Stanford



Ivana Maric

Assistant Professor (Research) of Pediatrics (Neonatology)

Pediatrics - Neonatology

Bio

BIO

Ivana Maric is an Assistant Professor in the Pediatrics Department at the Stanford University School of Medicine. Her research focuses on applying machine learning to improving maternal and neonatal health. Her main focus has been on developing machine learning models for early prediction of adverse outcomes of pregnancy from omics and electronic health records data, that could guide development of low-cost, point of care diagnostic tools. Her main interest is in solutions that are applicable worldwide and especially in low-resource settings. Previously, her research focused on information theory, a mathematical discipline tightly related to statistics and machine learning. She is a recipient of the 2021 Rosenkranz Prize awarded for innovative work to improve health in low- or middle-income countries. She is also a recipient of the 2026 WSPR Best Global Health Abstract Award, 2025 McCormick Faculty Award, the 2025 Reckitt/Mead Johnson Junior Faculty Award from the Western Society for Pediatric Research (WSPR), and the co-recipient of the 2013 IEEE Communications Society Best Tutorial Paper Award. She received BS degree from the University of Novi Sad, Serbia, MS and PhD at Rutgers University and postdoctoral training at Stanford University.

ACADEMIC APPOINTMENTS

- Assistant Professor-Research, Pediatrics - Neonatology
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)

ADMINISTRATIVE APPOINTMENTS

- Faculty Affiliate, Stanford Center for Digital Health (CDH), (2026- present)
- Faculty Affiliate, King Center on Global Development, (2024- present)

HONORS AND AWARDS

- 2026 WSPR Best Global Health Abstract, Western Society for Pediatric Research (WSPR) (2026)
- 2025 McCormick Faculty Award, Stanford University School of Medicine (2025)
- 2025 Reckitt/Mead Johnson Junior Faculty Award, Western Society for Pediatric Research (WSPR) (2025)
- Rosenkranz Prize, Freeman Spogli Institute for International Studies and Stanford Health Policy, Stanford University (2021)
- IEEE Communications Society Best Tutorial Paper Award, IEEE (2013)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Global Health Faculty Fellow, Center for Innovation in Global Health (CIGH) (2025 - present)
- Member, Society for Pediatric Research (SPR) (2024 - present)
- Member, Western Society for Pediatric Research (WSPR) (2024 - present)

PROFESSIONAL EDUCATION

- PhD, Rutgers University , Electrical Engineering (2006)
- Postdoctoral Scholar, Stanford University , Electrical Engineering (2010)

LINKS

- My Google Scholar Citations: https://scholar.google.com/citations?user=O4pBP40AAAAJ&hl=en
- My lab site: https://mariclab.stanford.edu/

Teaching

STANFORD ADVISEES

Diba Dindoust

Med Scholar Project Advisor

Daniel Diatlov

Postdoctoral Faculty Sponsor

Yeasul (Yera) Kim

Publications

PUBLICATIONS

- **PregMedNet: Multifaceted maternal medication impacts on neonatal complications.** *Nature communications*
  Kim, Y., Marić, I., Kashiwagi, C. M., Han, L., Chung, P., Reiss, J. D., Butcher, L. D., Caoili, K. J., Berson, E., Xue, L., Espinosa, C., James, T., Shome, et al
  2026
- **Large Language Models for Maternal and Neonatal Healthcare in Low- and Middle-Income Countries.** *The Journal of pediatrics*
  Yu, L., Darmstadt, G. L., Ward, V., Wong, R. J., Stevenson, D. K., Maric, I.
  2026: 115037
- **Quantitative assessment of neonatal health using dried blood spot metabolite profiles and deep learning.** *Science translational medicine*
  Chang, A. L., Reiss, J. D., Culos, A., Becker, M., Mayo, J. A., Marić, I., De Francesco, D., Phongpreecha, T., Espinosa, C. A., Mataraso, S. J., Berson, E., Kim, Y., Xue, et al
  2026; 18 (833): eadv4942
- **Development and validation of a pre-trained language model for neonatal morbidities: a retrospective, multicentre, prognostic study.** *The Lancet. Digital health*
  Xie, F., Chung, P., Reiss, J. D., Tjoa, E., De Francesco, D., Phongpreecha, T., Haberkorn, W., Chakraborty, D., Chang, A. L., James, T., Kim, Y., Mataraso, S., Espinosa, et al
  2025: 100926
- **Maternal lipidomic signatures of preterm and small-for-gestational-age newborn infants in low- and middle-income countries.** *Science advances*
  Marić, I., Mahzarnia, A., Mujuru, H. A., Chimhini, G., Saha, S. K., Shameem Hassan, M., Otieno, N. A., Hawken, S., Wilson, K., Shen, X., Lancaster, S., Wong, R. J., Reiss, et al
  2025; 11 (49): eadu9145
- **Predicting Placenta Accreta Spectrum Disorder Through Machine Learning Using Metabolomic and Lipidomic Profiling and Clinical Characteristics.** *Obstetrics and gynecology*
  Miller, S., Lyell, D., Maric, I., Lancaster, S., Sylvester, K., Contrepois, K., Kruger, S., Burgess, J., Stevenson, D., Aghaeepour, N., Snyder, M., Zhang, E., Badillo, et al
  2025; 145 (6): 721-731
- **Predicting Preterm Birth Using Proteomics.** *Clinics in perinatology*

Marić, I., Stevenson, D. K., Aghaeepour, N., Gaudillière, B., Wong, R. J., Angst, M. S.
2024; 51 (2): 391-409

- **Discovery of sparse, reliable omic biomarkers with Stabl.** *Nature biotechnology*
  Hédou, J., Marić, I., Bellan, G., Einhaus, J., Gaudillière, D. K., Ladant, F. X., Verdonk, F., Stelzer, I. A., Feyaerts, D., Tsai, A. S., Ganio, E. A., Sabayev, M., Gillard, et al
  2024

- **Early prediction and longitudinal modeling of preeclampsia from multiomics.** *Patterns (New York, N.Y.)*
  Maric, I., Contrepois, K., Moufarrej, M. N., Stelzer, I. A., Feyaerts, D., Han, X., Tang, A., Stanley, N., Wong, R. J., Traber, G. M., Ellenberger, M., Chang, A. L., Fallahzadeh, et al
  2022; 3 (12): 100655

- **Decreased Mortality Rate Among COVID-19 Patients Prescribed Statins: Data From Electronic Health Records in the US** *Frontiers in Medicine*
  Maric, I., Oskotsky, T., Kosti, I., Le, B., Wong, R. J., Shaw, G. M., Sirota, M., Stevenson, D. K.
  2021; 8

- **Data-Driven Modeling of Pregnancy-Related Complications.** *Trends in molecular medicine*
  Espinosa, C. n., Becker, M. n., Marić, I. n., Wong, R. J., Shaw, G. M., Gaudilliere, B. n., Aghaeepour, N. n., Stevenson, D. K.
  2021

- **Mortality Risk Among Patients With COVID-19 Prescribed Selective Serotonin Reuptake Inhibitor Antidepressants.** *JAMA network open*
  Oskotsky, T., Maric, I., Tang, A., Oskotsky, B., Wong, R. J., Aghaeepour, N., Sirota, M., Stevenson, D. K.
  2021; 4 (11): e2133090

- **Towards personalized medicine in maternal and child health: integrating biologic and social determinants.** *Pediatric research*
  Stevenson, D. K., Wong, R. J., Aghaeepour, N., Maric, I., Angst, M. S., Contrepois, K., Darmstadt, G. L., Druzin, M. L., Eisenberg, M. L., Gaudilliere, B., Gibbs, R. S., Gotlib, I. H., Gould, et al
  2020

- **Early Prediction of Preeclampsia via Machine Learning** *American Journal of Obstetrics & Gynecology MFM*
  Maric, I., Tsur, A., Aghaeepour, N., Montanari, A., Stevenson, D. K., Shaw, G. M., Winn, V. D.
  2020; 2 (2)

- **Prenatal wildfire smoke, first trimester proteome, and subsequent child behavioral outcomes: An exploratory study.** *Environmental research*
  Buthmann, J. L., Aghaeepour, N., Burke, M., Maric, I., Stevenson, D. K., Shaw, G. M., Gotlib, I. H.
  2025; 291: 123577

- **A clinician's musings on oxygen: Too little or too much with life in the balance.** *Journal of perinatology : official journal of the California Perinatal Association*
  Stevenson, D. K., Wong, R. J., Reiss, J. D., Marić, I., Paşca, A. M., Ahern, T. L.
  2025

- **Metabolomic profiling of biomarkers associated with preterm birth from infants in low resource settings using machine learning**
  Ward, V., Maric, I., Adhikari, K., Mujuru, H., Chimhini, G., Otieno, N., Saha, S. K., Hawken, S., Chakraborty, P., Wilson, K., Wong, R. J., Shaw, G. M., Stevenson, et al
  SAGE PUBLICATIONS LTD.2025: 263-264

- **Towards a new taxonomy of preterm birth.** *Journal of perinatology : official journal of the California Perinatal Association*
  Stevenson, D. K., Chang, A. L., Wong, R. J., Reiss, J. D., Gaudillière, B., Sylvester, K. G., Ling, X. B., Angst, M. S., Shaw, G. M., Katz, M., Aghaeepour, N., Marić, I.
  2024

- **Predicting Spontaneous Preterm Birth Using the Immunome.** *Clinics in perinatology*
  Feyaerts, D., Marić, I., Arck, P. C., Prins, J. R., Gomez-Lopez, N., Gaudillière, B., Stelzer, I. A.
  2024; 51 (2): 441-459

- **Hydroxychloroquine in lupus pregnancy and risk of preeclampsia.** *Arthritis & rheumatology (Hoboken, N.J.)*
  Rector, A., Maric, I., Chaichian, Y., Chakravarty, E., Cantu, M., Weisman, M. H., Shaw, G. M., Druzin, M., Simard, J. F.
  2024

- **Deep representation learning identifies associations between physical activity and sleep patterns during pregnancy and prematurity.** *NPJ digital medicine*
  Ravindra, N. G., Espinosa, C., Berson, E., Phongpreecha, T., Zhao, P., Becker, M., Chang, A. L., Shome, S., Marić, I., De Francesco, D., Mataraso, S., Saarunya, G., Thuraiappah, et al
  2023; 6 (1): 171

- **Persistent Bacterial Vaginosis and Risk for Spontaneous Preterm Birth.** *American journal of perinatology*
  Blumenfeld, Y. J., Marić, I., Stevenson, D. K., Gibbs, R. S., Shaw, G. M.
  2023

- **Development of a Urine Metabolomics Biomarker-Based Prediction Model for Preeclampsia during Early Pregnancy.** *Metabolites*
  Zhang, Y., Sylvester, K. G., Jin, B., Wong, R. J., Schilling, J., Chou, C. J., Han, Z., Luo, R. Y., Tian, L., Ladella, S., Mo, L., Maric, I., Blumenfeld, et al
  2023; 13 (6)

- **Multiomic signals associated with maternal epidemiological factors contributing to preterm birth in low- and middle-income countries.** *Science advances*
  Espinosa, C. A., Khan, W., Khanam, R., Das, S., Khalid, J., Pervin, J., Kasaro, M. P., Contrepois, K., Chang, A. L., Phongpreecha, T., Michael, B., Ellenberger, M., Mehmood, et al
  2023; 9 (21): eade7692

- **Postpartum long-acting reversible contraception among privately insured: national analysis 2007-2016, by term and preterm birth.** *Contraception*
  Shaw, J. G., Goldthwaite, L. M., Marić, I., Shaw, K. A., Stevenson, D. K., Shaw, G. M.
  2023: 110065

- **Target-agnostic drug prediction integrated with medical record analysis uncovers differential associations of statins with increased survival in COVID-19 patients.** *PLoS computational biology*
  Sperry, M. M., Oskotsky, T. T., Marić, I., Kaushal, S., Takeda, T., Horvath, V., Powers, R. K., Rodas, M., Furlong, B., Soong, M., Prabhala, P., Goyal, G., Carlson, et al
  2023; 19 (5): e1011050

- **Large-scale correlation network construction for unraveling the coordination of complex biological systems.** *Nature computational science*
  Becker, M., Nassar, H., Espinosa, C., Stelzer, I. A., Feyaerts, D., Berson, E., Bidoki, N. H., Chang, A. L., Saarunya, G., Culos, A., De Francesco, D., Fallahzadeh, R., Liu, et al
  2023; 3 (4): 346-359

- **Breath: The Exhaust of Metabolism.** *The Journal of pediatrics*
  Stevenson, D. K., Marić, I., Wong, R. J.
  2023

- **Data-driven longitudinal characterization of neonatal health and morbidity.** *Science translational medicine*
  De Francesco, D., Reiss, J. D., Roger, J., Tang, A. S., Chang, A. L., Becker, M., Phongpreecha, T., Espinosa, C., Morin, S., Berson, E., Thuraiappah, M., Le, B. L., Ravindra, et al
  2023; 15 (683): eadc9854

- **In-Silico Generation of High-Dimensional Immune Response Data in Patients using a Deep Neural Network.** *Cytometry. Part A : the journal of the International Society for Analytical Cytology*
  Fallahzadeh, R., Bidoki, N. H., Stelzer, I. A., Becker, M., Marić, I., Chang, A. L., Culos, A., Phongpreecha, T., Xenochristou, M., De Francesco, D., Espinosa, C., Berson, E., Verdonk, et al
  2022

- **Omics approaches: interactions at the maternal-fetal interface and origins of child health and disease.** *Pediatric research*
  Ozen, M., Aghaeepour, N., Maric, I., Wong, R. J., Stevenson, D. K., Jantzie, L. L.
  2022

- **Information Theoretic Perspectives on 5G Systems and Beyond**
  edited by Maric, I., Shamai (Shitz), S., Simeone, O.
  Cambridge University Press.2022

- **Multiomics Characterization of Preterm Birth in Low- and Middle-Income Countries (vol 3, e2029655, 2020)** *JAMA NETWORK OPEN*
  Jehan, F., Sazawal, S., Baqui, A. H.

2021; 4 (2)

- **DECREASED MORTALITY RATE AMONG COVID-19 PATIENTS USING STATINS: DATA FROM US ELECTRONIC HEALTH RECORDS**
  Oskotsky, T., Maric, I., Kosti, I., Le, B. L., Wong, R. J., Shaw, G. M., Sirota, M., Stevenson, D. K.
  BMJ PUBLISHING GROUP.2021: 219–20

- **PERSISTENT BACTERIAL VAGINOSIS AND RISK FOR SPONTANEOUS PRETERM BIRTH**
  Blumenfeld, Y. J., Maric, I., Stevenson, D. K., Shaw, G. M.
  BMJ PUBLISHING GROUP.2021: 127–28

- **Integration of mechanistic immunological knowledge into a machine learning pipeline improves predictions** *NATURE MACHINE INTELLIGENCE*
  Culos, A., Tsai, A. S., Stanley, N., Becker, M., Ghaemi, M. S., McIlwain, D. R., Fallahzadeh, R., Tanada, A., Nassar, H., Espinosa, C., Xenochristou, M., Ganio, E., Peterson, et al
  2020

- **VoPo leverages cellular heterogeneity for predictive modeling of single-cell data.** *Nature communications*
  Stanley, N. n., Stelzer, I. A., Tsai, A. S., Fallahzadeh, R. n., Ganio, E. n., Becker, M. n., Phongpreecha, T. n., Nassar, H. n., Ghaemi, S. n., Maric, I. n., Culos, A. n., Chang, A. L., Xenochristou, et al
  2020; 11 (1): 3738

- **Changes in pregnancy-related serum biomarkers early in gestation are associated with later development of preeclampsia.** *PloS one*
  Hao, S. n., You, J. n., Chen, L. n., Zhao, H. n., Huang, Y. n., Zheng, L. n., Tian, L. n., Maric, I. n., Liu, X. n., Li, T. n., Bianco, Y. K., Winn, V. D., Aghaeepour, et al
  2020; 15 (3): e0230000

- **Increased Carbon Monoxide Washout Rates in Newborn Infants.** *Neonatology*
  Stevenson, D. K., Wong, R. J., Ostrander, C. R., Maric, I., Vreman, H. J., Cohen, R. S.
  2019: 1–5

- **Data-driven queries between medications and spontaneous preterm birth among 2.5 million pregnancies.** *Birth defects research*
  Marić, I. n., Winn, V. D., Borisenko, E. n., Weber, K. A., Wong, R. J., Aziz, N. n., Blumenfeld, Y. J., El-Sayed, Y. Y., Stevenson, D. K., Shaw, G. M.
  2019

- **Maternal Height and Risk of Preeclampsia among Race/Ethnic Groups.** *American journal of perinatology*
  Maric, I., Mayo, J. A., Druzin, M. L., Wong, R. J., Winn, V. D., Stevenson, D. K., Shaw, G. M.
  2018

- **Residential agricultural pesticide exposures and risks of preeclampsia** *ENVIRONMENTAL RESEARCH*
  Shaw, G. M., Yang, W., Roberts, E. M., Aghaeepour, N., Mayo, J. A., Weber, K. A., Maric, I., Carmichael, S. L., Winn, V. D., Stevenson, D. K., English, P. B.
  2018; 164: 546–55

- **Capacity-Achieving Rate-Compatible Polar Codes** *IEEE Trans. Information Theory*
  Hong, S., Hui, D., Maric, I.
  2017; 63 (12): 7620-7632

- **Capacity-Achieving Rate-Compatible Polar Codes for General Channels** *IEEE Wireless Communications and Networking Conference Workshops (WCNCW)*
  Mondelli, M., Hassani, H., Marić, I., Hui, D., Hong, S.
  2017

- **Short Message Noisy Network Coding With Sliding-Window Decoding for Half-Duplex Multihop Relay Networks** *IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS*
  Hong, S., Maric, I., Hui, D.
  2016; 15 (10): 6676-6689

- **Capacity-Achieving Rate-Compatible Polar Codes** *2016 IEEE INTERNATIONAL SYMPOSIUM ON INFORMATION THEORY*
  Hong, S., Hui, D., Maric, I.
  2016: 41-45

- **Diversity-Multiplexing Tradeoff for the Interference Channel With a Relay** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Zahavi, D., Zhang, L., Maric, I., Dabora, R., Goldsmith, A. J., Cui, S.
  2015; 61 (2): 963-982
- **On the Achievable Rates of Multihop Virtual Full-Duplex Relay Channels** *2015 IEEE INTERNATIONAL SYMPOSIUM ON INFORMATION THEORY (ISIT)*
  Hong, S., Maric, I., Hui, D., Caire, G.
  2015: 2246-2250
- **Multihop Virtual Full-Duplex Relay Channels** *2015 IEEE INFORMATION THEORY WORKSHOP (ITW)*
  Hong, S., Maric, I., Hui, D., Caire, G.
  2015
- **Enhanced Relay Cooperation via Rate Splitting** *CONFERENCE RECORD OF THE 2014 FORTY-EIGHTH ASILOMAR CONFERENCE ON SIGNALS, SYSTEMS & COMPUTERS*
  Maric, I., Hui, D.
  2014: 225-229
- **Capacity Bounds and Exact Results for the Cognitive Z-Interference Channel** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Liu, N., Maric, I., Goldsmith, A. J., Shamai (Shitz), S.
  2013; 59 (2): 886-893
- **Low Latency Communications** *2013 INFORMATION THEORY AND APPLICATIONS WORKSHOP (ITA)*
  Maric, I.
  2013
- **Capacity of Cognitive Radio Networks** *Multiantenna Channels: Principles of Cognitive Radio*
  Goldsmith, A., Maric, I.
  Cambridge Press.2013
- **Relaying in the Presence of Interference: Achievable Rates, Interference Forwarding, and Outer Bounds** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Maric, I., Dabora, R., Goldsmith, A. J.
  2012; 58 (7): 4342-4354
- **Multihop Analog Network Coding via Amplify-and-Forward: The High SNR Regime** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Maric, I., Goldsmith, A., Medard, M.
  2012; 58 (2): 793-803
- **Bandwidth and Power Allocation for Cooperative Strategies in Gaussian Relay Networks** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Maric, I., Yates, R. D.
  2010; 56 (4): 1880-1889
- **Breaking Spectrum Gridlock With Cognitive Radios: An Information Theoretic Perspective** *PROCEEDINGS OF THE IEEE*
  Goldsmith, A., Jafar, S. A., Maric, I., Srinivasa, S.
  2009; 97 (5): 894-914
- **On the capacity of interference channels with one cooperating transmitter** *EUROPEAN TRANSACTIONS ON TELECOMMUNICATIONS*
  Maric, I., Goldsmith, A., Kramer, G., Shamai (Shitz), S.
  2008; 19 (4): 405-420
- **Discrete memoryless interference and broadcast channels with confidential, messages: Secrecy rate regions** *IEEE Information Theory and Applications Workshop*
  Liu, R., Maric, I., Spasojevic, P., Yates, R. D.
  IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC.2008: 2493–2507
- **On the Capacity of the Interference Channel with a Relay** *IEEE International Symposium on Information Theory*
  Marric, I., Dabora, R., Goldsmith, A.
  IEEE.2008: 554–558

- **Capacity of interference channels with partial transmitter cooperation** *IEEE TRANSACTIONS ON INFORMATION THEORY*
  Maric, I., Yates, R. D., Kramer, G.
  2007; 53 (10): 3536-3548
- **Joint relaying and network coding in wireless networks** *IEEE International Symposium on Information Theory*
  Katti, S., Maric, I., Goldsmith, A., Katabi, D., Medard, M.
  IEEE.2007: 1101–1105
- **Cooperative Communications** *Foundations and Trends in Networking*
  Kramer, G., Maric, I., Yates, R. D.
  NOW Publishers Inc.2006; 1
- **Cooperative multicast for maximum network lifetime** *IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS*
  Maric, I., Yates, R. D.
  2005; 23 (1): 127-135
- **Cooperative multihop broadcast for wireless networks** *IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS*
  Maric, Yates, R. D.
  2004; 22 (6): 1080–88