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| **Verhoeff-Van Gieson Stain** | | | |
| **Purpose** | To demonstrate elastic fibers in tissue sections. | | |
| **Policy Statements** | This procedure applies to Histology Technical staff performing special stains. | | |
| **Principle** | Elastic fiber demonstration methods are useful in demonstrating hypertrophy of elastic tissue. The techniques can show thinning, loss of elastic fibers, breaks, splitting and reduplication of elastic lamella. Elastic fiber techniques that incorporate a nuclear stain are valuable for determining if a particular cancer has progressed so far that it has invaded blood vessels. | | |
| **Materials** | **Supplies** | | **Reagents** |
|  | • Coplin jars with lids  • PPE  • Graduated cylinder | | • Hematoxylin, 5%  • Ferric Chloride, 10%  • Lugol Iodine  • Sodium Thiosulfate, 5%  • Van Gieson Stain |
| **Sample** | FFPE tissue | | |
| **Quality Control** | A section of aorta or kidney. | | |
| Stock Solutions | Hematoxylin, 5%  Ferric Chloride, 10%  Lugol Iodine  Sodium Thiosulfate, 5%  Van Gieson Stain | | |
| **Working Solutions** | Working Verhoeff Solution - Combine in order and mix well  Solution A: Hematoxylin, 5% ....................20.0 mL  Solution B: Ferric Chloride, 10%................8.0 mL  Solution C: Lugol Iodine ............................8.0 mL  Working Ferric Chloride, 2% Solution:  Solution B: Ferric Chloride, 10%................ 10.0 mL  Distilled water .............................................40.0 mL | | |
| **Procedure** | **Step** | **Action** | |
|  | 1 | Deparaffinize slides and hydrate to water | |
|  | 2 | Stain in freshWorking Verhoeff Solution ......................**20** minutes | |
|  | 3 | Rinse in several changes of tap water | |
|  | 4 | Differentiate each slide individually in fresh Working Ferric Chloride, 2% Solution; approximately **20** dips | |
|  | 5 | Rinse slides in tap water | |
|  | 6 | Check microscopically for black elastic fibers with gray background staining. If slides are over differentiated, place bak in Verhoeff Solution. Should additional differentiation be necessary, dip slides in the Ferric Chloride again, rinse and re-examine slides | |
|  | 7 | Wash well in running tap water | |
|  | 8 | Place slides in Solution D: Sodium Thiosulfate, 5%..........**1** minute | |
|  | 9 | Wash in running tap water ……….**5** minutes | |
|  | 10 | Counterstain in Solution E: Van Gieson Stain.......………**3-5** minutes | |
|  | 11 | Dehydrate, clear and coverslip | |
| **Results** | Elastic fibers......................Blue to black  Nuclei.................................Blue to black  Collagen.............................Red  Other tissue elements........Yellow | | |
| **Result Reporting** | By Pathologists | | |
| **References** | Sheehan, D.C. and Hrapchak, B.B.: Theory and Practice of Histotechnology, 2nd edition, pp. 196-197; C. V. Mosby Co., St. Louis, MO, 1980.  Carson, Freida, *Histotechnology: A Self-Instructional Text.* 2nd ed. Chicago: ASCP Press, 1997, p.138-140 | | |

**Historical Record**

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| Version | Revised by | Effective Date | Summary of Revisions |
| 1 |  |  | Initial version. |
| 2 | A. Dubbelde | 6/27/19 | Update format, add version, and update to match current staining procedure used. |
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