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**GRIMELIUS - PASCUAL'S MODIFIED - ARGYROPHIL CELLS**

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**PURPOSE:** These cells are found in larger numbers in the same general locations as the argentaffin cells. Argentaffin cells will have a positive reaction with the argyrophil techniques, but the argyrophil cells will not react with the argentaffin techniques. This procedure is used for the differentiation of carcinoid tumors.

**PRINCIPLE:** Argyrophil cells are capable of being impregnated with silver, but need a reducing agent to reduce the silver to a visible metallic silver. While argentaffin cells have both the ability of being impregnated with silver and reducing the silver.

**CONTROL:** Tissue known to contain argyrophil granules or small intestine.

**FIXATION:** 10% formalin

**TECHNIQUE:** Cut paraffin sections 4 $\mu$ .

**EQUIPMENT:** Acid cleaned glassware, pH meter, microwave oven.

**REAGENTS:**

**Acidulated Water:**

Distilled water                    1000.0 ml  
0.3% Citric acid                    50.0 ml

Add the 0.3% citric acid, drop by drop, until a pH has been established at 4.2. Make fresh, discard after use.

**CAUTION:** Avoid contact and inhalation.

**Reducing Solution:**

Sodium sulfite, anhydrous 2.5 gm  
Hydroquinone                    0.5 gm  
Acidulated water                    50.0 ml

Make fresh, discard after use.

**CAUTION:** Avoid contact and inhalation.

**1% Silver Nitrate:**

Silver nitrate                    0.5 gm  
Acidulated water                    50.0 ml

Make fresh, discard after use.

**CAUTION:** Avoid contact and inhalation.

**SAFETY:** Wear gloves, goggles and lab coat. Avoid contact and inhalation.

Silver nitrate: severe skin and eye irritant. Oxidizer. Ingestion will produce violent gastrointestinal discomfort. Possible carcinogen: equivocal tumorigenic agent.

Sodium sulfite; toxic on ingestion. can irritate the stomach. Irritant to skin, eyes and respiratory system.

Hydroquinone; irritant to skin and eyes. Toxic by inhalation and ingestion. Chronic exposure has caused bladder cancer in mice.

**PROCEDURE:**

1. Deparaffinize and hydrate to acidulated water.
2. \*1% Silver solution, microwave 80 power, 50 seconds. Save solution.
3. Rinse slides in hot acidulated water.
4. \*Heat Reducing solution, 55 seconds, Hi power. Place slides in hot solution for 3-5 minutes. Save solution.
5. Rinse in 3 changes of hot acidulated water.
6. \*1% Silver solution, microwave 80 power, 30 seconds.
7. Rinse in hot acidulated water.
8. \*Reheat Reducing solution, 15 seconds, Hi power. Place slides in hot solution for 1-2 minutes. Check microscopically for black cytoplasmic granules, repeat steps 6 through 8 if needed.
9. Rinse in tap water for several minutes.
10. Dehydrate, clear, and coverslip.

\*Conventional Method:

2. Silver solution, 60°C , 1 hour.
4. Heated Reducer, 58°C, 5 minutes.
6. Silver solution, 58°C, 10 minutes.
8. Heat Reducer, 58°C, 10 minutes.

**RESULTS:**

Argyrophillic cells	black
Background	yellow to gold

**REFERENCES:**

Pascual JS, A New Method for Easy Demonstration of Argyrophil cells.  
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## PROCEDURE CARD

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