Personal Genome Diagnostics' ImmunoSELECT™ Technology Demonstrates How Resistance to Checkpoint Blockade Therapy Evolves in *Cancer Discovery* Study

—ImmunoSELECT's Comprehensive Multi-Dimensional Genomic Analyses Elucidated How the Cancer Neoantigen Landscape Evolved During Treatment with Immuno-Oncology Therapy—

BALTIMORE, MD, January 4, 2017 – Personal Genome Diagnostics Inc. (PGDx), a leading provider of advanced cancer genome testing products and services, today announced that its ImmunoSELECT™ technology played a key role in a major new immuno-oncology (IO) study published in *Cancer Discovery.* The study for the first time demonstrated that acquired resistance to immune checkpoint inhibitor cancer drugs can develop as the landscape of somatic mutations evolves to remove the IO-targeted neoantigens.[1] The study was conducted in the laboratory of PGDx co-founder Victor Velculescu, MD, PhD, who is Program Leader and Professor of Oncology at the Bloomberg~Kimmel Institute for Cancer Immunotherapy at Johns Hopkins University.

Mark Sausen, PhD, PGDx Vice President of Research & Development, commented, "Despite the increased efficacy and durability of treatment seen with IO therapies, some patients develop resistance to the therapy, and this study for the first time elucidates how this may result from the evolving cancer genome landscape. The comprehensive, multi-dimensional ImmunoSELECT approach revealed that in patients developing therapeutic resistance, somatic mutations specifically targeted by the IO therapy disappeared."

PGDx's ImmunoSELECT service identifies neoantigens--potentially immunogenic cancer mutations--to aid in the development of immuno-oncology therapies. Neoantigens are peptides containing tumor-specific mutations that may be capable of inducing an immune response to cancer. The exquisite tumor specificity of neoantigens makes them good targets for immunotherapy, but their identification requires highly accurate and comprehensive exome sequencing and tumor-specific mutation detection, as well as use of downstream approaches to further enrich and categorize the results. ImmunoSELECT combines the industry-leading accuracy of PGDx's CancerXOME™ analysis with the company's proprietary predictive bioinformatics pipeline specifically designed for immuno-oncology applications.

Dr. Sausen added, "These findings illustrate the value of ImmunoSELECT's highly sensitive and specific approaches for whole-exome analyses and its multi-dimensional neoantigen prediction platform. The elucidation, discovery and validation of mutations that may be candidate neoantigens require a highly accurate mutation detection approach combined with integrated interpretation methods. ImmunoSELECT's demonstrated ability to evaluate the effects of cancer therapy on the neoantigen landscape provides researchers with the detailed information they need to develop cancer immunotherapies and guide treatment options."

ImmunoSELECT has the capability to detect somatic mutations with 95% sensitivity and 97% PPV for alterations with at least a 10% mutant allele frequency, and it has been validated using orthogonally available whole-exome Sanger sequencing data. The accuracy of ImmunoSELECT for detection of somatic alterations is strengthened by the use of tumor and patient-matched normal control DNA, ensuring exclusion of germline polymorphisms. The company also employs a proprietary strategy to stratify candidate neoantigens for experimental validation.

For more information about the ImmunoSELECT service, click here.

PGDx offers a complete range of cancer genome analysis tools, including exome and targeted approaches for tissue specimens, targeted approaches for plasma samples and a variety of custom tissue and plasma-

based options designed to address the specific research needs of cancer researchers and drug developers. PGDx's service offerings for researchers and testing labs are complemented by the clinical services it provides through its CLIA-certified laboratory.

1- Evolution of Neoantigen Landscape During Immune Checkpoint Blockade in Non-Small Cell Lung Cancer, V Anagnostou, KN Smith, PM Forde, N Niknafs, R Bhattacharya, J White, T Zhang, V Adleff, J Phallen, N Wali, C Hruban, VB Guthrie, K Rodgers, J Naidoo, H Kang, WH Sharfman, C Georgiades, F Verde, P Illei, QK Li, E Gabrielson, MV Brock, CA Zahnow, SB Baylin, R Scharpf, JR Brahmer, R Karchin, DM Pardoll and VE Velculescu*, Cancer Discovery*, Dec. 28 2016 DOI: 10.1158/2159-8290.CD-16-0828

About Personal Genome Diagnostics .

Personal Genome Diagnostics (PGDx) advances the frontiers of cancer medicine through innovative genomic technologies for oncology researchers, drug developers, clinicians and patients. The expert team at PGDx draws on a deep understanding of cancer biology, extensive experience in cancer genomics and clinical oncology, and the company's distinctive technologies. It was established in 2010 by researchers from Johns Hopkins University who are pioneers in cancer genome sequencing and liquid biopsy technologies. Under the leadership of founders Drs. Luis Diaz and Victor Velculescu, the company has achieved consistent growth by successfully commercializing novel clinical and investigational products and services. These novel technologies precisely identify and characterize unique genomic alterations in tumors. PGDx is working toward broad patient access to its genomic approaches, through a CLIA-certified facility providing comprehensive genomic services, as well as its PROGENEUS™ technology transfer solution and in vitro diagnostic products to enable other molecular laboratories to easily internalize genomic testing. For additional information, visit personalgenome.com.

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