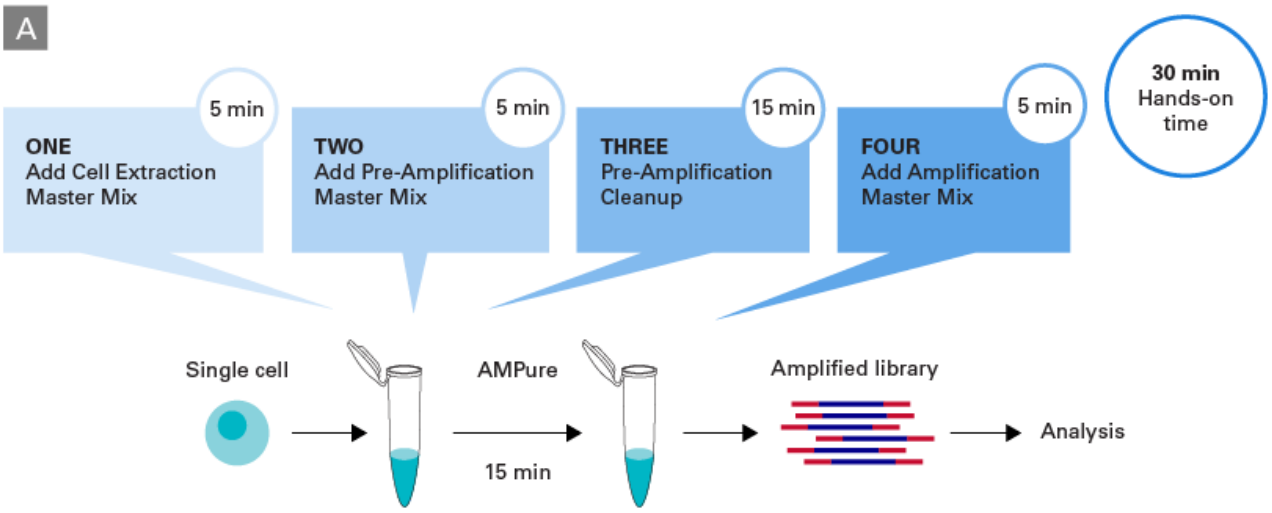
HLA typing in cancer

Human Leukocyte Antigen (HLA) is a highly polymorphic region composed of several genes involved in immune regulation. HLA typing is the characterization of this set of genes and is a valuable tool for targeting recurrent mutations and hotspot sites implicated in cancer pathogenesis. This method is also used to match donor and patient before solid organ or allogenic stem cell transplants, often used to treat cancers such as leukemia, lymphoma, multiple myeloma, and neuroblastoma. Next-Generation Sequencing (NGS) is the latest technology used to perform HLA typing, offering better precision at a lower cost than traditional techniques such as LD PCR (Hosomichi et al. 2015). NGS in the HLA typing context requires specificity, fidelity, and robustness to work with a wide range of complex DNA templates. We offer high-quality and high-performance tools for HLA typing, including high-fidelity polymerases for targeted sequencing and NGS library preparation kits.

Highlighted products

Our PrimeSTAR GXL and Takara *LA Taq* DNA polymerases have been shown to be ideal enzymes for HLA typing via targeted sequencing (NGS and Sanger) due to their high fidelity, ability to robustly amplify long fragments, and GC-rich-template tolerance. Indeed, a number of publications have cited the use of PrimeSTAR GXL and/or *LA Taq* enzymes for HLA typing (Liu et al. 2018; Xu, Wang, and Hong 2017; Yin et al. 2016; Mayor et al. 201; Lan et al. 2015; Ozaki et al. 2013; Ozaki et al. 2015), and both Anthony Nolan and NHSBT (London, United Kingdom) are routinely using these enzymes for HLA typing.

In addition, our SMARTer PicoPLEX WGA and SMARTer PicoPLEX Gold Single Cell DNA-seq kits allow robust whole genome amplification (downstream applications: HLA typing via NGS, Sanger, or array), even from single cells (Murphy et al. 2016; Png et al. 2011). SMARTer PicoPLEX Gold technology (Figure 1) allows robust and reproducible whole genome amplification from single cells with a streamlined and straightforward workflow. SMARTer ThruPLEX DNA-Seq kits can also be used for NGS library preparation.



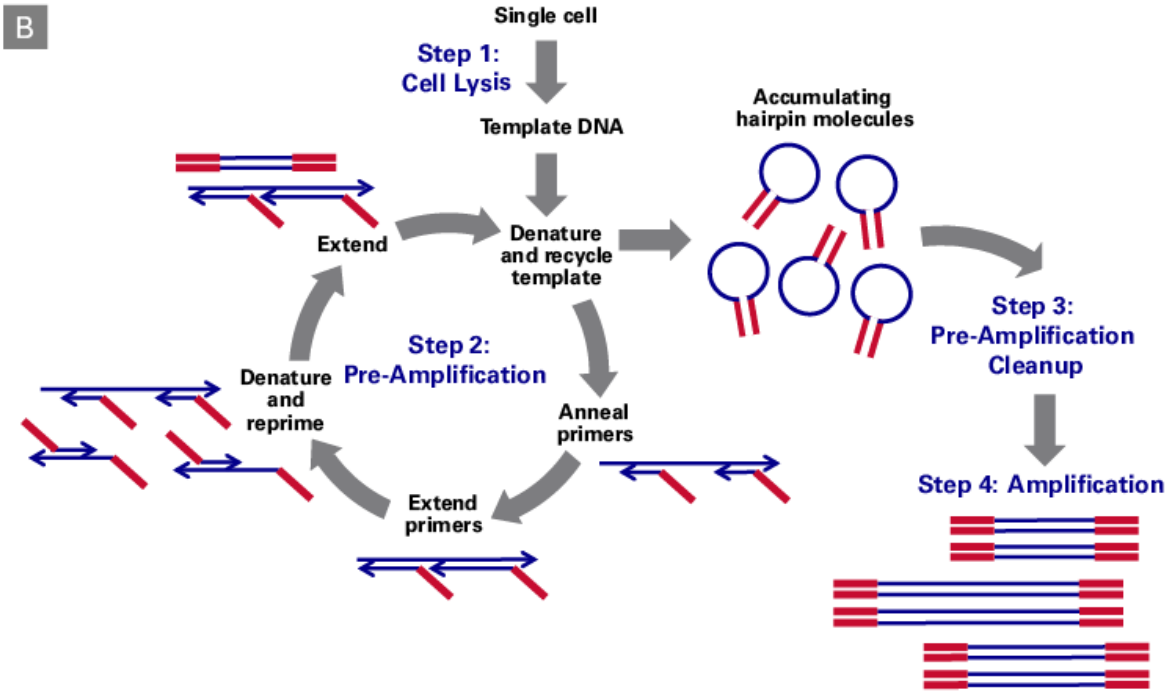


Figure 1. SMARTer PicoPLEX Gold Single Cell DNA-Seq technology. Panel A. Schematic depicting the simple, four-step PicoPLEX Gold workflow with minimum hands-on time. **Panel B.** Schematic illustrating the PicoPLEX Gold chemistry. Cellular gDNA extracted in Step 1 is used as the template for multiple cycles of quasi-random priming and linear amplification followed by exponential library amplification.

References and product citations

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