

Michael J. Arcaro

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EMPLOYMENT

- 2020 – Assistant Professor
Department of Psychology
University of Pennsylvania
- 2017 – 2019 Instructor in Neurobiology
Advisor: Margaret Livingstone, Ph.D.
Livingstone Laboratory, Harvard Medical School
- 2015 – 2017 Postdoctoral Fellow
Advisor: Margaret Livingstone, Ph.D.
Livingstone Laboratory, Harvard Medical School
- 2013 – 2015 Postdoctoral Research Associate
Advisor: Sabine Kastner, Ph.D., M.D.
Neuroscience of Attention & Perception Laboratory, Princeton University

EDUCATION

- 2013 Princeton University – Ph.D. in Psychology and Neuroscience
- 2011 Princeton University – M.A. in Psychology and Neuroscience
- 2004 Boston University – B.A. in Psychology and Philosophy (*cum laude*)

AWARDS & HONORS

- 2023 APA's Distinguished Scientific Award for Early Career Contribution to Psychology
- 2019 David Hubel Outstanding Postdoctoral Fellow
- 2018 Harvard Faculty Research Award – Mind, Brain, and Behavior program
- 2017 William Randolph Hearst Fellowship
- 2016 Mahoney Postdoctoral Fellow
- 2010 Quantitative and Computational Neuroscience Fellowship / NIH T90

PEER-REVIEWED PUBLICATIONS

Kay K, Bonnen K, Denison RN, **Arcaro MJ**, Barack DL (2023). Tasks and their role in visual neuroscience. *Neuron*.

Scott LS & **Arcaro MJ** (2023). A domain-relevant framework for the development of face processing. *Nature Reviews Psychology*. 2, 183-195.

Arcaro MJ, Livingstone MS, Kay KN, Weiner KS (2022). The retrocalcarine sulcus is functionally distinct between macaques and humans. *Brain Structure and Function*, 227(4), 1227-1245.

Arcaro MJ and Livingstone MS (2021) On the relationship between maps and domains in inferotemporal cortex. *Nature Reviews Neuroscience*. 22, 573-583.

Ellis CT, Yates TS, Skalaban LJ, Bejjanki VR, **Arcaro MJ**, Turk-Browne NB (2021). Retinotopic organization of visual cortex in human infants. *Neuron*. 109 (16), 2616-2626.

Natu V, **Arcaro MJ**, Barnett MA, Gomez J, Livingstone MS, Grill-Spector K, Weiner KS (2021) Sulcal depth in medial ventral temporal cortex predicts the location of a place-selective region in macaques, children, and adults. *Cerebral Cortex*, 31. 48-61.

Arcaro MJ, Mautz T, Berezovskii V, Livingstone MS (2020) Anatomical correlates of face patches in macaque inferotemporal cortex. *PNAS*. 117 (51), 32667-32678.

Arcaro MJ, Ponce CR, Livingstone MS (2020) The neurons that mistook a hat for a face. *eLife*. 9(e53798), 1-19.

Arcaro MJ, Schade P, Livingstone MS (2019) Body-map proto-organization in newborn macaques. *PNAS*. 116(49) 24861-24871.

Arcaro MJ, Schade PF, Livingstone MS (2019) Universal mechanisms and the development of the face network: what you see is what you get. *Annual Review of Vision Science*. 5. 341-372.

Livingstone MS, **Arcaro MJ**, Schade P (2019) Cortex is cortex: ubiquitous principles drive face-domain development. *Trends in Cognitive Sciences*. 23 (1), 3-4.

Arcaro MJ, Thaler L, Quinlan DJ, Monaco S, Khan S, Valyear KF, Goebel R, Dutton GN, Goodale MA, Kastner S, Culham JC. (2019) Psychophysical and neuroimaging responses to moving stimuli in a patient with the Riddoch phenomenon due to bilateral visual cortex lesions. *Neuropsychologia*. 128. 150-165.

Benson N, Jamison KW, **Arcaro MJ**, Vu A, Glasser MF, Coalson TS, Van Essen D, Yacoub E, Ugurbil K, Winawer J, Kay K. (2018) The HCP 7T Retinotopy Dataset: Description and pRF Analysis. *Journal of Vision*. 18 (13) 1-22.

Arcaro MJ, Pinsk MA, Chen J, Kastner S. (2018) Organizing principles of pulvino-cortical coupling in humans. *Nature Communications*. 9(1), 1-14.

Haufe S, DeGuzman P, Henin S, **Arcaro MJ**, Honey CJ, Hasson U, Parra LC. (2018) Elucidating relations between fMRI, ECoG and EEG through a common natural stimulus. *NeuroImage*. 179, 79-91.

Todd N, Zhang Y, **Arcaro MJ**, Becerra L, Borsook D, Livingstone MS, McDannold N. (2018) Focused ultrasound induced opening of the blood-brain barrier disrupts inter-hemispheric resting state functional connectivity in the rat brain. *NeuroImage*. 178, 414-422.

Arcaro MJ*, Schade PF*, Vincent JL, Ponce CR, Livingstone MS*. (2017) Seeing faces is necessary for face-patch formation. *Nature Neuroscience*. 20(10), 1-9.

Arcaro MJ & Livingstone MS. (2017) A hierarchical, retinotopic proto-organization of the primate visual system at birth. *eLife*. 6(e26196), 1-24.

Arcaro MJ & Livingstone MS. (2017) Retinotopic organization of scene areas in the macaque inferior temporal cortex. *Journal of Neuroscience*. 37(31), 7373-7389.

Livingstone MS*, Vincent JL*, **Arcaro MJ***, Srihasam K, Schade P, Savage T. (2017) Development of the macaque face-patch system. *Nature Communications*. 8, 1-12.

Chen J, Honey CJ, Simony E, **Arcaro MJ**, Norman KA, Hasson U. (2016) Accessing real-life episodic information from minutes versus hours earlier modulates hippocampal and high-order cortical dynamics. *Cerebral Cortex*. 28(8), 3428-3441.

Arcaro MJ, Pinsk MA, Kastner S. (2015) The anatomical and functional organization of the human visual pulvinar. *Journal of Neuroscience*. 35(27), 9848-9871.

Arcaro MJ & Kastner S. (2015) Topographic organization of areas V3 and V4 and its relation to supra-areal organization of the primate visual system. *Visual Neuroscience*. 32(e015), 1-15.

Arcaro MJ, Honey CJ, Mruczek REB, Kastner S, Hasson U. (2015) Widespread correlation patterns of fMRI signal across visual cortex reflect eccentricity organization. *eLife*. 4(e03952), 1-28.

Lombaert H, **Arcaro MJ**, Ayache N. (2015) Brain transfer: spectral analysis of cortical surfaces and functional maps. *IPMI*. 9123, 474-487.

Wang L, Mruczek REB, **Arcaro MJ**, Kastner S. (2015) Probabilistic maps of visual topography in human cortex. *Cerebral Cortex*. 25(10) 3911-3931.

Kelly YT, Webb TW, Meier JD, **Arcaro MJ**, Graziano MSA (2014). Attributing awareness to oneself and to others. *PNAS*. 111(13), 5012-5017.

Wang L, Saalmann YB, Pinsk MA, **Arcaro MJ**, Kastner S (2012). Electrophysiological low-frequency coherence and cross-frequency coupling contributes to BOLD connectivity. *Neuron*. 76(5), 1010-1020.

Arcaro MJ, Pinsk MA, Li X, Kastner S (2011). Visuotopic organization of macaque posterior parietal cortex: An fMRI study. *Journal of Neuroscience*. 31(6), 2064-2078.

Caplovitz GP, **Arcaro M**, Kastner S (2010). Stage 3 and what we see. *Cognitive Neuroscience*. 1(3), 220-222.

Carmel D, **Arcaro MJ**, Kastner S, Hasson U (2010). How to create and use binocular rivalry. *Journal of Visualized Experiments (JoVE)*. 45(e2030), 1-10.

Arcaro MJ*, McMains S*, Singer B, Kastner S (2009). Retinotopic organization of human ventral visual cortex. *Journal of Neuroscience*. 29(34), 10638-10652.

Pinsk MA, **Arcaro M**, Weiner KS, Kalkus JF, Inati SJ, Gross CG, Kastner S (2009). Neural representations of faces and body parts in the macaque and human cortex: A comparative fMRI study. *Journal of Neurophysiology*. 101, 2581-2600.

CHAPTERS

Kastner S & **Arcaro MJ**. (2021) The Thalamus in Attention. In Halassa M.M., editor. *The Thalamus*. Cambridge, UK. Cambridge University Press.

REVIEWING – publons.com/a/1217788/

Cerebral Cortex, Cortex, eLife, Human Brain Mapping, J Neuro, Nat Comm., NeuroImage, Neuropsychologia, PNAS

PROFESSIONAL ACTIVITIES AND SERVICE

2021 Session moderator for Vision Sciences Society talk session: *Development*

2018 Co-chair for Society for Neuroscience nanosymposium, *Vision: Representation of Faces and Bodies*

2017 Postdoctoral steering committee for Harvard's Mind Brain Behavior program

TEACHING

2022/23 PSYC 1230 Cognitive Neuroscience - Instructor
2020/22 PSYC 3233 Seminar in Cognitive Neuroscience: Brain Development - Instructor
2014 NEU 502 From Molecules to Systems to Behavior - Workshop: Functional connectivity
2013 PSY 255 Cognitive Psychology – Precept Instructor
2012 PSY 311 Rationality and Human Reasoning – Precept Instructor
2011 PSY 259 Cognitive Neuroscience - Lab Instructor
2010 NEU 502 From Molecules to Systems to Behavior - Workshop: Retinotopic mapping with fMRI

MENTORING

2021- Emily Meyer, Graduate Student, University of Pennsylvania
2021- Lucy Song, Graduate Student, University of Pennsylvania
2020-2021 Wei Song Ong, Postdoctoral Researcher, University of Pennsylvania
2017-2018 Theoroda Mautz, Research project on structure-function relationships in IT, Harvard University
2015-2017 Maddie Snyder, Senior Thesis on functional connectivity in infant monkeys, Harvard University
2010 Oly Khowash, Summer research project on DTI methods development, Princeton University
2009 Jan Kalkus, Summer research project on fMRI surface-based analyses, Princeton University

INVITED TALKS

CalTech, Division of Biology and Biological Engineering, August 2022
JHBI (Japanese meeting for Human Brain Imaging) Talk Series, January 2022
Giessen University, Seminar series: Current topics in Perception and Cognition, November 2021
Carnegie Melon University, AI Seminar Series, December 2020
Nathan Klein Institute, Works in Progress Seminar Series, December 2020
University of California, Berkeley, Cognitive Neuroscience Colloquium, November 2020
Bar Illan University, Cognitive Neuroscience Lab, January 2019
University of Virginia, Department of Psychology Colloquium, March 2018
University of Pittsburgh, Department of Ophthalmology, March 2018
University of Minnesota, CMRR Seminar, January 2017
Massachusetts Institute of Technology, CBMM Special Seminar Series, December 2016

CONFERENCE PRESENTATIONS

Meyer EE, Ong WS, Balboa M, **Arcaro MJ**. Assessing tree shrew high-level visual behavior using conventional and natural paradigms. Society for Neuroscience Abstracts 47: Program Number 297.04

Oishi, H, Berezovski VK, Livingstone MS, Weiner K., & **Arcaro MJ**. The microarchitecture of face-selective patches in macaques. Society for Neuroscience Abstracts 47: Program Number 715.09

Arcaro MJ. (2022). Macro- and microstructural analyses of face-selective patches in macaques. Workshop on Cortical Sulci. Paris, France.

Song C & **Arcaro MJ** (2022) Mapping anatomical connectivity between visual cortex and the pulvinar in human neonates. Vision Sciences Society 2022.

Arcaro MJ, Guest DR, Allen E, Kay KN (2022) Recapitulation of cortical visual hierarchy in the human pulvinar. Vision Science Society 2022.

Arcaro MJ & Livingstone MS (2021) Face neurons see Waldo. Society for Neuroscience Abstracts 46: Program Number P487.07.

Arcaro MJ (2021) Sulcal morphology predicts face patches in macaques. FLUX 2021 Symposium.

Ellis C, Yates T, **Arcaro MJ**, Turk-Browne NB (2021) Prediction of retinotopic organization in infant visual cortex from movies. V-VSS 2021.

Guest D, Allen E, Wu Y, Naselaris T, **Arcaro MJ**, Kay K (2021) Evidence for a ventral visual stream in the pulvinar. V-VSS 2021.

Martynek M, Kastner S, Livingstone MS, **Arcaro MJ** (2021). Testing the molecular anchor hypothesis in humans and macaques. SfN Global Connectome.

Arcaro **MJ**, Mautz T, Livingstone MS (2020). Anatomical folding predicts the location of face-selective domains in macaque IT. Vision Sciences Society Meeting Abstract 20. V-VSS 2020.

Ellis C, Yates T, Skalaban L, Bejjanki V, **Arcaro MJ**, Turk-Browne N (2020). Retinotopic mapping with fMRI in awake, behaving infants. Vision Sciences Society Meeting Abstract 20. V-VSS 2020.

Arcaro MJ, Ponce CR, Livingstone MS (2019). The neurons that mistook a hat for a face. Society for Neuroscience Abstracts 45: Program Number 489.05.

Arcaro MJ, Ponce CR, Livingstone MS (2019). The neurons that mistook a hat for a face. Vision Sciences Society Meeting Abstract 19.

Natu V, **Arcaro MJ**, Barnett MA, Gomez J, Livingstone MS, Grill-Spector K, Weiner KS (2019). Development and evolution of sulcal morphology in place-selective regions of ventral temporal cortex. HBM 2019.

Arcaro MJ, Schade PF, Livingstone MS (2018). Multiple body maps in newborn macaques. Society for Neuroscience Abstracts 44: Program Number 642.14.

Arcaro MJ, Schade PF, Livingstone MS (2018). Preserved cortical organization in the absence of early visual input. Vision Sciences Society Meeting Abstract 18.

Schade PF, **Arcaro MJ**, Livingstone MS (2018). Effects of experience on face and body selective neurons in macaque IT. Society for Neuroscience Abstracts 44: Program Number 307.16.

Benson NC, Jamison KW, **Arcaro MJ**, Vu AT, Glasser MF, Van Essen DC, Ugurbil K, Winawer J, Kay KN (2018). The human connectome project 7t retinotopy dataset: A freely available resource of human visual organization. Society for Neuroscience Abstracts 44: Program Number 719.07.

Arcaro MJ, Schade PF, Livingstone MS (2017). Experience-dependent development of the visual system is anchored to an innate retinotopic organization. Society for Neuroscience Abstracts 43: Program Number 492.08.

Arcaro MJ & Livingstone MS (2017). Retinotopic organization of scene area in macaque inferior temporal cortex and its implications for development. Vision Sciences Society Meeting Abstract. 17.

Livingstone MS, **Arcaro MJ**, Schade PF, Vincent JL, Ponce CR (2017). The effects of early face deprivation on the macaque face-patch system. Society for Neuroscience Abstracts 43: Program Number 492.09.

Todd N, Sun T, Zhang Y, Power C, **Arcaro MJ**, Patz S, Livingstone M, McDannold N (2017) Resting state functional MRI for evaluation of focused ultrasound induced disruption of the blood brain barrier. ISTU. Nashville, TN. Abstract #2956547.

Todd N, Sun T, Zhang Y, Power C, **Arcaro MJ**, Patz S, Livingstone M, McDannold N (2017) Functional MRI evaluation of a novel approach to neuromodulation: Targeted delivery of GABBA via focused ultrasound-mediated disruption of the blood-brain barrier. ISMRM. Honolulu, Hawaii. Abstract #0109.

Arcaro MJ, Vincent JL, Schade P, Srihasam K, Livingstone MS (2016). A retinotopic proto-organization in IT present at birth. Society for Neuroscience Abstracts 42: Program Number 800.04

Culham JC, **Arcaro MJ**, Thaler L, McLean DA, Quinlan DJ, Dutton GN, Goodale MA, Kastner S (2016). Cortical and subcortical responses to moving stimuli in a patient with Riddoch phenomenon arising from bilateral visual cortex lesions. 34th European Workshop on Cognitive Neuropsychology. Bressanone, Italy. Poster #114.

Arcaro MJ, Pinsk MA, Kastner S (2015). Functional and anatomical organization of the dorsal pulvinar in humans. Society for Neuroscience Abstracts 41: Program Number 148.27

Lombaert H, **Arcaro MJ**, Kastner S, Ayache N (2015). Brain transfer for the analysis of cortical data. Society for Neuroscience Abstracts 41: Program Number 830.11

Arcaro MJ, Pinsk MA, Kastner S (2014). Functional and anatomical connectivity between the pulvinar and temporal cortex. Society for Neuroscience Abstracts 40: Program Number 816.15

Arcaro MJ, Pinsk MA, Kastner S (2013). Investigating the organization of functional and anatomical thalamo-cortical connectivity in the human pulvinar. Society for Neuroscience Nanosymposium 310: Program Number 310.08

Arcaro MJ, Honey CJ, Mruczek REB, Kastner S, Hasson U (2012). Functional connectivity reveals a large-scale eccentricity organization within visual cortex. Society for Neuroscience Abstracts 38: Program Number 573.08

Wang L, Mruczek REB, **Arcaro MJ**, Kastner S (2012). Visual topographic probability maps (VTPM) in standard MNI space. Society for Neuroscience Abstracts.

Arcaro MJ & Kastner S (2011). Topographic organization and attention functions of the human pulvinar. Society for Neuroscience Minisymposium 113: Program Number 113.02

Arcaro MJ, Mclean DA, Quinlan J, Dutton GN, Goodale MA, Kastner S, Culham JC (2011). Cortical and subcortical response properties in a patient with visual cortex lesions. Society for Neuroscience Abstracts 37: Program Number 695.12

Pinsk MA, Saalmann YB, Wang L, **Arcaro MJ**, Li X, Kastner S (2011). Electrophysiological basis of resting state fMRI. Society for Neuroscience Abstracts 37: Program Number 398.08

Arcaro MJ, Pinsk MA, McMains SA, Kastner S (2010). Visuotopic organization of the human pulvinar revealed using high-resolution fMRI. Society for Neuroscience Abstracts 36: Program Number, 72.14.

Arcaro MJ, Pinsk MA, Li X, Kastner S (2010). Topographic organization of posterior parietal cortex in awake macaque monkeys: an fMRI study. Gordon Conference: Neurobiology of Cognition, Waterville Valley, NH.

Pinsk MA, **Arcaro MJ**, Kastner S (2010). A comparative approach using fMRI to investigate the face perception network in humans and macaques. ECVP. Laussane, Switzerland.

Caplovitz GP, **Arcaro MJ**, Kastner S (2010). Categorical representation of visually suppressed objects in visual cortex. Vision Sciences Society Meeting Abstract.

Arcaro MJ, Pinsk MA, Konen C, Li X, Kastner S (2009). Topographic organization of posterior parietal cortex in awake macaque monkeys revealed using fMRI. Society for Neuroscience Abstracts 35: Program Number, 759.3.

Lee RF, Xu J, Prabhakaran K, **Arcaro MJ** (2009). Spatial and spectral analysis for a radial sampling balance SSFP for fMRI. ISMRM: Program Number, 7071

Arcaro MJ & Kastner S (2008). Neural correlates of binocular rivalry in the human visual system using simple and complex stimuli. Society for Neuroscience Abstracts 34: Program Number, 462.24

Arcaro MJ, McMains S, Kastner S (2008). Phase-encoded attention tasks reveal topographic maps in posterior parahippocampal cortex. Vision Sciences Society Meeting Abstract (8)6, 1001

Pinsk MA, **Arcaro MJ**, Konen CS, Li X, Kastner S, Inati SJ (2008). Improved functional MRI of the macaque ventral visual pathway at 3T using multi-echo EPI and dynamic, field map corrected image reconstruction. Society for Neuroscience Abstracts 34: Program Number, 260.2

Konen CS, Pinsk MA, **Arcaro MJ**, Li X, Inati SJ, Kastner S (2008). Object representations in monkey posterior parietal cortex. Society for Neuroscience Abstracts 34: Program Number, 261.2

Konen CS, Pinsk MA, **Arcaro MJ**, Kastner S (2008). Object representations in the dorsal pathway: fMRI adaptation effects in macaque posterior parietal cortex. Vision Sciences Society Meeting Abstract (8)6, 493

Arcaro MJ, McMains S, Kastner S (2007). Phase-encoded attentive tracking reveals topographic maps in human ventral occipital cortex. Society for Neuroscience Abstracts 33: Program Number, 280.4