Stanford



Artem A. Trotsyuk, Ph.D.

Postdoctoral Scholar, Genetics

Bio

BIO

Dr. Artem A. Trotsyuk is an AI Fellow in the Department of Genetics at Stanford University and an AI Special Projects Fellow at the Hoover Institution. He earned his PhD in Bioengineering and a Master's in Computer Science with an AI specialization at Stanford, under the supervision of Dr. Geoffrey Gurtner in the Department of Surgery. He was co-advised by Dr. Zhenan Bao (Chemical Engineering), Dr. Russ Altman (Bioengineering and Medicine), and Dr. Michael Snyder (Genetics). His doctoral research focused on developing a smart bandage that integrates a closed-loop AI processing system for wound sensing and therapeutic delivery. His current work centers on evaluating AI tools in biomedicine, as well as special projects related to security, intent capture, and persona modeling.

PROFESSIONAL EDUCATION

- Doctor of Philosophy, Stanford University , BIOE-PHD (2022)
- Master of Science, Stanford University , CS-MS (2022)
- Bachelor of Science, University of California, Davis , Biological Sciences

STANFORD ADVISORS

- Michael Snyder, Postdoctoral Faculty Sponsor

LINKS

- Google Scholar: https://scholar.google.com/citations?user=YOI-9uoAAAAJ&hl=en

Teaching

COURSES

2024-25

- AI for Beginners: GENE 231 (Spr)
- BioEntrepreneurship Bootcamp: BIOE 396 (Spr)
- Healthcare Entrepreneurship: GENE 134, GENE 234 (Aut)
- How We Age: GENE 229 (Win)

2023-24

- AI for Beginners: GENE 231 (Win)
- Aging: Science and Technology for Longevity: GENE 223 (Spr)
- Healthcare Venture Capital: GENE 225 (Aut)

Publications

PUBLICATIONS

- **Mitigating Bias in Sepsis Risk Prediction Models: Insights from a Stakeholder-Based Ethical Assessment.** *The American journal of bioethics : AJOB*
  Djiberou Mahamadou, A. J., Trotsyuk, A. A., Downing, N. L., Char, D., Mello, M. M.
  2026; 26 (2): 124-126

- **The AI Arms Race In Health Insurance Utilization Review: Promises Of Efficiency And Risks Of Supercharged Flaws.** *Health affairs (Project Hope)*
  Mello, M. M., Trotsyuk, A. A., Mahamadou, A. J., Char, D.
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- **Targeting circulating mechanoresponsive monocytes and macrophages to reduce fibrosis.** *Nature biomedical engineering*
  Chen, K., Griffin, M., Henn, D., Berryman, K. S., Sivaraj, D., Kussie, H. C., Bonham, C. A., McKenna, E., Mora Pinos, M. G., Alsharif, A. M., Saenz, F., Matthews, N. E., Jafri, et al
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- **Advances in Therapeutics for Chronic Lung Diseases: From Standard Therapies to Emerging Breakthroughs** *JOURNAL OF CLINICAL MEDICINE*
  Brewer, K. D., Santo, N. V., Samanta, A., Nag, R., Trotsyuk, A. A., Rajadas, J.
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- **Revisiting Technical Bias Mitigation Strategies.** *Annual review of biomedical data science*
  Mahamadou, A. J., Trotsyuk, A. A.
  2025

- **Algorithmic Fairness Beyond Legally Protected Groups and When Group Labels Are Unknown**
  Mahamadou, A. D., Gichoya, J. W., Trotsyuk, A. A.
  edited by Burton, E., Mattei, N., Paez, A.
  ASSOC ADVANCEMENT ARTIFICIAL INTELLIGENCE.2025: 692-704

- **Toward a framework for risk mitigation of potential misuse of artificial intelligence in biomedical research.** *Nature machine intelligence*
  Trotsyuk, A. A., Waeiss, Q., Bhatia, R. T., Aponte, B. J., Heffernan, I. M., Madgavkar, D., Felder, R. M., Lehmann, L. S., Palmer, M. J., Greely, H., Wald, R., Goetz, L., Trengove, et al
  2024; 6 (12): 1435-1442

- **Toward a framework for risk mitigation of potential misuse of artificial intelligence in biomedical research** *NATURE MACHINE INTELLIGENCE*
  Trotsyuk, A. A., Waeiss, Q., Bhatia, R., Aponte, B. J., Heffernan, I. M. L., Madgavkar, D., Felder, R., Lehmann, L., Palmer, M. J., Greely, H., Wald, R., Goetz, L., Trengove, et al
  2024

- **Biomedical Data Science, Artificial Intelligence, and Ethics: Navigating Challenges in the Face of Explosive Growth.** *Annual review of biomedical data science*
  Federico, C. A., Trotsyuk, A. A.
  2024

- **Unreliable LLM Bioethics Assistants: Ethical and Pedagogical Risks.** *The American journal of bioethics : AJOB*
  Goetz, L., Trengove, M., Trotsyuk, A., Federico, C. A.
  2023; 23 (10): 89-91

- **Allometrically scaling tissue forces drive pathological foreign-body responses to implants via Rac2-activated myeloid cells.** *Nature biomedical engineering*
  Padmanabhan, J., Chen, K., Sivaraj, D., Henn, D., Kuehlmann, B. A., Kussie, H. C., Zhao, E. T., Kahn, A., Bonham, C. A., Dohi, T., Beck, T. C., Trotsyuk, A. A., Stern-Buchbinder, et al
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- **Stronger regulation of AI in biomedicine.** *Science translational medicine*
  Trotsyuk, A. A., Federico, C. A., Cho, M. K., Altman, R. B., Magnus, D.

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- **Cas9-mediated knockout of Ndrg2 enhances the regenerative potential of dendritic cells for wound healing.** *Nature communications*
  Henn, D., Zhao, D., Sivaraj, D., Trotsyuk, A., Bonham, C. A., Fischer, K. S., Kehl, T., Fehlmann, T., Greco, A. H., Kussie, H. C., Moortgat Illouz, S. E., Padmanabhan, J., Barrera, et al
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- **Time From Authorization by the US Food and Drug Administration to Medicare Coverage for Novel Technologies.** *JAMA health forum*
  Sexton, Z. A., Perl, J. R., Saul, H. R., Trotsyuk, A. A., Pietzsch, J. B., Ruggles, S. W., Nikolov, M. C., Schulman, K. A., Makower, J.
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- **Robotics in Plastic Surgery: It's Here.** *Plastic and reconstructive surgery*
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- **Blockchain, Information Security, Control, and Integrity - Who Is in Charge?** *Plastic and reconstructive surgery*
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- **Nitric oxide-releasing gel accelerates healing in a diabetic murine splinted excisional wound model.** *Frontiers in medicine*
  Sivaraj, D., Noishiki, C., Kosaric, N., Kiwanuka, H., Kussie, H. C., Henn, D., Fischer, K. S., Trotsyuk, A. A., Greco, A. H., Kuehlmann, B. A., Quintero, F., Leeolou, M. C., Granoski, et al
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- **Sensor-enabled Multilayer Artificial Intelligence Analysis for Predictive Wound Healing and Real-Time Patient Monitoring**
  Trotsyuk, A. A., Jing, S., Chen, K., Henn, D., Jiang, Y., Niu, S., Sivaraj, D., Nag, R., Snyder, M., bao, Z., Gurtner, G. C.
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- **Interrogation of Wound Healing with Single Cell Analysis using a Wireless Smart Bandage**
  Trotsyuk, A. A., Jiang, Y., Niu, S., Chen, K., Henn, D., Sivaraj, D., Bao, Z., Gurtner, G. C.
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- **Outcomes of Biosynthetic and Synthetic Mesh in Ventral Hernia Repair.** *Plastic and reconstructive surgery. Global open*
  Sivaraj, D., Fischer, K. S., Kim, T. S., Chen, K., Tigchelaar, S. S., Trotsyuk, A. A., Gurtner, G. C., Lee, G. K., Henn, D., Nazerali, R. S.
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- **Healing chronic wounds with a wireless smart bandage with integrated sensors and stimulators** *NATURE BIOTECHNOLOGY*
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- **Characterization of Mechanoresponsive Inflammatory Cells during Wound Healing**
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- **Disrupting mechanotransduction decreases fibrosis and contracture in split-thickness skin grafting.** *Science translational medicine*
  Chen, K., Henn, D., Januszyk, M., Barrera, J. A., Noishiki, C., Bonham, C. A., Griffin, M., Tevlin, R., Carlomagno, T., Shannon, T., Fehlmann, T., Trotsyuk, A. A., Padmanabhan, et al
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- **Pullulan-Collagen Hydrogel Wound Dressing Promotes Dermal Remodeling and Wound Healing Compared to Commercially Available Collagen Dressings.** *Wound repair and regeneration : official publication of the Wound Healing Society [and] the European Tissue Repair Society*
  Chen, K., Sivaraj, D., Davitt, M., Leeolou, M. C., Henn, D., Steele, S. R., Huskins, S. L., Trotsyuk, A. A., Kussie, H. C., Greco, A., Padmanabhan, J., Perrault, D. P., Zamaleeva, et al

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- **Topological supramolecular network enabled high-conductivity, stretchable organic bioelectronics.** *Science (New York, N.Y.)*
  Jiang, Y., Zhang, Z., Wang, Y. X., Li, D., Coen, C. T., Hwaun, E., Chen, G., Wu, H. C., Zhong, D., Niu, S., Wang, W., Saberi, A., Lai, et al
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  Henn, D., Fischer, K. S., Chen, K., Greco, A. H., Martin, R. A., Sivaraj, D., Trotsyuk, A. A., Mao, H., Reddy, S. K., Kneser, U., Gurtner, G. C., Schmidt, V. J., Sacks, et al
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- **Mechanical Signaling Mediated by IQGAP1 Promotes Pathologic Foreign Body Response**
  Sivaraj, D., Padmanabhan, J., Chen, K., Henn, D., Kussie, H. C., Leeolou, M. C., Trotsyuk, A. A., Fischer, K., Perrault, D., Gurtner, G. C.
  WILEY.2022: A21

- **Application of No Releasing Gel Increases Fibronectin, TGF-beta 1, and Accelerates Wound Healing in Diabetic Mice**
  Noishiki, C., Sivaraj, D., Kosaric, N., Leeolou, M. C., Kussie, H. C., Kiwanuka, H., Henn, D., Fischer, K., Trotsyuk, A. A., Padmanabhan, J., Perrault, D., Murad, F., Chen, et al
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- **Determining How Early Disruption Of Mechanotransduction Affects Acute Wound Healing**
  Kussie, H. C., Sivaraj, D., Leeolou, M. C., Huskins, S. L., Steele, S., Henn, D., Trotsyuk, A. A., Gurtner, G. C., Chen, K.
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- **Interactions Of Fibroblasts Versus Macrophages In An In Vitro Model Of Scar Formation And Wound Healing**
  Huskins, S. L., Griffin, M., Steele, S., Thomas, B., Kussie, H. C., Sivaraj, D., Leeolou, M. C., Trotsyuk, A. A., Padmanabhan, J., Longaker, M. T., Gurtner, G. C., Chen, K.
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- **Pullulan-Collagen Hydrogel Wound Dressing Promotes Dermal Remodeling and Healing in an Excisional Wound Model**
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  WILEY.2022: A24

- **Characterization of Mechanoresponsive Inflammatory Cells during Wound Healing**
  Chen, K., Griffin, M., Henn, D., Bonham, C. A., Fischer, K., Padmanabhan, J., Trotsyuk, A. A., Sivaraj, D., Leeolou, M. C., Kussie, H. C., Huskins, S. L., Steele, S., Perrault, et al
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- **Galvanotactic Smart Bandage for Chronic Wound Management and Tissue Regeneration**
  Trotsyuk, A. A., Jiang, Y., Niu, S., Henn, D., Chen, K., Larson, M., Beard, E., Saberi, A., Sivaraj, D., Mermin-Bunnell, A., Mittal, S., Jing, S., Kwon, et al
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- **Allometric Tissue-Scale Forces Activate Mechanoresponsive Immune Cells To Drive Pathological Foreign Body Response To Biomedical Implants**
  Padmanabhan, J., Chen, K., Sivaraj, D., Kuehlmann, B., Bonham, C., Dohi, T., Henn, D., Stern-Buchbinder, Z., Than, P., Hosseini, H., Barrera, J., Kussie, H., Magbual, et al
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- **Characterization of Mechanoresponsive Inflammatory Cells during Wound Healing**
  Chen, K., Griffin, M., Henn, D., Bonham, C. A., Fischer, K., Padmanabhan, J., Trotsyuk, A. A., Sivaraj, D., Leeolou, M. C., Kussie, H. C., Huskins, S. L., Steele, S., Perrault, et al
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- **IQGAP1-mediated mechanical signaling promotes the foreign body response to biomedical implants.** *FASEB journal : official publication of the Federation of American Societies for Experimental Biology*
  Sivaraj, D., Padmanabhan, J., Chen, K., Henn, D., Noishiki, C., Trotsyuk, A. A., Kussie, H. C., Leeolou, M. C., Magbual, N. J., Andrikopoulos, S., Perrault, D. P., Barrera, J. A., Januszyk, et al
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- **Inhibiting Fibroblast Mechanotransduction Modulates Severity of Idiopathic Pulmonary Fibrosis.** *Advances in wound care*
  Trotsyuk, A. A., Chen, K., Kwon, S. H., Ma, K. C., Henn, D., Mermin-Bunnell, A. M., Mittal, S., Padmanabhan, J., Larson, M. R., Steele, S. R., Sivaraj, D., Bonham, C. A., Noishiki, et al
  2021

- **Mechanical Strain Drives Myeloid Cell Differentiation Toward Pro-Inflammatory Subpopulations.** *Advances in wound care*
  Chen, K., Henn, D., Sivaraj, D., Bonham, C. A., Griffin, M., Choi Kussie, H., Padmanabhan, J., Trotsyuk, A. A., Wan, D. C., Januszyk, M., Longaker, M. T., Gurtner, G. C.
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- **Mechanical Activation Of Inflammation At The Implant-tissue Interface Underlies Pathological Foreign Body Response**
  Padmanabhan, J., Chen, K., Bonham, C. A., Kuehlmann, B. A., Dohi, T., Henn, D., Stern-Buchbinder, Z. A., Than, P. A., Hosseini, H. S., Magbual, N. J., Borrelli, M., Sivaraj, D., Trotsyuk, et al
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- **CRISPR/Cas9 Editing Of Autologous Dendritic Cells To Enhance Angiogenesis And Wound Healing**
  Henn, D., Zhao, D., Bonham, C. A., Chen, K., Greco, A. H., Padmanabhan, J., Sivaraj, D., Trotsyuk, A., Barrera, J. A., Januszyk, M., Qi, L., Gurtner, G. C.
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- **Disrupting Mechanotransduction Reduces Scar Formation And Restores Cellular Subpopulations In A Large Animal Model Of Skin Grafting**
  Chen, K., Henn, D., Bonham, C. A., Noishiki, C., Barrera, J. A., Carlomagno, T. C., Shannon, T., Mays, C. J., Trotsyuk, A. A., Padmanabhan, J., Longaker, M. T., Januszyk, M., Gurtner, et al
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- **Adipose-derived stromal cells seeded in pullulan-collagen hydrogels improve healing in murine burns.** *Tissue engineering. Part A*
  Barrera, J., Trotsyuk, A., Maan, Z. N., Bonham, C. A., Larson, M. R., Mittermiller, P. A., Henn, D., Chen, K., Mays, C. J., Mittal, S., Mermin-Bunnell, A. M., Sivaraj, D., Jing, et al
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  Kwon, S., Kuehlmann, B., Dohi, T., Trotsyuk, A. A., Hu, M. S., Inayathullah, M., Rajadas, J., Longaker, M. T., Gurtner, G. C.
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  Duscher, D. n., Trotsyuk, A. A., Maan, Z. N., Kwon, S. H., Rodrigues, M. n., Engel, K. n., Stern-Buchbinder, Z. A., Bonham, C. A., Whittam, A. J., Barrera, J. n., Hu, M. S., Inayathullah, M. n., Rajadas, et al
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  Johnston, B. H., Ilves, H., Trotsyuk, A., Rodrigues, M., White, A., Mandell, K., Hammond, P. T., Gurtner, G. C., Dallas, A.
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  Bonham, C. A., Rodrigues, M., Galvez, M., Trotsyuk, A., Stern-Buchbinder, Z., Inayathullah, M., Rajadas, J., Gurtner, G. C.
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- **Controlled Delivery of a Focal Adhesion Kinase Inhibitor Results in Accelerated Wound Closure with Decreased Scar Formation.** *The Journal of investigative dermatology*
  Ma, K. n., Kwon, S. H., Padmanabhan, J. n., Duscher, D. n., Trotsyuk, A. A., Dong, Y. n., Inayathullah, M. n., Rajadas, J. n., Gurtner, G. C.
  2018

- **Acceleration of Diabetic Wound Healing with PHD2- and miR-210-targeting Oligonucleotides.** *Tissue engineering. Part A*
  Dallas, A. n., Trotsyuk, A. n., Ilves, H. n., Bonham, C. A., Rodrigues, M. n., Engel, K. n., Barrera, J. A., Kosaric, N. n., Stern-Buchbinder, Z. A., White, A. n., Mandell, K. J., Hammond, P. n., Mansbridge, et al
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- **Allogeneic Cd26/Cd55 Cell Therapy for Treating Burn Wounds**
  Trotsyuk, A., Rodrigues, M., Bonham, C., Mittermiller, P., Gurtner, G.
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