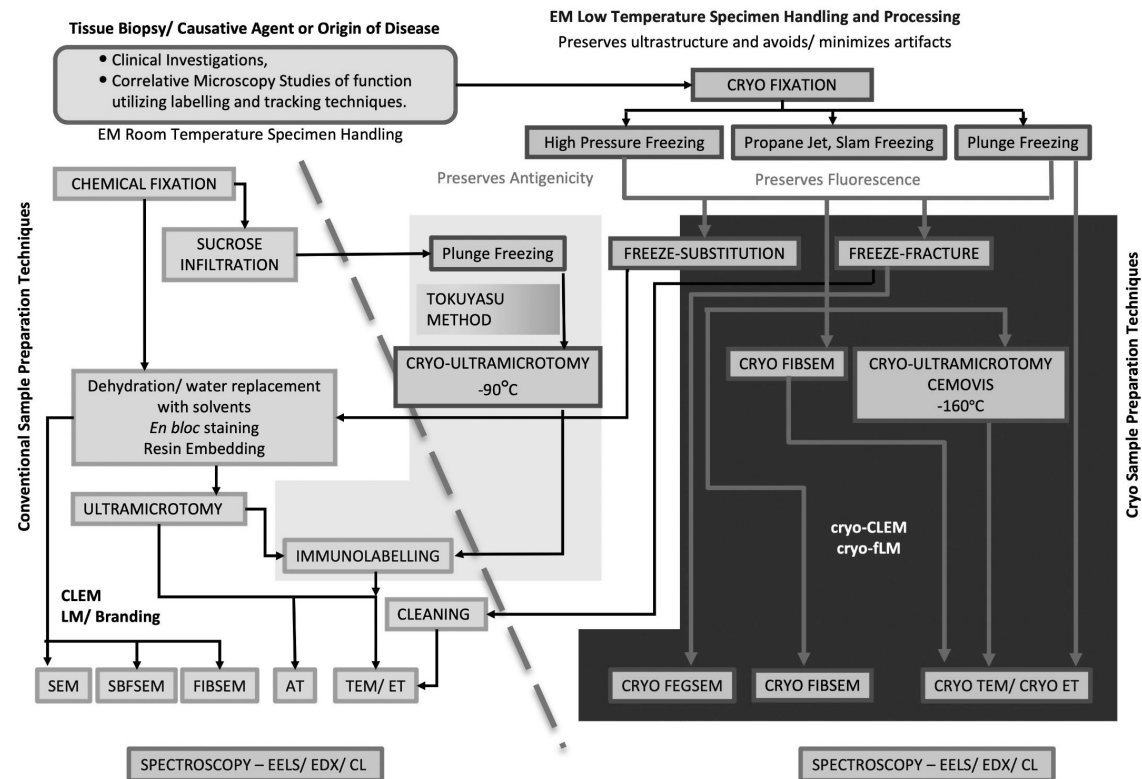


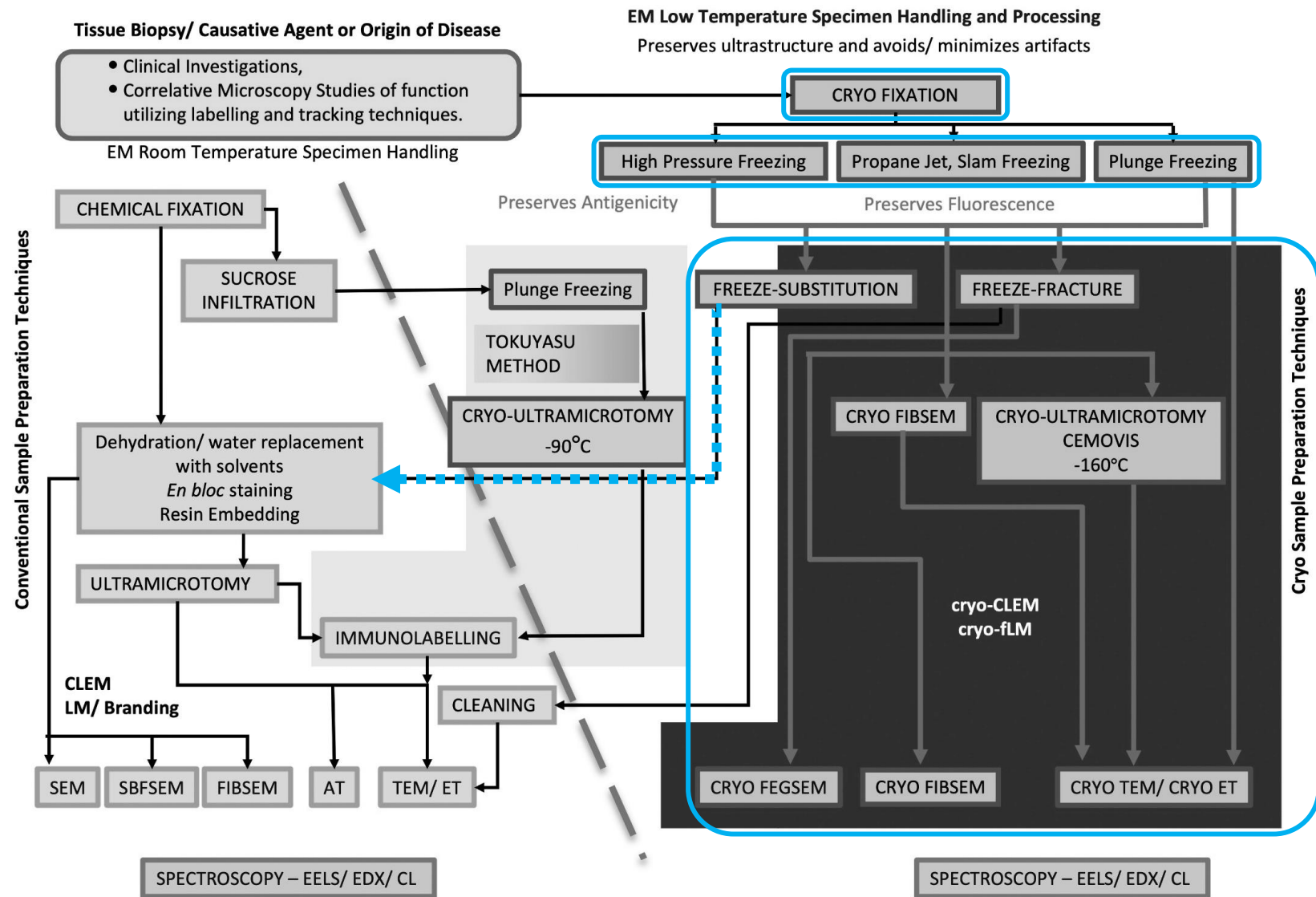
Chapter 20: Post-2000 EM technology. “Current Advances in Electron Microscopy Technology and Techniques with Postulated Applications in Pathology”



Chapter 20: Post-2000 EM technology

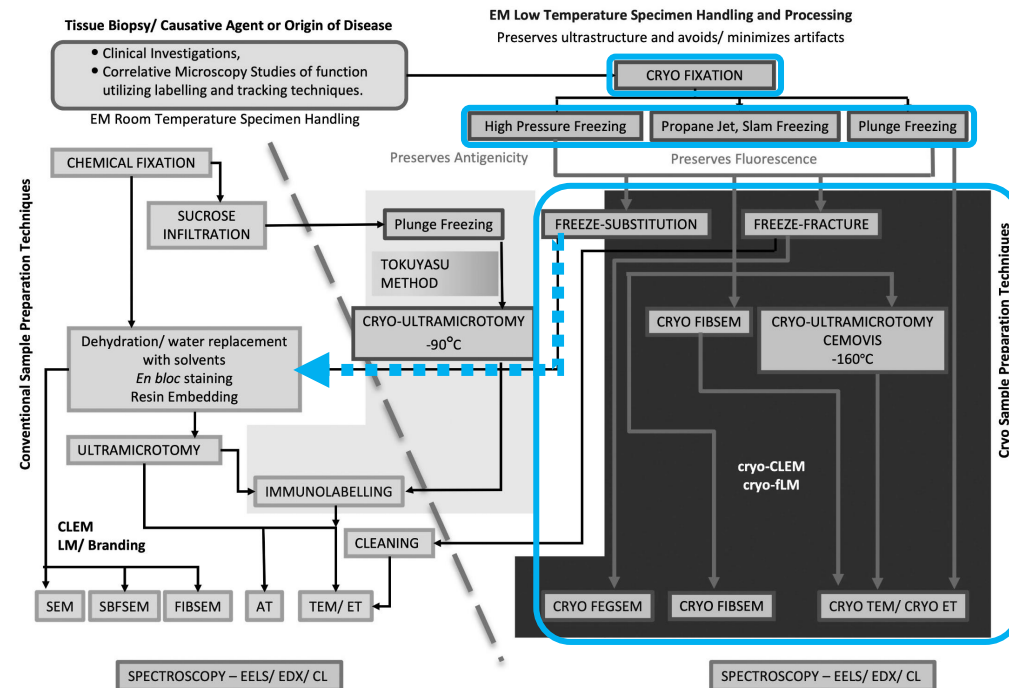
- Cryo workflows
 - More accurate preservation - closer to native state
- Volume EM
 - Better 3D context
- Analytical techniques
 - Information about elemental composition
- Correlative workflows
 - Navigation
 - Combine benefits of different methods on the same ROI
- See book chapter for info about applications!

Chapter 20: Post-2000 EM technology: Cryo

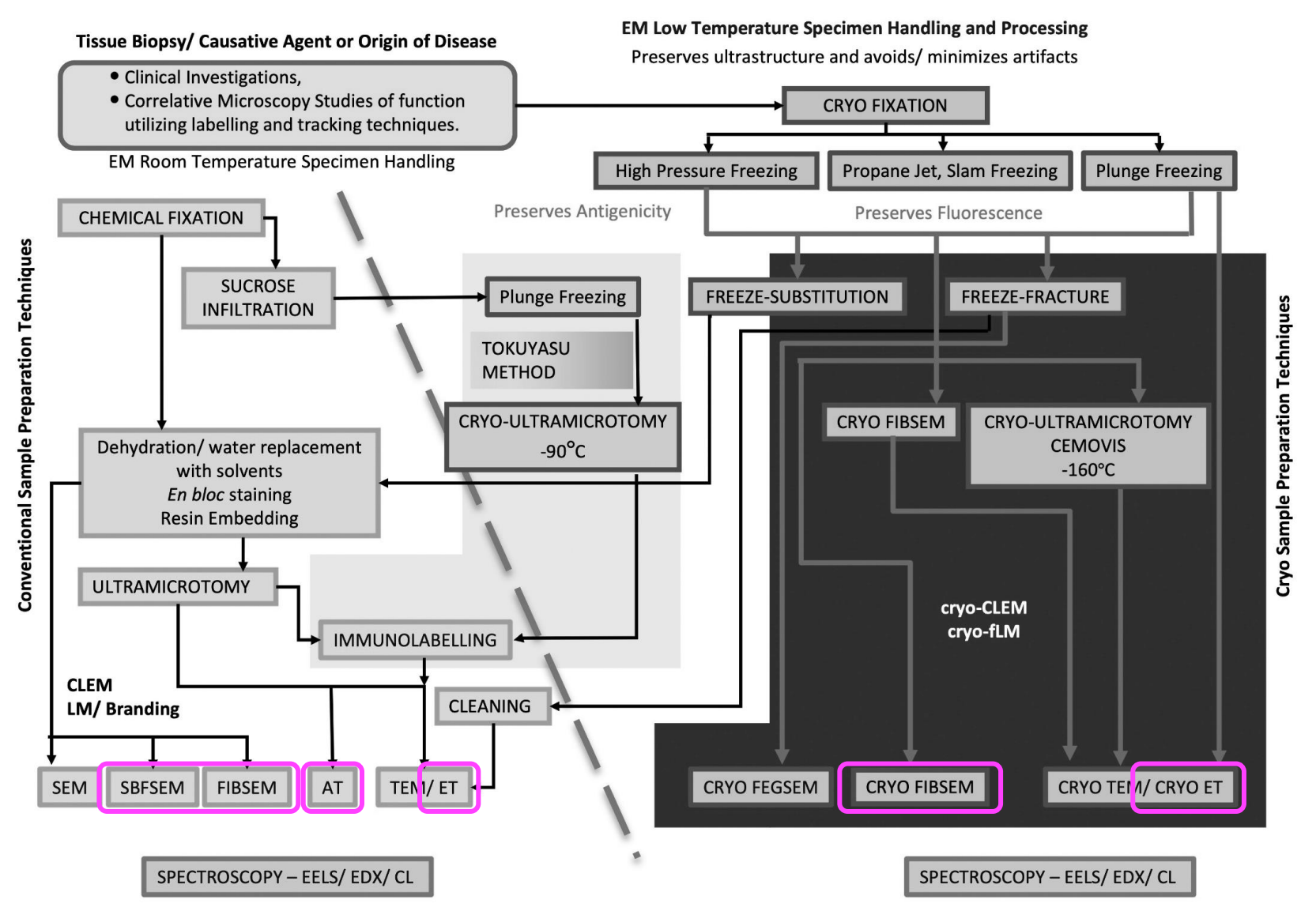


Chapter 20: Post-2000 EM technology: Cryo

- Closer to native state
- More difficult than RT prep (low contrast, sensitive)
- Easier now;
 - Correlative workflows
 - Energy filters
 - Direct detectors
- Part cryo/part RT can be a good compromise

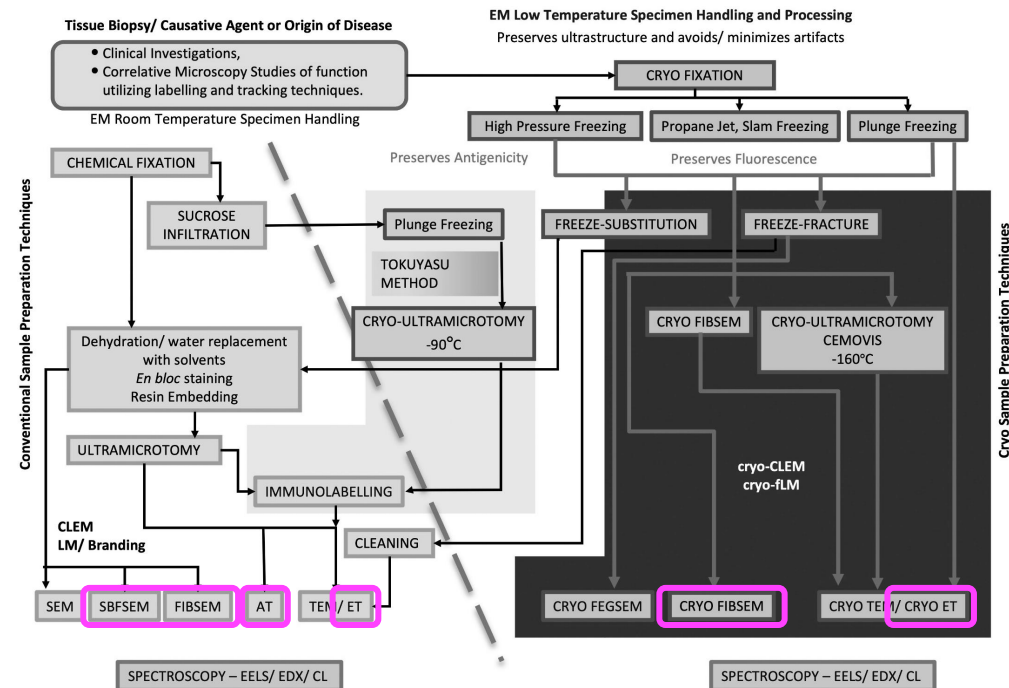


Chapter 20: Post-2000 EM technology: Volume EM



Chapter 20: Post-2000 EM technology: Volume EM

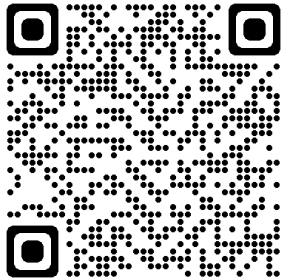
- More accurate 3D context
- New technologies make it more accessible
 - Array tomography
 - Automation
 - Image analysis tools (eg Segment Anything)
- Resolution of SEM worse than TEM, but enough for many applications!



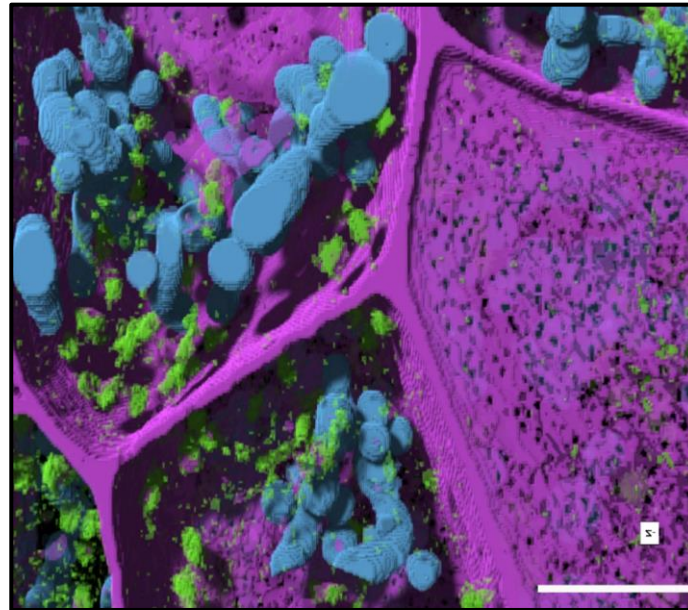


Chan Zuckerberg Initiative Awarded for vEM

Chan
Zuckerberg
Initiative 



vEM Website



<https://www.volumeem.org>



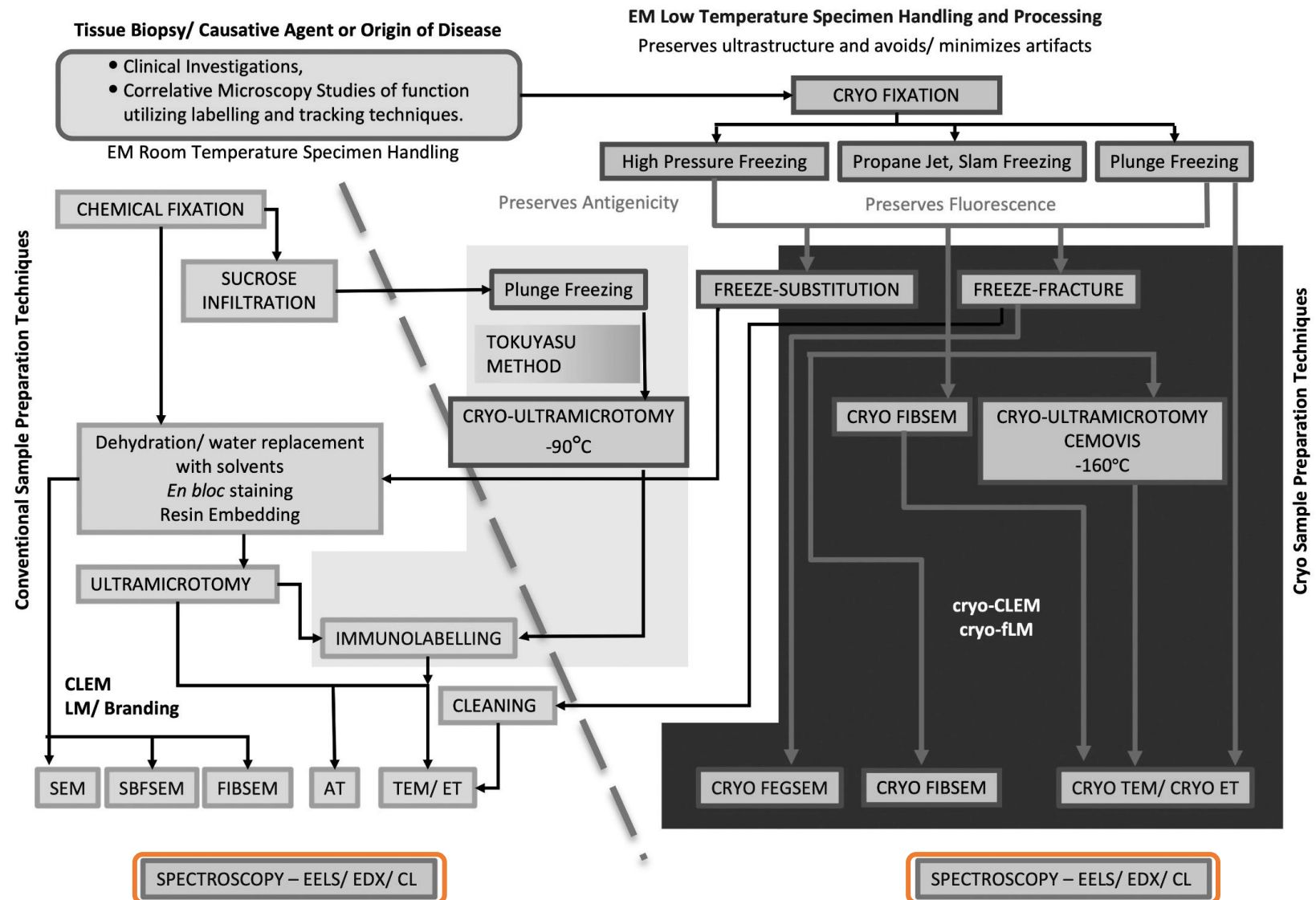
vEM Mailing List



@VolumeEM1
#VolumeEM

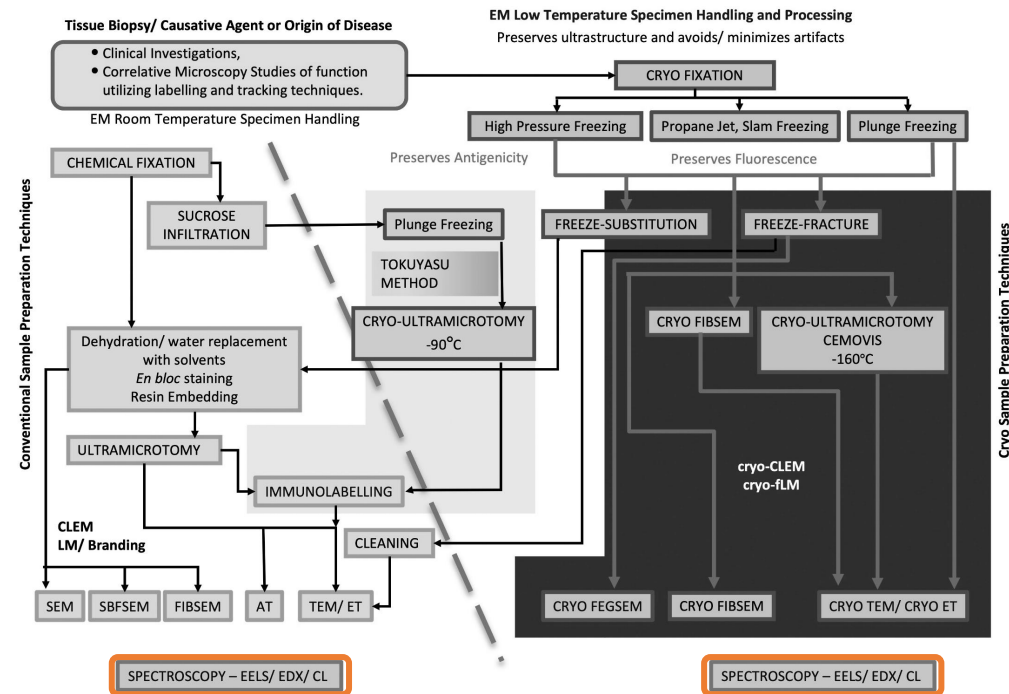
Please Join our vEM Community & Working Groups!

Chapter 20: Post-2000 EM technology: Analytical

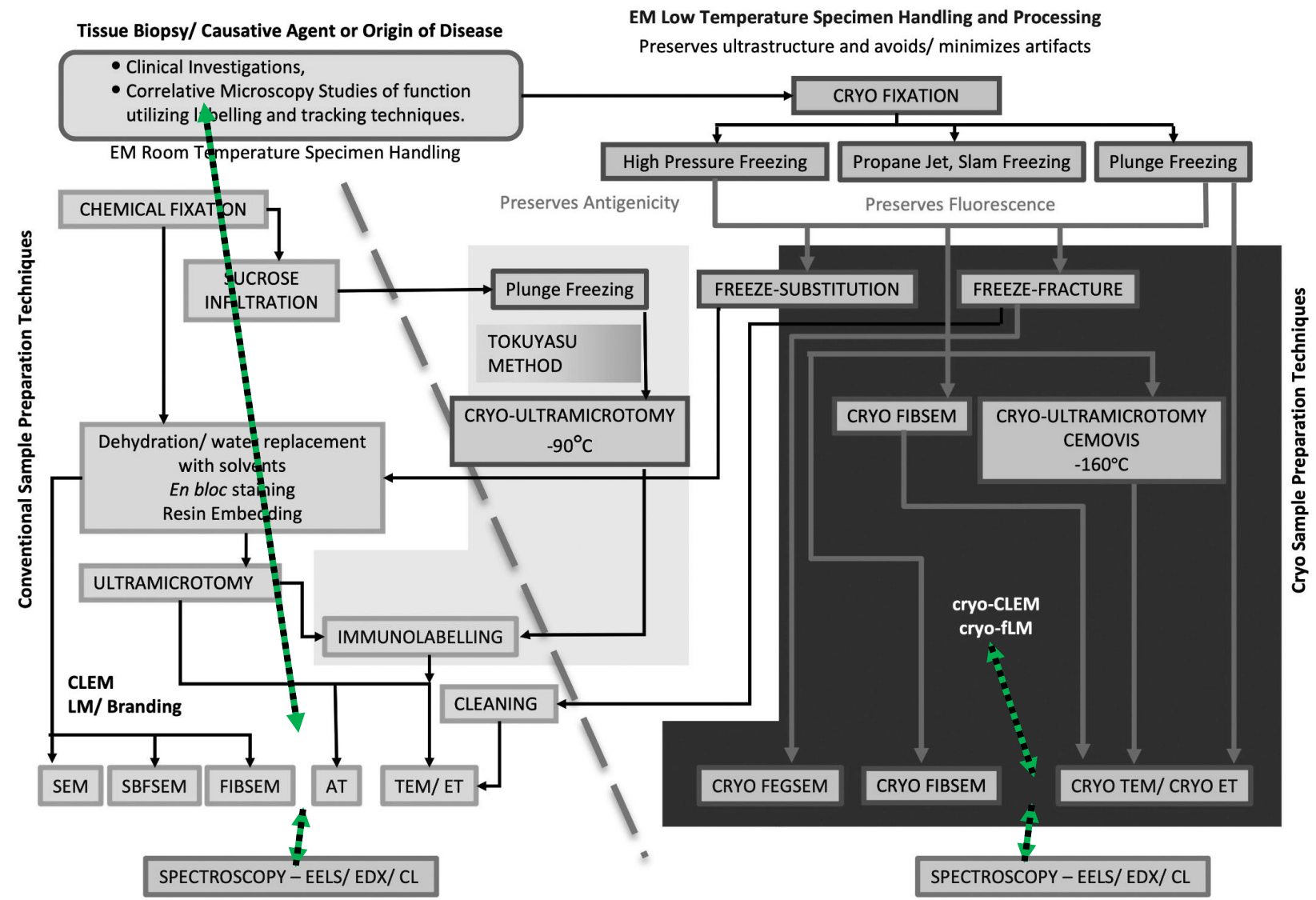


Chapter 20: Post-2000 EM technology: Analytical

- Identify important elements in your sample
- Even a benchtop SEM can do EDX
- Simultaneous EDS/SEM scanning
- More exotic techniques may not be accessible

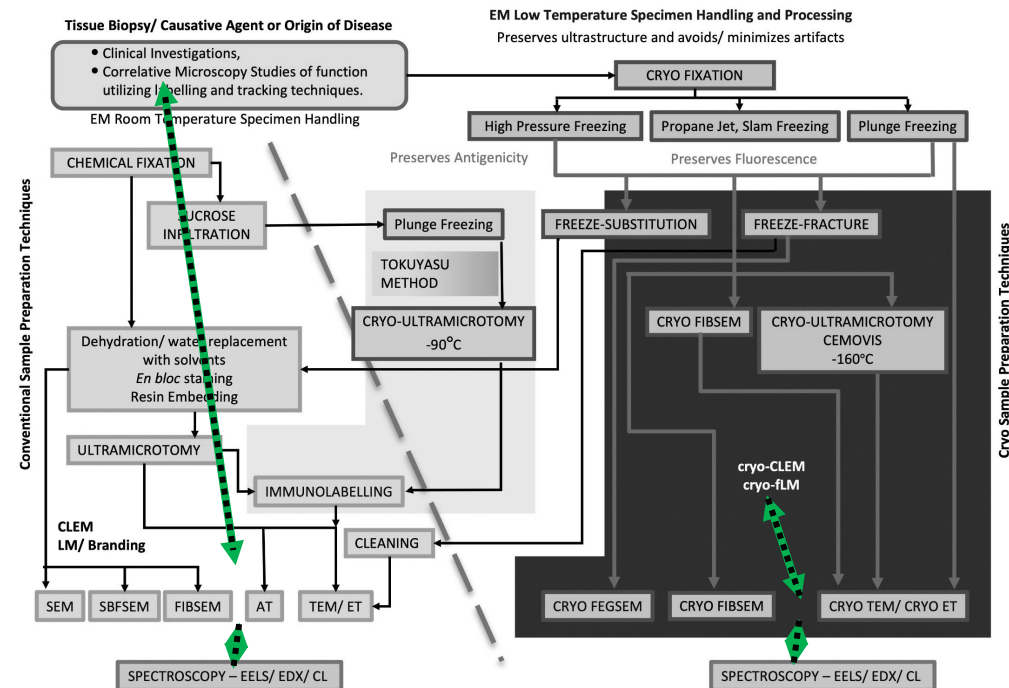


Chapter 20: Post-2000 EM technology: Correlative



Chapter 20: Post-2000 EM technology: Correlative

- LM-EM
- LM-X-ray-EM
- EDX-EM
- ...and lots more!
- Can be a huge help to navigate across scales
- Combine benefits of different methods
 - Functional info for EM features



Chapter 20: Post-2000 EM technology

- Some of the more advanced workflows provide interesting opportunities.
- But making them accessible is a challenge, certainly for diagnostics, but also for clinical pathology.
- People are working to improve this!