

Stanford



Vaidehi Natu

Physical Sci Res Scientist

Psychology

Bio

BIO

Staff Research Scientist

Department of Psychology

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ACADEMIC APPOINTMENTS

- Phys Sci Res Assoc, Psychology
- Member, Maternal & Child Health Research Institute (MCHRI)

PROFESSIONAL EDUCATION

- Postdoctoral Fellow, Stanford University , Neuroscience
- Ph.D., University of Texas at Dallas , Cognition and Neuroscience
- B.E., University of Pune , Electrical Engineering

Research & Scholarship

RESEARCH INTERESTS

- Brain and Learning Sciences
- Child Development
- Early Childhood
- Psychology
- Research Methods

CURRENT RESEARCH AND SCHOLARLY INTERESTS

I am a developmental neuroscientist. My research program aims to study how the human brain matures from infancy to adulthood, as it acquires new life skills and behaviors: What are the origins of neural and cellular mechanisms of brain development during infancy? How does the trajectory of cellular mechanisms unfold during development, as school-aged children acquire complex skills such as reading or face recognition? What are some of the parallels in brain development across primate species? What changes occur in the brain in developmental disorders such as autism, multiple sclerosis, and dyslexia.

I use a multi-modal approach by combining different techniques to study the brain. I use neuroimaging methods including functional magnetic resonance imaging (fMRI), quantitative MRI (qMRI), and diffusion MRI (dMRI) as well as behavioral observations, histology, comparative methods across humans and macaques, and intracranial electroencephalography. This combination of complementary techniques provides a unified understanding of how the brain's anatomy, function, and behavior co-develop to achieve complex human skills.

Publications

PUBLICATIONS

- **Longitudinal development of category representations in ventral temporal cortex predicts word and face recognition.** *Nature communications*
Nordt, M., Gomez, J., Natu, V. S., Rezai, A. A., Finzi, D., Kular, H., Grill-Spector, K.
2023; 14 (1): 8010
- **White matter connections of high-level visual areas predict cytoarchitecture better than category-selectivity in childhood, but not adulthood.** *Cerebral cortex (New York, N.Y. : 1991)*
Kubota, E., Grotheer, M., Finzi, D., Natu, V. S., Gomez, J., Grill-Spector, K.
2022
- **White matter myelination during early infancy is linked to spatial gradients and myelin content at birth.** *Nature communications*
Grotheer, M., Rosenke, M., Wu, H., Kular, H., Querdasi, F. R., Natu, V. S., Yeatman, J. D., Grill-Spector, K.
2022; 13 (1): 997
- **Infants' cortex undergoes microstructural growth coupled with myelination during development.** *Communications biology*
Natu, V. S., Rosenke, M., Wu, H., Querdasi, F. R., Kular, H., Lopez-Alvarez, N., Grotheer, M., Berman, S., Mezer, A. A., Grill-Spector, K.
2021; 4 (1): 1191
- **Cortical recycling in high-level visual cortex during childhood development.** *Nature human behaviour*
Nordt, M., Gomez, J., Natu, V. S., Rezai, A. A., Finzi, D., Kular, H., Grill-Spector, K.
2021
- **Sulcal Depth in the Medial Ventral Temporal Cortex Predicts the Location of a Place-Selective Region in Macaques, Children, and Adults.** *Cerebral cortex (New York, N.Y. : 1991)*
Natu, V. S., Arcaro, M. J., Barnett, M. A., Gomez, J., Livingstone, M., Grill-Spector, K., Weiner, K. S.
2020
- **Neural adaptation to faces reveals racial outgroup homogeneity effects in early perception.** *Proceedings of the National Academy of Sciences of the United States of America*
Hughes, B. L., Camp, N. P., Gomez, J., Natu, V. S., Grill-Spector, K., Eberhardt, J. L.
2019
- **Apparent thinning of human visual cortex during childhood is associated with myelination.** *Proceedings of the National Academy of Sciences of the United States of America*
Natu, V. S., Gomez, J. n., Barnett, M. n., Jeska, B. n., Kirilina, E. n., Jaeger, C. n., Zhen, Z. n., Cox, S. n., Weiner, K. S., Weiskopf, N. n., Grill-Spector, K. n.
2019
- **Development of population receptive fields in the lateral visual stream improves spatial coding amid stable structural-functional coupling.** *NeuroImage*
Gomez, J., Drain, A., Jeska, B., Natu, V., Barnett, M., Grill-Spector, K.
2018
- **The functional neuroanatomy of face perception: from brain measurements to deep neural networks**
Grill-Spector, K., Weiner, K. S., Gomez, J., Stigliani, A., Natu, V. S.
ROYAL SOC.2018
- **The functional neuroanatomy of face perception: from brain measurements to deep neural networks.** *Interface focus*
Grill-Spector, K., Weiner, K. S., Gomez, J., Stigliani, A., Natu, V. S.
2018; 8 (4): 20180013
- **On object selectivity and the anatomy of the human fusiform gyrus** *NEUROIMAGE*
Weiner, K. S., Natu, V. S., Grill-Spector, K.

2018; 173: 604–9

- **Development differentially sculpts receptive fields across early and high-level human visual cortex.** *Nature communications*
Gomez, J., Natu, V., Jeska, B., Barnett, M., Grill-Spector, K.
2018; 9 (1): 788
- **Learning to Read Increases the Informativeness of Distributed Ventral Temporal Responses.** *Cerebral cortex (New York, N.Y. : 1991)*
Nordt, M. n., Gomez, J. n., Natu, V. n., Jeska, B. n., Barnett, M. n., Grill-Spector, K. n.
2018
- **Development differentially sculpts receptive fields across early and high-level human visual cortex** *Nature Communications*
Gomez, J., Natu, V., Jeska, B., Barnett, M., Grill-Spector, K.
2018; 9: 788
- **Defining the most probable location of the parahippocampal place area using cortex-based alignment and cross-validation.** *NeuroImage*
Weiner, K. S., Barnett, M. A., Withoft, N., Golarai, G., Stigliani, A., Kay, K. N., Gomez, J., Natu, V. S., Amunts, K., Zilles, K., Grill-Spector, K.
2017
- **Microstructural proliferation in human cortex is coupled with the development of face processing** *SCIENCE*
Gomez, J., Barnett, M. A., Natu, V., Mezer, A., Palomero-Gallagher, N., Weiner, K. S., Amunts, K., Zilles, K., Grill-Spector, K.
2017; 355 (6320): 68-?
- **Development of Neural Sensitivity to Face Identity Correlates with Perceptual Discriminability.** *journal of neuroscience*
Natu, V. S., Barnett, M. A., Hartley, J., Gomez, J., Stigliani, A., Grill-Spector, K.
2016; 36 (42): 10893-10907
- **Spatiotemporal changes in neural response patterns to faces varying in visual familiarity.** *NeuroImage*
Natu, V. S., O'Toole, A. J.
2015; 108: 151-159