Stanford



Anca M. Hrastinski, MD

Assistant Professor of Pediatrics

Pediatrics - Neonatology

CLINICAL OFFICE (PRIMARY)

- **Neonatology-Stanford University**

  750 Welch Rd MC 5731

  Palo Alto, CA 94304

  Tel (650) 724-9954 **Fax** (650) 725-8351

Bio

CLINICAL FOCUS

- Neonatal-Perinatal Medicine

ACADEMIC APPOINTMENTS

- Assistant Professor-Univ Med Line, Pediatrics - Neonatology
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- Inaugural Bhatt-Ramanathan Scholarship Award, California Association of Neonatologists (CAN)
- 2017 STAT Wunderkinds Award, STAT News
- Pediatric Scientist Development Program Award, The Association of Medical School Pediatric Department Chairs (AMSPDC)
- Bechtel Endowed Fellow in Pediatric Translational Medicine, Child Health Research Institute, Stanford University

PROFESSIONAL EDUCATION

- Fellowship: Stanford University Neonatology Fellowship (2018) CA
- Residency: Stanford University Hospital and Clinics, Lucile Packard Children's Hospital (2013) CA
- Medical Education: Iuliu Hatieganu University of Medicine (2007) Romania
- Board Certification: Pediatrics, American Board of Pediatrics (2019)
- Neonatology Fellowship, Lucile Packard Children's Hospital, Stanford University , Neonatology (2018)
- PSDP Scholar, Lucile Packard Children's Hospital, Stanford University , Perinatal Brain Development (2016)
- Board Certification, Pediatrics, American Board of Pediatrics (2013)
- Pediatrics Residency, Lucile Packard Children's Hospital, Stanford University , Pediatrics (2013)
- Pediatrics Internship, Lucile Packard Children's Hospital, Stanford University , Pediatrics (2011)

- ECFMG Certification, Educational Commission for Foreign Medical Graduates , Medicine (2009)
- M.D., Iuliu Hatieganu University of Medicine and Pharmacy, Romania , Medicine (2007)

LINKS

- Lab Website: BrainTherapeuticsLab.org

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I am a physician-scientist, neonatologist, and stem cell biologist whose research focuses on understanding mechanisms of human brain development, neuroinflammation, and neurological injury using patient-derived stem cell models.

I was among the early pioneers of three-dimensional human cortical organoid technologies and contributed to development of foundational protocols for generating region-specific human brain organoids from pluripotent stem cells. My work helped establish the feasibility of modeling human brain development and disease using stem cell-derived tissues and has contributed to the widespread adoption of organoid technologies across neuroscience, regenerative medicine, and translational research.

A major focus of my laboratory is the development of increasingly sophisticated multicellular organoid and assembloid systems that incorporate diverse neuronal and glial populations to model complex human brain circuitry and disease processes. We integrate stem cell biology, organoid engineering, CRISPR-based genome editing, single-cell transcriptomics, epigenomics, high-content imaging, and computational approaches to identify disease mechanisms and therapeutic targets. These technologies have been applied to studies of hypoxic brain injury, 22q11.2 deletion syndrome, Trisomy 21 (Down Syndrome), Trisomy 18, narcolepsy, Alzheimer's and Parkinson's Disease.

Teaching

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Meghali Aich, Jong Bin Choi, Dhriti Nagar

Doctoral Dissertation Reader (NonAC)

Jerry Cheng, Suyash Raj

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Neonatal-Perinatal Medicine (Fellowship Program)

Publications

PUBLICATIONS

- **Red Blood Cell Transfusions: Evidence Favors a Restrictive Approach in Neonates.** *Anesthesia and analgesia*
  Stevenson, D. K., Wong, R. J., Chock, V. Y., Pașca, A. M., Ahern, T. L.
  2026; 143 (2): 217-219
- **Adrenomedullin restores the human cortical interneurons migration defects induced by hypoxia** *ELIFE*
  Puno, A., Michno, W. P., Li, L., Everitt, A., McCluskey, K., Htun, S., Nagar, D., Choi, J., Dai, Y., Park, S., Gurwitz, E., Willsey, J. A., Birey, et al
  2026; 14
- **The FAM53C/DYRK1A axis regulates the G1/S transition of the cell cycle.** *eLife*
  Hammond, T., Choi, J. B., Membreño, M. W., Demeter, J., Ng, R., Bhattacharya, D., Nguyen, T. N., Hartmann, G. G., Colon, C. I., Bossard, C., Skotheim, J. M., Jackson, P. K., Pasca, et al
  2026; 14

- **Neonatal management and outcomes in the setting of disseminated coccidioidomycosis in pregnancy.** *Journal of perinatology : official journal of the California Perinatal Association*
  Darmawan, D. O., Mathew, R., Pasca, A. M., Aziz, N., Zhang, X., Kappagoda, S., Waldrop, A. R., Markwei, M., O'Brien, L. E.
  2026
- **Non-canonical roles for Hif-1alpha in interneuron progenitor proliferation and cortical circuit maturation.** *Developmental cell*
  Li, L., Pasca, A. M.
  2026; 61 (4): 713-715
- **Multiomics and deep learning dissect regulatory syntax in human development.** *Nature*
  Liu, B. B., Jessa, S., Kim, S. H., Ng, Y. T., Higashino, S. I., Marinov, G. K., Chen, D. C., Parks, B. E., Li, L., Nguyen, T. C., Wang, A. T., Wang, S. K., Tan, et al
  2026
- **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
- **Distinct type I and II interferon responses direct cortical and medullary thymic epithelial cell development.** *Science immunology*
  Mohammed, A., Wang, W., Arreola, M., Solomon, B. D., Slepicka, P. F., Hubka, K. M., Nguyen, H. D., Zheng, Z., Chavez, M. G., Yeh, C. Y., Kim, D. K., Ma, M. R., Martin, et al
  2025; 10 (107): eado4720
- **CXCL12 drives natural variation in coronary artery anatomy across diverse populations.** *Cell*
  Rios Coronado, P. E., Zhou, J., Fan, X., Zanetti, D., Naftaly, J. A., Prabala, P., Martínez Jaimes, A. M., Farah, E. N., Kundu, S., Deshpande, S. S., Evergreen, I., Kho, P. F., Ma, et al
  2025
- **Human assembloids reveal the consequences of CACNA1G gene variants in the thalamocortical pathway.** *Neuron*
  Kim, J. I., Miura, Y., Li, M. Y., Revah, O., Selvaraj, S., Birey, F., Meng, X., Thete, M. V., Pavlov, S. D., Andersen, J., Pașca, A. M., Porteus, M. H., Huguenard, et al
  2024
- **CXCL12 regulates coronary artery dominance in diverse populations and links development to disease.** *medRxiv : the preprint server for health sciences*
  Rios Coronado, P. E., Zanetti, D., Zhou, J., Naftaly, J. A., Prabala, P., Kho, P. F., Martínez Jaimes, A. M., Hilliard, A. T., Pyarajan, S., Dochtermann, D., Chang, K. M., Winn, V. D., Pașca, et al
  2023
- **Crosstalk between small-cell lung cancer cells and astrocytes mimics brain development to promote brain metastasis.** *Nature cell biology*
  Qu, F., Brough, S. C., Michno, W., Madubata, C. J., Hartmann, G. G., Puno, A., Drainas, A. P., Bhattacharya, D., Tomasich, E., Lee, M. C., Yang, D., Kim, J., Peiris-Pagès, et al
  2023
- **Comparing the efficacy in reducing brain injury of different neuroprotective agents following neonatal hypoxia-ischemia in newborn rats: a multi-drug randomized controlled screening trial.** *Scientific reports*
  Sabir, H., Maes, E., Zweyer, M., Schleehuber, Y., Imam, F. B., Silverman, J., White, Y., Pang, R., Pasca, A. M., Robertson, N. J., Maltepe, E., Bernis, M. E.
  2023; 13 (1): 9467
- **Anatomical and functional maturation of the mid-gestation human enteric nervous system.** *Nature communications*
  Dershowitz, L. B., Li, L., Pasca, A. M., Kaltschmidt, J. A.
  2023; 14 (1): 2680
- **Single-cell transcriptomic landscape of the developing human spinal cord.** *Nature neuroscience*
  Andersen, J., Thom, N., Shadrach, J. L., Chen, X., Onesto, M. M., Amin, N. D., Yoon, S. J., Li, L., Greenleaf, W. J., Müller, F., Pașca, A. M., Kaltschmidt, J. A., Pașca, et al
  2023
- **Carnitine octanoyltransferase is important for the assimilation of exogenous acetyl-L-carnitine into acetyl-CoA in mammalian cells.** *The Journal of biological chemistry*

Hsu, J., Fatuzzo, N., Weng, N., Michno, W., Dong, W., Kienle, M., Dai, Y., Pasca, A., Abu-Remaileh, M., Rasgon, N., Bigio, B., Nasca, C., Khosla, et al

2022: 102848

- **Blood flow modeling reveals improved collateral artery performance during the regenerative period in mammalian hearts.** *Nature cardiovascular research*

  Anbazhakan, S., Rios Coronado, P. E., Sy-Quia, A. N., Seow, L. W., Hands, A. M., Zhao, M., Dong, M. L., Pfaller, M. R., Amir, Z. A., Raftrey, B. C., Cook, C. K., D'Amato, G., Fan, et al

  2022; 1 (8): 775-790

- **Perinatal infection, inflammation, preterm birth, and brain injury: A review with proposals for future investigations.** *Experimental neurology*

  Reiss, J. D., Peterson, L. S., Nesamoney, S. N., Chang, A. L., Pasca, A. M., Marić, I., Shaw, G. M., Gaudilliere, B., Wong, R. J., Sylvester, K. G., Bonifacio, S. L., Aghaeepour, N., Gibbs, et al

  2022: 113988

- **Dissecting the molecular basis of human interneuron migration in forebrain assembloids from Timothy syndrome.** *Cell stem cell*

  Birey, F., Li, M. Y., Gordon, A., Thete, M. V., Valencia, A. M., Revah, O., Paşca, A. M., Geschwind, D. H., Paşca, S. P.

  2021

- **Chromatin and gene-regulatory dynamics of the developing human cerebral cortex at single-cell resolution.** *Cell*

  Trevino, A. E., Müller, F., Andersen, J., Sundaram, L., Kathiria, A., Shcherbina, A., Farh, K., Chang, H. Y., Pașca, A. M., Kundaje, A., Pașca, S. P., Greenleaf, W. J.

  2021

- **The CD22-IGF2R interaction is a therapeutic target for microglial lysosome dysfunction in Niemann-Pick type C.** *Science translational medicine*

  Pluvinage, J. V., Sun, J., Claes, C., Flynn, R. A., Haney, M. S., Iram, T., Meng, X., Lindemann, R., Riley, N. M., Danhash, E., Chadarevian, J. P., Tapp, E., Gate, et al

  2021; 13 (622): eabg2919

- **Increased Tau Expression Correlates with Neuronal Maturation in the Developing Human Cerebral Cortex.** *eNeuro*

  Fiock, K. L., Smalley, M. E., Crary, J. F., Pasca, A. M., Hefti, M. M.

  2020

- **Human 3D cellular model of hypoxic brain injury of prematurity.** *Nature medicine*

  Pașca, A. M., Park, J. Y., Shin, H. W., Qi, Q. n., Revah, O. n., Krasnoff, R. n., O'Hara, R. n., Willsey, A. J., Palmer, T. D., Pașca, S. P.

  2019

- **Reliability of human cortical organoid generation.** *Nature methods*

  Yoon, S. J., Elahi, L. S., Pașca, A. M., Marton, R. M., Gordon, A. n., Revah, O. n., Miura, Y. n., Walczak, E. M., Holdgate, G. M., Fan, H. C., Huguenard, J. R., Geschwind, D. H., Pașca, et al

  2019; 16 (1): 75–78

- **Generation and assembly of human brain region-specific three-dimensional cultures.** *Nature protocols*

  Sloan, S. A., Andersen, J., Pașca, A. M., Birey, F., Pașca, S. P.

  2018

- **Functional cortical neurons and astrocytes from human pluripotent stem cells in 3D cultures.** *Nature Methods*

  Pasca, A. M., Sloan, S., Clarke, L. E., Tian, Y., Makinson, C., Huber, N., Kim, C., Park, J., O'Rourke, N., Nguyen, K., Smith, S. J., Huguenard, J., Geschwind, et al

  2015: 671–78

- **PLACENTAL HORMONE CONTRIBUTION TO FETAL BRAIN DAMAGE** *Joint Meeting of the International-Federation-of-Placenta-Associations (IFPA) and European-Placenta-Group (EPG)*

  Penn, A., Moss, W., Agrawal, M., Volate, S., Leuenberger, D., Kiraly, M., Pasca, A., Chisholm, K.

  W B SAUNDERS CO LTD.2014: A52–A52

- **Neonatal CSF oxytocin levels are associated with parent report of infant soothability and sociability.** *Psychoneuroendocrinology*

  Clark, C. L., St John, N., Pasca, A. M., Hyde, S. A., Hornbeak, K., Abramova, M., Feldman, H., Parker, K. J., Penn, A. A.

  2013; 38 (7): 1208-1212

- **Using iPSC-derived neurons to uncover cellular phenotypes associated with Timothy syndrome** *NATURE MEDICINE*
  Pasca, S. P., Portmann, T., Voineagu, I., Yazawa, M., Shcheglovitov, A., Pasca, A. M., Cord, B., Palmer, T. D., Chikahisa, S., Nishino, S., Bernstein, J. A., Hallmayer, J., Geschwind, et al
  2011; 17 (12): 1657-U176

- **Using induced pluripotent stem cells to investigate cardiac phenotypes in Timothy syndrome** *NATURE*
  Yazawa, M., Hsueh, B., Jia, X., Pasca, A. M., Bernstein, J. A., Hallmayer, J., Dolmetsch, R. E.
  2011; 471 (7337): 230-U120

- **The Placenta: The Lost Neuroendocrine Organ** *Neoreviews*
  Pasca, A. M., Penn, A. A.
  2010; 11 (2)