Established in 2002, the Genomics & Molecular Biology Shared Resource (GMBSR) provides advanced genomics technologies required to support the full range of biomedical research conducted at Dartmouth. Housed in a 1,500 sq/ft space within the NCI-designated Dartmouth Cancer Center, the GMBSR operates as a fee-for-service core facility, providing a range of services from nucleic acid extraction and QC through library preparation and Next-Generation Sequencing as well as microarray-based –omics technologies. The facility leverages Illumina NextSeq2000, Novaseq6000, Miseq and MiniSeq platforms to sequence DNA (genome, exome and targeted/amplicon) and RNA (mRNA and miRNA) on a genome-wide scale. Illumina Infinium microarray technologies are also available for SNP genotyping and epigenome profiling applications. In addition, the GMBSR houses a Nanostring instrument for targeted DNA/RNA/Protein analysis and provides next-day Sanger sequencing services. The Single Cell Genomics Core (SCGC), a division of the GMBSR, was established in 2018 to enable the sequencing of DNA, RNA, proteins, and other molecules from fresh and fixed specimens with single cell and spatial resolution using the 10x Genomics Chromium X and Visium platforms, and other technologies. The SCGC specializes in end-to-end workflows for single cell and spatial genomics applications, from sample collection and processing, through primary data analysis. Instruments for single cell sample preparation include a Curiox MINI laminar wash station, Cytiva VIA tissue dissociator and Nexcelom K2 automated fluorescent cell counter. Several pieces of instrumentation and dedicated expertise are available for spatial genomic applications. Fresh frozen and FFPE tissue sections can be processed for the 10x Genomics Visium assay, with an enhanced workflow for hands-off processing of FFPE tissues on spatially barcoded Visium slides using the 10x Genomics CytAssist platform. Through integration with the Pathology Shared Resource, H&E staining and imaging of Visium slides are performed using clinical-grade autostainers and Aperio AT2 imagers, providing 40x, whole-slide images. A Vizgen MERSCOPE instrument was recently acquired for highly multiplexed single molecule FISH in frozen and FFPE tissue sections, providing single molecule resolution of up to 500 RNA targets.