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Histology Utilization in Biomedical Research

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Role of the histotechnician

- Biomedical
- Research (translation to human models)
- Direct involvement in sample collection and discussion
 - Identification of appropriate histological methods

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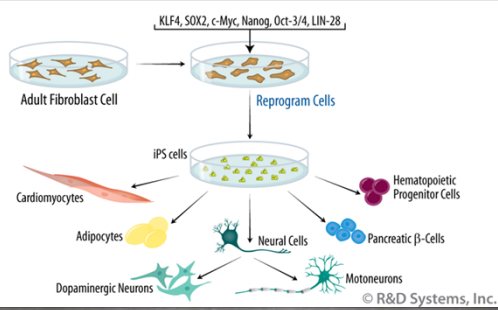
Review of regenerative medicine

- Three interrelated approaches:
 - Rejuvenation
 - Replacement
 - Regeneration

Stem cell 101

- Stem cell basics
- Embryonic vs adult stem cells
- Induced pluripotent stem cells





Examples in application

- Wound healing
 - Matrix (tissue engineering)
 - Processing and fixation
 - Staining
- Sucrose gradient processing
 - Endogenous fluorescent tags
 - Trace MRNA-lineage tracing
- Whole organ review (mega block)
- Electron microscopy
 - Resin embedded samples

Examples in application


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Examples in application

- Sucrose gradient processing
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Examples in application

- Whole organ review (mega block)
 - Sliding microtome

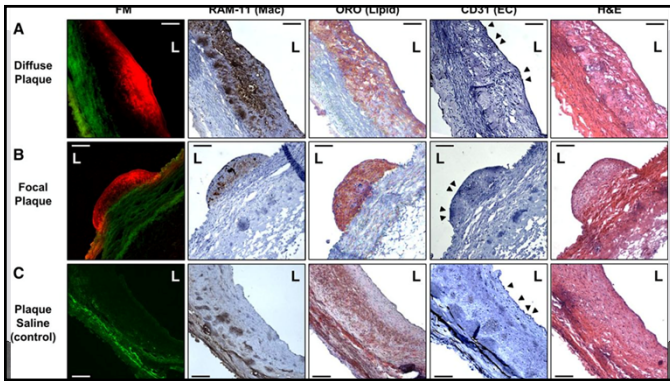


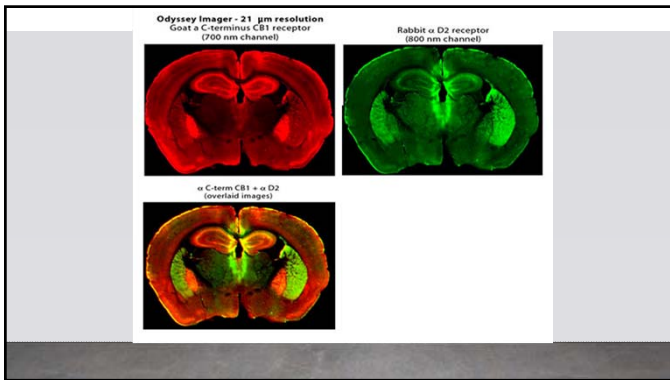
Examples in application

- Electron microscopy
 - Resin embedded samples
 - Ultra structure

Current and Future Trends

- Digital pathology
- Immunohistochemistry
 - Layered staining
 - Modern fluorescent staining
 - Infrared/photon
- Mega blocks





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Immunohistochemistry staining

- Triple staining/ multiple color fluorescence (current)
 - Alexa Fluor
- Infrared (LICOR) (future)
 - Proton emission

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5 min 1 h 7 h 20 min 24 h 48 h

Needs of research

- Whole organ review
 - Elimination of image stitching
- Efficiency and cost
 - Multiple staining
 - Co-localization
 - Limited samples/resources
- Vibratome
 - Neurology
- Versatility
- Troubleshooting

References

Contact Information

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