Stanford



Stylianos (Stelios) Serghiou

Assistant Professor of Epidemiology and Population Health and of Medicine (Computational Medicine)

Bio

BIO

Stylianos (Stelios) Serghiou, MD, MS, PhD, is an Assistant Professor of Epidemiology and Population Health and of Medicine (Computational Medicine) at Stanford University. His lab develops and deploys the methods and technologies needed to make high-quality care proactive, personalized, continuous, and accessible at scale.

Medicine remains organized around the episodic visit. Care often begins when symptoms appear, decisions rest on sparse and fragmented records, and the evidence base exceeds any clinician's capacity to assimilate it. Meanwhile, patients' physiology, behavior, and experience between visits remain largely unobserved. Continuous, multimodal data and AI systems capable of interpreting them at scale now make an alternative attainable. Stelios's research aims to translate that possibility into rigorously validated practice: care embedded in daily life, tailored to the individual, and continually improved through evidence generated in practice.

Stelios trained in medicine at the University of Edinburgh, graduating with honors in the top 10% of his class, and practiced as an Academic Foundation Doctor with NHS Lothian before earning an MS in Statistics and a PhD in Epidemiology and Clinical Research at Stanford, where he was a Data Science Scholar. As one of four AI Residents at Google Health, he applied machine learning to public health at national and international scales. His work included exposure risk modeling for the Google-Apple COVID-19 Exposure Notification System and quantifying urban park use across the United States at the census-tract level.

He then joined Prolaio, a cardiology startup, as its first employee and Vice President of Clinical Data Science. He built the data science team from the ground up and led development of its flagship pipeline, integrating wearable signals and clinical records to support risk prediction, LLM-generated clinical summaries, and the company's first clinical decision support product for heart failure.

Stelios is committed to carrying innovation into clinical practice. His lab pursues the full translational lifecycle, moving from data to evidence, from evidence to technology, and from technology to products validated, deployed, and evaluated in clinical workflows. He has released open-source R packages (rtransparent, clinicaltrialr, and metareadr), with applications extending as far as evolutionary biology, and collaborated with clinical groups across cardiology, neurosurgery, pediatrics, ophthalmology, and gastroenterology.

A longstanding commitment to transparent, rigorous, and reproducible research runs through this work. With John Ioannidis, Stelios developed computational methods to study the biomedical literature at scale, mapping indicators of transparency across 2.75 million open-access articles. He also

coauthored a practitioner's handbook on open, rigorous, and reproducible research and teaches these practices at Stanford. His lab now extends this agenda to clinical AI, investigating how agentic systems can embed rigor and reproducibility throughout clinical research workflows.

His work has been recognized with the Journal of Clinical Epidemiology's David Sackett Young Investigator of the Year Award, a Stanford Data Science Scholarship, and selection for the Google Health AI Residency. He serves on the editorial board of the Journal of Clinical Epidemiology and has received awards for outstanding peer review from Annals of Internal Medicine, the Journal of Clinical Epidemiology, and the Machine Learning for Health (ML4H) conference.

The lab is actively recruiting postdoctoral fellows, students at every level, clinicians, and engineers who wish to shape its work from the start. Learn more at https://serghioulab.org/.

ACADEMIC APPOINTMENTS

- Assistant Professor, Epidemiology and Population Health
- Assistant Professor, Division of Computational Medicine

HONORS AND AWARDS

- Top Reviewer Award, Annals of Internal Medicine (2023)
- Best Reviewer of the Year, Journal of Clinical Epidemiology (2021)
- Stanford Data Science Scholar, Stanford University (2020)
- David Sackett Young Investigator of the Year, Journal of Clinical Epidemiology (2017)
- Honorary Clinical Fellow, University of Edinburgh (2016)
- Patric-Trevor Award, Royal College of Ophthalmology (2014)
- Intercalated BSc Scholarship, Royal College of Physicians of UK and Ireland (2011)
- AMGEN Scholar, University of Cambridge, AMGEN (2009)

PROFESSIONAL EDUCATION

- PhD, Stanford University , Epidemiology & Clinical Research (2020)
- MS, Stanford University , Statistics (2019)
- Academic Foundation Doctor, NHS Lothian and University of Edinburgh , Medicine (2016)
- MBChB (Honors), University of Edinburgh , Medicine (2015)
- BSc (Hons) Neuroscience, University of Edinburgh , Neuroscience (2012)

LINKS

- Serghiou Lab: http://www.serghioulab.org
- Personal site: https://web.stanford.edu/~sstelios/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The Serghiou Lab develops and rigorously evaluates AI-native systems in real-world settings to make high-quality care proactive, personalized, continuous, and accessible at scale. We integrate longitudinal, multimodal data from clinical records, remote patient monitoring, and patient-reported outcomes with published evidence. Drawing on advances in computer science, statistics, and clinical epidemiology, we translate these sources into clinically reliable tools and actionable knowledge.

Our research spans three complementary directions:

Clinicians. Clinicians make high-stakes decisions from fragmented records, guided by an evidence base no individual can fully assimilate. We develop and evaluate decision support systems that make guideline-directed care the default. Our flagship project addresses statin underuse: millions of eligible U.S. adults are not receiving treatment. We combine longitudinal electronic health records with AI-derived clinical context to identify treatment gaps proactively and test whether this approach changes clinical decisions.

Patients. Patients' daily lives contain information that medicine rarely captures, while their clinical records are often incomplete or inaccurate. In a large survey, one in five patients who read their notes reported an error; more than 40% of those respondents considered it serious. We are developing conversational, agentic systems that elicit and structure clinical histories and patient-reported outcomes. Using statins as our first test case, we investigate whether patient-generated records can identify eligible patients otherwise overlooked, creating a direct path from patient engagement to evidence-based prevention.

Researchers. Clinical research still relies on fragmented, labor-intensive workflows that are often difficult to reproduce. We investigate how agentic systems can serve as scientific companions, orchestrating end-to-end data analysis and evidence synthesis within transparent, auditable, and reproducible pipelines. Our aim is to accelerate the generation and updating of reliable evidence, extending our longstanding work on research rigor and reproducibility to the AI systems being developed to support scientific discovery.

Across all three directions, we pursue the full translational lifecycle: from data to evidence, from evidence to technology, and from technology to products validated, deployed, and evaluated in clinical workflows, with real-world use informing the next cycle of research.

We are actively recruiting doctoral students, as well as postdoctoral fellows, students at every level, clinicians, and engineers.

Publications

PUBLICATIONS

- **CONTINUOUS MONITORING REVEALS DYNAMIC VITAL SIGN STABILIZATION FOLLOWING HEART FAILURE DISCHARGE AND MEDICATION TITRATION**
  Martin, C. M., Sideris, K., Hanff, T., Schmalfuss, C., Lewis, N. P., Sallam, K., Carter, S., Hanson, H., Steinhubl, S. R., Edelberg, J. M., Tison, G. H., Kurio, G., Wegerich, et al
  ELSEVIER SCIENCE INC.2026
- **Clinical Associations with Lenticulostriatal Vasculopathy (LSV) at Birth: A Case-Control Study.** *Children (Basel, Switzerland)*
  Kyriakopoulou, A., Samikos, K., Kanavaki, A., Alexopoulou, E., Argyropoulou, M., Psaltopoulou, T., Kanaka-Gantenbein, C., Dinopoulos, A., Giorgi, M., Antoniadou, A., Filippa, I., Siafakas, N., Serghiou, et al
  2025; 12 (2)
- **Deep Learning for Epidemiologists: An Introduction to Neural Networks.** *American journal of epidemiology*
  Serghiou, S., Rough, K.
  2023; 192 (11): 1904-1916
- **Lessons learnt from registration of biomedical research.** *Nature human behaviour*
  Serghiou, S., Axfors, C., Ioannidis, J. P.
  2023
- **Large Pediatric Randomized Clinical Trials in ClinicalTrials.gov.** *Pediatrics*
  Cho, S. M., Serghiou, S., Ioannidis, J. P., Klassen, T. P., Contopoulos-Ioannidis, D. G.

2021; 148 (3)

- **Media and social media attention to retracted articles according to Altmetric.** *PloS one*
  Serghiou, S. n., Marton, R. M., Ioannidis, J. P.
  2021; 16 (5): e0248625
- **Assessment of transparency indicators across the biomedical literature: How open is open?** *PLoS biology*
  Serghiou, S. n., Contopoulos-Ioannidis, D. G., Boyack, K. W., Riedel, N. n., Wallach, J. D., Ioannidis, J. P.
  2021; 19 (3): e3001107
- **Antenatal imaging and clinical outcome in congenital CMV infection: A field-wide systematic review and meta-analysis** *JOURNAL OF INFECTION*
  Kyriakopoulou, A., Serghiou, S., Dimopoulou, D., Arista, I., Psaltopoulou, T., Dinopoulos, A., Papaevangelou, V.
  2020; 80 (4): 407-418
- **Evaluation of confounding in epidemiologic studies assessing alcohol consumption on the risk of ischemic heart disease.** *BMC medical research methodology*
  Wallach, J. D., Serghiou, S. n., Chu, L. n., Egilman, A. C., Vasiliou, V. n., Ross, J. S., Ioannidis, J. P.
  2020; 20 (1): 64
- **Calibrating the Scientific Ecosystem Through Meta-Research** *Annual Review of Statistics and Its Application*
  Tom, H. E., Stylianos, S., Janiaud, P., Danchev, V., Crüwell, S., Goodman, S. N., Ioannidis, J. P.
  2020; 7
- **Random-Effects Assumption in Meta-analyses-Reply.** *JAMA*
  Goodman, S. N., Serghiou, S.
  2019; 322 (1): 82
- **Use of machine learning for prediction of ocular conservation and visual outcomes after proton beam radiotherapy for choroidal melanoma**
  Serghiou, S., Damato, B. E., Afshar, A. R.
  ASSOC RESEARCH VISION OPHTHALMOLOGY INC.2019
- **New clinical trial designs in the era of precision medicine: An overview of definitions, strengths, weaknesses, and current use in oncology** *CANCER TREATMENT REVIEWS*
  Janiaud, P., Serghiou, S., Ioannidis, J. P. A.
  2019; 73: 20–30
- **Random-EffectsMeta-analysis Summarizing Evidence With Caveats** *JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*
  Serghiou, S., Goodman, S. N.
  2019; 321 (3): 301-302
- **Random-Effects Meta-analysis: Summarizing Evidence With Caveats.** *JAMA*
  Serghiou, S., Goodman, S. N.
  2018
- **New clinical trial designs in the era of precision medicine: An overview of definitions, strengths, weaknesses, and current use in oncology.** *Cancer treatment reviews*
  Janiaud, P., Serghiou, S., Ioannidis, J. P.
  2018; 73: 20–30
- **THE INTERLEUKIN-6 RECEPTOR AS A DRUG TARGET IN INFLAMMATORY BOWEL DISEASE; A MENDELIAN RANDOMISATION STUDY**
  Parisinos, C., Serghiou, S., Patel, R., Hemingway, H., Hingorani, A.
  BMJ PUBLISHING GROUP.2018: A55
- **Altmetric Scores, Citations, and Publication of Studies Posted as Preprints** *JAMA-JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*
  Serghiou, S., Ioannidis, J. P. A.
  2018; 319 (4): 402–3
- **Variation in Interleukin 6 Receptor Gene Associates with Risk of Crohn's Disease and Ulcerative Colitis.** *Gastroenterology*
  Parisinos, C. A., Serghiou, S. n., Katsoulis, M. n., George, M. J., Patel, R. S., Hemingway, H. n., Hingorani, A. D.

2018

- **Curing World Blindness: The Lifeline Express Train**
  Molera, R., Wren, S. M., Serghiou, S., Lee, S., Shields, R. A., Cho, H.
  ELSEVIER SCIENCE INC.2017: S100

- **Long noncoding RNAs as novel predictors of survival in human cancer: a systematic review and meta-analysis** *MOLECULAR CANCER*
  Serghiou, S., Kyriakopoulou, A., Ioannidis, J. P.
  2016; 15

- **Comparative assessment of phototherapy protocols for reduction of oxidative stress in partially transected spinal cord slices undergoing secondary degeneration.** *BMC neuroscience*
  Ashworth, B. E., Stephens, E., Bartlett, C. A., Serghiou, S., Giacci, M. K., Williams, A., Hart, N. S., Fitzgerald, M.
  2016; 17 (1): 21

- **Field-wide meta-analyses of observational associations can map selective availability of risk factors and the impact of model specifications** *JOURNAL OF CLINICAL EPIDEMIOLOGY*
  Serghiou, S., Patel, C. J., Tan, Y. Y., Koay, P., Ioannidis, J. P.
  2016; 71: 58-67

- **Risk of Bias in Reports of In Vivo Research: A Focus for Improvement** *PLOS BIOLOGY*
  Macleod, M. R., McLean, A. L., Kyriakopoulou, A., Serghiou, S., de Wilde, A., Sherratt, N., Hirst, T., Hemblade, R., Bahor, Z., Nunes-Fonseca, C., Potluru, A., Thomson, A., Baginskitae, et al
  2015; 13 (10)