Stanford

John Hickey

Postdoctoral Scholar, Microbiology and Immunology

Curriculum Vitae available Online

Bio

BIO

John Hickey received his PhD in Biomedical Engineering from Johns Hopkins University in 2019, mentored under Dr. Jonathan Schneck and Hai-quan Mao. There he engineered biomaterials to solve challenges facing T cell immunotherapies and was a recipient of the NSF graduate research fellowship, INBT cancer research fellowship, ARCS foundation scholarship, Siebel scholar award, and Young Investigators' Day award. Dr. Hickey is a Postdoctoral Fellow in Dr. Garry Nolan's lab and comes with an interest in technology development that can provide systems-level data to immune responses.

HONORS AND AWARDS

- ACS Postdoctoral Fellowship, American Cancer Society (2020)
- Young Investigators' Day Hans J. Prochaska Award, Johns Hopkins School of Medicine (2019)
- Siebel Scholar, Siebel Foundation (2018)
- JCM Foundation ARCS Scholar, ARCS Foundation (2017)
- Teaching Shark Tank Award, Center for Educational Resources (2016)
- NSF Graduate Research Fellow, National Science Foundation (2015)
- NIH Cancer Nanotechnology Predoctoral Fellow, JHU Institute for Nanobiotechnology (2014)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Biomedical Engineering Society (2017 - present)

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Johns Hopkins University (2019)
- PhD, Johns Hopkins University , Biomedical Engineering (2019)
- BS, Brigham Young University , Chemical Engineering (2013)

STANFORD ADVISORS

- Garry Nolan, Postdoctoral Faculty Sponsor

LINKS

- Personal Site: https://sites.google.com/view/john-w-hickey/home?authuser=0
- Nolan Lab Site: http://web.stanford.edu/group/nolan/index.html
- LinkedIn Profile: www.linkedin.com/in/johnhickey22

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I am interested in engineering and using tools which can capture the complex interactions of the immune system more holistically. Understanding the immune system at a systems level will be even more critical as we try to engineer it for therapy. This will enable unique innovations in therapies overcoming several challenges of current immunotherapies: (1) ineffective for a large subset of patients, (2) non-specific, causing immunocompromised or autoimmune states, (3) costly, (4) not well modeled or predicted by in vitro tests and animal models, and (5) treat symptoms rather than cure disease.

Publications

PUBLICATIONS

- **Multicellular modules as clinical diagnostic and therapeutic targets.** *Trends in cancer*
  Baertsch, M., Nolan, G. P., Hickey, J. W.
  2021

- **Spatial mapping of protein composition and tissue organization: a primer for multiplexed antibody-based imaging.** *Nature methods*
  Hickey, J. W., Neumann, E. K., Radtke, A. J., Camarillo, J. M., Beuschel, R. T., Albanese, A., McDonough, E., Hatler, J., Wiblin, A. E., Fisher, J., Croteau, J., Small, E. C., Sood, et al
  2021

- **CODEX multiplexed tissue imaging with DNA-conjugated antibodies.** *Nature protocols*
  Black, S., Phillips, D., Hickey, J. W., Kennedy-Darling, J., Venkataraaman, V. G., Samusik, N., Goltsev, Y., Schurch, C. M., Nolan, G. P.
  2021

- **Highly multiplexed tissue imaging using repeated oligonucleotide exchange reaction.** *European journal of immunology*
  Kennedy-Darling, J. n., Bhate, S. S., Hickey, J. W., Black, S. n., Barlow, G. L., Vazquez, G. n., Venkataraaman, V. G., Samusik, N. n., Goltsev, Y. n., Schürch, C. M., Nolan, G. P.
  2021

- **Strategies for Accurate Cell Type Identification in CODEX Multiplexed Imaging Data.** *Frontiers in immunology*
  Hickey, J. W., Tan, Y., Nolan, G. P., Goltsev, Y.
  2021; 12: 727626

- **Adaptive Nanoparticle Platforms for High Throughput Expansion and Detection of Antigen-Specific T cells** *NANO LETTERS*
  Hickey, J. W., Isser, A., Salathe, S. F., Gee, K. M., Hsiao, M., Shaikh, W., Uzoukwu, N. C., Bieler, J., Mao, H., Schneck, J. P.
  2020; 20 (9): 6289–98

- **Engineering an Artificial T-Cell Stimulating Matrix for Immunotherapy** *ADVANCED MATERIALS*
  Hickey, J. W., Dong, Y., Chung, J., Salathe, S. F., Pruitt, H. C., Li, X., Chang, C., Fraser, A. K., Bessell, C. A., Ewald, A. J., Gerecht, S., Mao, H., Schneck, et al
  2019; 31 (23)

- **Efficient magnetic enrichment of antigen-specific T cells by engineering particle properties** *BIOMATERIALS*
  Hickey, J. W., Isser, A. Y., Vicente, F. P., Warner, S. B., Mao, H., Schneck, J. P.
  2018; 187: 105–16

- **Biologically Inspired Design of Nanoparticle Artificial Antigen-Presenting Cells for Immunomodulation** *NANO LETTERS*
  Hickey, J. W., Vicente, F. P., Howard, G. P., Mao, H., Schneck, J. P.
  2017; 17 (11): 7045–54

- **Rhesus Macaque CODEX Multiplexed Immunohistochemistry Panel for Studying Immune Responses During Ebola Infection** *FRONTIERS IN IMMUNOLOGY*
  Jiang, S., Mukherjee, N., Bennett, R. S., Chen, H., Logue, J., Dighero-Kemp, B., Kurtz, J. R., Adams, R., Phillips, D., Schuerch, C. M., Goltsev, Y., Hickey, J. W., McCaffrey, et al
  2021; 12: 729845

- **Anatomical structures, cell types and biomarkers of the Human Reference Atlas.** *Nature cell biology*

Borner, K., Teichmann, S. A., Quardokus, E. M., Gee, J. C., Browne, K., Osumi-Sutherland, D., Herr, B. W., Bueckle, A., Paul, H., Haniffa, M., Jardine, L., Bernard, A., Ding, et al
2021; 23 (11): 1117-1128

- **INTRAEPITHELIAL GROUP 1 INNATE LYMPHOID CELLS GENERATED IN VITRO EXHIBIT ENHANCED CYTOTOXICITY AND INFILTRATION INTO SOLID TUMOROIDS**
  Horowitz, N., Hickey, J., Sunwoo, J.
  BMJ PUBLISHING GROUP.2021: A193
- **T CELL PHENOTYPE DRIVES RESTRUCTURING OF TUMOR MICROENVIRONMENT TO BALANCE T CELL LONGEVITY AND TUMOR CONTROL: INSIGHTS FROM MULTIPLEXED IMAGING AND MULTI-SCALE AGENT BASED MODELING**
  Hickey, J., Nolan, G., Covert, M., Agmon, E., Horowitz, N., Sunwoo, J.
  BMJ PUBLISHING GROUP.2021: A192
- **Application of machine learning in understanding atherosclerosis: Emerging insights.** *APL bioengineering*
  Munger, E., Hickey, J. W., Dey, A. K., Jafri, M. S., Kinser, J. M., Mehta, N. N.
  2021; 5 (1): 011505
- **Improving Biomedical Engineering Undergraduate Learning Through Use of Online Graduate Engineering Courses During the COVID-19 Pandemic.** *Biomedical engineering education*
  Nesmith, J. E., Hickey, J. W., Haase, E.
  2021: 1–8
- **Biodegradable Cationic Polymer Blends for Fabrication of Enhanced Artificial Antigen Presenting Cells to Treat Melanoma.** *ACS applied materials & interfaces*
  Rhodes, K. R., Isser, A. n., Hickey, J. W., Ben-Akiva, E. n., Meyer, R. A., Kosmides, A. K., Livingston, N. K., Tzeng, S. Y., Schneck, J. P., Green, J. J.
  2021
- **Commensal bacteria stimulate antitumor responses via T cell cross-reactivity.** *JCI insight*
  Bessell, C. A., Isser, A., Havel, J. J., Lee, S., Bell, D. R., Hickey, J. W., Chaisawangwong, W., Glick Bieler, J., Srivastava, R., Kuo, F., Purohit, T., Zhou, R., Chan, et al
  2020; 5 (8)
- **Collagen fiber structure guides 3D motility of cytotoxic T lymphocytes** *MATRIX BIOLOGY*
  Pruitt, H. C., Lewis, D., Ciccaglione, M., Connor, S., Smith, Q., Hickey, J. W., Schneck, J. P., Gerecht, S.
  2020; 85-86: 147–59
- **Collagen fiber structure guides 3D motility of cytotoxic T lymphocytes.** *Matrix biology : journal of the International Society for Matrix Biology*
  Pruitt, H. C., Lewis, D. n., Ciccaglione, M. n., Connor, S. n., Smith, Q. n., Hickey, J. W., Schneck, J. P., Gerecht, S. n.
  2019
- **Enrich and Expand Rare Antigen-specific T Cells with Magnetic Nanoparticles** *JOVE-JOURNAL OF VISUALIZED EXPERIMENTS*
  Hickey, J. W., Schneck, J. P.
  2018
- **Separating T Cell Targeting Components onto Magnetically Clustered Nanoparticles Boosts Activation** *NANO LETTERS*
  Kosmides, A. K., Necochea, K., Hickey, J. W., Schneck, J. P.
  2018; 18 (3): 1916–24
- **Engineering Platforms for T Cell Modulation** *BIOLOGY OF T CELLS, PT A*
  Hickey, J. W., Kosmides, A. K., Schneck, J. P., Galluzzi, L., Rudqvist, N. P.
  2018; 341: 277–362
- **Biomimetic Artificial Antigen Presenting Cells Synergize with Anti-PD1 in the Treatment of Melanoma**
  Meyer, R. A., Kosmides, A. K., Hickey, J. W., Aje, K., Cheung, K., Schneck, J. P., Green, J. J.
  CELL PRESS.2017: 269–70
- **Biomimetic biodegradable artificial antigen presenting with PD-1 blockade to treat melanoma cells synergize** *BIOMATERIALS*
  Kosmides, A. K., Meyer, R. A., Hickey, J. W., Aje, K., Cheung, K. N., Green, J. J., Schneck, J. P.
  2017; 118: 16–26

- **Control of polymeric nanoparticle size to improve therapeutic delivery** *JOURNAL OF CONTROLLED RELEASE*
  Hickey, J. W., Santos, J., Williford, J., Mao, H.
  2015; 219: 536–47

- **Prevention and Removal of Lipid Deposits by Lens Care Solutions and Rubbing** *OPTOMETRY AND VISION SCIENCE*
  Tam, N., Pitt, W. G., Perez, K. X., Hickey, J. W., Glenn, A. A., Chinn, J., Liu, X., Maziarz, E.
  2014; 91 (12): 1430–39

- **The role of multi-purpose solutions in prevention and removal of lipid depositions on contact lenses** *CONTACT LENS & ANTERIOR EYE*
  Tam, N., Pitt, W. G., Perez, K. X., Handly, E., Glenn, A. A., Hickey, J. W., Larsen, B. G.
  2014; 37 (6): 405–14

- **Metallization of Branched DNA Origami for Nanoelectronic Circuit Fabrication** *ACS NANO*
  Liu, J., Geng, Y., Pound, E., Gyawali, S., Ashton, J. R., Hickey, J., Woolley, A. T., Harb, J. N.
  2011; 5 (3): 2240-2247