myome | atlas CANCER

Technical Overview: Cancer Integrated Risk*

Integrated Risk tests combine disease-specific polygenic risk scores (PRS) from whole-genome sequencing (WGS) with clinical inputs from a patient's health history. Each test produces a genomic dataset that MyOme can re-query as healthcare needs change and new information about the genome is discovered.

Clinical Use

Integrated Risk tests are intended as comprehensive risk assessment tools, not diagnostic tests. Each may assist with the development of a personalized treatment and management strategy in conjunction with standard clinical assessment.

Method

Genomic DNA obtained from submitted samples is sequenced using Illumina technology, and reads are aligned to the human genome reference assembly GRCh38.p14. A PRS is calculated for each of 5 continental ancestries—African, Admixed American, East Asian, South Asian, and European—and standardized and weighted to produce a cross-ancestry PRS (caPRS), which is then integrated with clinical risk factors for each condition below.

SELECT A PCR-free whole-genome library is constructed and a sub-aliquot is taken through PCR amplification and exome selection. The blended genome and exome libraries are sequenced to generate 2x150 bp paired-end reads, resulting in low-coverage whole-genome and higher coverage exome data.

PLUS A high-coverage (mean ≥30X) PCR-free whole-genome library is constructed and sequenced.

Sample Types

- Blood (2 EDTA tubes)
- Buccal (2 swabs)

Turnaround Times

- Most results are delivered **5–6 weeks** from the day all samples are received.**
- Follow-up testing or re-requisitions are typically completed in under **1 week**.

**Turnaround times are provided as estimates and begin once sample(s) are processed at MyOme. Turnaround times may be extended in cases outside of MyOme's control, including delays related to confirmation testing or other unforeseen circumstances.

Breast Cancer

SELECT (PR42009) | PLUS (PR41003)

Intended Population

Women*** (aged 18–84) who have not previously been diagnosed with breast cancer and who do not have a clinically relevant variant in a breast cancer predisposition gene.

Integrated Clinical Risk Factors

Includes clinical and familial risk factors used by the Tyrer-Cuzick (TC) model, such as age, reproductive history, breast density, and family history.[1,2]

Included in Report

- 5-year and remaining lifetime risk of developing breast cancer
- Integrated risk is reported as "average" or "elevated" risk.
- Actionable recommendations for screening and reducing breast cancer risk, based on established clinical guidelines.[3–6]

Prostate Cancer

SELECT (PR42038) | PLUS (PR41034)

Intended Population

Men*** (aged 30–75) years old without a personal history of prostate cancer.

Integrated Clinical Risk Factors

Non-genetic risk factors provided by the ordering physician, including age and family history.

Included in Report

- 10-year risk (for patients aged 40–70) and remaining lifetime risk (for all patients) of developing prostate cancer, together with relative risk contributed by genetic factors.
- Integrated risk is reported as "not at increased risk" or "increased risk", with a 25% increased risk cutoff, corresponding to remaining lifetime risk >2X above the US population average.[7]
- Actionable recommendations for screening and reducing prostate cancer risk, based on established clinical guidelines.[8–11]

*This test was previously offered as "Integrated Polygenic Risk (iPRS)" under MyOme Proactive Health.
***MyOme recognizes and respects the diversity of gender identities. For the purposes of this document, "women" refers to individuals assigned female at birth and "men" refers to individuals assigned male at birth.

1. Tshiaba P, et al. Integration of a cross-ancestry polygenic model with clinical risk factors improves breast cancer stratification. *JCO Precis Oncol.* 2023;7:e2200447. doi:10.1200/PO.22.00447. **2.** Tyrer J, et al. A breast cancer prediction model incorporating familial and personal risk factors. *Stat Med.* 2004;23(7):1111–1130. doi:10.1002/sim.1668. **3.** American Cancer Society. Recommendations for the early detection of breast cancer. https://www.cancer.org. **4.** Monticciolo DL, et al. Breast cancer screening for women at higher-than-average risk: updated recommendations from the ACR. *J Am Coll Radiol.* 2023;20(9):902–914. doi:10.1016/j.jacr.2023.04.002. **5.** Visvanathan K, et al. Use of endocrine therapy for breast cancer risk reduction: ASCO clinical practice guideline update. *J Clin Oncol.* 2019;37(33):3152–3165. doi:10.1200/JCO.19.01472. **6.** US Preventive Services Task Force. Breast cancer: medication use to reduce risk. 2019. **7.** National Cancer Institute. Cancer stat facts: prostate cancer. https://seer.cancer.gov/statfacts/html/prost.html. **8.** Wei JT, et al. Early detection of prostate cancer: AUA/SUO guideline part I. *J Urol.* 2023;210(1):45–53. doi:10.1097/JU.0000000000003491. **9.** Smith RA, et al. Cancer screening in the United States, 2019. *CA Cancer J Clin.* 2019;69(3):184–210. doi:10.3322/caac.21557. **10.** Wolf AMD, et al. American Cancer Society guideline for the early detection of prostate cancer: update 2010. *CA Cancer J Clin.* 2010;60(2):70–98. doi:10.3322/caac.20066. **11.** US Preventive Services Task Force. Screening for prostate cancer. *JAMA.* 2018;319(18):1901–1913. doi:10.1001/jama.2018.3710.

These tests were developed, and their performance characteristics were determined, by MyOme, Inc., a clinical laboratory certified under the Clinical Laboratory Improvement Amendments of 1988 (CLIA) and College of American Pathologist (CAP) accredited to perform high complexity clinical laboratory testing. These tests have not been cleared or approved by the U.S. Food and Drug Administration (FDA). Test results should always be interpreted by a clinician in the context of clinical and familial data with the availability of genetic counseling when appropriate. MyOme is not responsible for the content or accuracy of third-party websites.