

Curriculum Vitae
Asif A. Ghazanfar
Princeton Neuroscience Institute
Departments of Psychology and Ecology & Evolutionary Biology
Princeton University
(December 2022)

[Note: was on sabbatical for 2021 – 2022, except for my new role as Head of College, which coincided with 2021.]

Contact Information

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Education

1994 – 1999 Doctorate, *Neurobiology*, Duke University (Advisor: Miguel Nicolelis)
1990 – 1994 Bachelor of Science, *Philosophy*, University of Idaho.

Positions held

2021 – present Head of College, New College East, Princeton University
2014 – present Professor, Princeton Neuroscience Institute & Department of Psychology
2014 – 2020 Director of Undergraduate Studies, Princeton Neuroscience Institute
2011 – 2014 Co-Director, Undergraduate Neuroscience Certificate Program
2011 – 2013 Director of Graduate Studies, Department of Psychology
2010 – 2014 Associate Professor, Princeton Neuroscience Institute, Princeton University
2010 – 2014 Associate Professor, Department of Psychology, Princeton University
2009 – present Associated Faculty, Ecology & Evolutionary Biology, Princeton University
2007 – 2010 Assistant Professor, Neuroscience Institute, Princeton University
2005 – 2010 Assistant Professor, Department of Psychology, Princeton University
2001 – 2005 Research Scientist, AG Logothetis, Max Planck Institute for Biological
Cybernetics, Tübingen, Germany
2000 Teaching fellow, Department of Psychology, Harvard University
1999 – 2001 Postdoctoral fellow, Department of Psychology, Harvard University

Honors and Awards

2013	Troland Research Award, National Academy of Sciences
2011 – 2016	Elected member, International Neuropsychological Symposium
2010 – 2016	James S. McDonnell Scholar Award
2010 – 2013	Lawrence S. Brodie preceptorship
2008	Kavli Frontiers of Science Fellow
2006 – 2011	National Science Foundation CAREER Award
2002 – 2005	Max Planck Society Fellowship
2000	Human Frontiers Science Program Fellowship
1999	McDonnell-Pew Summer Institute in Cognitive Neuroscience Fellow
1999 – 2002	National Research Service Award (Postdoctoral), NIH NIDCD
1999 – 2002	Harvard-MIT Speech & Hearing Sciences Fellowship (declined)
1995	Antonio Borsellino College on Neurophysics, Trieste, Italy
1994 – 1996	Duke University Neurobiology Graduate Fellowship
1993	1 st Prize, Biological Sciences section, Idaho Academy of Sciences
1991 – 1994	University of Idaho Dean's Honor List
1990	University of Idaho Presidential Scholarship
1989	National Science Foundation Young Scholars Program Fellow

Editorial Positions

- 2019 – present: Editorial Board, *Biology Letters*
2019 – 2022: Board of Trustees, *Princeton University Press*
2018 – 2022: Editorial Board, *Princeton University Press*
2014 – 2021: Editorial Board, *Behavioral Neuroscience*
2012 – present: Editorial Board, *Developmental Psychobiology*
2010 – present: Editorial Board, *Current Biology*
2010 – 2016: Associate Editor, *The Journal of Neuroscience*
2007 – 2010: Associate Editor, *Frontiers in Integrative Neuroscience*

Guest Editor: *Proceedings of the National Academy of Sciences, USA; PLoS Biology*

Grant Support

Current

- 2006 – 2023 NIH 2R01NS054898, Principal Investigator
“*The social neurobiology of vocal production and perception.*”
- 2017 Princeton Neuroscience Institute Research Innovator Award (co-PI with Carlos Brody)
“*Fast functional ultrasound imaging platform to measure large-scale neural activity.*”

Completed

- 2012 – 2015 250th Anniversary Fund for Teaching Innovation
“*The Life Cycle of Behaviors*” lecture and lab course development
- 2010 – 2016 James S. McDonnell Scholar Award, Principal Investigator
“*Vocal communication emerges and evolves through coupled oscillations*”

- 2006 – 2011 NSF BCS-0547760 CAREER Award, Principal Investigator
“The neuro-cognitive evolution of speech-reading”
- 2006 – 2008 Autism Speaks Research Grant, Principal Investigator
“Large-scale network operations in the primate brain underlying the sensorimotor integration of social signals”

Professional Associations

Society for Neuroscience
International Society for Neuroethology

Service

External

Committees:

2018	Chair, R01 Special Emphasis – Integrative Neuroscience, NIH
2017-2020	Member, Donald B. Lindsey Prize Selection Committee, Society for Neuroscience
2016	Co-organizer, Mechanisms of Communication conference (San Diego)
2016	Member, Program Project (P01) Panel, NIH
2016	Member, R01 Special Emphasis Panel – Integrative Neuroscience, NIH
2015	Scientific committee, 1 st Joint Conference on Facial Analysis, Animation and Audiovisual Speech Processing, Vienna Austria
2012	Organizing committee, 10 th International Congress of Neuroethology
2011	Nominating committee, International Society for Neuroethology
2011	NSF Cognitive Neuroscience Review panel
2011	NIH Special Emphasis Panel – Hearing and Balance, NIDCD
2010	NSF Cognitive Neuroscience Review panel
2009	NIH Special Emphasis Panel – Methodology and Measurement for the Behavioral and Social Sciences
2008	NIH Special Emphasis Panel, Integrative, Functional and Cognitive Neuroscience
2007	Organizing committee, 8 th International Congress of Neuroethology
2006	NSF Cognitive Neuroscience Review panel

Outreach

2017	Q & A at Princeton Learning Cooperative
2011	Presenter, Littlebrook Elementary School Science Expo, Princeton, New Jersey
2009	Presentation Judge and Recruiter, <i>Annual Biomedical Research Conference for Minority Students</i> , Phoenix, Arizona
2007	Mentor, Harlem Children Society
2006	Mentor, New Jersey Center for Life Science

University

Committees:

2022 – 2023	Committee, promotion to tenure, Lindy McBride (EEB/PNI)
2020 – 2021	Search committee, Faculty position in Psychology
2020	Search committee, Senior Associate Director, McGraw Center
2020	Search committee, Associate Dean for Advising in ODOC
2020	Provost's COVID 19 Planning Committee on Instruction
2018 – 2019	President's Ad-hoc Committee on the Classroom Learning Environment
2018 – 2019	Committee member, promotion-to-professor, Mala Murthy (PNI/MOL)
2017 – 2020	Chair, Institutional Animal Care & Use Committee
2017 – 2018	Committee member, 3 rd -year reappointment, Lindy McBride (EEB/PNI)
2016 – 2017	Search committee, Faculty position in Neuroscience Institute
2015 – 2020	Animal Research Advisory Group
2013 – 2017	Member (alternate), Institutional Animal Care & Use Committee
2013 – 2014	Chair, Search committee, Faculty position in Psychology (Developmental)
2013 – 2014	Search committee, Faculty position in Ecology & Evolutionary Biology (Animal behavior)
2012 – 2013	University Curriculum Committee
2011 – 2012	Search committee, Faculty position in Neuroscience Institute
2011 – 2012	Search committee, Behavioral Science Librarian position
2011 – 2020	[Chair from 2014-2018], Princeton Neuroscience Institute Curriculum Committee
2009, 2010, 2011	Neuroscience Institute Graduate Admissions Committee
2007 – 2008	Neuroscience Institute Design Committee – Vivarium
2007 – present	Executive committee, Neuroscience Institute

Other Service

2016-2022	Freshman Advisor, Butler College
2014	Lecturer, "Teachers as Scholars" program
2012-2022	Fellow, Butler College
2006, 2008, 2010	Freshman Advisor, Mathey College
2006-2012	Fellow, Mathey College
2006	Mentor, Freshman Scholars Institute
2006	Mentor, Mellon Fellows program

Teaching

Princeton University

2020, 2023	FRS 189 Systems
2013 – present	PSY/NEU260 The Life Cycles of Behavior
2013	PSY543 Research Seminar in Cognitive Psychology
2010, 2011	NEU258 Fundamentals of Neuroscience
2010 – present	NEU 501 & 502 From Molecules to Systems to Behavior (2-5 lectures per year)
2008	FRS133 How the body shapes the way the brain works
2006-2010	PSY511 Current Issues in Neuroscience & Behavior (co-organizer)

2007, 2008 PSY502 Proseminar in Neuroscience & Neuropsychology
2006 – present NEU/PSY336 The Diversity of Brains

Harvard University

2000 Science B25 Behavioral Neuroscience (Teaching Fellow)
2000 Science B29 Human Behavioral Biology (Teaching Fellow)

Duke University

1997 Principles of Neurobiology (Teaching Fellow)

Mentoring

Post-doctoral fellows

Ahmed El-Hady (co-mentored with Carlos Brody) 2017 → 2021
Morgan L. Gustison 2017 → 2018
Yisi S. Zhang 2014 → present
Daniel Y. Takahashi 2010 → 2019
- Currently a Professor at Federal University of Rio Grande do Norte, Brazil
- 2010 – 2012 Pew Latin American Fellow
Stephen V. Shepherd 2008 → 2012
- Currently a postdoctoral fellow at Rockefeller University
Luis Lemus 2009 → 2011
- Currently an assistant professor at the Instituto de Fisiología Celular-
Neurociencias, Universidad Nacional Autónoma de México

Graduate (doctoral) students

Thiago T. Varella 2019 → present
- National Science Foundation Graduate Fellowship
Diana A. Liao 2013 → 2019
- Currently a postdoctoral fellow at the University of Tuebingen, Germany
- National Science Foundation Graduate Fellowship
Jeremy I. Borjon 2012 → 2017
- National Science Foundation Graduate Fellowship
- Currently a postdoctoral fellow at Indiana University
Ipek G. Kulahci (co-advised with Dan Rubinstein, EEB) 2009 → 2014
- 2010 American Society of Primatologists Small Research Grant
- 2012 American Society of Mammalogists Grant
- 2012 Founders Memorial Poster Paper Award, Animal Behavior Society
- 2013 Animal Behavior Society Grant
- Currently a postdoctoral fellow at University of Notre Dame
Darshana Narayanan 2009 → 2015
- 2011 NIH(NICHHD)/Sackler Institute Travel Award
Chandramouli Chandrasekaran 2006 → 2011
- 2010-2011 Charlotte Elizabeth Procter Honorific Fellowship
- 2010-2011 Hoffman Scholar
- Currently an Assistant Professor at Boston University

Hjalmar K. Turesson 2006 → 2011

- Currently Deloitte Data Scientist; Lecturer, Master of Business Analytics and Master of Management in Artificial Intelligence, York University, Toronto

Joost X. Maier 2003 → 2006

- 2005 Graduate Student Award, International Multisensory Research Forum, Trento, Italy
- PhD dissertation awarded *magna cum laude*
- Currently an Assistant Professor at Wake Forest University

Visiting graduate students

Marco Lanzilotto (University of Modena & Reggio Emilia, Italy) 2011 → 2012

Publications

Books

1. **Ghazanfar AA**, Editor (2002) *Primate Audition: Ethology and Neurobiology*. CRC Press, Boca Raton, FL.
2. Platt ML & **Ghazanfar AA**, Editors (2010) *Primate Neuroethology*. Oxford University Press, Oxford, UK.

Research reports

1. **Ghazanfar AA** and Nicolelis MAL (1997) Non-linear processing of tactile information by thalamocortical ensembles. *Journal of Neurophysiology*, 78: 506-510.
2. Nicolelis MAL, **Ghazanfar AA**, Faggini B, Votaw S and Oliveria LMO (1997) Reconstructing the engram: simultaneous, multi-site, many single neuron recordings. *Neuron*, 18: 529-537.
3. Grober MS, Winterstein G, **Ghazanfar AA** and Eroschenko V (1998) The effects of estradiol on gonadotropin-releasing hormone neurons in the developing mouse brain. *General & Comparative Endocrinology*, 112:356-363.
4. Nicolelis MAL, **Ghazanfar AA**, Stambaugh, CR, Oliveira LMO, Laubach, M, Chapin JK, Nelson RJ and Kaas JH (1998) Simultaneous encoding of tactile information by three primate cortical areas. *Nature Neuroscience*, 1:621-630.
5. Krupa, DJ, **Ghazanfar AA** and Nicolelis MAL (1999) Immediate thalamic sensory plasticity depends on cortical feedback. *Proceedings of the National Academy of Sciences, USA*, 96: 8200-8205.
 - [commentary by JH Kaas, "Is most of neural plasticity in the thalamus cortical?" *PNAS* 96: 7622-7623].

6. **Ghazanfar AA** and Nicolelis MAL (1999) Spatiotemporal properties of layer V neurons in the rat primary somatosensory cortex. *Cerebral Cortex*, 9: 348-361.
7. **Ghazanfar AA**, Stambaugh CR and Nicolelis MAL (2000) Encoding of tactile stimulus location by somatosensory thalamocortical ensembles. *Journal of Neuroscience*, 20: 3761-3775.
8. **Ghazanfar AA**, Flombaum JI, Miller CT and Hauser MD (2001) Units of perception in the antiphonal calling behavior of cotton-top tamarin (*Saguinus oedipus*): playback experiments with long calls. *Journal of Comparative Physiology A*, 187: 27-35.
9. **Ghazanfar AA**, Krupa DJ and Nicolelis MAL (2001) Role of corticothalamic feedback in processing simple and complex tactile stimuli. *Experimental Brain Research*, 141: 88-100.
10. **Ghazanfar AA**, Smith-Rohrberg D and Hauser MD (2001) The role of temporal cues in conspecific vocal recognition: rhesus monkey orienting asymmetries to reversed calls. *Brain, Behavior, and Evolution*, 58: 163-172.
11. **Ghazanfar AA**, Smith-Rohrberg D, Pollen AA and Hauser MD (2002) Temporal cues in the perception of long calls by cotton-top tamarins. *Animal Behaviour*, 64: 427-438.
12. **Ghazanfar AA**, Neuhoff JG and Logothetis NK (2002) Auditory looming perception in rhesus monkeys. *Proceedings of the National Academy of Sciences, USA*, 99: 15755-15757.
 - [Commentary by DA Hall and DR Moore, “Auditory neuroscience: the salience of looming sounds” in *Current Biology* 13: R91-R93].
13. **Ghazanfar AA** and Logothetis NK (2003) Facial expressions linked to monkey calls. *Nature*, 423: 937-938.
14. Maier JX, Neuhoff JG, Logothetis NK and **Ghazanfar AA** (2004) Multisensory integration of looming signals by rhesus monkeys. *Neuron*, 43: 177-181.
15. Jordan KE, Brannon EM, Logothetis NK and **Ghazanfar AA** (2005) Monkeys match the number voices they hear to the number of faces they see. *Current Biology*, 15: 1034-1038.
 - [Commentary by LR Santos, “Primate cognition: putting two and two together”, *Current Biology* 15: 545-547]
16. **Ghazanfar AA**, Maier JX, Hoffman KL and Logothetis NK (2005) Multisensory integration of dynamic faces and voices in primate auditory cortex. *Journal of Neuroscience*, 25: 5004-5012.
17. **Ghazanfar AA**, Nielsen K and Logothetis NK (2006) Eye movements of monkeys viewing vocalizing conspecifics. *Cognition*, 101: 515-529.
18. Lewkowicz DJ and **Ghazanfar AA**. (2006) The decline of cross-species intersensory perception in human infants. *Proceedings of the National Academy of Sciences, USA*, 103: 6771-6774.

19. **Ghazanfar AA**, Turesson HK, Maier JX, van Dinther R, Patterson RD and Logothetis NK (2007) Vocal tract resonances as indexical cues in a non-human primate. *Current Biology*, 17: 425-430.
 - [Commentary by KG Munhall and SK Byrne, “Animal communication: big talkers and small talk”, *Current Biology*, 17: R247-R249]
20. Maier JX and **Ghazanfar AA** (2007) Looming biases in monkey auditory cortex. *Journal of Neuroscience*, 27: 4093-4100.
21. **Ghazanfar AA**, Chandrasekaran C and Logothetis NK (2008) Interactions between the superior temporal sulcus and auditory cortex mediate dynamic face/voice integration in rhesus monkeys. *Journal of Neuroscience*, 28: 4457-4469.
22. Vatakis A, **Ghazanfar AA** and Spence C (2008) Facilitation of multisensory integration by the ‘unity effect’ reveals that speech is special. *Journal of Vision*, 8: 1-11. doi:10.1167/8.9.14
23. Maier JX, Chandrasekaran C and **Ghazanfar AA** (2008) Integrating bimodal looming signals through neuronal coherence in the temporal lobe. *Current Biology*, 18: 963-968.
 - [Commentary by M Bauer, “Multisensory integration: A functional role for inter-area synchronization?” *Current Biology*, 18: 709-710]
24. Chandrasekaran C and **Ghazanfar AA** (2009) Different neural frequency bands integrate faces and voices differently in the rhesus monkey superior temporal sulcus. *Journal of Neurophysiology*, 101: 773-788.
25. Zangenehpour S, **Ghazanfar AA**, Lewkowicz DJ and Zatorre RJ (2009) Heterochrony and cross-species intersensory matching by infant vervet monkeys. *PLoS ONE*, 4: e4302.
26. Chandrasekaran C, Trubanova A, Stillitano S, Caplier A and **Ghazanfar AA** (2009) The natural statistics of audiovisual speech. *PLoS Computational Biology*, 5: e1000436.
27. **Ghazanfar AA** and Maier JX (2009) Monkeys hear rising frequency sounds as looming. *Behavioral Neuroscience*, 123: 822-827.
28. Steckenfinger SA and **Ghazanfar AA** (2009) Monkey visual behavior falls into the uncanny valley. *Proceedings of the National Academy of Sciences, USA*, 106: 18362-18366.
29. Shepherd SV, Steckenfinger SA, Hasson U and **Ghazanfar AA** (2010) Human-monkey gaze correlations reveal convergent and divergent patterns of movie-viewing. *Current Biology*, 20: 649-656.
30. **Ghazanfar AA**, Chandrasekaran C and Morrill RJ (2010) Dynamic, rhythmic facial expressions and the superior temporal sulcus of macaque monkeys: implications for the evolution of audiovisual speech. *European Journal of Neuroscience*, 31: 1807-1817.
31. Chandrasekaran C, Turesson HK, Brown CH and **Ghazanfar AA** (2010) The influence of natural scene dynamics on auditory cortical activity. *Journal of Neuroscience*, 30: 13919-13931.

32. Borjon JI*, Shepherd SV*, Todorov A and **Ghazanfar AA** (2011) Eye gaze and arrow cues influence elementary sound perception. *Proceedings of the Royal Society B*, 278: 1997-2004.
*joint first authorship
33. Turesson HK and **Ghazanfar AA** (2011) Statistical learning of social signals and its implications for the social brain hypothesis. *Interaction Studies*, 12: 397-417.
doi:10.1075/is.12.3.02tur
34. Chandrasekaran C, Lemus L, Trubanova A, Gondan M and **Ghazanfar AA** (2011) Monkeys and humans share a common computation for face/voice integration. *PLoS Computational Biology*, 7: e1002165.
35. Lewkowicz DJ and **Ghazanfar AA** (2012) The development of the uncanny valley in infants. *Developmental Psychobiology*, 54: 124-132. doi:10.1002/dev.20583
36. Morrill RJ, Paukner A, Ferrari PF and **Ghazanfar AA** (2012) Monkey lipsmacking develops like the human speech rhythm. *Developmental Science*, 15: 557-568.
37. **Ghazanfar AA**, Takahashi DY, Mathur NA and Fitch WT (2012) Cineradiography of monkey lipsmacking reveals putative origins of speech dynamics. *Current Biology*, 22: 1176-1182.
38. Shepherd SV, Lanzilotto M and **Ghazanfar AA** (2012) Facial muscle synergies during rhythmical facial expressions versus ingestive movements. *Journal of Neuroscience*, 32: 6105-6116.
39. Grossmann T, Missana M, Friederici AD and **Ghazanfar AA** (2012) Neural correlates of perceptual narrowing in cross-species face-voice matching. *Developmental Science*, 15: 830-839.
40. **Ghazanfar AA**, Morrill RJ and Kayser C (2013) Monkeys are perceptually tuned to facial expressions that exhibit a theta-like rhythm. *Proceedings of the National Academy of Sciences, USA*, 110: 1959-1963.
41. Takahashi DY, Narayanan D and **Ghazanfar AA** (2013) Coupled oscillator dynamics of vocal turn-taking in monkeys. *Current Biology*, 23: 2162-2168.
42. Chandrasekaran C, Lemus L and **Ghazanfar AA** (2013) Dynamic faces speed up the onset of auditory cortical spiking responses during vocal detection. *Proceedings of the National Academy of Sciences, USA*, 110: E4668-4677.
43. Kulahci IG, Drea CM, Rubenstein DI and **Ghazanfar AA** (2014) Individual recognition through olfactory - auditory matching in lemurs. *Proceedings of the Royal Society B*, 281: 20140071.
44. Choi JY, Takahashi DY and **Ghazanfar AA** (2015) Cooperative vocal control in marmoset monkeys via vocal feedback. *Journal of Neurophysiology*, 114: 274-283.

45. Takahashi DY, Fenley AR, Teramoto Y, Narayanan DZ, Borjon JI, Holmes P and **Ghazanfar AA** (2015) The developmental dynamics of marmoset monkey vocal production. *Science*, 349: 734-738.
46. Kulahci IG, Rubenstein DI and **Ghazanfar AA** (2015) Lemurs groom-at-a-distance through vocal networks. *Animal Behaviour*, 110: 179-186.
47. Takahashi DY, Fenley AR and **Ghazanfar AA** (2016) Early development of turn-taking shapes vocal acoustics in infant marmosets. *Phil. Trans. R. Soc. B.*, 371: 20150370.
48. Zhang YS and **Ghazanfar AA** (2016) Perinatally influenced autonomic system fluctuations drive infant vocal sequences. *Current Biology*, 26: 1249-1260.
49. Borjon JI, Takahashi DY, Cervantes DC and **Ghazanfar AA** (2016) Arousal dynamics drive vocal production in marmoset monkeys. *Journal of Neurophysiology*, 116: 753-764.
50. Fitch WT, de Boer B, Mathur N and **Ghazanfar AA** (2016) Monkey vocal tracts are speech-ready. *Science Advances*, 2: e1600723.
51. Teramoto Y, Takahashi DY, Holmes P and **Ghazanfar AA** (2017) Vocal development in a Waddington landscape. *eLife*, 6: e20782.
52. Takahashi DY, Liao DA and **Ghazanfar AA** (2017) Vocal learning via social reinforcement by infant marmoset monkeys. *Current Biology*, 27: 1844-1852.
53. Kulahci IG, **Ghazanfar AA** and Rubenstein DI (2018) Consistent individual variation across interaction networks indicates social personalities in lemurs. *Animal Behaviour*, 136: 217-226.
54. Zhang YS and **Ghazanfar** (2018) Vocal development through morphological computation. *PLoS Biology*, 16: e2003933.
55. Kulahci IG, **Ghazanfar AA** and Rubenstein DI (2018) Knowledgeable lemurs become more central in social networks. *Current Biology*, 28: 1306-1310.
56. Liao DA, Zhang YS, Cai LX and **Ghazanfar AA** (2018) Internal states and extrinsic factors both determine monkey vocal production. *Proceedings of the National Academy of Sciences, USA*, 115: 3978-3983.
57. Gustison ML, Borjon JI, Takahashi DY and **Ghazanfar AA** (2019) Vocal and locomotor coordination develops in association with the autonomic nervous system. *eLife*, 8: e41853.
58. Zhang YS, Liao DA, Takahashi DY, **Ghazanfar AA*** and Elemans CPH* (2019) Vocal state change through laryngeal development. *Nature Communications*, 10:4592.
*joint senior authors
59. Ghazanfar AA, Kelly LM, Takahashi DY, Winters S, Terrett R and Higham JP (2020) Domestication phenotype linked to vocal behavior in marmoset monkeys. *Current Biology* 30: 5026-5032.e3

60. Narayanan DZ, Takahashi DY, Kelly LM, Hlavaty SI, Huang J, **Ghazanfar AA**. (2022) Prenatal development of neonatal vocalizations. *Elife*. 2022 Jul 26;11:e78485. doi: 10.7554/eLife.78485.
61. Varella TT, Zhang YS, Takahashi DY, **Ghazanfar AA**. (2022) A mechanism for punctuating equilibria during mammalian vocal development. *PLoS Comput Biol*. 2022 Jun 13;18(6):e1010173. doi: 10.1371/journal.pcbi.1010173.
62. Zhang YS, Takahashi DY, El Hady A, Liao DA, **Ghazanfar AA**. (2022) Active neural coordination of motor behaviors with internal states. *Proc Natl Acad Sci U S A*. 2022 Sep 27;119(39):e2201194119. doi: 10.1073/pnas.2201194119.
63. Zhang YS, Alvarez JL, **Ghazanfar AA**. (2022) Arousal elevation drives the development of oscillatory vocal output. *J Neurophysiol*. 2022 Jun 1;127(6):1519-1531. doi: 10.1152/jn.00007.2022.

Reviews

1. Nicolelis MAL, Fanselow EE and **Ghazanfar AA** (1997) Hebb's dream: the resurgence of cell assemblies. *Neuron*, 19: 219-221.
2. **Ghazanfar AA** and Hauser MD (1999) The neuroethology of primate vocal communication: substrates for the evolution of speech. *Trends in Cognitive Sciences*, 3: 377-384.
3. **Ghazanfar AA** and Nicolelis MAL (2001) The structure and function of dynamic cortical and thalamic receptive fields. *Cerebral Cortex*, 11: 183-193.
4. **Ghazanfar AA** and Hauser MD (2001) The auditory behaviour of primates: a neuroethological perspective. *Current Opinion in Neurobiology*, 11: 712-720.
5. **Ghazanfar AA** and Santos LR (2004) Primate brains in the wild: the sensory bases for social interactions. *Nature Reviews Neuroscience*, 5: 603-616.
6. **Ghazanfar AA** and Schroeder CE (2006) Is the neocortex essentially multisensory? *Trends in Cognitive Sciences*, 10: 278-285.
7. **Ghazanfar AA** and Rendall D (2008) The evolution of human vocal production. *Current Biology*, 18: R457-R460.
8. **Ghazanfar AA** (2009) The multisensory roles for auditory cortex in primate vocal communication. *Hearing Research*, 258: 113-120.
9. Lewkowicz DJ and **Ghazanfar AA** (2009) The emergence of multisensory systems through perceptual narrowing. *Trends in Cognitive Sciences*, 13: 470-478.

10. Teufel C, **Ghazanfar AA** and Fischer J (2010) On the relationship between lateralized brain function and orienting asymmetries. *Behavioral Neuroscience*, 124: 437-445.
11. **Ghazanfar AA** and Shepherd SV (2011) Monkeys at the movies: What evolutionary cinematics tells us about film. *Projections: The Journal for Movies and Mind*, 5: 1-25.
dx.doi.org/10.3167/proj.2011.050202
12. Hasson U, **Ghazanfar AA**, Galantucci B, Garrod S and Keysers C (2012) Brain-to-brain coupling as a mechanism for shared communication and cognition. *Trends in Cognitive Sciences*, 16: 114-121.
13. **Ghazanfar AA** (2013) Multisensory vocal communication in primates and the evolution of rhythmic speech. *Behavioral Ecology & Sociobiology*, 67: 1441-1448.
14. **Ghazanfar AA** and Takahashi DY (2014) Facial expressions and the evolution of the speech rhythm. *Journal of Cognitive Neuroscience*, 26: 1196-1207.
15. Borjon JI and **Ghazanfar AA** (2014) Convergent evolution of vocal cooperation without convergent evolution of brain size. *Brain, Behavior & Evolution*, 84: 93-102.
16. **Ghazanfar AA** and Eliades S (2014) The neurobiology of primate vocal communication. *Current Opinion in Neurobiology*, 28: 128-135.
17. **Ghazanfar AA** and Takahashi DY (2014) The evolution of speech: vision, rhythm, cooperation. *Trends in Cognitive Sciences*, 18: 543-553.
18. **Ghazanfar AA** and Zhang YS (2016) The autonomic nervous system is the engine for vocal development through social feedback. *Current Opinion in Neurobiology*, 40: 155-160.
19. Krakauer JW, **Ghazanfar AA**, Gomez-Marin A, MacIver MA, Poeppel D (2017) Neuroscience needs behavior: correcting a reductionist bias. *Neuron*, 93: 480-490.
20. **Ghazanfar AA** and Liao DA (2018) Constraints and flexibility during vocal development. *Current Opinion in Behavioral Sciences*, 21: 27-32.
21. **Ghazanfar AA**, Liao DA and Takahashi DY (2019) Volition and learning in primate vocal behavior. *Animal Behaviour*, 151: 239-247.
22. Gomez Marin, A and **Ghazanfar AA** (2019) The life of behavior. *Neuron*, 104: 25-36.
23. Zhang YS and **Ghazanfar AA** (2020) A hierarchy of autonomous systems for vocal production. *Trends in Neurosciences*, 43: 115-126.
24. Varella TT and **Ghazanfar AA** (2021) Cooperative care and the evolution of prelinguistic vocal learning. *Developmental Psychobiology*, 62: 1583-1588.

Book Chapters and Proceedings

1. **Ghazanfar AA** and Nicolelis MAL (2000) The space-time continuum in mammalian sensory pathways. In *Time and the Brain*. Edited by R. Miller. Hardwood Press, Sidney, pp. 97-130.
2. Weiss DJ, **Ghazanfar AA**, Miller CT and Hauser MD (2002) Specialized processing of primate facial and vocal expressions: evidence for cerebral asymmetries. In *Comparative Vertebrate Lateralization*. Edited by L.J. Rogers & R.J. Andrew. Cambridge University Press, Cambridge, pp. 480-530.
3. Miller CT and **Ghazanfar AA** (2002) Meaningful acoustic units in nonhuman primate vocal behavior. In *The Cognitive Animal*. Edited by C. Allen, M. Bekoff & G.M. Burghardt. MIT Press, Cambridge, MA, pp. 265-273.
4. **Ghazanfar AA** and Santos LR (2002) Primates as auditory specialists. In *Primate Audition: Ethology & Neurobiology*. Edited by A.A. Ghazanfar. CRC Press, Boca Raton, FL, pp. 1-12.
5. **Ghazanfar AA** and Miller CT (2004) Communication--Auditory. In *Encyclopedia of Animal Behavior*. Edited by Marc Bekoff. Greenwood Press, Westport, CT. pp. 334-343.
6. **Ghazanfar AA**, JX Maier and Turesson HK (2007) Multisensory processes in non-human primates. In *Comparative Social Cognition*. Edited by Shigeru Watanabe, Takeo Tsujii & Julian Keenan. Keio University Press, Tokyo, Japan. Pp. 125-146.
7. **Ghazanfar AA** (2007) The evolution of speech-reading: some comparative evidence. *Proceedings of the Workshop on Audiovisual Speech Processing*, Edited by Jean Vroomen, Marc Swerts & Emiel Krahmer, pp. 1-2.
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