processing platforms.

**Genotyping:** Ten QuantStudio 5 and two QuantStudio 7 for Uniplex (Taqman) genotyping. Agena MassARRAY System platform. Illumina Platform including iScan scanner and autoloader and two Tecan Infinium automation systems equipped for Infinium genotyping chemistries.

**Epigenomics:** Illumina Platform including Illumina iScan scanner and autoloader and two Tecan Infinium automation systems equipped for Infinium DNA methylation chemistries (EPIC array). DNA methylation analysis using next-generation sequencing on Illumina sequencers in combination with bisulfite sequencing and/or locus-specific sequence capture. PacBio Sequel DNA methylation sequencing.

**Gene Expression:** Ten QuantStudio 5 and two QuantStudio 7 real-time PCR instruments for real-time qPCR analysis. Full complement of Roche Universal Probe Library (UPL) probes. Illumina Platform including Illumina iScan scanner and autoloader for Illumina DirectHyb and DASL expression chemistries. NanoString nCounter Gen2 platform. Fluidigm BioMark HTP real-time Q-PCR/ digital PCR platforms. Bio-Rad QX200 Droplet Digital PCR system.

**Miscellaneous:** Over 40 PCR thermocyclers blocks (96- + 384-well). QIAGEN, Beckman, Eppendorf, Integra, and Hydra liquid handling robots, as well as a Labcyte Echo 525 acoustic liquid handler. Agilent 2100 Bioanalyzers (2), 8-channel Nanodrop quantitation instruments (2), and Agilent TapeStation 2000 high-throughput capillary electrophoresis system.

**Informatics:** The UMGC has built and operates its own electronic Laboratory Information Management System **(**LIMS). For most services, projects are ordered online, and data are posted electronically. MSI’s Research Informatics Solutions (RIS) and the University of Minnesota Informatics Institute provide bioinformatic assistance.

**Other Resources:** In addition, the UMGC maintains a library of ≈ 300,000 shRNA knockdown constructs for use by UMN researchers for manipulation of gene expression levels in human and mouse cell lines. We provide clones, lentiviral preps, and library pools of these clones.