

## Movat-Russell Pentachrome Control Slides – Technical Memo

<b>CONTROL SLIDES:</b>	<b>Part 4440A</b>	<b>Part 4440B</b>
	10 Slide/Set	98 Slide/Set

### PRODUCT SPECIFICATIONS:

**Tissue:** Positive staining small intestine and positive staining lung.

**Fixation:** Formalin 10%, Phosphate Buffered (Part 1090).

**Section/Glass:** Paraffin sections cut at 4 microns on Superfrost™ Plus slides.

**Quality Control Stain:** Movat-Russell Pentachrome quality control stained slide(s) included.

**Reactivity:** Guaranteed product specific reactivity for one year from date of receipt. Revalidate after one year to verify continued reactivity.

**Storage:** 15-30°C in a light deprived and humidity controlled environment.

**Intended Use:** To verify histological techniques and reagent reactivity.

**Before using unstained control slides, review the enclosed stained slide(s) to ensure that this tissue source is acceptable for testing needs.**

### CONTROL SLIDE VALIDATION:

With Movat-Russell Modified Pentachrome Stain Kit:	Part 9150A	Individual Stain Solution
Solution A: Alcian Blue Stain 1%, Aqueous	250 ml	
Solution B: Ammonium Hydroxide 28-30%, ACS	50 ml	Part 1006
Solution C: Hematoxylin 10%, Alcoholic	100 ml	
Solution D: Ferric Chloride 10%, Aqueous	100 ml	Part 10856
Solution E: Iodine, Verhoeff, Aqueous	100 ml	Part 1209
Solution F: Ferric Chloride 2%, Aqueous	250 ml	Part 108553
Solution G: Sodium Thiosulfate 5%, Aqueous	250 ml	Part 1389
Solution H: Crocein Scarlet 7B Stain, Aqueous	250 ml	
Solution I: Acid Fuchsin Stain, Aqueous	100 ml	
Solution J: Phosphotungstic Acid 5%, Aqueous	500 ml	Part 13345
Solution K: Orange G Stain 1%, Aqueous	250 ml	
Solution L: Acetic Acid 0.5%, Aqueous	500 ml	Part 100121

### APPLICATION:

Newcomer Supply Movat-Russell Pentachrome Control Slides are for the positive histochemical staining of connective tissue elements, mucin, fibrin, elastic fibers, muscle, and collagen.

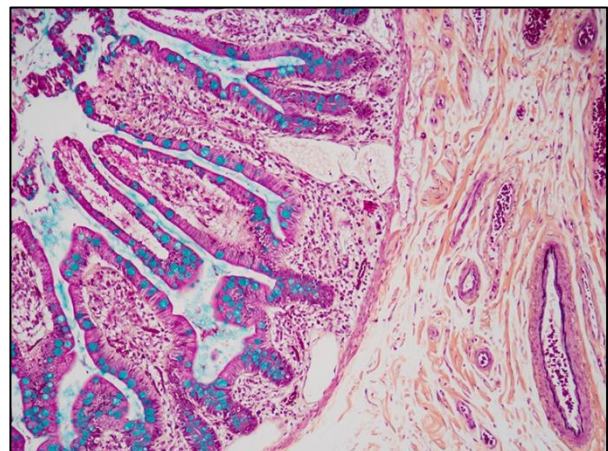
### NEWCOMER SUPPLY VALIDATION PROCEDURE:

1. Heat dry sections in oven according to your laboratory protocol.
2. Deparaffinize sections thoroughly in three changes of xylene, 3 minutes each. Hydrate through two changes each of 100% and 95% ethyl alcohols, 10 dips each. Wash well with distilled water.
  - a. See Procedure Notes #1 and #2 (page 2).
3. Stain in Solution A: Alcian Blue Stain 1%, Aqueous for 20 minutes.
4. Wash in running tap water for 5 minutes.
5. Prepare **fresh** Alkaline Alcohol Solution; combine and mix well.
  - a. Solution B: Ammonium Hydroxide 28-30% 5 ml
  - b. Alcohol, Ethyl Denatured, 95% (10842) 45 ml
6. Place slides in **fresh** Alkaline Alcohol Solution for 30 minutes.
7. Wash in running tap water for 10 minutes; rinse in distilled water.
  - a. See Procedure Note #3 (page 2).
8. Prepare **fresh** Hematoxylin Working Stain Solution just before use in the order given; combine and mix well.
  - a. Solution C: Hematoxylin 10%, Alcoholic 10 ml
  - b. Alcohol, Ethyl Denatured 100% (10841) 10 ml
  - c. Solution D: Ferric Chloride 10%, Aqueous 10 ml
  - d. Solution E: Iodine, Verhoeff, Aqueous 10 ml
9. Stain in **fresh** Hematoxylin Working Stain Solution for 15 minutes.
  - a. Discard after successful differentiation in Step #11.
10. Rinse in several changes of distilled water.
11. Differentiate **one slide at a time** in Solution F: Ferric Chloride 2%, Aqueous until elastic fibers contrast sharply with the background; approximately 5-10 dips.
  - a. See Procedure Note #4 (page 2).
12. Rinse in distilled water.
13. Place in Solution G: Sodium Thiosulfate 5%, Aqueous for 1 minute.
14. Wash in running tap water for 5 minutes; rinse in distilled water.
15. Prepare Crocein Scarlet-Acid Fuchsin Solution:
  - a. Solution H: Crocein Scarlet 7B Stain, Aqueous 40 ml
  - b. Solution I: Acid Fuchsin Stain, Aqueous 10 ml

16. Stain in Crocein Scarlet-Acid Fuchsin Solution for 1 minute.
17. Rinse in several changes of distilled water.
18. Rinse in Solution L: Acetic Acid 0.5%, Aqueous for 30 seconds.
19. Place in Solution J: Phosphotungstic Acid 5%, Aqueous; two changes of 5 minutes each.
20. Rinse in Solution L: Acetic Acid 0.5%, Aqueous.
21. Stain in Solution K: Orange G Stain 1%, Aqueous for 15 minutes.
22. Dehydrate through three changes of 100% ethyl alcohol, 10 dips each. Clear in three changes of xylene, 10 dips each; coverslip with compatible mounting medium.
  - a. Do not use 95% ethyl alcohol in the dehydration step.

### RESULTS:

Nuclei and elastic fibers	Black
Collagen and reticular fibers	Yellow
Ground substance and mucin	Blue
Fibrinoid, fibrin	Intense red
Muscle	Red



**PROCEDURE NOTES:**

1. Drain slides after each step to prevent solution carry over.
2. Do not allow sections to dry out at any point during procedure.
3. It is important to completely remove Alkaline Alcohol Solution with running tap water. Failure to do so will inhibit the subsequent staining steps.
4. Do not over-differentiate in Solution F: Ferric Chloride 2%, Aqueous. If the background is completely colorless, the section may be over-differentiated. Over-differentiated sections may be restained in Hematoxylin Working Stain Solution (Step #9) provided sections have not been treated with an alcohol/dehydration step.
5. If using a xylene substitute, closely follow the manufacturer's recommendations for deparaffinization and clearing steps.

**REFERENCES:**

1. Carson, Freida L., and Christa Hladik. *Histotechnology: A Self-Instructional Text*. 3rd ed. Chicago, Ill.: American Society of Clinical Pathologists, 2009. 172-174.
2. Movat, Henry, "Demonstration of All Connective Tissue Elements in a Single Section". *AMA Archives of Pathology*. 1955; 60 (3): 289–295.
3. Russell H. K. Jr. "A Modification of Movat's Pentachrome Stain". *AMA Archives of Pathology*. 1972; 94 (2): 187–191.
4. Modifications developed by Newcomer Supply Laboratory.