

UNIVERSITY OF PENNSYLVANIA - SCHOOL OF MEDICINE
Curriculum Vitae

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Geoffrey K Aguirre, M.D., Ph.D.

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Narrative description:

I am a Professor of Neurology at the University of Pennsylvania. My area of clinical specialty is Behavioral Neurology, which encompasses disorders of higher-level cognitive function. My scientific work is in the area of translational vision science. I relate human visual perception to quantitative measurements of the structure and function of the visual pathway. Magnetic resonance imaging (MRI) is an important technique in my studies, often coupled with retinal imaging and psychophysics. A particular focus is how neurologic and ophthalmologic disease alters perception and function along the visual pathway. I am additionally the Associate Director of the Center for Neuroscience and Society at the University of Pennsylvania, where I consider the use and misuse of brain imaging data. I am active in career development for physician-scientist trainees, and serve as an Associate Program Director of the Neurology Residency at the Hospital of the University of Pennsylvania.

Office Address: 3 West Gates
Hospital of the University of Pennsylvania
Philadelphia, PA 19104-4283

Education:

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| 1988-92 | B.A. Princeton University (Politics) Thesis: Congressional control of NIH funding priorities during the AIDS crisis |
| 1992-00 | M.D. University of Pennsylvania |
| 1993-98 | Ph.D. University of Pennsylvania (Neuroscience) Thesis: Neural components of topographical orientation |

Postgraduate Training and Fellowship Appointments:

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| 2000-01 | Intern in Medicine, Pennsylvania Hospital, Philadelphia |
| 2001-04 | Resident in Neurology, Hosp. of the Univ of Pennsylvania, Philadelphia |

Faculty Appointments:

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| 2021-present | Professor of Neurology, Department of Neurology University of Pennsylvania School of Medicine |
| 2013-2021 | Associate Professor of Neurology, Department of Neurology University of Pennsylvania School of Medicine |
| 2004-2013 | Assistant Professor of Neurology, Department of Neurology University of Pennsylvania School of Medicine |

University Committee Appointments:

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| 2024-present | Member, Senate Committee on Faculty and the Administration (SCOA) which advises on matters related to the interaction of these bodies |
| 2020-2023 | Member, Senate Committee on Academic Freedom and Responsibility (SCAFR) which adjudicates claims of violations of academic freedom |
| 2016-2019 | Social Responsibility Advisory Committee (SRAC) which advises the University Trustees and Trustee Subcommittee on Proxy Voting |
| 2015-present | Associate Director of the Center for Neuroscience and Society |
| 2019-present | Vision Research Center Executive Committee and director of the Scientific Transparency / Image Analysis Core |

Departmental Appointments:

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| 2024-present | Chair, Departmental Committee on Appointments and Promotions (DCOAP) |
| 2022-2024 | Vice-chair, Departmental Committee on Appointments and Promotions (DCOAP) |
| 2015-present | Associate Director, Neurology Residency Program |

Specialty Certification:

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| 2005-present | American Board of Neurology |
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Licensure: PennsylvaniaAwards, Honors and Membership in Honorary and National Societies:

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| 2023 | Perelman School of Medicine, Graduate Medical Education Mentorship Award |
| 2020 | Research to Prevent Blindness / Lions Clubs International Foundation Low Vision Research Award |
| 2018 | Elected as a Fellow of Optica (formerly Optical Society of America) |
| 2018 | Resident's Award for Excellence in Teaching |
| 2013 | Elected as a Fellow of the Philadelphia College of Physicians |
| 2012 | Elected as a Fellow of the the American Neurological Association |
| 2011 | Appointed Senior Consultant to the MacArthur Foundation Research Network on Law and Neuroscience |
| 2008 | Member of the Neuroimaging Steering Committee of the Hastings Center for Bioethics (2008-2014) |

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| 2004 | Samuel Zeritsky award for excellence in research (Univ. of Penn) |
| 2004 | Penn Pearls award for excellence in medical student education (Univ. of Penn) |
| 2001 | Intern of the Year (Pennsylvania Hospital) |
| 2001 | Thomas Bond Prize for the best research by a house officer (Pennsylvania Hospital) |
| 2000 | Eric Corey Raps Memorial Prize for excellence in clinical neurology (Univ. of Penn) |
| 1999 | World Technology Award Finalist in Health and Medicine |
| 1998 | Louis B. Flexner prize for the best dissertation research in the neurosciences (Univ. of Penn) |
| 1998 | G. Milton Shy Award for the best essay in clinical neurology (American Academy of Neurology) |

Memberships in Professional and Scientific Societies:

National Societies and Organizations (active):

American Neurological Association
 American Academy of Neurology
 Vision Sciences Society — Presentation review committee
 Optica (formerly Optical Society of America):
 - vice-Chair of the vision technical group (2017-2019)
 - member of the Edgar D. Tillyer Award Committee (2019 - 2021)
 - organizer of the Fall Vision Meeting (2017-2022)

National Societies and Organizations (currently inactive):

Organization for Human Brain Mapping
 Cognitive Neuroscience Society
 Society for Neuroscience

Editorial / Board / Review Positions:

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| 2024- | Co-Chair, advisory committee, Burroughs Wellcome Fund, Career Awards for Medical Scientists |
| 2020-2024 | Member of advisory committee, Burroughs Wellcome Fund, Career Awards for Medical Scientists |
| 2022-2024 | Chair, Neuroscience of Basic Visual Processes (NBVP) NIH study section |
| 2018-2024 | Member, NBVP (formerly SPC) NIH study section |
| 2022 | Ad hoc reviewer for the National Science Foundation, Perception, Action, and Cognition program |
| 2022 | Ad hoc reviewer for Special Emphasis Panel 2022/08 RRDS (Department of Veterans Health, Rehabilitation Research & Development Service) |
| 2020 | Ad hoc member of the NIMH Board of Scientific Counselors |
| 2018-2022 | Editorial Board, <u>Journal of Vision</u> |
| 2009-2012 | Editorial Board, <u>NeuroImage</u> |
| 2004-2009 | Associate Editor, <u>Neuroscience Letters</u> |

Major Teaching and Clinical Responsibilities at the University of Pennsylvania and Affiliated Hospitals:

1. Consult attending at the Hospital of the University of Pennsylvania 3-4 weeks/year
2. Residents clinic attending 20 sessions / year
3. Member of the division of Behavioral Neurology and member of the Alzheimer's disease specialist group

Additional Teaching Roles at the University of Pennsylvania:

1. Member Neuroscience Graduate Group
2. Member Psychology Graduate Group
3. Lecturer in the annual Neurology Board review course
4. Lecturer in the Brain and Behavior medical school course
5. Lecturer in the Consult Liaison Psychiatry Fellowship Didactic series

Lectures by Invitation since 2013: (*upcoming)

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| August, 2024 | “Approaches and challenges to measuring cone-specific responses in clinical populations”, European Conference on Visual Perception, Aberdeen Scotland. |
| June, 2024 | “Neural mechanisms of photophobia”, Centre for Neuroscience Studies at Queen's University, Canada. |
| September, 2023 | “Perception and discomfort from melanopsin stimulation”, Rank Prize Symposium, Grasmere, Cumbria, UK. |
| April, 2023 | “Perception and pain from melanopsin”, Neurology Grand Rounds, University of Wisconsin, Madison. |
| January, 2023 | “Perception and pain from melanopsin”, Neurology Grand Rounds, New York Medical College, NY. |
| October, 2022 | “Perception and pain from melanopsin”, Perception and Action Seminar Series, Brown University, Providence, Rhode Island. |
| Jan, 2022 | “Human melanopsin function”, Grand Rounds, University of Illinois Chicago. |
| May, 2021 | “What to expect when you are expecting an experiment”, Symposium on Open Science, Vision Sciences Society Annual, Virtual Meeting. |
| May, 2021 | “Retinotopic mapping as a methodological engine of vision science fMRI”, Vision Sciences Society Annual, Virtual Meeting. |
| January, 2021 | “Research in Residency”, American Physician Scientist Association, Virtual conference |
| July, 2020 | “Vision research on the Flywheel platform”, Digital Workflow in Imaging Research Symposium, School of Medicine and Munich School of Bioengineering, Munich, Germany (canceled due to Covid-19) |
| June, 2020 | “Perceptual, pupil, and visual cortex responses to melanopsin stimulation in humans”, Virtual Neurology Grand Rounds, New York University School of Medicine, NY, NY |

- April, 2020 “Perceptual, pupil, and visual cortex responses to melanopsin stimulation in humans”, University of Helsinki, Biomedicum Helsinki Seminars, Helsinki, Finland (cancelled due to Covid-19)
- March, 2020 “Individual differences in visual pathway structure and function”. Medical College of Wisconsin’s Distinguished Lecture Series, Milwaukee (cancelled due to Covid-19)
- February, 2020 “Perceptual, pupil, and visual cortex responses to melanopsin stimulation in humans”, University of Iowa, Iowa City, Iowa
- January, 2020 Invited participant, National Eye Institute Audacious Goals Initiative for Regenerative Medicine Understanding Human Retina Biology and Perception Workshop, Bethesda, Maryland
- February, 2019 “Perceptual, pupil, and visual cortex responses to melanopsin stimulation in humans”, Emory University, Atlanta.
- December, 2018 “Post-retinal structure and function in human blindness”, Visual Function Acquisition and Restoration Workshop, Hebrew University, Jerusalem, Israel.
- May, 2018 “Variation in Temporal Stimulus Integration Across Visual Cortex”, Invited Symposium, Vision Sciences Society Annual Meeting, St. Petersburg Florida.
- April, 2018 “Neuroscience in the Courtroom”, Haverford College, Haverford, Pennsylvania.
- February, 2018 “Scientific aspects of afferent visual dysfunction in neuro-degenerative disease”, North American Neuro-Ophthalmologic Society (NANOS) annual meeting, Kailua, Hawaii.
- October 2017 Served as a commentator on the topic of “Protecting Autonomy in the Era of Neural Control” at the Law and STEM Young Scholars Forum, University of Pennsylvania
- August, 2017 “Perceptual, pupil, and visual cortex responses to melanopsin stimulation in humans”, Institute for Ophthalmic Research, University of Tübingen Medical Centre, Tübingen, Germany
- August, 2017 “Temporal integration of visual information across visual cortex”, European Conference on Visual Perception (ECPV), Berlin, Germany
- May, 2017 “Post-retinal structure and function in human blindness”, VSS@ARVO invited symposium, The Association for Research in Vision and Ophthalmology Annual Meeting, Baltimore, MD
- April, 2017 “Scientific aspects of afferent visual dysfunction in neuro-degenerative disease”, American Academy of Neurology annual meeting, Boston, MA
- Feb, 2017 “Measuring human melanopsin function”, Neurology Grand Rounds, Johns Hopkins University, Baltimore, MD
- Feb, 2017 “Measuring human melanopsin function”, Neurology Grand Rounds, University of Maryland, Baltimore, MD
- Dec, 2016 “Measuring human melanopsin function”, Ophthalmology Grand Rounds, University of Pennsylvania, Philadelphia
- Dec, 2016 “Melanopsin: From the dawn of vision to the fear of light”, Philadelphia Neurological Society, Philadelphia

- Nov, 2016 “Measuring human melanopsin function”, Neuroscience Seminar Series, NYU, New York
- Sept, 2016 “Measuring human melanopsin function”, NextGenVis Course on Computational Neuroimaging, York University, York UK
- Sept, 2016 “Measuring human melanopsin function”, Visual Brain Core seminar series, University of Alabama at Birmingham
- Sept, 2016 “Pre-register, please. Measure with care. Model with math. Replicate, share”, Keynote Address, Neuroscience Graduate Group Student Retreat, University of Pennsylvania, Philadelphia
- Feb, 2016 “Measuring human melanopsin function”, Department of Ophthalmology and Visual Sciences, University of Illinois at Chicago
- Jan, 2016 “An introduction to fMRI and functional correlation”, Doctoral College “Imaging the Mind” Winter-School, University of Salzburg, Austria
- Nov, 2015 “Measuring human melanopsin function”, Ophthalmology Dept., McGill University, Montreal, Canada
- Sept, 2015 “Neuroimaging of the visual system without vision”, American Society of Neurophysiological Monitoring, Fall Meeting, Philadelphia, PA
- June, 2015 Faculty-at-large member for the NINDS/AUPN/ANA/CNS Symposium on Combining Clinical and Research Careers, Washington, DC
- June, 2015 “Neuroscience for legal decision makers”, Illinois Advanced Judicial Academy, *Science in the Courtroom*, Champaign, IL
- May, 2015 “The elusive neuroimaging marker of mild traumatic brain injury”, Traumatic Brain Injury Interdisciplinary Symposium, Franklin Institute, Philadelphia, PA
- March, 2014 “Neuroimaging 2.0”, Hall Center for Law and Health Event/Indiana Health Law Review Symposium: Neuroscience and Law: Injury, Capacity and Illness, Indianapolis, IN
- Feb, 2014 “Melanopsin and S-cone responses in the human pupil and brain”, Vision Center Annual Retreat, University of Pennsylvania, Philadelphia PA
- Feb, 2014 “Neurons to Neuroimaging”, MacArthur Foundation Colloquium on Law, Neuroscience and Criminal Justice, Nashville, TN
- Nov, 2013 “Measuring Visual Cortex without Vision”, Oxford University, Oxford, UK
- June, 2013 “Measuring Visual Cortex without Vision”, Optical Society of America Fall Vision Meeting, Houston TX
- June, 2013 “Inferring neuronal tuning from fMRI: adaptation and pattern information”, Advanced fMRI Course, Organization for Human Brain Mapping Annual Meeting, Seattle, Washington
- April, 2013 “Measuring Visual Cortex without Vision”, Princeton University Neuroimaging Group, Princeton NJ
- April, 2013 “Primer of Behavioral Neurology”, American Academy of Neurology, New Orleans, LA

Bibliography:

Research Publications, peer reviewed (print or other media):

1. JA Detre, DC Alsop, **GK Aguirre**, MR Sperling: Coupling of cortical and thalamic ictal activity in human partial epilepsy: demonstration by functional magnetic resonance imaging. *Epilepsia* 37(7): 657-61, Jul 1996.
2. **GK Aguirre**, JA Detre, DC Alsop, M D'Esposito. (1996). The parahippocampus subserves topographical learning in man. *Cerebral Cortex*, 6, 823-829.
3. LT Zorrilla, **GK Aguirre**, E Zarahn, TD Cannon, M D'Esposito. (1996). Activation of the prefrontal cortex during judgments of recency: a functional MRI study. *Neuroreport*, 7, 2803-2806.
4. **GK Aguirre**, M D'Esposito. (1997). Environmental knowledge is subserved by separable dorsal/ventral neural areas. *Journal of Neuroscience*, 17, 2512-2518. PMC6573507.
5. E Zarahn, **GK Aguirre**, M D'Esposito. (1997). Empirical analyses of BOLD fMRI statistics. I. Spatially unsmoothed data collected under null-hypothesis conditions. *Neuroimage*, 5, 179-197.
6. **GK Aguirre**, E Zarahn, M D'Esposito. (1997). Empirical analyses of BOLD fMRI statistics. II. Spatially smoothed data collected under null-hypothesis and experimental conditions. *Neuroimage*, 5, 199-212.
7. M D'Esposito, JA Detre, **GK Aguirre**, M Stallcup, DC Alsop, LJ Tippet, MJ Farah. (1997). A functional MRI study of mental image generation. *Neuropsychologia*, 35, 725-730.
8. M D'Esposito, E Zarahn, **GK Aguirre**, RK Shin, P Auerbach, JA Detre. (1997). The effect of pacing of experimental stimuli on observed functional MRI activity. *Neuroimage*, 6, 113-121.
9. SL Thompson-Schill, M D'Esposito, **GK Aguirre**, MJ Farah. (1997). Role of left inferior prefrontal cortex in retrieval of semantic knowledge: a reevaluation. *Proceedings of the National Academy of Sciences of the United States of America*, 94, 14792-14797. PMC25116.
10. E Zarahn, **GK Aguirre**, M D'Esposito. (1997). A trial-based experimental design for fMRI. *Neuroimage*, 6, 122-138.
11. **GK Aguirre**, E Zarahn, M D'Esposito. (1998). An area within human ventral cortex sensitive to "building" stimuli: evidence and implications. *Neuron*, 21, 373-383.
12. **GK Aguirre**, E Zarahn, M D'Esposito. (1998). The variability of human BOLD hemodynamic responses. *NeuroImage*, 8, 360-369.
13. **GK Aguirre**, E Zarahn, M D'Esposito. (1998). The inferential impact of global signal covariates in functional neuroimaging analyses. *NeuroImage*, 8, 302-306.

14. **GK Aguirre**, E Zarahn, M D'Esposito. (1998). A critique of the use of the Kolmogorov-Smirnov (KS) statistic for the analysis of BOLD fMRI data. *Magnetic Resonance in Medicine*, 39, 500-505.
15. M D'Esposito, **GK Aguirre**, E Zarahn, D Ballard, RK Shin, J Lease. (1998). Functional MRI studies of spatial and nonspatial working memory. *Cogn Brain Res*, 7, 1-13.
16. M D'Esposito, D Ballard, **GK Aguirre**, E Zarahn. (1998). Human prefrontal cortex is not specific for working memory. *NeuroImage*, 8, 274-282.
17. **GK Aguirre**, E Zarahn, M D'Esposito. (1998). Neural components of topographical representation. *PNAS USA*, 95, 839-846. PMC33806.
18. JA Detre, L Maccotta, D King, DC Alsop, G Glosser, M D'Esposito, E Zarahn, **GK Aguirre**, JA French. (1998). Functional MRI lateralization of memory in temporal lobe epilepsy. *Neurology*, 50, 926-932.
19. MJ Farah, **GK Aguirre**. (1999). Imaging visual recognition: PET and fMRI studies of the functional anatomy of human visual recognition. *Trends in Cognitive Sciences*, 3, 179-186.
20. SL Thompson-Schill, **GK Aguirre**, M D'Esposito, MJ Farah. (1999). A neural basis for category and modality specificity of semantic knowledge. *Neuropsychologia*, 37, 671-676.
21. **GK Aguirre**, R Singh, M D'Esposito. (1999). Stimulus inversion and the responses of face and object-sensitive cortical areas. *NeuroReport*, 10, 189-194.
22. E Zarahn, **GK Aguirre**, M D'Esposito. (1999). Temporal isolation of the neural substrates of spatial mnemonic processing with fMRI. *Cognitive Brain Research*, 7, 255-268.
23. M D'Esposito, E Zarahn, **GK Aguirre**, B Rypma. (1999). The effect of normal aging on coupling of neural activity to the BOLD hemodynamic response. *NeuroImage*, 10, 6-14.
24. **GK Aguirre**, M D'Esposito. (1999). Topographical disorientation: a synthesis and taxonomy. *Brain*, 122, 1613-1628.
25. E Zarahn, **GK Aguirre**, M D'Esposito. (2000). Replication and further studies of neural mechanisms of spatial mnemonic processing in humans. *Cogn Brain Res*, 9, 1-17.
26. M D'Esposito, D Ballard, E Zarahn, **GK Aguirre**. (2000). The Role of Prefrontal Cortex in Sensory Memory and Motor Preparation: An Event-Related fMRI Study. *NeuroImage*, 11, 400-408.
27. DY Kimberg, **GK Aguirre**, M D'Esposito. (2000). Modulation of task-related neural activity in task-switching: an fMRI study. *Cognitive Brain Research*, 10, 189-196.

28. DY Kimberg, **GK Aguirre**, J Lease, M D'Esposito. (2001). Cortical effects of bromocriptine, a D-2 dopamine receptor agonist, in human subjects, revealed by fMRI. *Human Brain Mapping*, 12, 246-257. PMC6871975.
29. **GK Aguirre**, JA Detre, E Zarahn, D C Alsop. (2002). Experimental design and the relative sensitivity of BOLD and perfusion fMRI. *NeuroImage*, 15, 488-500.
30. TA Polk, M Stallcup, **GK Aguirre**, DC Alsop, M D'Esposito, JA Detre, MJ Farah. (2002). Neural specialization for letter recognition. *Journal of Cognitive Neuroscience*, 14, 145-159.
31. SM Schaefer, DC Jackson, RJ Davidson, **GK Aguirre**, DY Kimberg, SL Thompson-Schill. (2002). Modulation of amygdala activity by conscious maintenance of negative emotion. *Journal of Cognitive Neuroscience*. 14, 913-921.
32. **GK Aguirre**, JM Ellenbogen, J Pollard, ED Stolzenberg, SL Galetta. (2002). Amyloid angiopathy. *Neurology*, 59, 1656
33. J-J Wang, **GK Aguirre**, DY Kimberg, AC Roc, L Li, MD Schnall, JA Detre. (2003). Arterial Spin Labeling Perfusion fMRI with Very Low Task Frequency. *Magn Reson Med* 49, 796-802.
34. J-J Wang, **GK Aguirre**, DY Kimberg, JA Detre. (2003). Empirical Analyses of Null-Hypothesis Perfusion fMRI Data at 1.5 and 4T. *NeuroImage* 19, 1449-62.
35. AP Jha, SA Fabian, **GK Aguirre** (2004). The role of prefrontal cortex in resolving distractor interference. *Cogn Affect Behav Neurosci* 4, 517-27.
36. J-J Wang, Z Wang, **GK Aguirre**, JA Detre (2005). To smooth or not to smooth? ROC analysis of perfusion fMRI data. *Magn Reson Imaging* 23, 75-81.
37. RA Epstein, JS Higgins, W Parker, **GK Aguirre**, S Cooperman (2006) Cortical correlates of face and scene inversion: A comparison. *Neuropsychologia* 44(7): 1145-1158.
38. IR Olson, H Rao, KS Moore, J Wang, JA Detre, **GK Aguirre** (2006) Using perfusion fMRI to measure continuous changes in neural activity with learning. *Brain Cogn* 60, 262-71.
39. M Bedny, **GK Aguirre**, SL Thompson-Schill (2007) Item analysis in functional magnetic resonance imaging. *Neuroimage*. 35, 1093-1102.
40. **GK Aguirre** (2007) Continuous carry-over designs for fMRI. *Neuroimage*. 35, 1480-1494. PMC2147064.
41. **GK Aguirre**, AM Komaromy, AV Cideciyan, DH Brainard, TS Aleman, AJ Roman, BB Avants, JC Gee, M Korczykowski, WW Hauswirth, GM Acland, GD Aguirre, SG Jacobson (2007) Canine and Human Visual Cortex Intact and Responsive Despite Early Retinal Blindness from RPE65 Mutation. *PLoS Med*, 4(6), 230. PMC1896221.
42. AV Cideciyan, TS Aleman, SG Jacobson, H Khanna, A Sumaroka, **GK Aguirre**, et al. (2007). Centrosomal-ciliary gene *cep290/nphp6* mutations result in

- blindness with unexpected sparing of photoreceptors and visual brain: Implications for therapy of leber congenital amaurosis. *Hum Mutat*, 28(11), 1074-1083.
43. DJ Libon, L Massimo, P Moore, HB Coslett, A Chatterjee, **GK Aguirre**, A Rice, L Vesely, M Grossman (2007). Screening for Frontotemporal Dementias and Alzheimer's Disease with the Philadelphia Brief Assessment of Cognition: A Preliminary Analysis. *Dement Geriatr Cogn Disord*. 24(6):441-447
 44. GA Stefanatos, WQ Joe, **GK Aguirre**, JA Detre, G Wetmore (2008). Activation of human auditory cortex during speech perception: Effects of monaural, binaural, and dichotic presentation. *Neuropsychologia*. 46(1): 301-15
 45. Z Wang, **GK Aguirre**, H Rao, J Wang, MA Fernandez-Seara, AR Childress, et al. (2008). Empirical optimization of ASL data analysis using an ASL data processing toolbox: Asltbx. *Magn Reson Imaging*. PMC2268990.
 46. A Thomas, K Lawler, IR Olson, **GK Aguirre** (2008). The Philadelphia face perception battery. *Archives of Clinical Neuropsychology*. 23(2): 175-187. PMC2366210.
 47. A Harris, **GK Aguirre** (2008). The representation of parts and wholes in face-selective cortex. *Journal of Cognitive Neuroscience*. 20(5): 863-878
 48. PD Radoeva, S Prasad, DH Brainard, **GK Aguirre**. (2008) Neural activity within area V1 reflects unconscious visual performance in a case of Blindsight. *Journal of Cognitive Neuroscience*. 20(11), 1-13. PMC2773243.
 49. A Harris, **GK Aguirre** (2008). The Effects of Parts, Wholes, and Familiarity on Face-Selective Responses in MEG. *Journal of Vision*. 8(10): 1-12
 50. A Chatterjee, A Thomas, S Smith, **GK Aguirre**. (2009) The Neural Response to Facial Attractiveness. *Neuropsychology*. 23(2): 135-43
 51. L Yan, Y Zhyo, Y Ye, J An, **GK Aguirre**, JJ Wang (2009). Physiological Origin of Low Frequency Drift in BOLD FMRI. *Magnetic Resonance in Medicine*. 61(4): 819-27
 52. D Drucker, **GK Aguirre** (2009). Different spatial scales of object similarity representation in lateral and ventral LOC. *Cerebral Cortex*. 19(10), 2269-2280. PMC2742590.
 53. D Drucker, WT Kerr, **GK Aguirre**. (2009) Distinguishing conjoint and independent neural tuning for stimulus features with fMRI adaptation. *J. Neurophysiology*. 101(6): 3310-24 [Selected as an F1000 paper.]. PMC2694123.
 54. EB Wencil, **GK Aguirre**, HB Coslett, A Chatterjee (2010). Carving the clock at its component joints: Neural bases for interval timing. *J Neurophysiology*. 104: 160-168. PMC2904232.
 55. A Harris, **GK Aguirre**. (2010). Neural Tuning for Face Wholes and Parts in Human Fusiform Gyrus Revealed by fMRI Adaptation. *J Neurophysiology*. 104(1):336-45. PMC2904228.

56. DA Kahn, AM Harris, D Wolk, **GK Aguirre**. (2010) Temporally distinct neural coding of perceptual similarity and prototype bias. *Journal of Vision*, 10(10):12, 1-12
57. LK Morgan, SP MacEvoy, **GK Aguirre**, and RA Epstein. (2011). Distances between real-world locations are represented in the human hippocampus. *Journal of Neuroscience*, 31(4):1238-1245. PMC3074276.
58. **GK Aguirre**, MG Mattar, L Magis-Weinberg. (2011) de Bruijn cycles for neural decoding. *NeuroImage*. 56: 1293–1300. PMC3104402.
59. R Datta, JA Detre, **GK Aguirre**, B Cucchiara. (2011). Absence of changes in cortical thickness in patients with migraine. *Cephalalgia*. 14:1452-8. PMC3512201.
60. TS Aleman, AV Cideciyan, **GK Aguirre**, WC Huang, CL Mullins, AJ Roman, A Sumaroka, MB Olivares, FF Tsai, SB Schwartz, LH Vandenberghe, MP Limberis, EM Stone, P Bell, JM Wilson, SG Jacobson (2011) Human CRB1-associated retinal degeneration: comparison with the rd8 Crb1-mutant mouse model. *Investigative Ophthalmology and Visual Science*. PMC3176016.
61. DA Kahn, **GK Aguirre**. (2012) Confounding of norm-based and adaptation effects in brain responses. *NeuroImage* 60(4): 2294–2299
62. R Datta, J Lee, J Duda, BB Avants, CH Vite, B Tseng, JC Gee, GD Aguirre, **GK Aguirre**. (2012) A digital atlas of the dog brain. *PLoS ONE* 7(12): e52140. PMC3527386.
63. NC Benson, OH Butt, R Datta, PD Radoeva, DH Brainard, **GK Aguirre** (2012) The retinotopic organization of striate cortex is well predicted by surface topology. *Current Biology* 22(21): 2081–2085. PMC3494819.
64. R Datta, **GK Aguirre**, S Hu, JA Detre, B Cucchiara (2013) Interictal cortical hyperresponsiveness in migraine is directly related to the presence of aura. *Cephalalgia* 33(6):365-74. PMC3658127.
65. BC Cucchiara, R Wolf, L Nagae, Q Zhang, S Kasner, R Datta, **GK Aguirre**, J Detre (2013) Migraine with aura is associated with an incomplete circle of Willis: results of a prospective observational study. *PLOS One*. PMC3724801.
66. OH Butt, NC Benson, R Datta, **GK Aguirre** (2013) The fine-scale functional connectivity of striate cortex in sighted and blind people. *Journal of Neuroscience* 33 (41), 16209-16219. PMC3792460.
67. NC Benson, OH Butt, DH Brainard, **GK Aguirre** (2014) Correction of distortion in flattened representations of the cortical surface allows prediction of V1-V3 functional organization from anatomy. *PLoS Computational Biology*. PMC3967932.
68. M Spitschan, S Jain, Dh Brainard, **GK Aguirre** (2014) Opponent melanopsin and S-cone signals in the human pupillary light response. *PNAS*. 11(43) 15568–15572. PMC4217411.

69. AV Cideciyan, **GK Aguirre**, SG Jacobson, O Butt, SB Schwartz, M Swider, AJ Roman, S Sadigh, WW Hauswirth (2014) Pseudo-fovea formation after gene therapy for RPE65-LCA. IOVS. PMC4303042.
70. B Cucchiara, R Datta, **GK Aguirre**, KE Idoko, J Detre (2015) Measurement of visual sensitivity in migraine: Validation of two scales and correlation with visual cortex activation. Cephalalgia
71. A Persichetti, **GK Aguirre**, S Thompson-Schill (2015) Value is in the eye of the beholder: Early visual cortex codes monetary value of objects during a diverted attention task. JoCN. PMC4382435.
72. OH Butt, NC Benson, R Datta, **GK Aguirre** (2015) Hierarchical and homotopic correlations of spontaneous neural activity within the visual cortex of the sighted and blind. Frontiers in Neuroscience. PMC4322716.
73. S Bishop, **GK Aguirre**, AO Nunez-Elizalde, D Toker (2015) Seeing the world through non rose-colored glasses: anxiety and the amygdala response to blended expressions. Frontiers in Neuroscience. PMC4375986.
74. M Spitschan, **GK Aguirre**, DH Brainard (2015) Selective stimulation of penumbral cones reveals perception in the shadow of retinal blood vessels. PLoS One. PMC4405364.
75. AS Persichetti, SL Thompson-Schill, OH Butt, DH Brainard, **GK Aguirre** (2015) fMRI adaptation reveals a non-categorical representation of hue in early visual cortex. Journal of Vision. PMC4461891.
76. M Spitschan, DH Brainard, **GK Aguirre** (2016) Human visual cortex responses to rapid cone and melanopsin directed flicker. J Neuroscience. PMC4737763.
77. MG Mattar, DA Kahn, S Thompson-Schill, **GK Aguirre**. (2016) Varying timescales of stimulus integration unite neural adaptation and prototype formation. Current Biology. PMC4942354.
78. M Spitschan, **GK Aguirre**, DH Brainard, AM Sweeney (2016) Variation of outdoor illumination as a function of solar elevation and light pollution. Nature Scientific Reports. PMC4895134.
79. LM Downs, EM Scott, AV Cideciyan, S Iwabe, V Dufour, KL Gardiner, S Genini, LF Marinho, A Sumaroka, MS Kosyk, M Swider, **GK Aguirre**, SG Jacobson, WA Beltran, GD Aguirre (2016) Overlap of Abnormal Photoreceptor Development and Progressive Degeneration in Leber Congenital Amaurosis Caused by NPHP5 Mutation. Human Molecular Genetics 2016; doi: 10.1093/hmg/ddw254. PMC5291197.
80. **GK Aguirre**, R Datta, NC Benson, S Prasad, SG Jacobson, AV Cideciyan, H Bridge, KE Watkins, OH Butt, AB Daina, L Brandes, ED Gennatas (2016) Patterns of individual variation in visual pathway structure and function in the sighted and blind. PLoS One. 2016 Nov 3;11(11):e0164677. PMC5094697.
81. **GK Aguirre**, OH Butt, R Datta, AJ Roman, A Sumaroka, SB Schwartz, AV Cideciyan, SG Jacobson (2017) Post-Retinal Structure and Function in Severe

- Congenital Photoreceptor Blindness Caused by Mutations in the *GUCY2D* Gene. IOVS. PMC5308769.
82. M Olkkonen, **GK Aguirre**, R Epstein (2017) Expectation modulates stimulus repetition priming under high stimulus variability. Journal of Vision. PMC5477629.
 83. M Spitschan, A Bock, J Ryan, G Frazzetta, DH Brainard, **GK Aguirre** (2017) The Human Visual Cortex Response to Melanopsin-Directed Stimulation is Accompanied by a Distinct Perceptual Experience. PNAS. PMC5699066.
 84. D Irwin, C McMillan, S Xie, K Rascovsky, V van Deerlin, HB Coslett, R Hamiltopn, **GK Aguirre**, E Lee, V Lee, J Trojanowski, M Grossman. (2017) Asymmetry of post-mortem neuropathology in behavioral-variant frontotemporal dementia. Brain. PMC5837322.
 85. M Mattar, NF Wymbs, AS Bock, **GK Aguirre**, ST Grafton, DS Bassett. (2018) Predicting future learning from baseline network architecture. Neuroimage. PMC5910215.
 86. MG Mattar, M Olkkonen, RA Epstein, **GK Aguirre** (2018) Adaptation decorrelates shape representations. Nature Communications. PMC6145947.
 87. H McAdams, A Igdaolva, M Spitschan, DH Brainard, **GK Aguirre** (2018) Pulses of melanopsin-directed contrast produce highly reliable pupil responses that are insensitive to a change in background radiance. IOVS. PMC6262648.
 88. MG Mattar, MV Carter, MS Zebrowitz, SL Thompson-Schill, **GK Aguirre** (2018) Individual differences in response precision correlate with adaptation bias. Journal of Vision. PMC6314105.
 89. **GK Aguirre**. (2019) A model of the entrance pupil of the human eye. Scientific Reports, 9. PMC6597540.
 90. EA Kaiser, A Igdaolva, **GK Aguirre***, Brett Cucchiara (2019) A web-based, branching logic questionnaire for the automated classification of migraine. Cephalalgia. (*corresponding author)
 91. F Hartung, A Jamrozik, M Rosen, **GK Aguirre**, D Sarwer, A Chatterjee (2019). Behavioral and Neural Responses to Facial Disfigurement. Scientific Reports, 9. PMC6541618.
 92. R Cooper, **GK Aguirre**, J Morgan (2019). Fully-Automated Estimation of Spacing and Density for Retinal Mosaics. Translational Vision Science & Technology. PMC6798313.
 93. C Patterson-Gentile and **GK Aguirre** (2020) A neural correlate of visual discomfort from flicker. Journal of Vision. PMC7424114.
 94. H McAdams, EA Kaiser, A Igdaolva, EB Haggerty, B Cucchiara, DH Brainard, **GK Aguirre** (2020) Selective amplification of ipRGC signals accounts for interictal photophobia in migraine. PNAS. PMC7382295.

95. JS Grewal, T Gloe, J Hegedus, K Bitterman, B Billings, S Chengetania, JC Ng, VX Wang, C Tang, S Geletta, B Wicinski, M Bertelson, R Mars, **GK Aguirre**, C Rusbridge, PR Hof, CC Sherwood, PR Manger, and MA Spocter (2020) Brain gyrification in wild and domestic canids: Has domestication changed the gyrification index in domestic dogs? *Journal of Comparative Neurology*
96. M Chen, J Nofziger, R Datta, JC Gee, J Morgan, **GK Aguirre** (2020) The influence of axial length upon the retinal ganglion cell layer of the human eye. *Translational Vision Science & Technology*. PMC7726585.
97. NF Darwich, JM Phan, B Kim, E Suh, JD Papatriantafyllou, L Changolkar, AT Nguyen, C O'Rourke, Z He, S Porta, GS Gibbons, KC Luk, SG Papageorgiou, M Grossman, L Massimo, DJ Irwin, CT McMillan, IM Nasrallah, C Toro, **GK Aguirre**, VM Van Deerlin, EB Lee (2020) Autosomal dominant VCP hypomorph mutation impairs disaggregation of PHF-tau. *Science*. PMC7818661.
98. C Workman, S Humphries, F Hartung, **GK Aguirre**, J Kable, A Chatterjee (2021) Morality is in the eye of the beholder: Unpacking the neurocognitive basis of the “anomalous-is-bad” stereotype. *Annals of the New York Academy of Sciences*. PMC8247878.
99. C Patterson-Gentile, NR Joshi, KJ Ciuffreda, KB Arbogast, C Master, **GK Aguirre** (2021) Developmental effects on pattern visual evoked potentials characterized by principal component analysis. *Translational Vision Science & Technology*. PMC8024780.
100. M Cieslak, ..., **GK Aguirre**, ..., TD Satterthwaite. (2021) QSIPrep: an integrative platform for preprocessing and reconstructing diffusion MRI data. *Nat Methods*. 2021 Jul;18(7):775-778. doi: 10.1038/s41592-021-01185-5. Epub 2021 Jun 21. PMC8596781.
101. TM Tapera, M Cieslak, M Bertolero, A Adembimpe, **GK Aguirre**, ER Butler, PA Cook, D Davila, MA Elliott, S Linguiti, K Murtha, W Tackett, JA Detre, TD Satterthwaite (2021) FlywheelTools: Data Curation and Manipulation on the Flywheel Platform. *Frontiers Neuroinformatics*. PMC8258420.
102. MA Barnett, **GK Aguirre**, DH Brainard. (2021) A Quadratic Model Captures the Human V1 Response to Variations in Chromatic Direction and Contrast. *eLife*. PMC8452309.
103. EA Kaiser, H McAdams, A Igdalova, EB Haggerty, B Cucchiara, DH Brainard, **GK Aguirre** (2021) Reflexive eye closure in response to cone and melanopsin stimulation: a study of implicit measures of light sensitivity in migraine. *Neurology*. PMC8605618.
104. J Vincent, EB Haggerty, DH Brainard, **GK Aguirre**. (2021) Melanopic stimulation does not affect psychophysical threshold sensitivity for luminance flicker. *Scientific Reports*. PMC8505480.
105. **GK Aguirre**. (2021) A model of the appearance of the moving human eye. *bioRxiv*. <https://www.biorxiv.org/content/10.1101/2021.02.02.429411v1>

- 106.CP Gentile, **GK Aguirre**, KB Arbogast, CL Master. (2022) The relationship between visually evoked effects and concussion in youth. *J Neurotrauma*. PMC9225424
- 107.CC Go, HO Taskin, S-A Ahmadi, G Frazzetta, L Cutler, S Malhotra, JIW Morgan, VI Flanagan, **GK Aguirre**. (2022) Persistent horizontal and vertical, MR-induced nystagmus in resting state Human Connectome Project data. *NeuroImage*. PMC10354749
- 108.HO Taskin, Y Qiao, VJ Sydnor, M Cieslak, EB Haggerty, TD Satterthwaite, JIW Morgan, Y Shi, **GK Aguirre**. (2022) Retinal ganglion cell endowment is correlated with optic tract fiber cross section, not density. *NeuroImage*. PMC5415575
- 109.H Jiang, A-G Simms, S Sadaghiani, YY Jiang, JIW Morgan, **GK Aguirre**, PM Pattany, JA Detre, J Wang. (2022) Multi-center repeatability of macular capillary perfusion density using optical coherence tomography angiography. *Clinical Ophthalmology*. Sep 17;16:3069-3078. PMC9491369.
- 110.CP Gentile, **GK Aguirre**, A Hershey, CL Szperka (2022) Comparison of continuous headache features in youth with migraine, new daily persistent headache, and persistent post-traumatic headache. *Cephalalgia*. PMC10029693
- 111.CP Gentile, **GK Aguirre**, A Hershey, CL Szperka (2023) Symptoms associated with headache in youth. *Cephalalgia*. July; 43 (7)
- 112.HO Taskin, J Wivel; GD Aguirre, WA Beltran, **GK Aguirre**. (2024) Cone-driven, geniculo-cortical responses in canine models of outer retinal disease. *TVST*. January; 13 (1).
- 113.L Murgiano, JK Niggel, L Benedicenti, M Cortellari, A Bionda, P Crepaldi, L Liotta, **GK Aguirre**, WA Beltran, GD Aguirre. (2024) Frameshift variant in AMPD2 in Cirneco dell'Etna dog breed with retinopathy and tremors. *Genes*.
- 114.EA Kaiser, EB Haggerty, DP Garner, VY Bunya, **GK Aguirre**. (2024) A measure of the blink reflex to parametric variation of mechanical stimulation of the trigeminal nerve. *Psychophysiology*.
- 115.CP Gentile, M Spitchan, HO Taskin, A Bock, **GK Aguirre**. (2024) Temporal sensitivity for achromatic and chromatic flicker across the visual cortex. *J Neuroscience*. May; 44 (21).
- 116.AE Kahn, K Szymula, EB Haggerty, N Nyema, **GK Aguirre**, DS Bassett. (in press) Network structure influences the strength of learned neural representations. *Nature Communications*
- 117.CP Gentile, **GK Aguirre**, KJ Cuiffreda, NR Joshi, KB Arbogast, CL Master. (in press) Model based fitting of pattern reversal visually evoked potentials provides a reliable characterization of waveform components. *Biomedical Signal Processing and Control*.
- 118.MA Barnett, BM Chin, **GK Aguirre**, J Burge, DH Brainard. (in revision) Temporal dynamics of color processing measured using a continuous tracking

- task. Journal of Vision. <https://www.biorxiv.org/content/10.1101/2024.03.01.582975v1>
119. RF Coope, S Kalaparambath, **GK Aguirre**, JIW Morgan. (in press) The normative human photoreceptor mosaic: Analysis of a publicly available adaptive optics montage repository. Sci Reports
 120. Z Lu, JB Julian, **GK Aguirre**, RA Epstein. (submitted) Neural compass in the human brain during naturalistic virtual navigation. J Neuroscience <https://www.biorxiv.org/cgi/content/short/2024.04.18.590112v1>
 121. LQ Zhang, J Mao, **GK Aguirre**, AA Stocker. (submitted) The tilt illusion arises from an efficient reallocation of neural coding resources at the contextual boundary. Nature Neuroscience; <https://www.biorxiv.org/content/10.1101/2024.09.17.613538v1>

Editorials, Reviews, Chapters, Preprints:

1. **GK Aguirre**, E Zarahn, M D'Esposito. (1998). Neural components of topographical representation. *PNAS USA*, 95, 839-846. PMC33806.
2. **GK Aguirre**, MJ Farah. (1998). Human visual object recognition: what have we learned from neuroimaging? *Psychobiology*, 26, 322-332.
3. M D'Esposito, E Zarahn, **GK Aguirre**. (1999). Event-related functional MRI: Implications for cognitive psychology. *Psychological Bulletin*, 125.
4. **GK Aguirre**. (1999). Face recognition turned upside-down. *Neuron*, 22, 5-6.
5. MJ Farah, **GK Aguirre**. (1999). Imaging visual recognition: PET and fMRI studies of the functional anatomy of human visual recognition. *Trends in Cognitive Sciences*, 3, 179-186.
6. **GK Aguirre**, M D'Esposito. (1999). Experimental Design for Brain fMRI. In C. T. W. Moonen & P. A. Bandettini (Eds.), *Functional MRI* (pp. 369-380). Berlin: Springer Verlag.
7. **GK Aguirre**. (2001). Turning the dial on object perception. *Neuron*, 29, 317-319.
8. **GK Aguirre**. (2002). Topographical Disorientation. In M D'Esposito (Ed.) *Neurological Foundations of Cognitive Neuroscience*. Boston: MIT Press.
9. **GK Aguirre**. (2003). Functional imaging in behavioral neurology and cognitive neuropsychology. In T. E. Feinberg & M. J. Farah (Eds.), *Behavioral Neurology and Cognitive Neuropsychology*. New York: McGraw Hill.
10. **GK Aguirre**. (2004). Experimental Design and Data Analysis for fMRI. In F. Mohamed & S. H. Faro (Eds.), *Clinical applications of fMRI*. Springer-Verlag. In Press
11. **GK Aguirre**, JA Detre, J Wang. (2005). Perfusion fMRI for functional neuroimaging. *Int Rev Neurobiol*, 66, 213-36.

12. **GK Aguirre.** (2006). Interpretation of clinical functional neuroimaging studies. In: D'Esposito, M. (Ed.), *Clinical Functional MRI*. Parthenon Publishing, New York.
13. A Harris, **GK Aguirre.** (2007). Prosopagnosia. *Current Biology*.
14. A Harris, **GK Aguirre.** (2007). Toward a Neurofunctional Definition of “Face-Blindness”. *Scientific American Mind Matters*. (<http://science-community.sciam.com/blog-entry/Mind-Matters/Face-Like/300004881>) Ed: David Dobbs.
15. **GK Aguirre.** (2008). The Political Brain. *Cerebrum*. September 12. (<http://www.dana.org/news/cerebrum/detail.aspx?id=13242>)
16. AK Asbury, MR Sperling, **GK Aguirre**, GT Liu. (2011). Selected contributions to Neurology by Philadelphia neurologists since 1980 (prepared in association with the 125th anniversary celebration meeting of the Philadelphia Neurological Society on Feb. 20, 2008). *Reviews In Neurological Diseases*. 7: 140-149.
17. **GK Aguirre.** (2011). Experimental Design and Data Analysis for fMRI. In F. Mohamed & S. H. Faro (Eds.), *Clinical applications of fMRI*. Springer-Verlag.
18. **GK Aguirre** (2012) FIASCO, VoxBo, MEDx: Behind the Code. *NeuroImage*
19. **GK Aguirre** and JA Detre (2012) The development and future of perfusion fMRI for dynamic imaging of human brain activity. *NeuroImage* 62(2): 1279–1285
20. **GK Aguirre** (2014) Functional Neuroimaging: Technical, Logical, and Social Perspectives. *Hastings Center Report* 44, no. 2 suppl. (2014): S8-S18.
21. M Spitschan, **GK Aguirre** (2017) Melanopsin as a *Raumgeber*. *Current Biology*. 27.13 (2017): R644-R646.
22. M Chen, JC Gee, JL Prince, **GK Aguirre** (2018). 2D Modeling and Correction of Fan-Beam Scan Geometry in OCT. In *Computational Pathology and Ophthalmic Medical Image Analysis* (pp. 328-335). Springer, Cham. PMC6534138.
23. M Chen, JC Gee, JIW Morgan, **GK Aguirre**: Shape Decomposition of Foveal Pit Morphology using Scan Geometry Corrected OCT (2019). *International Workshop on Ophthalmic Medical Image Analysis* 11855: 69-76, Oct. PMC7346004.
24. **GK Aguirre** (2024) A prolonged and colorless experience. *Current Biology*. 34, R82–R101, February 5, 2024
25. D Fischer, BL Edlow, HJ Freeman, D Alaiev, OWu, JWare, JA Detre, **GK Aguirre** (in revision) Reconstructing covert consciousness: Neural decoding as a novel consciousness assessment. *Neurology* (narrative review)