PATHOLOGY: TESTING AND DIAGNOSIS

Quick Summary of Section

Tumor Grade/Differentiating Cells	• Tumor grade is the description of a tumor based on how abnormal the tumor cells and the tumor tissue look under a microscope. *It is an indicator of how quickly a tumor is likely to grow and spread*.
Nottingham grading system	• Numbers are assigned to different features (gland formation, nuclear grade, and mitotic count) seen under the microscope and then added up to assign the grade".

Tumor Grade/ Differentiating Cells

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Based on these and other differences in microscopic appearance, doctors assign a numerical "grade" to most cancers. The factors used to determine tumor grade can vary between different types of cancer.
NIH – NCI (5)

Well differentiated:
If the cells of the tumor and the organization of the tumor's tissue are close to those of normal cells and tissue, the tumor is called "well-differentiated ." These tumors tend to *grow and spread at a slower rate.*

Poor or undifferentiated:
Tumors that are "undifferentiated" or "poorly differentiated," have abnormal-looking cells and may lack normal tissue structures and *grow at a faster rate.*

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Nottingham grading system
AKA
Elston-Ellis modification of the Scarff-Bloom-Richardson grading system

"Numbers are assigned to different features (gland formation, nuclear grade, and mitotic count) seen under the microscope and then added up to assign the grade".
American Cancer Society

Tubule formation: how much of the tumor tissue has normal breast (milk) duct structures

Nuclear grade: an evaluation of the size and shape of the nucleus in the tumor cells

Mitotic rate: how many dividing cells are present, which is a measure of how fast the tumor cells are growing and dividing

Each of the categories gets a score between 1 and 3.

A score of "1" means the cells and tumor tissue look the most like *normal* cells and tissue, and a score of "3" means the cells and tissue look the most *abnormal*.

The scores for the three categories are then added, yielding a total score of 3 to 9.

NIH – NCI (5)

Total score = 3–5: G1

Low grade or well differentiated

Total score = 6–7: G2

Intermediate grade or moderately differentiated

Total score = 8–9: G3

High grade or poorly differentiated