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2026 SYMPOSIUM

Self-repair of Acellular Tissue Engineered Vessels (ATEV) after Cannulation for Dialysis Access

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Disclosures and Disclaimer

Maisha Clancy is employed by and owns stock options in Humacyte, Inc.

These slides, poster, and the accompanying oral presentation contain forward-looking statements. All statements, other than statements of historical fact, included in this poster and the accompanying oral presentation are forward-looking statements reflecting management's current beliefs and expectations. In some cases, you can identify forward-looking statements by terminology such as "will," "anticipate," "expect," "believe," "intend" and "should" or the negative of these terms or other comparable terminology. Forward-looking statements in this poster and the accompanying oral presentation include, but are not limited to, statements about our plans and ability to commercialize our bioengineered Acellular Tissue Engineered Vessel ("ATEV"™) in the United States under the brand name SYMVESS™ in vascular trauma repair; the anticipated commercialization of our ATEV and our ability to manufacture ATEV and other product candidates in sufficient quantities to satisfy our clinical trial and commercial needs; our plans and ability to execute product development, process development and preclinical development efforts successfully and on our anticipated timelines; our plans, anticipated timelines and ability to obtain marketing approval from the U.S. Food and Drug Administration ("FDA") and other regulatory authorities, including the European Medicines Agency, for our ATEV in other indications and other product candidates; our ability to design, initiate and successfully complete clinical trials and other studies for our product candidates and our plans and expectations regarding our ongoing or planned preclinical and clinical trials; the outcome of our ongoing discussions with the FDA concerning the design of our clinical trials; our anticipated growth rate and market opportunities; the potential liquidity and trading of our securities; our ability to raise additional capital in the future; our ability to use our proprietary scientific technology platform to build a pipeline of additional product candidates; the anticipated characteristics and performance of our ATEV; the expected size of the target populations and addressable markets for our product candidates; the anticipated benefits of our ATEV relative to existing alternatives; our assessment of the competitive landscape; the degree of market acceptance of ATEV and the availability of third-party coverage and reimbursement; the implementation of our business model and strategic plans for our business; our expectations regarding our strategic partnership with Fresenius Medical Care Holdings, Inc. to sell, market and distribute our 6 millimeter ATEV for certain specified indications and in specified markets; the performance of other third parties on which we rely, including our third-party manufacturers, our licensors, our suppliers and the organizations conducting our clinical trials; our ability to obtain and maintain intellectual property protection for our product candidates as well as our ability to operate our business without infringing, misappropriating or otherwise violating the intellectual property rights of others; our ability to maintain the confidentiality of our trade secrets, particularly with respect to our manufacturing process; our compliance with applicable laws and regulatory requirements, including FDA regulations, healthcare laws and regulations, and anti-corruption laws; our ability to attract, retain and motivate qualified personnel and to manage our growth effectively; our future financial performance and capital requirements; our ability to implement and maintain effective internal controls; and the impact of the overall global economy and increasing interest rates and inflation on our business. These statements relate to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by these forward-looking statements. The potential risks and uncertainties that could cause actual results to differ from the results predicted include, among others, those risks and uncertainties included under the captions "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our Form 10-K for the year ended December 31, 2024, our quarterly report on Form 10-Q for the quarter ended June 30, 2025, each filed by Humacyte with the Securities and Exchange Commission, and in future filings made with the Securities and Exchange Commission from time to time. Any forward-looking statements contained herein are based on assumptions that we believe to be reasonable as of the date hereof. Except as required by law, we assume no obligation to update these forward-looking statements, even if new information becomes available in the future. This presentation shall not constitute an offer to sell or the solicitation of an offer to buy, nor shall there be any sale of our securities, in any state or other jurisdiction in which such offer, solicitation or sale would be unlawful prior to the reregistration or qualification under the securities laws of any such state or other jurisdiction.

Rob Kirkton, Juan Wang, Erica Nichols, Jason Keller, and Kevin Nash are employed by and owns stock or stock options in Humacyte, Inc.

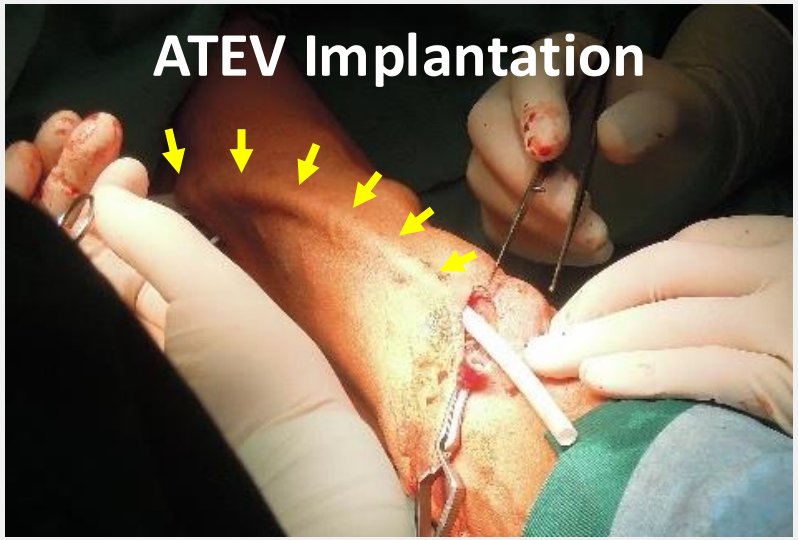
Tissue Engineered Blood Vessels

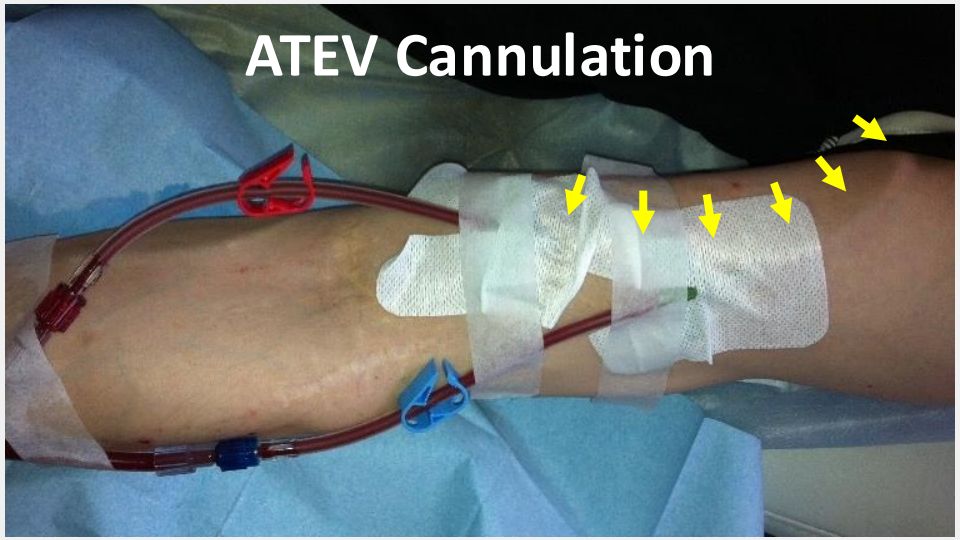


Acellular Tissue Engineered Vessel (ATEV)

- Readily available, “off-the-shelf”
- Universally implantable and non-immunogenic
- Commercially available in a 6mm x 42cm diameter and length.
- Currently FDA-approved in vascular trauma indication (December 2024)
- Investigational studies conducted in other indications including Arteriovenous (AV) Access for Dialysis and Peripheral Arterial Disease

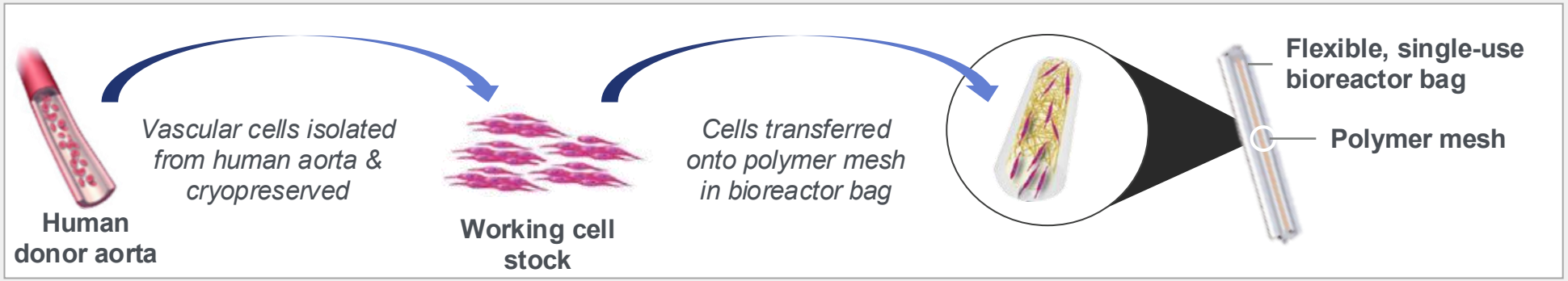




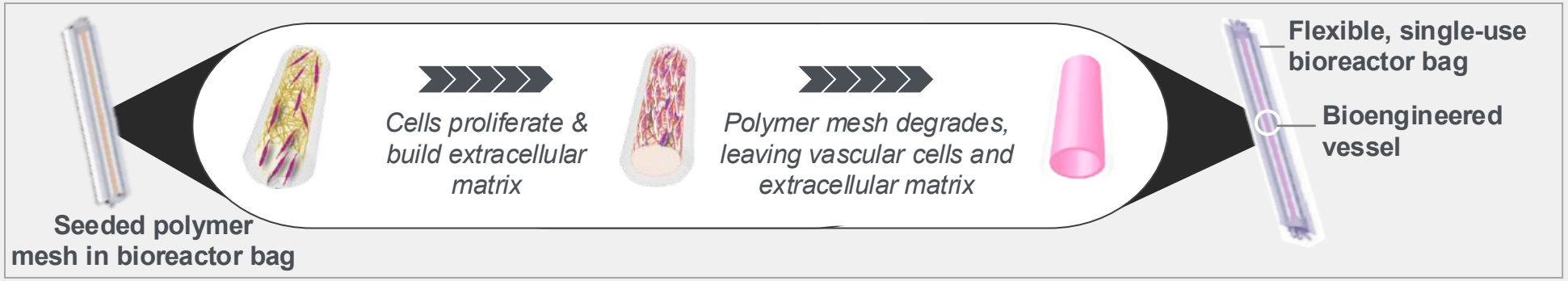


ATEV Production Overview

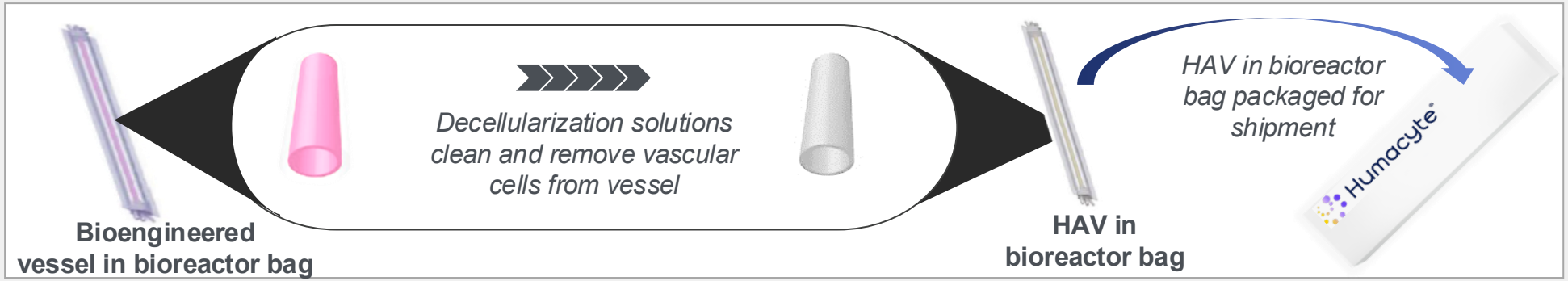
1 Cell seeding



2 Tissue formation



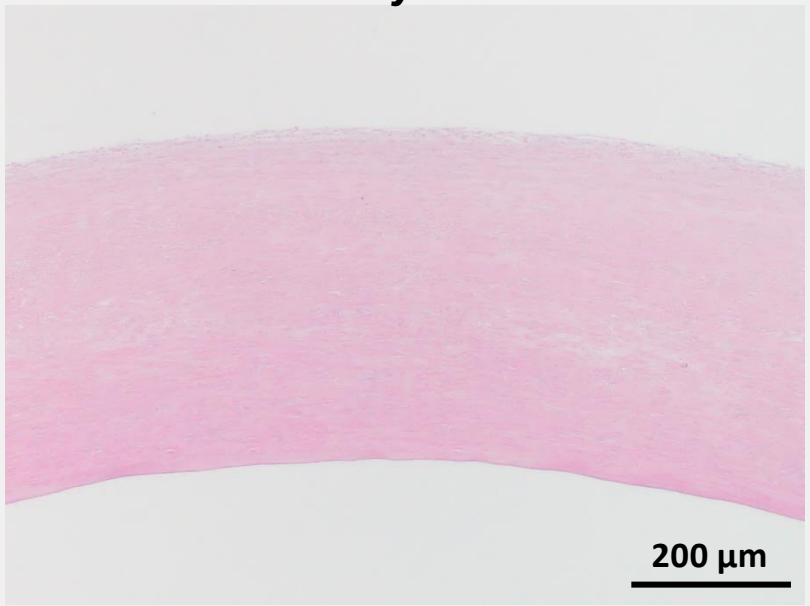
3 Cell removal and packaging



Patient Cells Repopulate and Remodel the ATEV

Pre-Implant

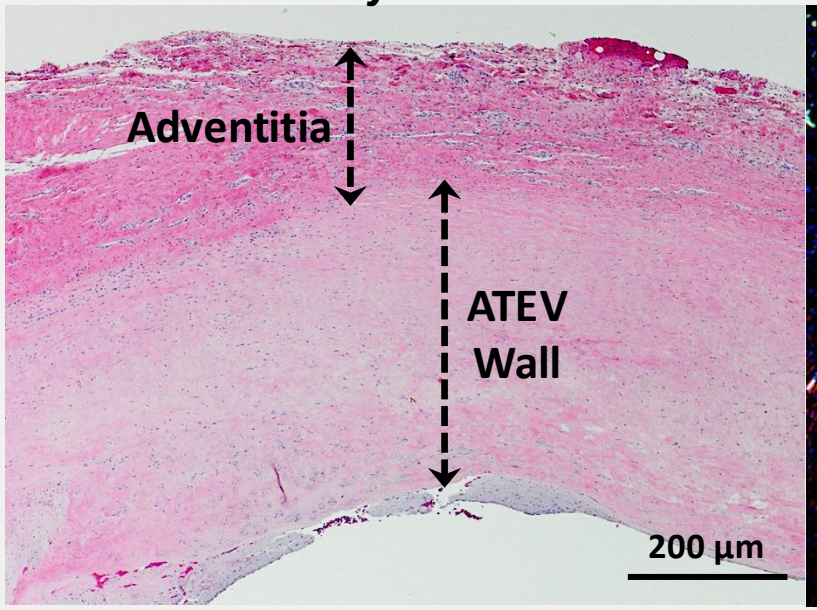
Hematoxylin & Eosin



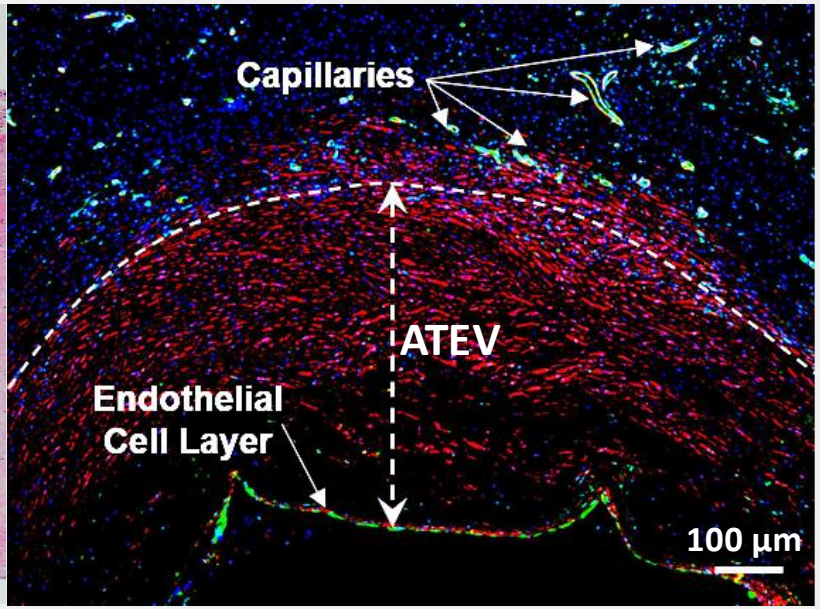
Implant Duration: 44 weeks

AV Access Clinical Trial V001 (NCT01744418)

Hematoxylin & Eosin



DAPI αSMA CD31



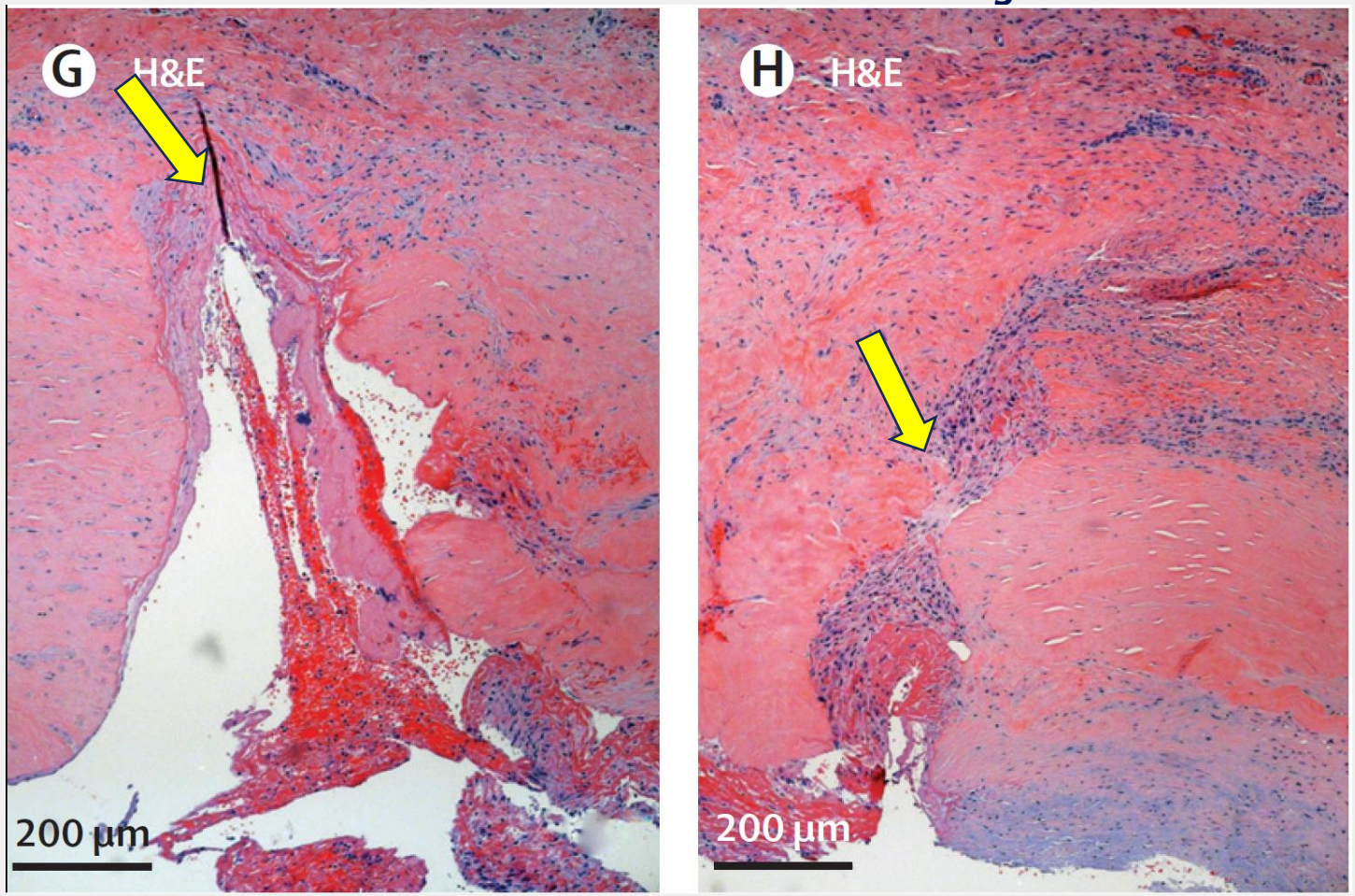
ATEV recellularized by patient's own
αSMA⁺ Smooth Muscle Cells and
CD31⁺ Endothelial Cells

Prior Evidence of Cannulation Injury Repair

(Clinical Trail V003 NCT01840956)

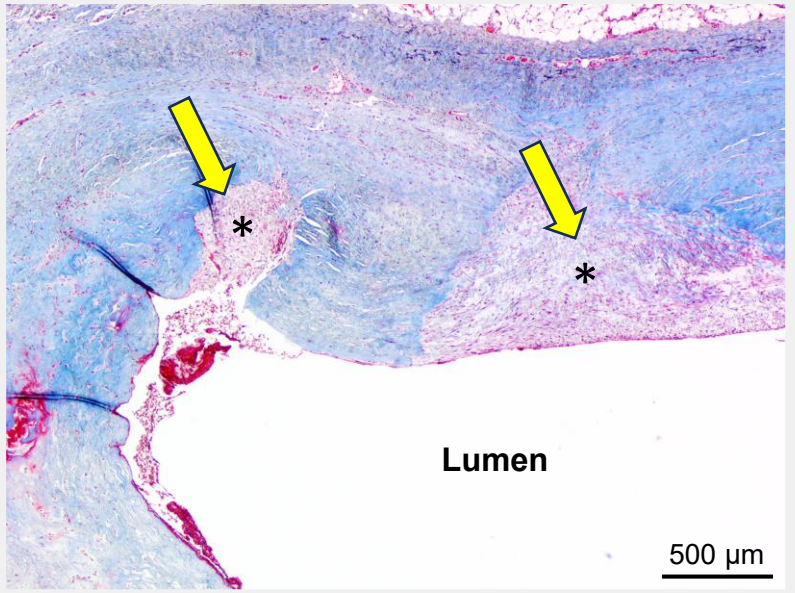
Implantation Duration: 44 weeks

Fresh Cannulation Site ***Mature Healing Cannulation Site***

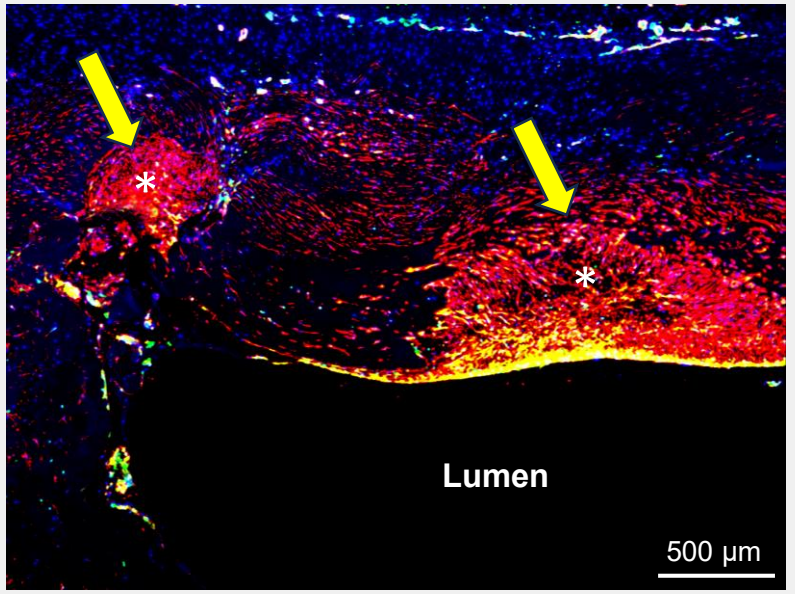


Lawson et al., Lancet, 2016

Masson's Trichrome



DAPI αSMA Nestin



Implantation Duration: 44 weeks

Kirkton et al., Sci. Transl. Med., 2019

Further Histological Characterization of ATEV Cannulation Sites

In total, ATEV explant segments taken during surgical interventions after 0.3 weeks to 5.5 years of implant duration from 55 patients were examined. We identified 134 potential ATEV cannulation sites in tissue cross sections from these patient explants.

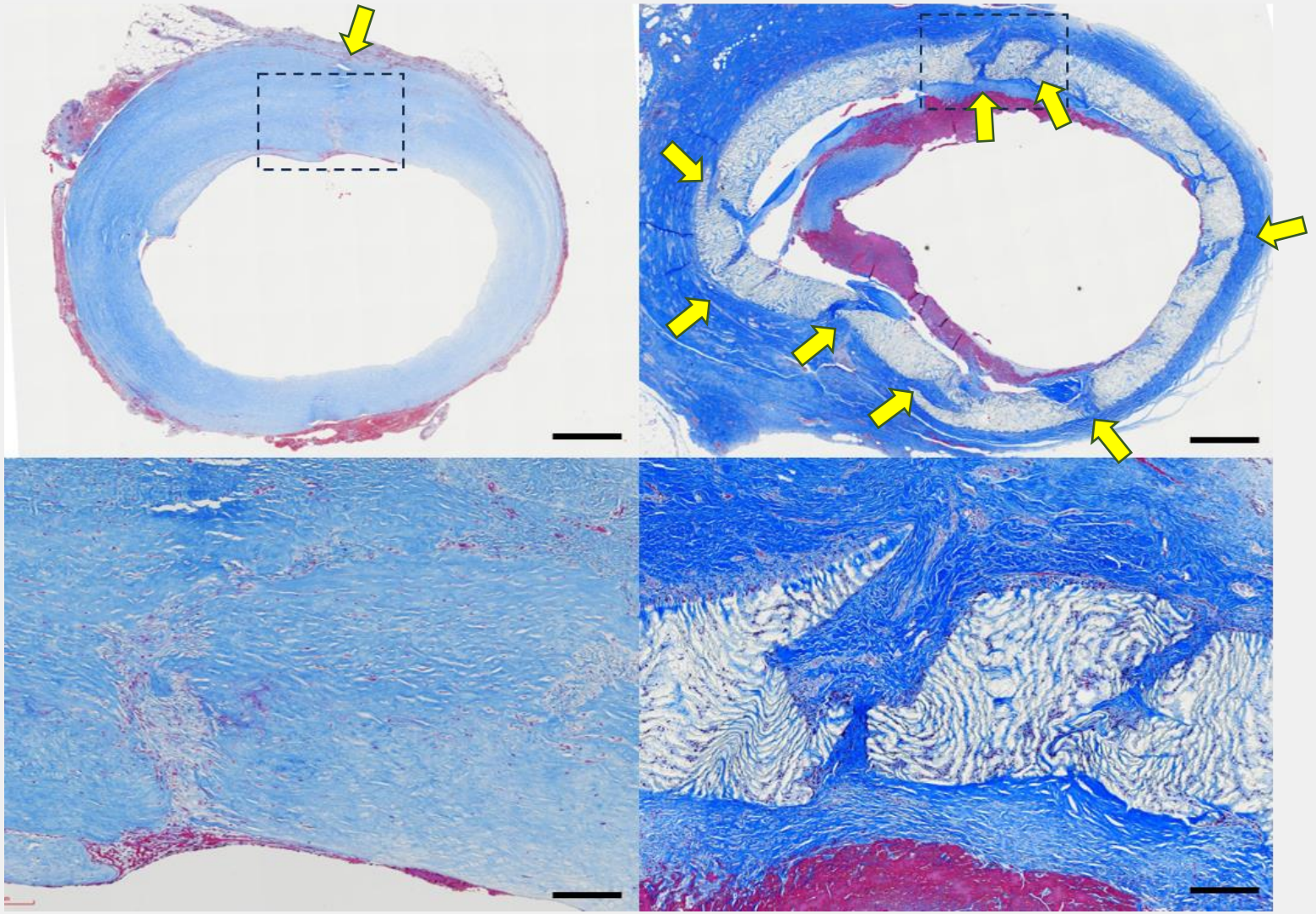
- **Host cell response**
  - Endothelial Cell (CD31)
  - Smooth Muscle Cell (αSMA)
- **Matrix remodeling**
  - Masson's Trichrome
  - Pentachrome
  - Collagen (Col I/Col III)
  - Proteoglycans (Biglycan/Decorin)
  - Growth Factor (TGF1β)
  - Glycoprotein (CD44)

Example of Cannulation Sites Observed in Explants

Implantation Duration

ATEV (100 weeks) | **ePTFE (71 weeks)**

Masson's Trichrome

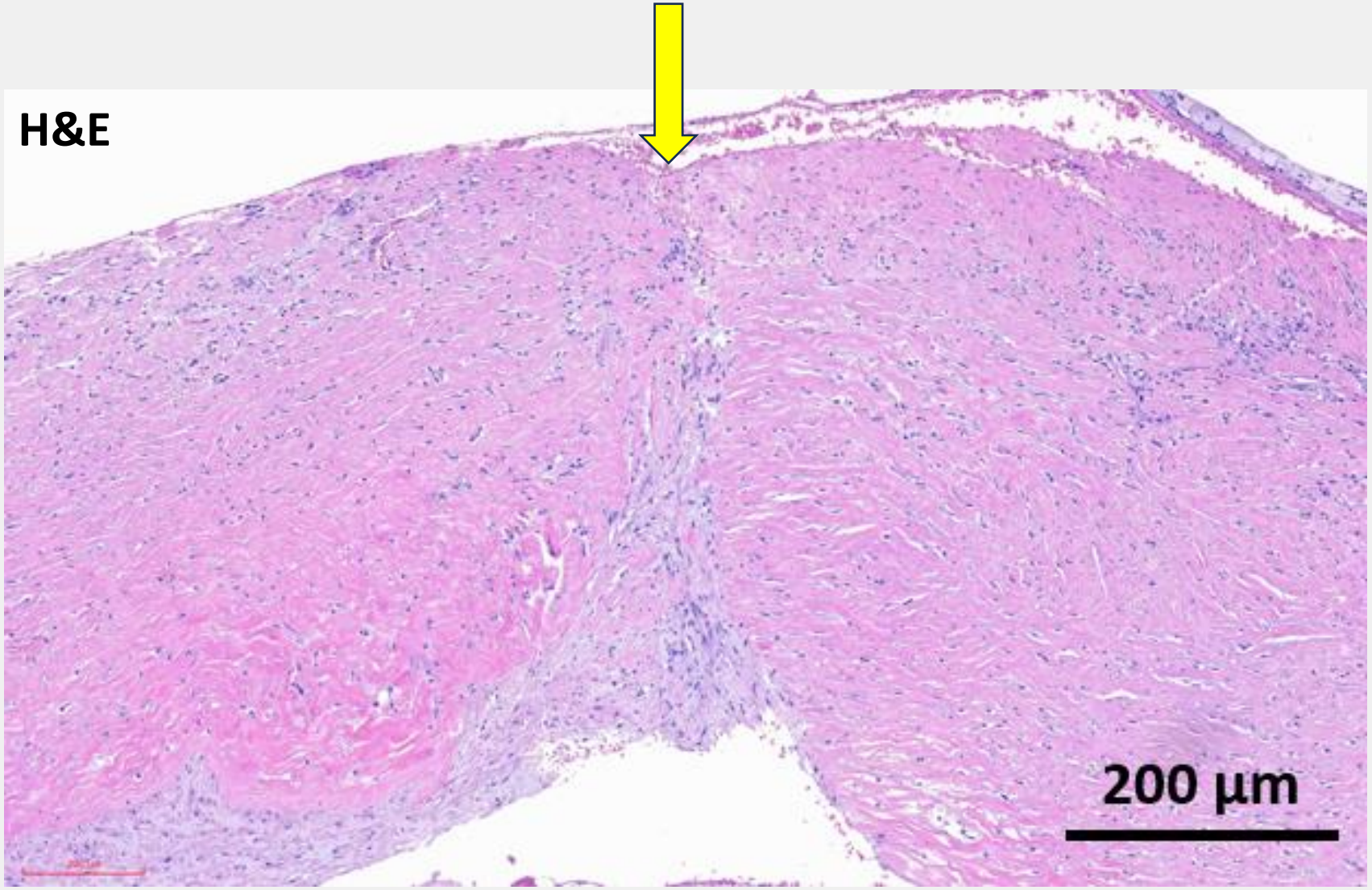


Scale bar: 1mm

Scale bar: 200µm

Clinical Trial V006 (NCT02644941)

Cannulation Site Repair in ATEV Implanted for 12 Weeks

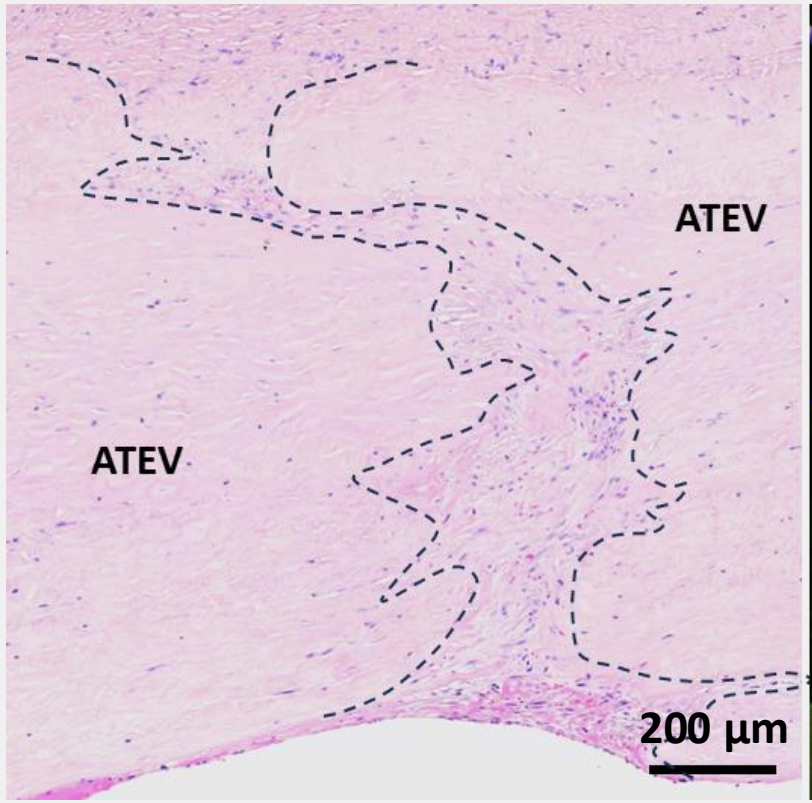


Clinical Trial V006 (NCT02644941)

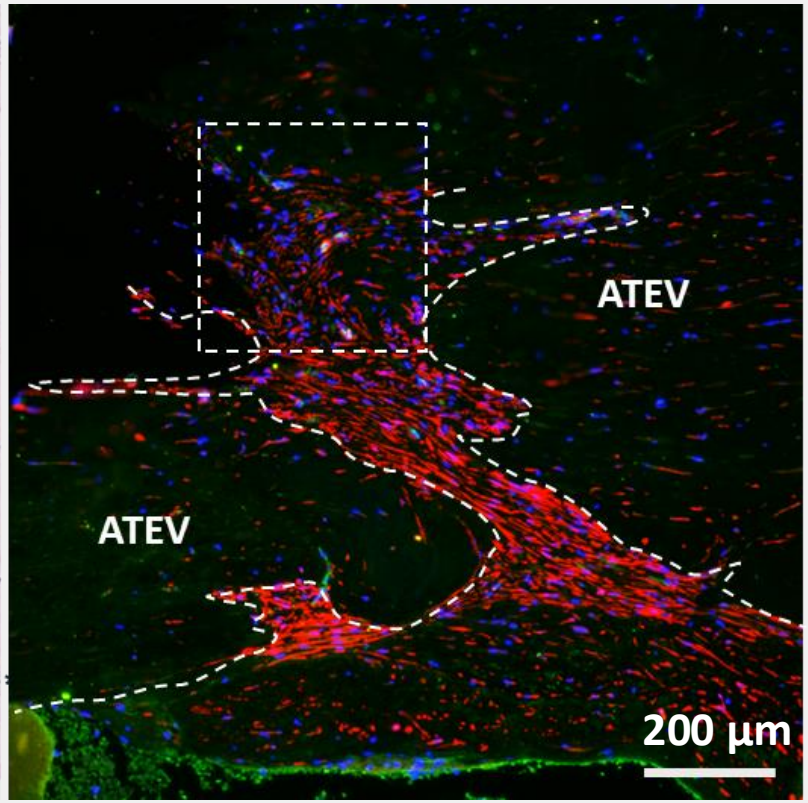
Host Cell Response to ATEV Cannulation

Implantation Duration: 100 weeks

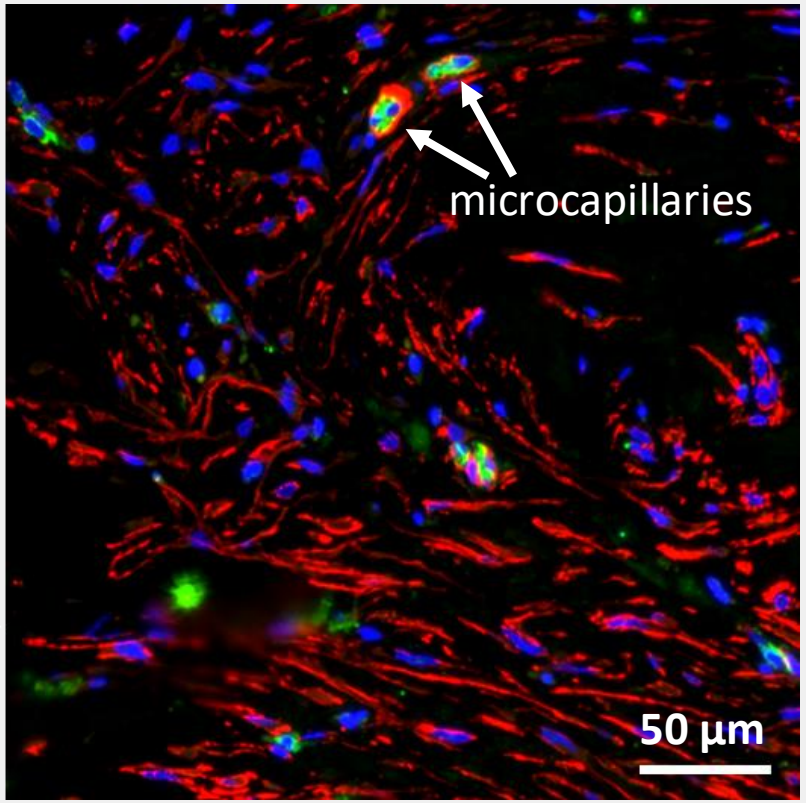
H&E



CD31 αSMA



CD31 αSMA (Higher Mag.)

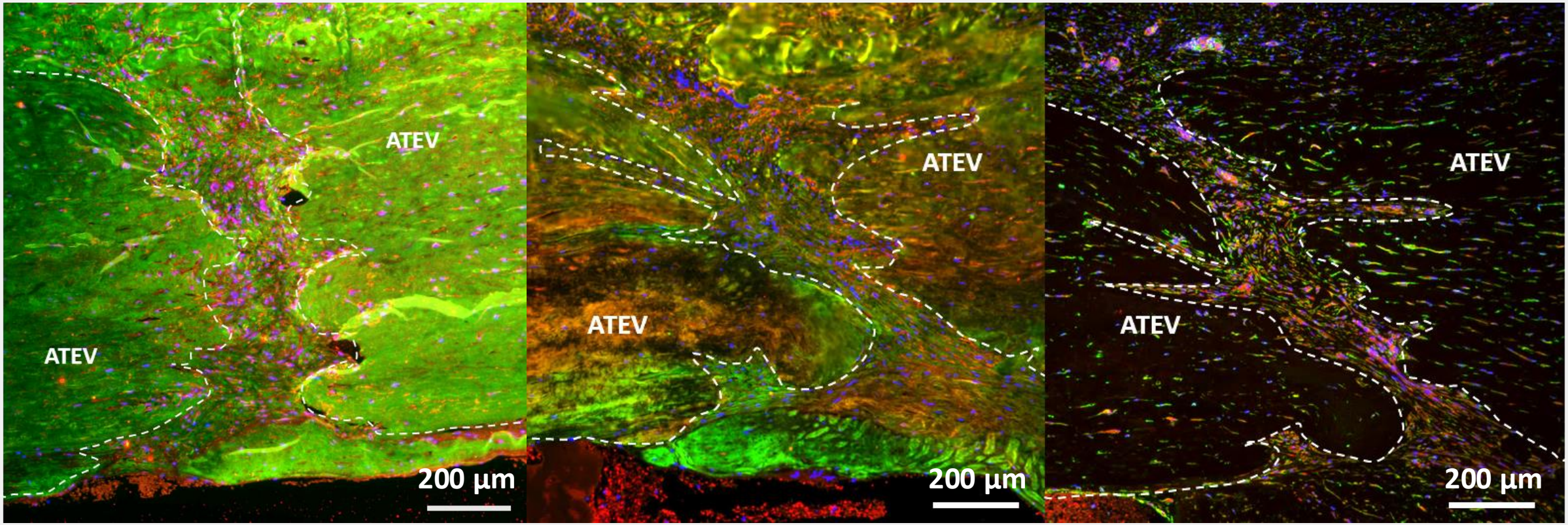


Clinical Trial V006 (NCT02644941)

Host Cell Response to ATEV Cannulation

Implantation Duration: 100 weeks

Collagen I / Collagen III | **Biglycan / Decorin** | **CD44 / TGFβ1**



Clinical Trial V006 (NCT02644941)

Conclusions

- Histological evaluation of explant samples retrieved from clinical trial patients using the ATEV for hemodialysis access demonstrated potential repair of cannulation tracts.
- The cells within the ATEV cannulation sites express vascular smooth muscle (αSMA) and endothelial cell (CD31) markers as well as receptors (CD44) and growth factors (TGFβ1) that may be associated with wound healing.
- The extracellular matrix (ECM) within the ATEV cannulation sites contain Collagen I and III as well as proteoglycans found in native vascular ECM.
- Additional histological characterization studies of cannulation sites within ATEV and ePTFE explants are being conducted for manuscript submission.

Acknowledgements

Clinical Trial Patients and Surgical Teams

Humacyte:

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Juan Wang, PhD

Erica Nichols, MA

Jason Keller, BS, HTL

Kevin Nash, PhD, DABT

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Thank You
Questions?

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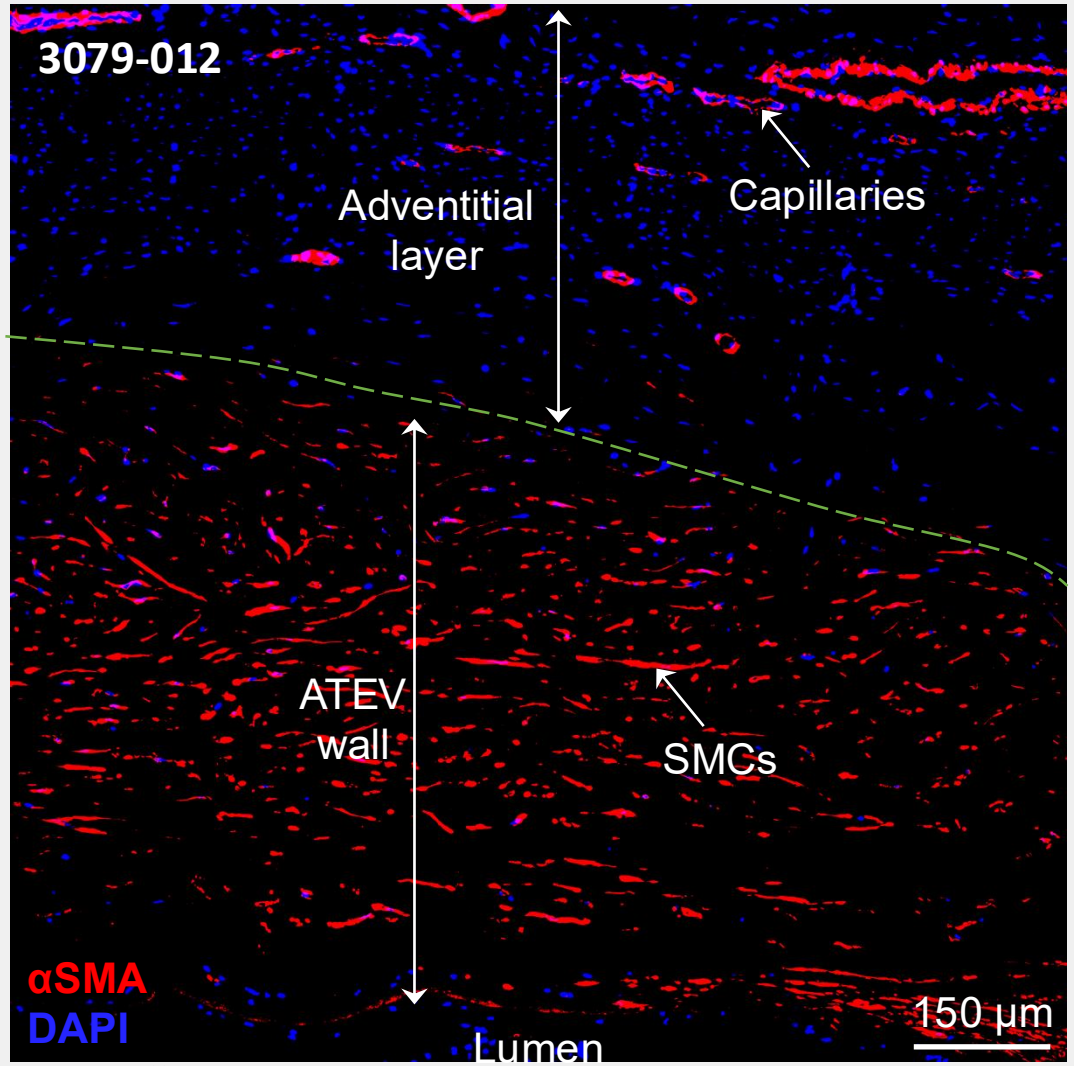
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Backup Slides

ATEV Remodeling is Likely Not Dependent on Patient Age

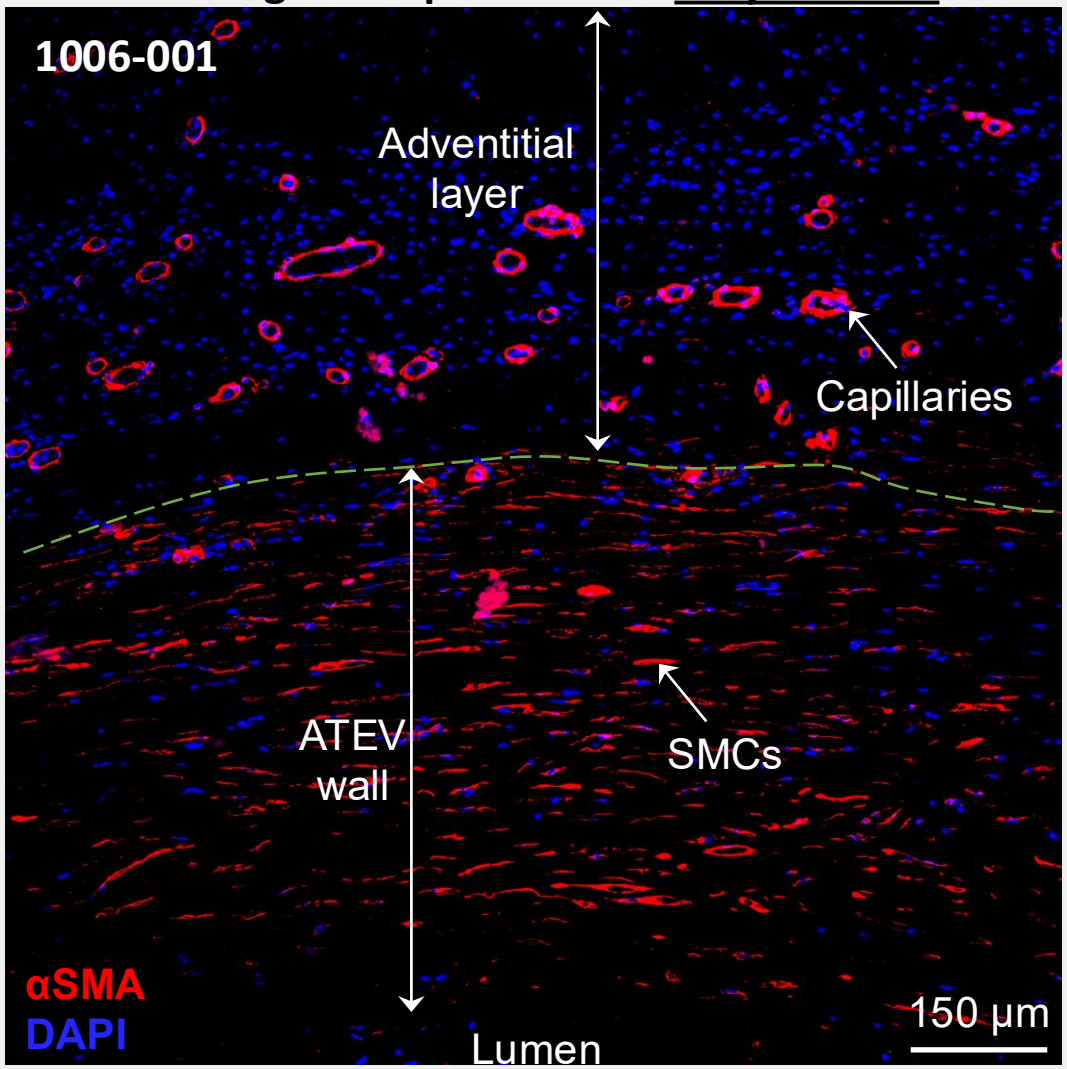
67.4 weeks post-implant for AV Access

Patient Age at Implantation = 26 years old

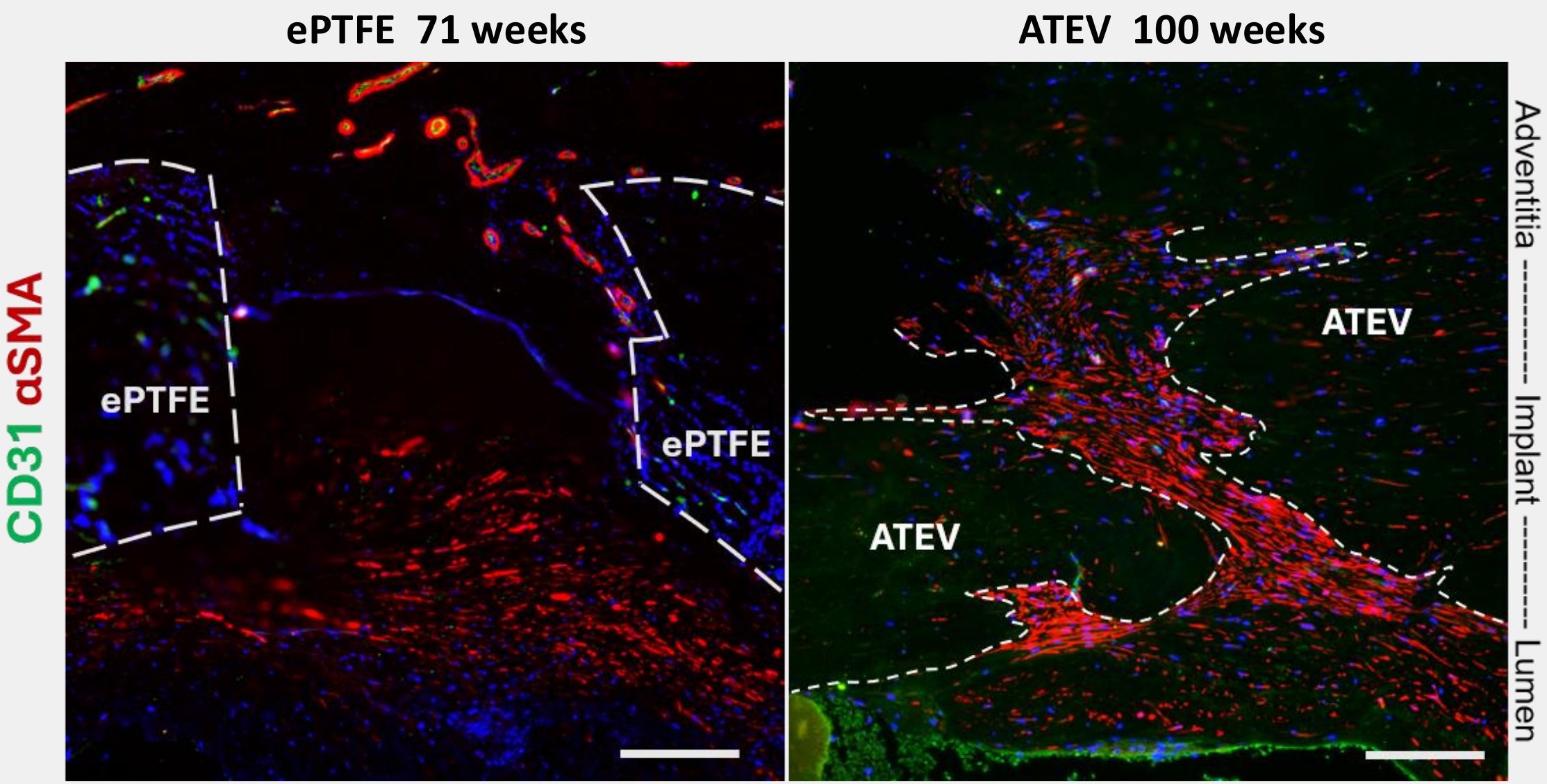


66.1 weeks post-implant for AV Access

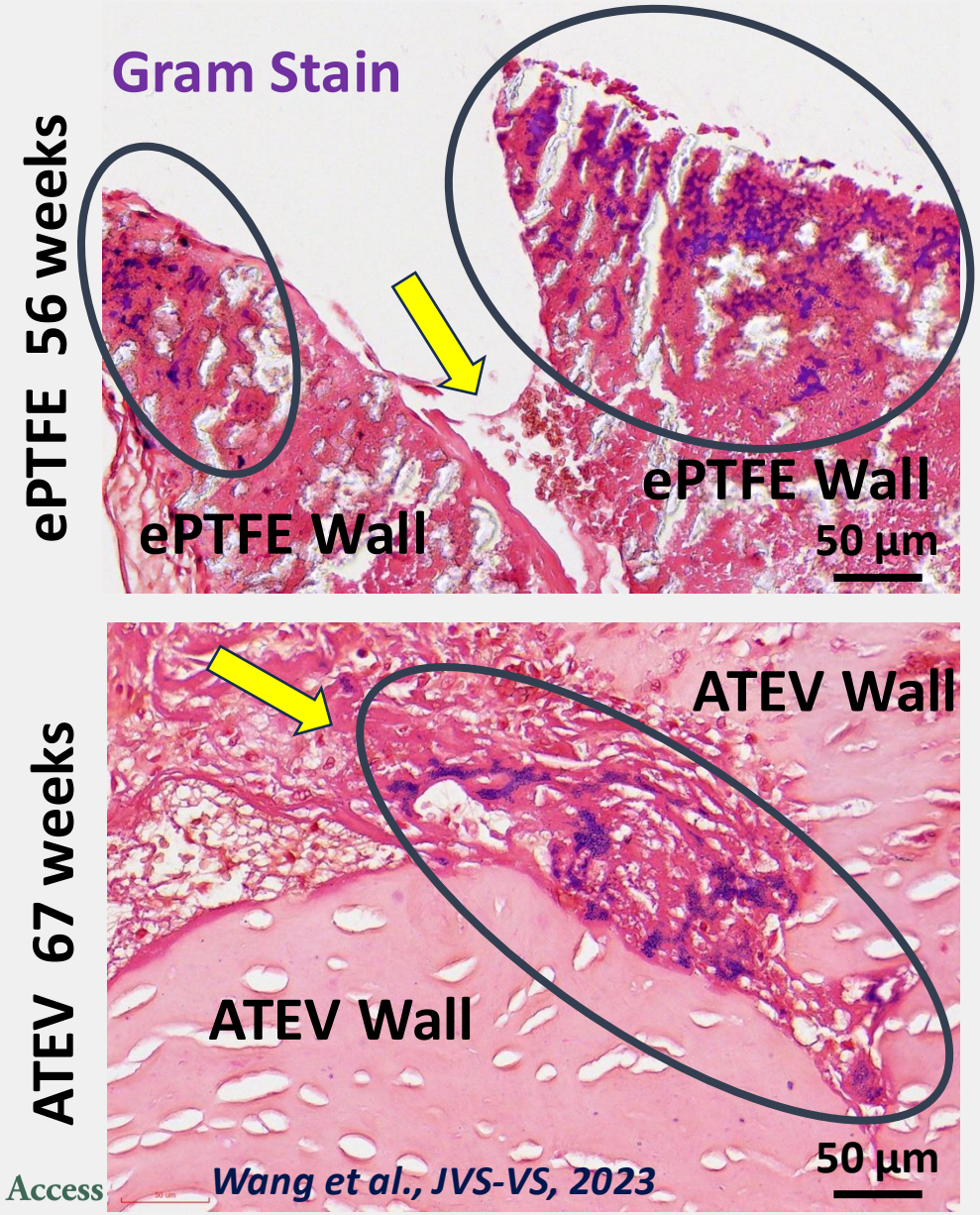
Patient Age at Implantation = 83 years old

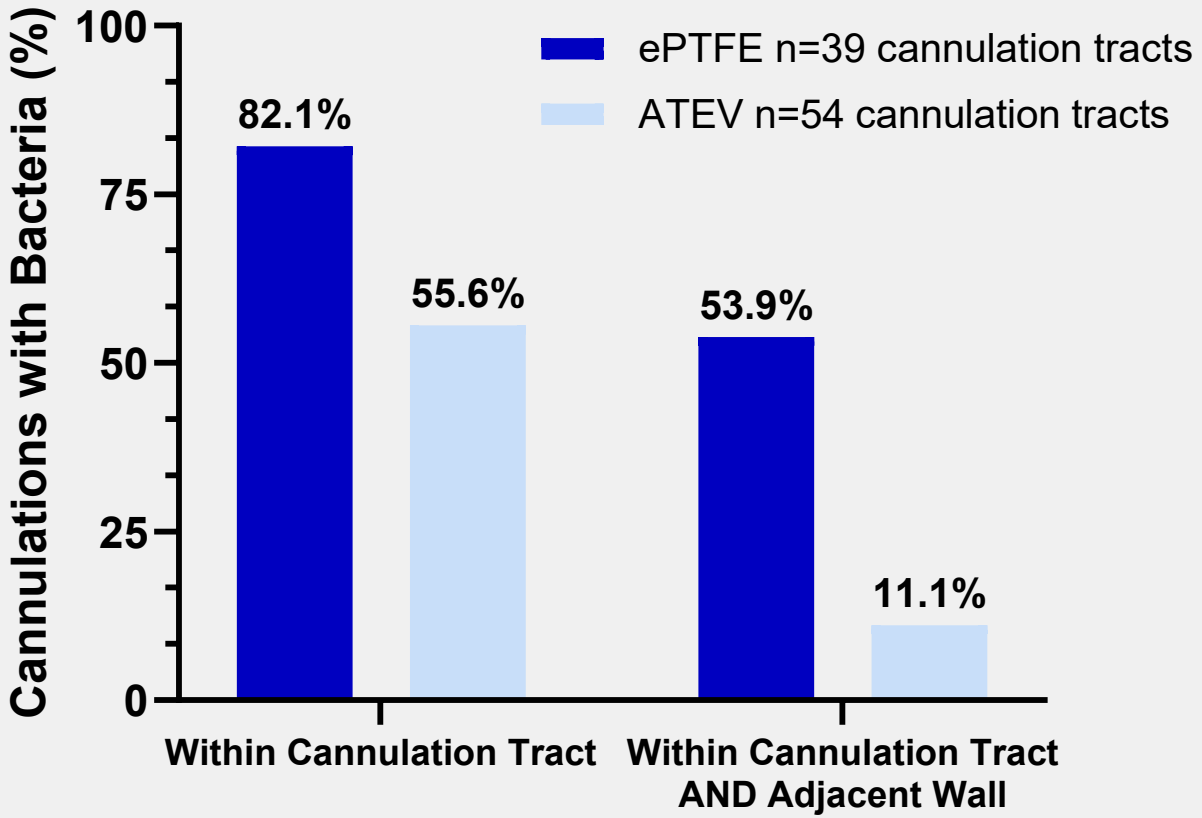


Host Cell Response to Cannulation on ePTFE vs. ATEV



Evaluation of Gram+ Bacteria Introduced by Cannulation

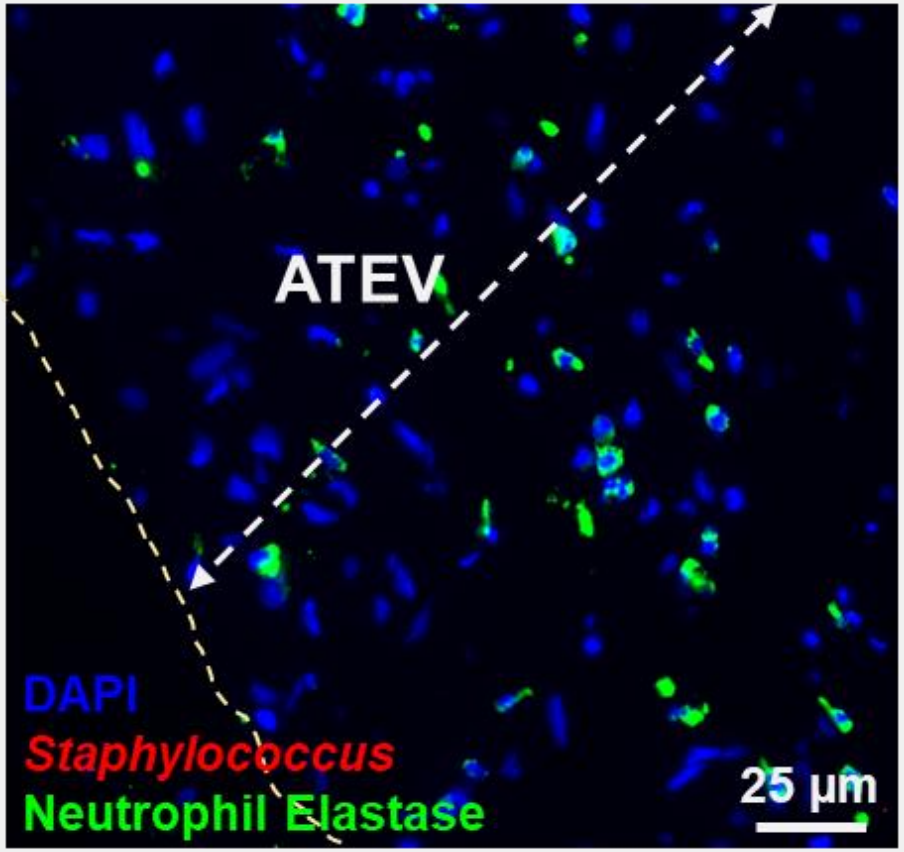




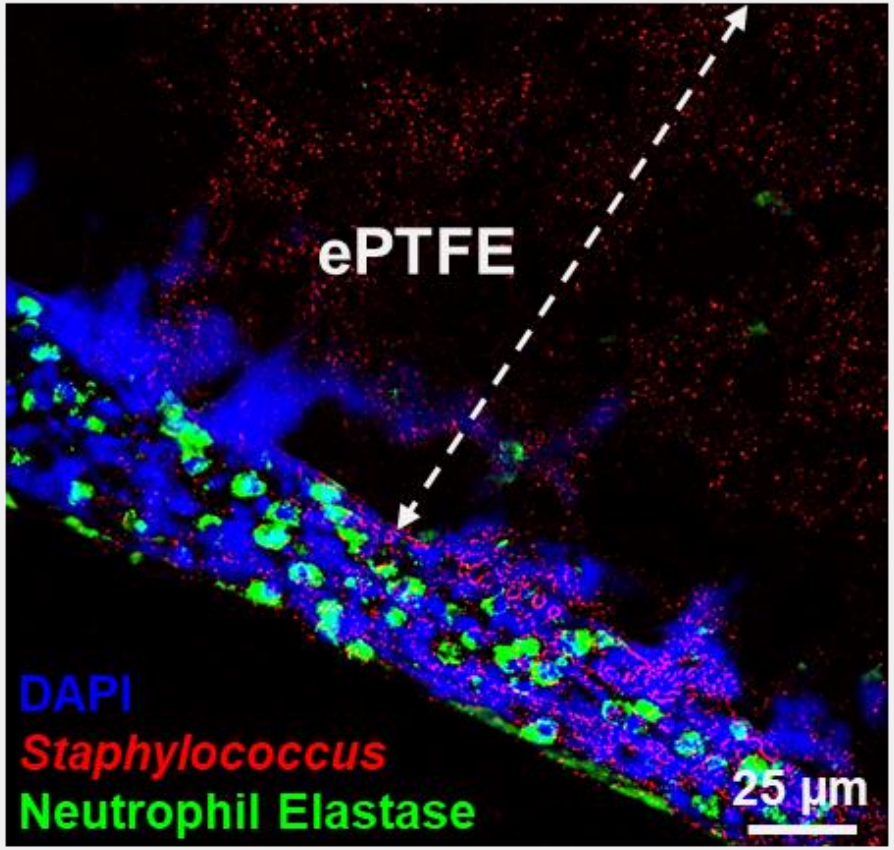
Clinical Trials V001, V003, V006, V007 (NCT01744418, NCT01840956, NCT02644941, NCT03183245)

ATEV Neutrophil Compatibility May Help Limit Bacterial Contamination

ATEV 54 weeks



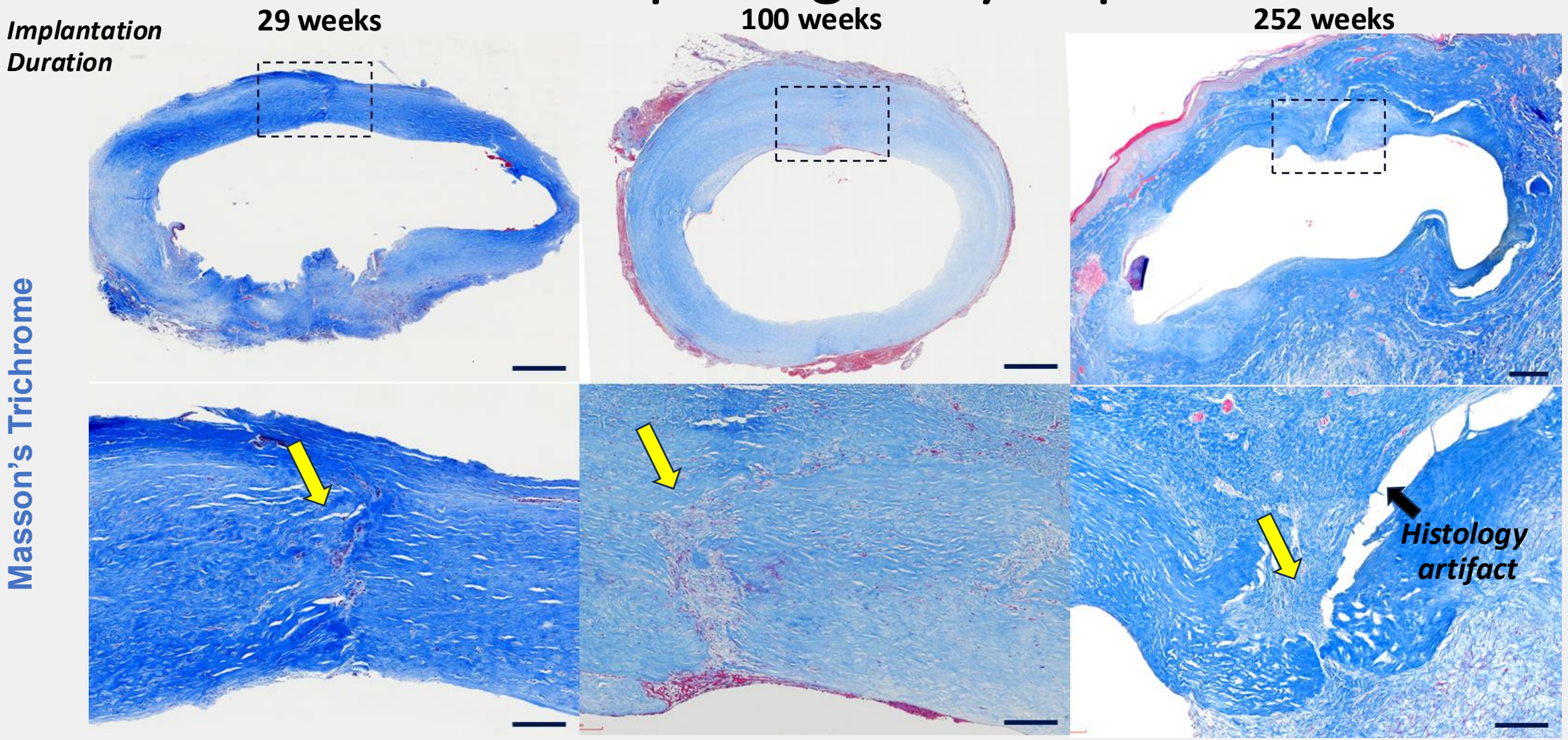
ePTFE 56 weeks



Wang et al., JVS-VS, 2023

Clinical Trial V006 (NCT0264494)

ATEV Cannulation Morphologies by Implant Duration



Clinical Trials V006/V007 (NCT02644941/NCT03183245)

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