

**Supplementary Table 1.** Testing criteria for high-penetrance cancer susceptibility genes including *PALB2* from national comprehensive cancer network (NCCN) guideline

Cancer type	Criteria
Breast cancer	<p>[Personal history of breast cancer]</p> <ul style="list-style-type: none"> <li>• ≤ 50 yr</li> <li>• Any age:                             <ul style="list-style-type: none"> <li>- Treatment indications                                     <ol style="list-style-type: none"> <li>1) To aid in systemic treatment decisions using PARP inhibitors for breast cancer in the metastatic setting</li> <li>2) To aid in adjuvant treatment decisions with olaparib for high-risk, HER2-negative breast cancer</li> </ol> </li> <li>- Pathology/histology                                     <ol style="list-style-type: none"> <li>1) Triple-negative breast cancer</li> <li>2) Multiple primary breast cancers (synchronous or metachronous)</li> <li>3) Lobular breast cancer with personal or family history of diffuse gastric cancer NCCN Guidelines for Gastric Cancer</li> </ol> </li> <li>- Male breast cancer</li> <li>- Ancestry: Ashkenazi Jewish ancestry</li> <li>- Family history                                     <ol style="list-style-type: none"> <li>1) ≥ 1 close blood relative with ANY:   <ul style="list-style-type: none"> <li>* Breast cancer at age ≤ 50</li> <li>* Male breast cancer</li> <li>* Ovarian cancer</li> <li>* Pancreatic cancer</li> <li>* Prostate cancer with metastatic, or high- or very-high-risk group (Initial Risk Stratification and Staging Workup in NCCN Guidelines for Prostate Cancer)</li> </ul> </li> <li>2) ≥ 3 diagnoses of breast and/or prostate cancer (any grade) on the same side of the family including the patient with breast cancer</li> </ol> </li> </ul> </li> </ul> <p>[Family history of cancer only]</p> <ul style="list-style-type: none"> <li>• Individuals affected with breast cancer (not meeting testing criteria listed above) or individual unaffected with breast cancer with a first- or second-degree blood relative meeting any of the criteria listed above (except unaffected individuals whose relatives meet criteria only for systemic therapy decision-making)</li> <li>• Individuals affected or unaffected with breast cancer who otherwise do not meet the criteria above but have a probability &gt;5% of a BRCA1/2 P/LP variant based on prior probability models (e.g., Tyrer-Cuzick, BRCAPro, CanRisk)</li> </ul>
Ovarian cancer	<ul style="list-style-type: none"> <li>• Personal history of epithelial ovarian cancer (including fallopian tube cancer or peritoneal cancer) at any age</li> <li>• Family history of cancer only                             <ul style="list-style-type: none"> <li>- An individual unaffected with ovarian cancer (with a first- or second-degree blood relative with epithelial ovarian cancer (including fallopian tube cancer or peritoneal cancer) at any age</li> <li>- An individual unaffected with ovarian cancer who otherwise does not meet the criteria above but has a probability &gt; 5% of a BRCA1/2 P/LP variant based on prior probability models (e.g., Tyrer-Cuzick, BRCAPro, CanRisk)</li> </ul> </li> </ul>
Pancreatic cancer	<ul style="list-style-type: none"> <li>• Exocrine pancreatic cancers                             <ul style="list-style-type: none"> <li>- All individuals diagnosed with exocrine pancreatic cancer</li> <li>- First-degree relatives of individuals diagnosed with exocrine pancreatic cancer</li> </ul> </li> <li>• Neuroendocrine pancreatic tumors</li> </ul>