

# Cell Marque™ Tissue Diagnostics

## Rapid Fontana-Masson Staining

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### Background

The Fontana-Masson stain is used in the histological visualization of melanin and argentaffin (silver-binding) cells, found in tissue sections. Fontana-Masson staining is used for demonstration of melanin and argentaffin granules in carcinoid tumors and some neurosecretory granules.<sup>1</sup> Argentaffin cells and melanin possess the ability to bind silver from a silver solution and reduce it to visible metallic silver without the need of a reducing agent.<sup>1</sup>

The standard protocol, room temperature at 24°C, for this stain is 60 minutes for argentaffin or 30 minutes for melanin detection. The purpose of this study is to evaluate a new rapid microwave protocol designed to be 30x faster than the standard.

### Design

With the aim of saving time, a rapid microwave protocol for the MilliporeSigma Fontana-Masson Staining Kit was optimized using argentaffin (human intestine) and melanin (human skin) tissue section (FFPE) slides. The microwave protocol was compared to a standard Fontana-Masson protocol as well as to another commercially available kit. The robustness of the Fontana-Masson staining reagents was also challenged in a three year accelerated stability study.

### Materials

Fontana-Masson Stain Kit  
Nuclear Fast Red  
Argentaffin and Melanin Control Slides

### Fontana-Masson Staining Procedure



## Results

### Figure 1:

The MilliporeSigma Fontana-Masson Staining Kit was used for staining argentaftin tissue following either the rapid 2 minute microwave protocol (a) or the standard 60 minute protocol (b). Melanin tissue was also stained following either the rapid 1 minute microwave protocol (c) or the standard 30 minute protocol (d). Argentaftin cells and melanin stain brown to black whereas the nuclei stain pink to rose in the background.

### Figure 2:

Accelerated stability testing (@ 42°C) of the MilliporeSigma Fontana-Masson Staining Kit components was performed to demonstrate robust performance over three years, no change in stain quality was noted. Staining was done at year 1, year 2 and year 3 time points. At each time point, both argentaftin and melanin tissues were stained following the rapid microwave (left) and standard (right) protocol. Images from year 3 time point are shown below.

### Figure 3:

The MilliporeSigma Fontana-Masson staining kit performance is equivalent to another vendor's (Vendor A) commercially available kit. Argentaftin (left) and melanin (right) were stained using either the MilliporeSigma (MS) kit following the rapid microwave protocol or Vendor A's standard protocol (as per manufacturer's instructions). MilliporeSigma's rapid microwave protocol gave stronger staining for both argentaftin and melanin tissues.

## Conclusion

When using the MilliporeSigma Fontana-Masson kit, both the microwave and standard protocol, produce strong, well-differentiated reactions. The microwave protocol has reduced the staining time from 60 minutes to 2 minutes for argentaftin, and 30 minutes to 1 minute for melanin. Argentaftin and melanin FFPE tissues stained, following the rapid microwave protocol, produced results that were significantly faster, more intense, and consistent, making this a preferred method for staining. Accelerated stability testing (@ 42°C) was performed to demonstrate its robust performance over three years.

### References:

1. Carson F. Histotechnology - A Self Instructional Text, Second Edition. 1996. pg 213.

## To place an order or receive technical assistance

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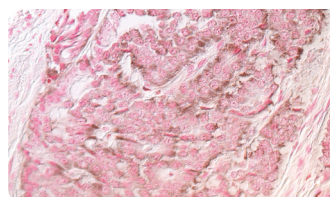


Figure 1A: Argentaftin — Microwave

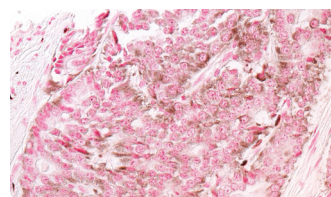


Figure 1B: Argentaftin — Standard

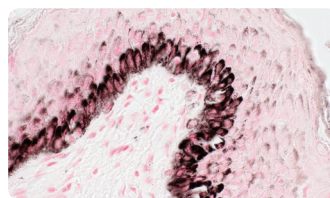


Figure 1C: Melanin — Microwave

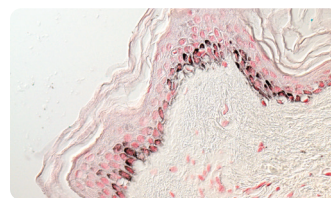


Figure 1D: Melanin — Standard

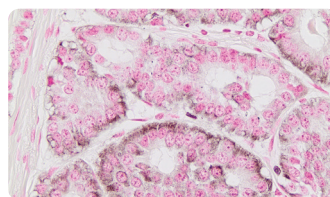


Figure 2A: Argentaftin — Microwave

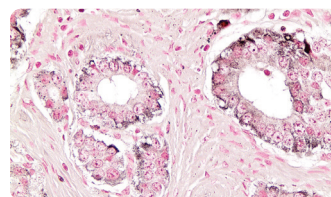


Figure 2B: Argentaftin — Standard

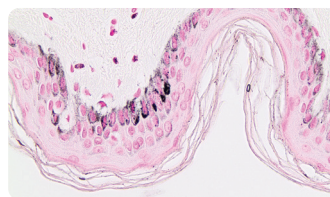


Figure 2C: Melanin — Microwave

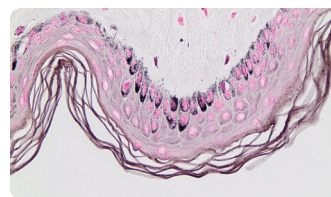


Figure 2D: Melanin — Standard

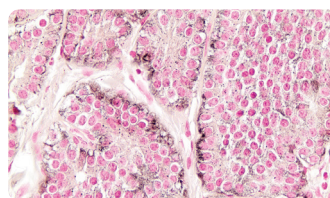


Figure 3A: MS Argentaftin — Microwave

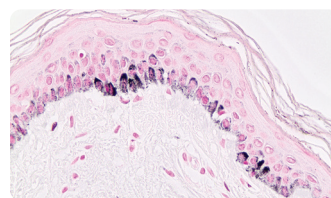


Figure 3B: MS Melanin — Microwave

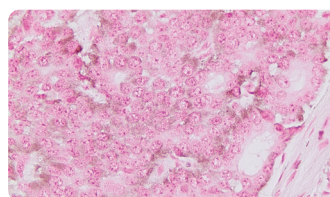


Figure 3C: Vendor A — Argentaftin

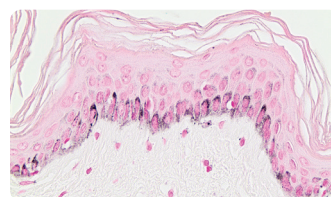


Figure 3D: Vendor A — Melanin

IVD

CE

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