

However, most carriers of the mutations will develop breast cancer by the age of 70 years, as compared with only 7% of women who do not carry a mutation. The role of these genes in nonhereditary sporadic breast cancer is less clear, because mutations affecting *BRCA1* and *BRCA2* are infrequent in these tumors. Less common genetic diseases associated with breast cancer are the Li-Fraumeni syndrome (caused by germ-line mutations in p53; Cowden disease (caused by germ-line mutations in *PTEN*) and carriers of the ataxia-telangiectasia gene.

ASSESSMENT OF BREAST CANCER

Traditional Morphologic Prognostic Factors

A major challenge in the treatment of breast cancer is to identify those patients more likely to develop recurrence so that the most appropriate therapy can be provided. The validated pathologic metric that have been demonstrated to provide clinically useful prognostic information in breast cancer include. **tumor size, histologic type, tumor grade, lymph node staging, and evidence of vascular Or lymphatic invasion.**

Hormone Receptors

The first of the prognostic and predictive biomarkers in breast cancer to enter routine clinical use, **the steroid hormone receptors** are in fact not new. It has been known for more than a century that oophorectomy increases the survival for some patients with advanced breast cancer. In addition, it has been known for some time that around 60% to 70% of breast carcinomas express estrogen receptors (ERs) and progesterone receptors (PRs). Furthermore, tumors that express these receptors depend on estrogen, progesterone, or both for growth. Thus, the ER became the first target for either treatment by therapeutic hormonal manipulations with ER antagonists such as **tamoxifen** or treatment with **aromatase inhibitors**, which will decrease the local concentrations of estrogen within the tumor microenvironment of mammary tissue or within metastatic deposits. The presence of ERs in breast cancer is a weak prognostic factor; however, it is optimally useful as a predictive factor for the benefit of adjuvant (additional or supportive) tamoxifen or aromatase inhibitors therapy.