



Decellularized Organs as Autologous Alternatives for Tissue Transplantation

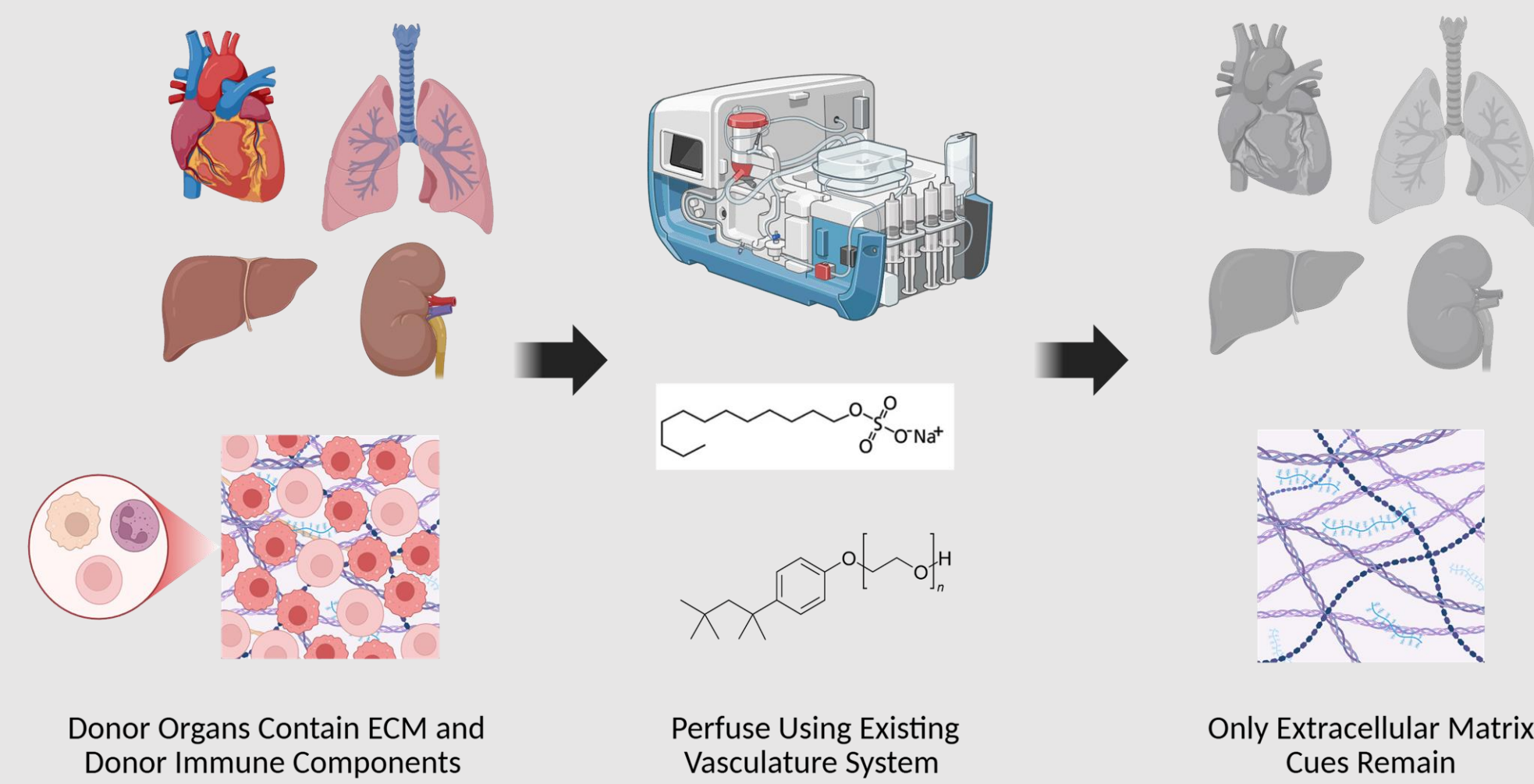


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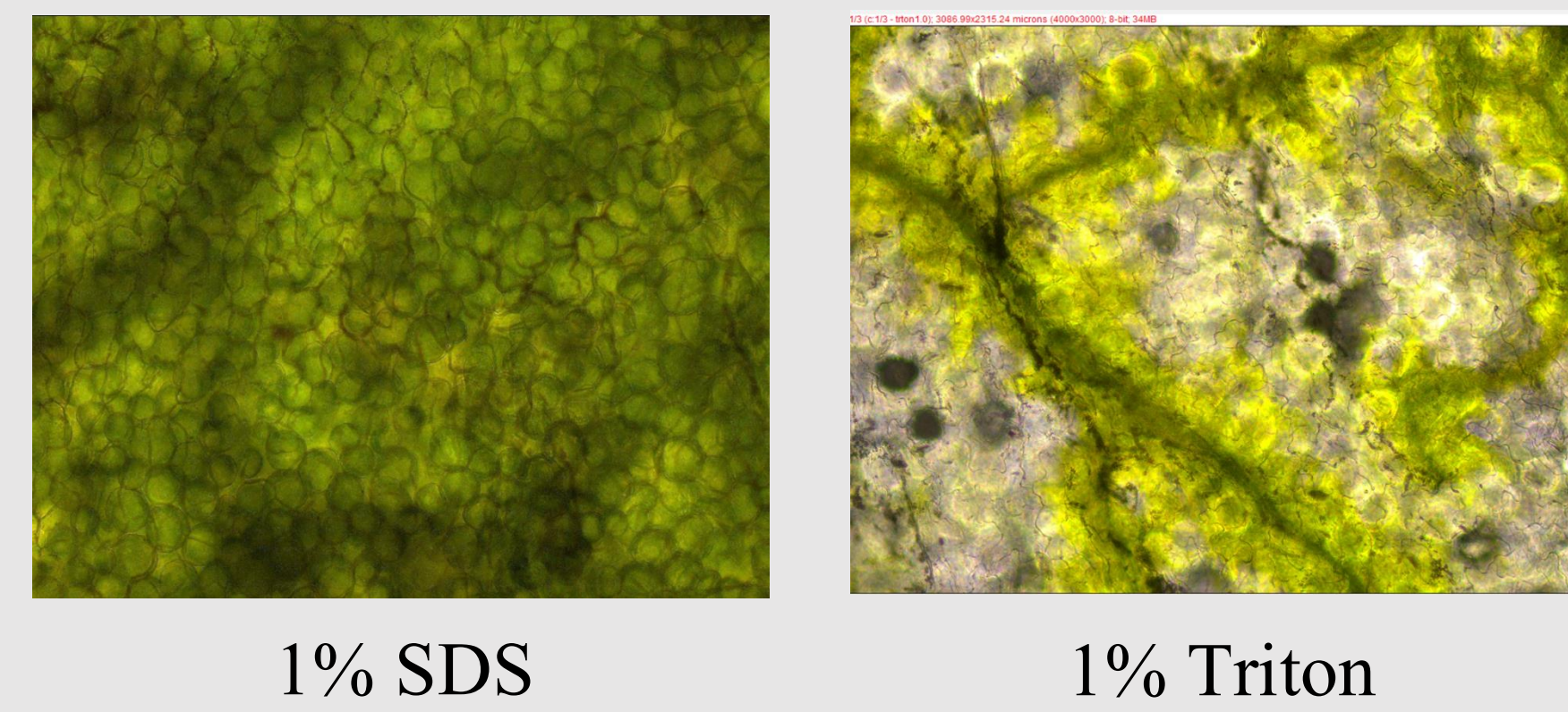
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Introduction

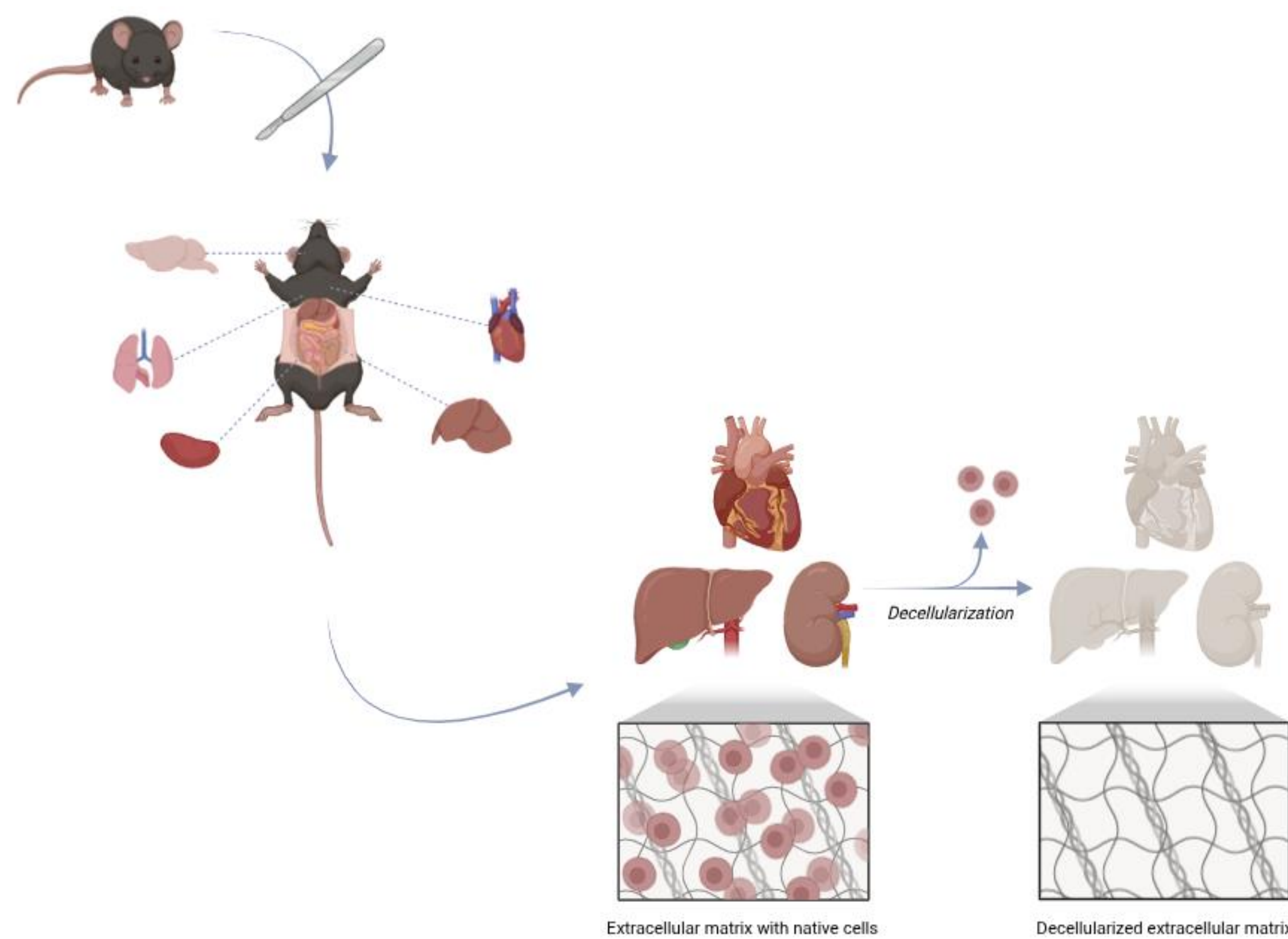
- Organ shortages are severe due to limited donors and time sensitivity, causing transplant waitlists to get long
- Decellularization and recellularization techniques offer a way to make patient-specific and immune compatible organs
- Using the donor's ECM as a scaffold and growing patient's cells on it, the organ can become autologous and less likely to be rejected



Detergent Comparison With Spinach

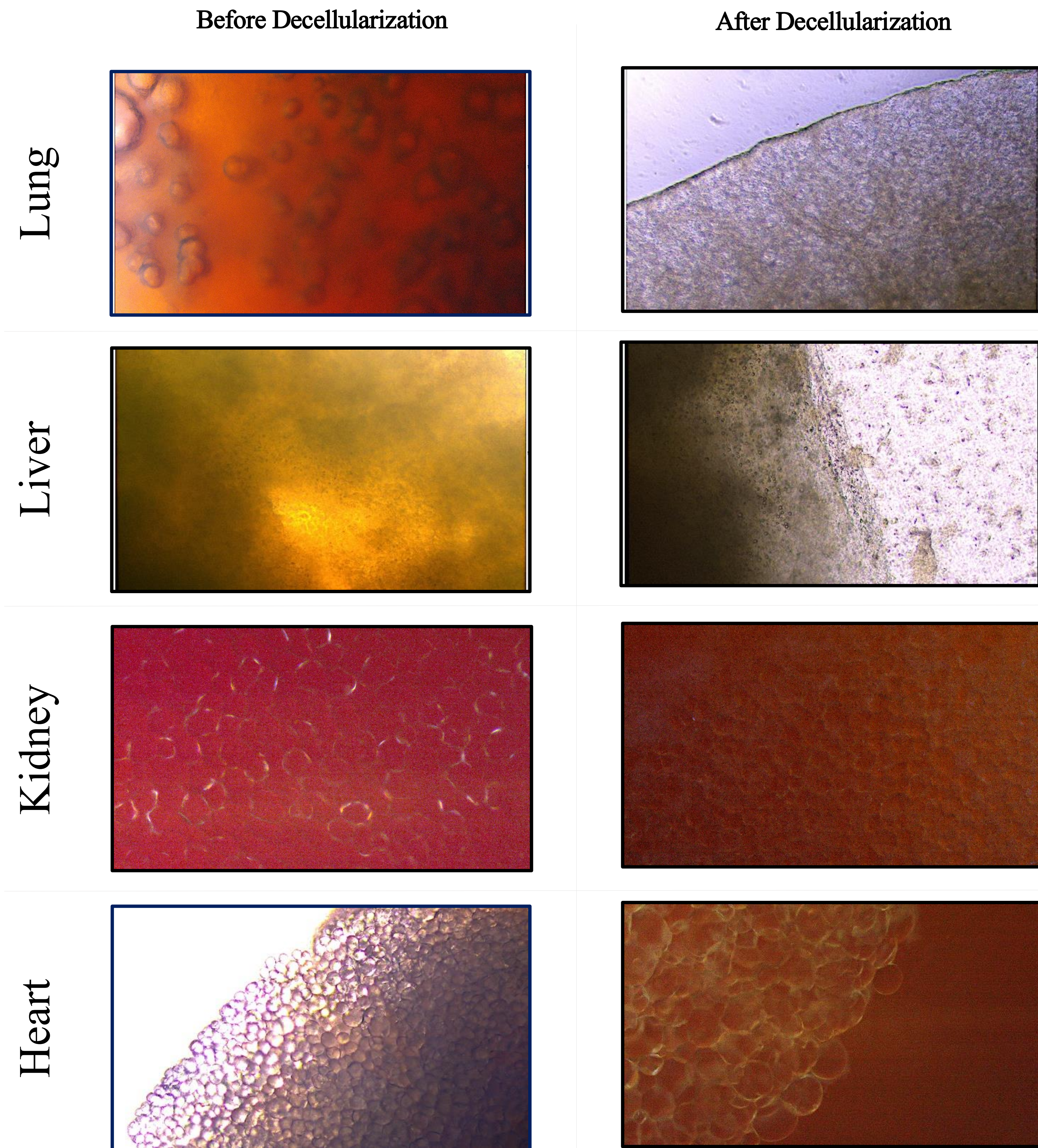


Procedure



- Surgically remove organs from host (*Mus musculus*)
- Strip cells from dissected organs using varied detergent concentrations
- Use microscopy to evaluate detergent effects on tissue
- Repeat detergent washes until organ is fully decellularized

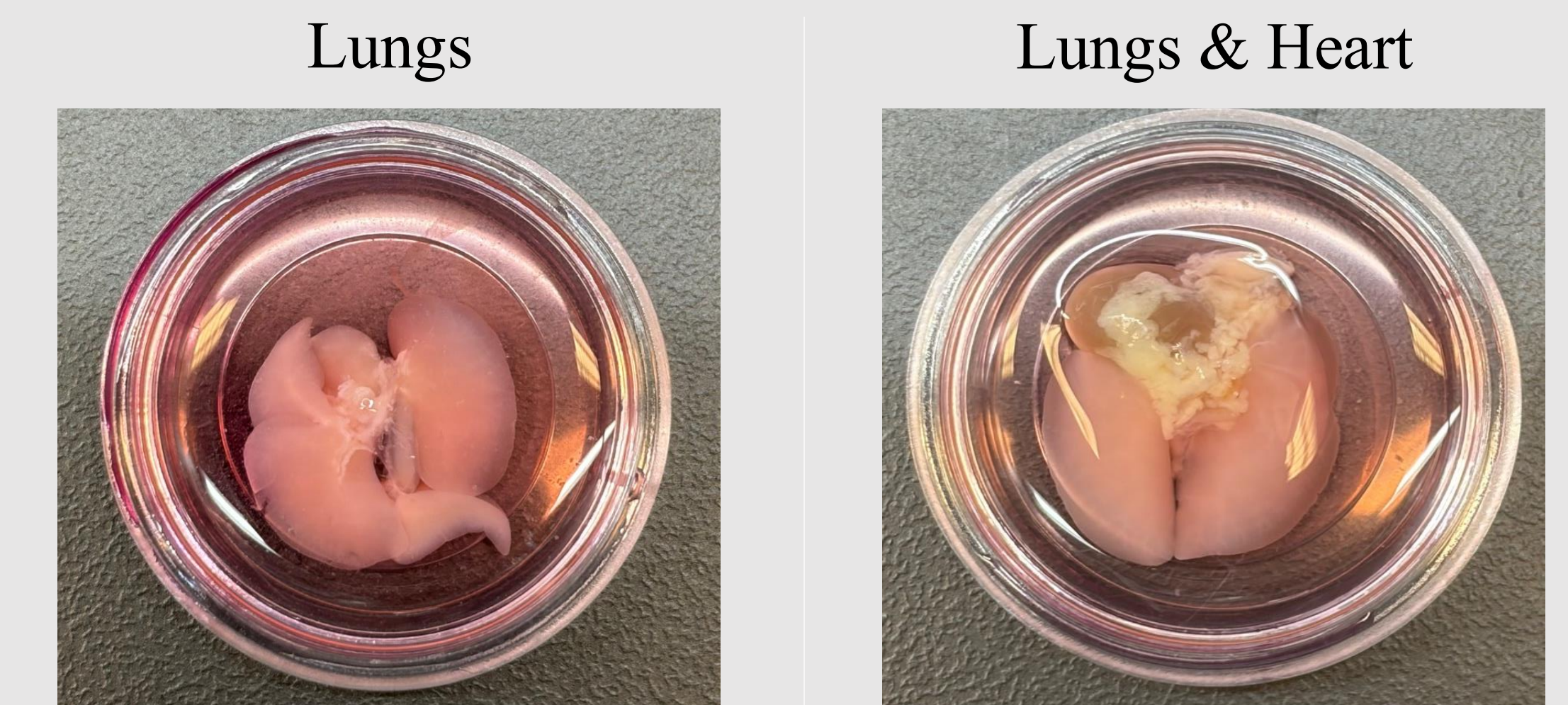
Results



Decellularization Protocol

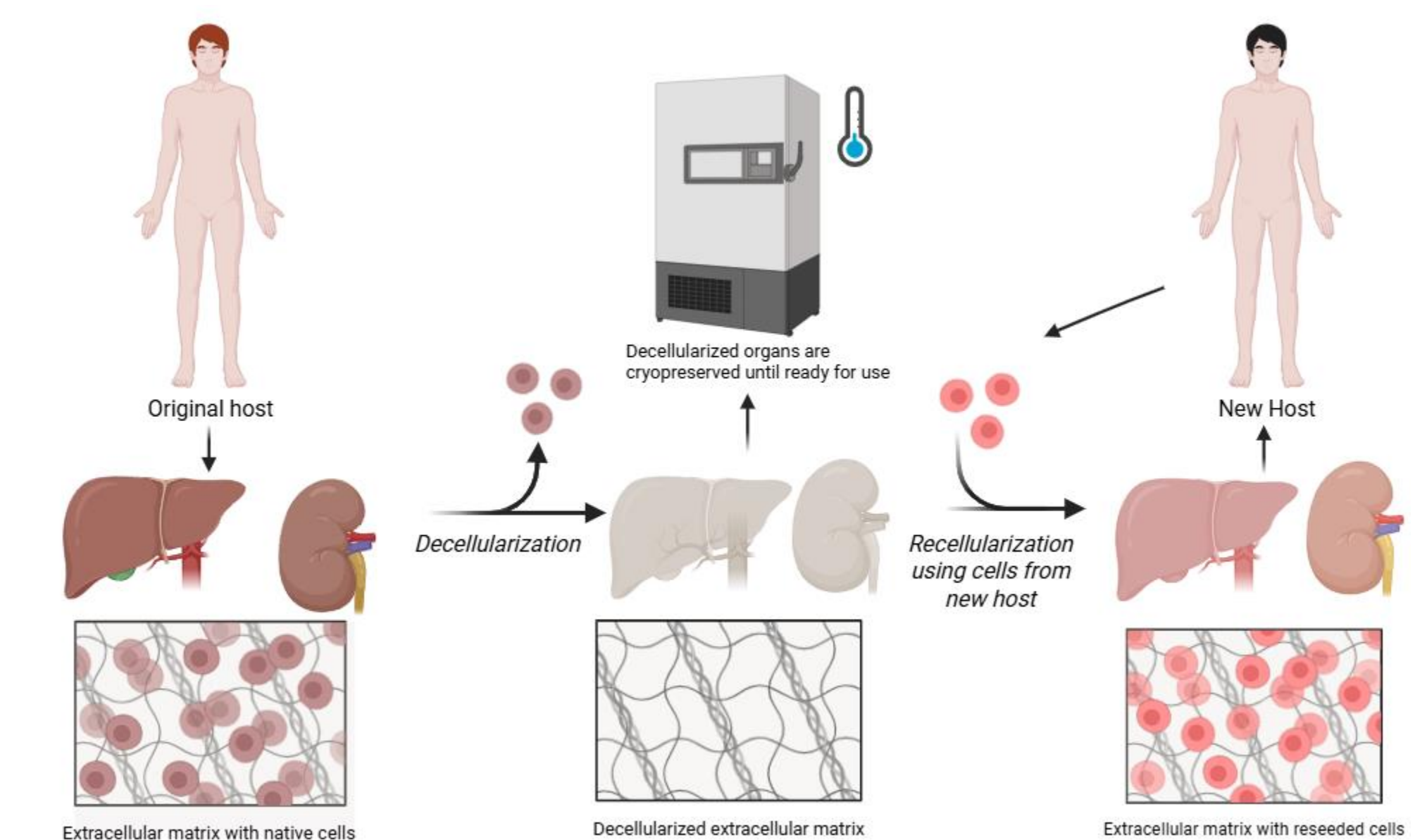
Organ	Protocol
Lung	0.1% SDS for 24 hours, 0.1% Triton for 24 hours, 0.3% SDS for 24 hours
Liver	0.1% SDS for 72 hours, 1% SDS for 8 hours, 0.3% SDS for 24 hours, 0.01% SDS for 90 hours, 0.3% Triton for 8 hours
Heart	0.1% SDS for 90 hours, 0.3% Triton for 32 hours, 0.01% Triton for 24 hours, 1% SDS for 24 hours, 0.01% SDS for 90 hours
Kidney	0.1% SDS for 90 hours, 1% SDS for 30 hours, 0.3% Triton for 24 hours, 0.3% Triton for 24 hours, 0.1% SDS for 96 hours

Cell Culture Media Perfusion



Future Directions

- Develop long-term cryopreservation for decellularized scaffolds
- Improve protocols for reseeding organs with host cells via vasculature
- Test the viability and performance of organs for future autologous transplants
- Use scaffolds as safe, controlled environments for cancer migration studies



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