Glycol methacrylate acrylic resin (GMA) embedding for Immunohistochemistry

Advantages of using GMA

- Water miscible, doesn’t require dehydration and rehydration steps
- No need to eliminate resin before staining
- Low viscosity, penetrates tissue easily
- No crosslinking, no antigen retrieval
- Good antigen presentation
- Good morphology preservation (cellular localisation)
- Low temperature processing
- Can cut very thin sections (1-2µm) making the most of very small biopsies – very good resolution

Procedure

Fixation
Several methods of tissue fixation can be used for GMA. Fixing in acetone usually gives good results for example:

1. Place biopsy immediately in ice cold acetone containing protease inhibitors
2. Fix overnight at -20°C
3. Replace fixative with acetone (room temperature) 15 minutes

Processing

1. Place biopsy in Methyl benzoate for 15 minutes (This helps infiltration of GMA into the tissue)
2. Place biopsy in 5% methyl benzoate in GMA at 4°C. Three times for 2 hours

Embedding
Follow the kit manufacturer’s instructions for embedding into GMA itself. The GMA will need to be polymerized using a catalyst (provided in commercially available kits) and left to set for 48 hours at 4°C

Section preparation
Sections can be cut at 1-2µm.

Lay sections out on a water bath containing ammonia (2ml ammonia in 1L distilled water). No need to heat (as with paraffin sections). The ammonia helps anti-genicity and provides better antibody staining (although the mechanisms for this are not clear).

Sections can be picked up on 10% poly-l-lysine coated slides and dried ready for staining. (Wrap in foil and store at -20°C for no longer than 2 weeks).