

Stanford



Tyler Edward Cork

Postdoctoral Scholar, Radiological Sciences Laboratory

Bio

BIO

I received my B.S. in Biomedical Engineering and M.S. in Electrical Engineering from the Catholic University of America in Washington DC. While attending graduate school at CUA, I worked as a post-baccalaureate fellow at the National Institutes of Health in the Laboratory of Diagnostic Radiology Research under Dr. David A. Bluemke. During my fellowship at the NIH, I primarily worked on quantitative image analysis for a prototype whole-body photon-counting computed tomography scanner. After my time at CUA and the NIH, I received my M.S. in Bioengineering from the University of California - Los Angeles while conducting research under Dr. Daniel Ennis.

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Stanford University , BIOE-PHD (2026)
- Master of Science, University of California - Los Angeles , Bioengineering (2018)
- Master of Science, The Catholic University of America , Electrical Engineering (2017)
- Bachelor of Science, The Catholic University of America , Biomedical Engineering (2015)

STANFORD ADVISORS

- Daniel Ennis, Postdoctoral Faculty Sponsor

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Currently, I am involved in two main projects. The first is developing 3D printing techniques to improve the accuracy of ex vivo geometrical and microstructural cardiac modeling from in vivo cardiac MR acquisitions. The second is applying machine learning applications to MRI data as a way to improve overall image quality and reduce acquisition time.

LAB AFFILIATIONS

- Daniel Ennis, Cardiac Cardiac Magnetic Resonance Group (8/13/2018)

Publications

PUBLICATIONS

- **The Effect of Voxel Volume and Voxel Shape on Cardiac Diffusion Tensor Imaging Metrics** *MAGNETIC RESONANCE IN MEDICINE*
Hannum, A. J., Cork, T. E., Setsompop, K., Ennis, D. B.
2025

- **Evaluation of EPI-Based Distortion Correction Techniques for Cardiac Diffusion Tensor Imaging.** *NMR in biomedicine*
Cork, T. E., Middione, M. J., Loecher, M., Liao, C., Setsompop, K., Ennis, D. B.
2025; 38 (11): e70147
- **Multi-Shot Diffusion Imaging Using Motion Compensation Diffusion Encoding Waveforms and EPI With Keyhole.** *NMR in biomedicine*
Moulin, K., Cork, T., Troalen, T., Chow, K., Ennis, D. B., Croisille, P., Viallon, M.
2025; 38 (7): e70022
- **Characterizing variability in passive myocardial stiffness in healthy human left ventricles using personalized MRI and finite element modeling.** *Scientific reports*
Kolawole, F. O., Wang, V. Y., Freytag, B., Loecher, M., Cork, T. E., Nash, M. P., Kuhl, E., Ennis, D. B.
2025; 15 (1): 5556
- **An axis-specific mitral annuloplasty ring eliminates mitral regurgitation allowing mitral annular motion in an ovine model.** *Communications medicine*
Zhu, Y., Imbrie-Moore, A. M., Park, M. H., Cork, T. E., Yajima, S., Wilkerson, R. J., Tran, N. A., Marin-Cuartas, M., Mullis, D. M., Baker, S. W., Tada, Y., Ueyama, T., Leipzig, et al
2025; 5 (1): 40
- **Automated Global and Regional Segmentation of Cardiac Diffusion Tensor Images**
Stocker, S. W., Hannum, A. J., Cork, T. E., Ennis, D. B.
edited by Chabiniok, R., Zou, Q., Hussain, T., Nguyen, H. H., Zaha, V. G., Gusseva, M.
SPRINGER INTERNATIONAL PUBLISHING AG.2025: 174-185
- **Characterizing Global and Regional Cardiac Diffusion Tensor Imaging Metrics in Healthy Subjects**
Hannum, A. J., Cork, T. E., Perotti, L. E., Ennis, D. B.
edited by Chabiniok, R., Zou, Q., Hussain, T., Nguyen, H. H., Zaha, V. G., Gusseva, M.
SPRINGER INTERNATIONAL PUBLISHING AG.2025: 186-196
- **Evaluating the Effect of Post-processing Steps When Analyzing Cardiac Diffusion Tensor Data**
Cork, T. E., Hannum, A. J., Loecher, M., Perotti, L. E., Ennis, D. B.
edited by Chabiniok, R., Zou, Q., Hussain, T., Nguyen, H. H., Zaha, V. G., Gusseva, M.
SPRINGER INTERNATIONAL PUBLISHING AG.2025: 137-149
- **Phase stabilization with motion compensated diffusion weighted imaging.** *Magnetic resonance in medicine*
Hannum, A. J., Cork, T. E., Setsompop, K., Ennis, D. B.
2024
- **A deep learning approach for fast muscle water T2 mapping with subject specific fat T2 calibration from multi-spin-echo acquisitions.** *Scientific reports*
Barbieri, M., Hooijmans, M. T., Moulin, K., Cork, T. E., Ennis, D. B., Gold, G. E., Kogan, F., Mazzoli, V.
2024; 14 (1): 8253
- **Hemodynamic effects of entry and exit tear size in aortic dissection evaluated with in vitro magnetic resonance imaging and fluid-structure interaction simulation.** *Scientific reports*
Zimmermann, J., Bäumlner, K., Loecher, M., Cork, T. E., Marsden, A. L., Ennis, D. B., Fleischmann, D.
2023; 13 (1): 22557
- **Hemodynamic Effects of Entry and Exit Tear Size in Aortic Dissection Evaluated with In Vitro Magnetic Resonance Imaging and Fluid-Structure Interaction Simulation.** *ArXiv*
Zimmermann, J., Bäumlner, K., Loecher, M., Cork, T. E., Marsden, A. L., Ennis, D. B., Fleischmann, D.
2023
- **Validating MRI-Derived Myocardial Stiffness Estimates Using In Vitro Synthetic Heart Models.** *Annals of biomedical engineering*
Kolawole, F. O., Peirlinck, M., Cork, T. E., Levenston, M., Kuhl, E., Ennis, D. B.
2023
- **Evaluation of Patient Positioning to Mitigate RF-induced Heating of Cardiac Implantable Electronic Devices for Pediatric MRI Exams.** *Annual International Conference of the IEEE Engineering in Medicine and Biology Society. IEEE Engineering in Medicine and Biology Society. Annual International Conference*

- Martinez, J. A., Cork, T. E., Chubb, H., Vasanaawala, S., Ennis, D. B.
2021; 2021: 5027-5030
- **Cardiac cine CT approaching 1mSv: implementation and assessment of a 58-ms temporal resolution protocol.** *The international journal of cardiovascular imaging*
Choi, Y. J., Ahlman, M. A., Mallek, M., Cork, T. E., Chen, M. Y., Bluemke, D. A., Sandfort, V.
2020
 - **Estimating cardiomyofiber strain in vivo by solving a computational model.** *Medical image analysis*
Perotti, L. E., Verzhbinsky, I. A., Moulin, K. n., Cork, T. E., Loecher, M. n., Balzani, D. n., Ennis, D. B.
2020; 68: 101932
 - **Estimating Aggregate Cardiomyocyte Strain Using In Vivo Diffusion and Displacement Encoded MRI.** *IEEE transactions on medical imaging*
Verzhbinsky, I. A., Perotti, L. E., Moulin, K. n., Cork, T. E., Loecher, M. n., Ennis, D. B.
2019
 - **High-Resolution Ex Vivo Microstructural MRI After Restoring Ventricular Geometry via 3D Printing.** *Functional imaging and modeling of the heart : ... International Workshop, FIMH ..., proceedings. FIMH*
Cork, T. E., Perotti, L. E., Verzhbinsky, I. A., Loecher, M. n., Ennis, D. B.
2019; 11504: 177–86
 - **Quarter-millimeter spectral coronary stent imaging with photon-counting CT: Initial experience.** *Journal of cardiovascular computed tomography*
Symons, R., De Bruecker, Y., Roosen, J., Van Camp, L., Cork, T. E., Kappler, S., Ulzheimer, S., Sandfort, V., Bluemke, D. A., Pourmorteza, A.
2018; 12 (6): 509-515
 - **Photon-Counting Computed Tomography for Vascular Imaging of the Head and Neck First In Vivo Human Results** *INVESTIGATIVE RADIOLOGY*
Symons, R., Reich, D. S., Bagheri, M., Cork, T. E., Krauss, B., Ulzheimer, S., Kappler, S., Bluemke, D. A., Pourmorteza, A.
2018; 53 (3): 135–42
 - **Optimized energy of spectral coronary CT angiography for coronary plaque detection and quantification** *JOURNAL OF CARDIOVASCULAR COMPUTED TOMOGRAPHY*
Symons, R., Choi, Y., Cork, T. E., Ahlman, M. A., Mallek, M., Bluemke, D. A., Sandfort, V.
2018; 12 (2): 108–14
 - **Photon-Counting CT of the Brain: In Vivo Human Results and Image-Quality Assessment** *AMERICAN JOURNAL OF NEURORADIOLOGY*
Pourmorteza, A., Symons, R., Reich, D. S., Bagheri, M., Cork, T. E., Kappler, S., Ulzheimer, S., Bluemke, D. A.
2017; 38 (12): 2257–63
 - **Photon-counting CT for simultaneous imaging of multiple contrast agents in the abdomen: An in vivo study** *MEDICAL PHYSICS*
Symons, R., Krauss, B., Sahbaee, P., Cork, T. E., Lakshmanan, M. N., Bluemke, D. A., Pourmorteza, A.
2017; 44 (10): 5120–27
 - **Dual-contrast agent photon-counting computed tomography of the heart: initial experience** *INTERNATIONAL JOURNAL OF CARDIOVASCULAR IMAGING*
Symons, R., Cork, T. E., Lakshmanan, M. N., Evers, R., Davies-Venn, C., Rice, K. A., Thomas, M. L., Liu, C., Kappler, S., Ulzheimer, S., Sandfort, V., Bluemke, D. A., Pourmorteza, et al
2017; 33 (8): 1253–61
 - **Low-dose lung cancer screening with photon-counting CT: a feasibility study** *PHYSICS IN MEDICINE AND BIOLOGY*
Symons, R., Cork, T. E., Sahbaee, P., Fuld, M. K., Kappler, S., Folio, L. R., Bluemke, D. A., Pourmorteza, A.
2017; 62 (1): 202–13
 - **Polynomial regression, Area and Length based filtering to remove misclassified pixels acquired in the crack segmentation process of 2D X-ray CT images of tested plaster specimens**
Bhowmik, U., Cork, T., Hudyma, N. W.
edited by Arabnia, H. R., Deligiannidis, L., Tran, Q. N.
IEEE.2015: 437–42