A PERFORMANCE EVALUATION AND OPTIMIZATION OF A PROTOTYPE HIGH-THROUGHPUT GDNA EXTRACTION KIT

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High-quality DNA extraction instrumentation and protocols are essential to the consistency and reliability of high-throughput genotyping and analysis services. As a core facility that conducts genotyping on over 100,000 human samples per year, an extraction protocol that produces high quality DNA with minimal handling time is of great importance. We evaluated a novel prototype 96-well vacuum manifold gDNA extraction kit. We compared its DNA isolation performance on 4 different tissue types (bovine bone, liver, blood and human buccal swabs) to that of magnetic particle-based chemistry on a robotic automation platform following the protocols provided by the manufacturers. In addition we optimized the prototype extraction protocol using liver and buccal samples, and evaluated it in parallel with our existing optimized extraction platform. To verify that the vacuum isolation kit produced DNA of suitable quality for PCR amplification, we performed the PCRs on the buccal swab isolations from both methods on one of our laboratory's multiplex PCRs. We visualized the PCR products via fragment analysis on an AB3730, and evaluated for peak quality, peak height and extraneous "noise" or false peaks.

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