BRIGHAM HEALTH
BRIGHAM AND WOMEN'S HOSPITAL

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New Preventive Genomics Clinic Launches at the Brigham

Nation's first academic clinic to offer comprehensive DNA sequencing and genetic risk assessment to healthy adults and children

Boston, MA — Building upon two decades of cutting-edge research around the clinical utility of advanced sequencing, geneticists and genetic counselors at Brigham and Women's Hospital have launched the Preventive Genomics Clinic, the first academically affiliated clinical service to provide comprehensive DNA sequencing, interpretation and reporting of disease-associated genes for healthy adults and their children who are seeking to understand and mitigate their risk of future disease.

"Preventive genomics is not yet recommended as standard of care," said Robert C. Green, MD, MPH, a medical geneticist in the Division of Genetics at the Brigham, professor of Medicine at Harvard Medical School and director of the new Preventive Genomics Clinic. "But for over two decades, our NIH-funded, randomized trials in translational genomics have generated consistent evidence that there are more potential medical benefits and fewer risks than previously considered. It is time for this technology to be offered in a clinical context, under the care of genetics experts, to individuals who wish to be proactive about their health."

The Preventive Genomics Clinic differs from consumer facing laboratory offerings in that it (1) requires individuals to be evaluated in-person by genetics specialists before testing is ordered, (2)

helps them order from a menu of the most appropriate laboratories for their medical needs, and (3) ensures that all medical and laboratory reports will be placed in the medical record and shared with the individuals and with their other providers in order to be integrated into their day-to-day health care.

At the initial appointment, a board-certified medical geneticist and genetic counselor will collect a personal and family history and conduct a detailed physical examination to evaluate the individual and that person's family for specific genetic risks that should be pursued with diagnostic genetic tests. If none are detected, the individual will be educated around the limitations of preventive genomics as well as the potential for privacy breaches and discrimination. The individual will then be offered choices from a menu of gene panels offered from several different academic and consumer-facing commercial laboratories ranging from a few hundred genes to a few thousand genes. The most comprehensive of these choices will enable patients to have high quality whole genome sequencing at the Broad Institute with interpretation and reporting of approximately 3,700 disease-associated genes through the Laboratory for Molecular Medicine within the Partners Personalized Medicine Program. After receiving their clinical findings, patients will be referred to specialists as needed, and all will be offered the opportunity to enroll in an NIH-funded follow-up study, in which a research team will track key outcomes for years.

The genetic testing services offered by the clinic are not typically covered by health insurance, but Green and his team are negotiating with several laboratory vendors and raising philanthropic funds to provide free or lower cost services where needed, particularly for minorities who have historically been underrepresented in genomics. Early offerings within the clinic will focus upon disease risks for single gene disorders, particularly hereditary cancers and hereditary heart problems, reproductive risks for those planning parenthood, and genetic markers to help avoid medication side effects. The clinic will soon add polygenic risk scores to help identify persons at high risk for common conditions such as heart disease, diabetes and atrial fibrillation.

In addition to Green, persons who come to the Preventive Genomics Clinic will be seen by several medical geneticists, including Joel Krier, MD, and Saud Aldubayan, MD, along with

primary care physician Ben Kerman, MD, MS, and genetic counselors Bethany Zettler, MS, CGC, Carrie Blout, MS, CGC, Tala Berro, MS, CGC, and Elizabeth Fieg, MS, CGC. Patients who have questions about their genetic responses to specific medications can be seen in the Pharmacogenomics Clinic, a new companion clinic at Brigham directed by Krier, Roseann Gammal, PharmD, and Fieg. The Preventive Genomics Clinic will have an Advisory Board of local and international experts in all aspects of genetics, as well as local experts who can provide expert consultation for individuals with positive findings, especially in cardiology and oncology. Advisory Board members announced so far include Katrina Armstrong, MD, George Church, PhD, Judy Garber, MD, MPH, Leroy Hood, PhD, David Ledbetter, PhD, Calum MacRae, MD, PhD, Christopher Mason, PhD, David Miller, MD, PhD, Mike Snyder, PhD, Sapna Syngal, MD, MPH, Eli VanAllen, MD, and Scott Weiss, MD.

Green was the lead author on the far-reaching 2013 statement from the American College of Medical Genetics and Genomics recommending that physicians offer any adult or child who is sequenced for a specific diagnosis the opportunity to receive additional limited genomic information for preventive purposes. He subsequently led the first federally funded trials to rigorously measure the medical, behavioral and economic impact of comprehensive genome sequencing in adults (the MedSeq Project), newborn infants (the BabySeq Project), and active duty military personnel (the MilSeq Project). And he is currently advising several large research studies on the return of genomic research, including the All of Us Research Program — anticipated to have a million participants — and the Google/Verily Baseline Project. Green and his research team have published over 300 peer-reviewed research papers, many of which specifically detail the methods and outcomes associated with providing genome sequencing to apparently healthy volunteers.

“Dr. Green’s team has helped establish a foundation of scientific evidence for genomic medicine, and the Preventive Genomics Clinic builds upon that robust work,” said Richard Maas, MD, PhD, chief of the Division of Genetics at the Brigham. “The Brigham has a long legacy of providing exceptional care driven by cutting-edge research, and this clinic will accelerate the integration of DNA sequencing into day-to-day medical care. Our hope is that we will increasingly be able to not simply treat diseases, but to anticipate and prevent them.”

More information about the Preventive Genetics Clinic can be found here:

https://www.brighamandwomens.org/medicine/genetics/genetics-and-genomic-medicine/preventive-genomics-clinic

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