Fixation Quick Card

Purpose: arrest autolysis/putrefaction; preserve morphology and assay targets (antigens, nucleic acids, enzymes).

Mechanisms: Crosslinking (formalin, glutaraldehyde) vs Coagulative (alcohols, acetone).

Pre-analytic: time to fix <=1h; thickness 3–5 mm; ~10:1 fixative:tissue; NBF pH ~7.0–7.2; temp appropriate; agitation/time adequate.

Formalin pigment: remove with alcoholic picric acid or 10% ammonium hydroxide in 70% ethanol.

Mercury pigment: iodine -> sodium thiosulfate.

Decalcification: prefer EDTA for IHC/ISH when feasible.

Tissue notes: fatty (thin, longer time); GI (Bouin's short, wash well); CNS (gentle, longer); BM/bone (EDTA).

Core Fixatives

10% NBF (~4% formaldehyde): universal. Strengths: morphology. Caveats: epitope masking; pigment if acidic.

Glyoxal-based: faster, low odor. Caveat: retrieval differs for some epitopes.

Glutaraldehyde: EM/enzyme histochemistry. Caveat: over-hardening, autofluorescence.

Alcohols/acetone: cytology/frozen/enzyme. Caveat: shrinkage, brittle; poor trichrome.

Bouin's: testis/GI mucosa, trichromes. Caveat: picrate contamination; wash long; safety.

Zinc-formalin: improved nuclear detail/IHC retention. Caveat: zinc waste/crystals.

Mercury fixatives (legacy): superb nuclear detail. Caveat: toxicity, mercury pigment.