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CURRICULUM VITAE OF IGOR KAGAN

Personal

Date and place of birth: June 01, 1972, Saint Petersburg (Leningrad), Russia (USSR)

Languages: English, Russian, Hebrew, German (basic)

Education

1996 – 2003 Ph.D. in Biomedical Engineering, Technion – Israel Institute of Technology, Haifa, Israel, and Schepens Eye Research Institute, Harvard Medical School, Boston, MA (advisors Prof. Moshe Gur and Prof. Max Snodderly). Thesis: Responses of cells in striate cortex of alert monkeys: neuronal properties and effects of eye movements.

1992 – 1996 B.Sc. in Biology, Faculty of Life Sciences, Tel Aviv University, Israel.

1989 – 1991 Department of Biophysics, Faculty of Physics and Mechanics, St. Petersburg State Technical University (former Polytechnic Institute), Russia.

Research interests

Cognitive and visuomotor functions in primates, with a focus on pulvinar, pulvinar-cortical, and bihemispheric processing underlying decision-making in the context of goal-directed eye and hand movements, using neurophysiology, causal interference (inactivation, microstimulation) and functional imaging. Comparative human-monkey neuroimaging. Metacognition and social decision-making. Neurophysiology of active vision in primary visual cortex.

Working experience

2011 – present Head of Decision and Awareness Group, German Primate Center, Goettingen, Germany. http://dpz.eu/dag

2009 – 2011 Senior Research Fellow, Richard Andersen Lab, Caltech, Pasadena, CA. Multielectrode bihemispheric electrophysiological recordings in area LIP for comparison with fMRI data, and investigation of inter-hemispheric interactions. Collaboration with Dr. Melanie Wilke on a combination of pharmacological brain inactivation of parietal cortex and thalamic pulvinar with fMRI to study spatial awareness and neglect.

2003 – 2008 Postdoctoral scholar, Richard Andersen Lab, Caltech, Pasadena, CA. Development and application of advanced event-related fMRI techniques (4.7T vertical scanner lab) to study visuomotor brain functions in behaving monkeys, and direct cross-species comparison with human imaging (3T scanner). Structural scans for planning and visualization of recording chambers, injection cannulae, and multielectrode arrays.

1998 – 2003 Graduate student, Max Snodderly Lab, Schepens Eye Research Institute, Boston, MA, and Moshe Gur Vision Research Lab, Technion, Israel. Development of visual neuroscience system for neurophysiological experiments in alert behaving monkeys.

1997 – 2001 Programmer, Animal Cardiology Lab, Department of Biomedical Engineering, Technion; Neufeld Cardiology Research Institute, Sheba Medical Center, Tel HaShomer; Bnai-Zion Medical Center, Haifa, Israel. Design and implementation of data acquisition and analysis software packages for physiological labs (LabVIEW, MATLAB, C).

1995 – 1997 Research assistant, Mark L. Shik Electrophysiology Lab, Faculty of Life Sciences, Tel Aviv University, Israel. Electrical stimulation and single unit recordings in the brain of amphibians during evoked locomotion. Development of software in C, LabVIEW, MATLAB, and Perl for data acquisition and analysis, experimental records database.

Professional skills

Behavioral experiments in individual and dyadic settings: perceptual and value-based decisions, metacognition and post-decision wagering, subjective utility estimation, eye and hand movement recording and analysis, face and body motion capture, dynamic dyadic interactions using novel transparent displays.

Visual and visuomotor neurophysiology experiments: brain activity recording, electrical microstimulation, and pharmacological inactivation. Neurophysiological data analysis and visualization, signal and image processing, statistical analysis, numerical simulations, and Monte Carlo method (MATLAB, R, LabVIEW).

Event-related functional MRI in monkeys and humans: design, setup, data acquisition, and analysis (BrainVoyager, SPM, AFNI, MIPAV, MRIcro, MATLAB). Extensive experience with different MR systems (Bruker 4.7T and 7T, Siemens 3T Trio/Prisma), hardware and software expertise and troubleshooting, NMR physics, and optimization of imaging methods for high-resolution functional and anatomical imaging.

Extensive programming skills for visual stimuli presentation (C/C++, DirectX, OpenGL, Psychophysics toolbox, Cogent) and real-time data acquisition and behavioral control software (C/C++, RPvds real-time DSP circuits, LabVIEW Real-Time, MATLAB).

Brain surgical procedures: headposts, recording chambers, floating multielectrode arrays, and cannulae implantations. Surgery planning using contrast agents, custom markers, high-resolution MRI scans, and frameless stereotaxic systems.

Scientific illustrations: conceptual development and implementation using Adobe Illustrator (used in several published papers and successful grant applications).

Meta-skills: problem detection and solving, excellent intuition for potential sources of bugs/inconsistencies, debugging, plausibility checks, the teaching of the above skills.

Professional activities

2015 – 2024 **Steering board member**, Leibniz ScienceCampus Primate Cognition

2022 – present **Associate Editor**, Frontiers in Decision Neuroscience

2022 – present **Reviewing Editor**, Frontiers in Integrative Neuroscience

2019 – 2024 **Co-Organizer** of International Summer School “Primate Cognitive Neuroscience”, Bad Bevensen

2019 **Symposium organizer**, Neural mechanisms of social decision-making, German Neuroscience Society meeting

2013 – present **Co-organizer** of the biennial Primate Neurobiology meeting in Goettingen

Ad hoc reviewer for journals: Age, Acta Psychologica, Current Biology, Cerebral Cortex, Communications Biology, eLife, eNeuro, European Journal of Neuroscience, Frontiers in Neuroscience, Frontiers in Zoology, Journal of Neuroscience, Journal of Neurophysiology, Journal of Economic Psychology, Imaging Neuroscience, Nature Communications, NeuroImage, Neuroscience & Biobehavioral Reviews, Physical Review, PLoS Biology, PLoS Computational Biology, PNAS, Progress in Neurobiology, Science Advances, Scientific Reports, Trends in Cognitive Sciences, Vision Research

Ad hoc reviewer for funding agencies: ANR – The French National Research Agency, BSF – Binational Science Foundation (US – Israel), BBSRC – Biotechnology and Biological Sciences Research Council, ERC – European

Research Council, FWO – Research Foundation Flanders, KU Leuven GOA – Geconcerteerde Onderzoeksacties, MRC – Medical Research Council, NSF – National Science Foundation

Society memberships: Society for Neuroscience, Visual Sciences Society, German Neuroscience Society, Israel Society for Neuroscience, Japan Neuroscience Society

Grants

2024 – 2026 Principle Investigator in the Leibniz Collaborative Excellence grant "PRIMADIS: Chemogenetic dissection of primate brain circuits underlying adaptive cognition". *1.000.000 Euro*

2022 – 2025 Principle Investigator in the Collaborative Research Center "Cognition of Interaction" (SFB 1528). https://uni-goettingen.de/de/652672.html
Project "A framework for dynamic sensorimotor interactions in nonhuman primates and humans – Dyadic Interaction and Exploration Room Platforms", with A. Gail. *710.900 Euro*

2021 – 2025 Principle Investigator in the EU H2020-MSCA-ITN-2020 In2PrimateBrains
"Intra- and Inter-Areal Communication in Primate Brain Networks". *4.005.134 Euro*
https://cordis.europa.eu/project/id/956669

Early Stage Researcher Project 7: "Probing the link between perceptual visibility and brain oscillations", together with M. Wilke and S. Treue

2020 – 2023 Principle Investigator in the Leibniz Collaborative Excellence grant "PRIMAINT: Neurophysiological mechanisms of primate interactions in dynamic sensorimotor setting". *1.000.000 Euro*

2016 – 2017 Principle Investigator in the Collaborative Research Project "Primate Cognition: From Information Integration to Decision-Making", headed by J. Fischer and S. Treue, funded by Volkswagen Foundation and Lower Saxony Ministry for Science and Culture. *1.000.000 Euro*

2015 – 2021 Seed/Audacity funds, Leibniz ScienceCampus Primate Cognition

with Michael Ortiz-Rios	*11.500 Euro*
with Anne Schacht	*14.127 Euro*
with Arezoo Pooresmaeili	*18.234 Euro*
with Julia Fischer, Stefan Treue, Alex Gail, Vanessa Wilson	*25.594 Euro*
with Caspar Schwiedrzik	*7.500 Euro*

2014 – 2017 DFG Research Unit Primate Systems Neuroscience FOR 1847/KA 3726/2: "The Physiology of Distributed Computing Underlying Higher Brain Functions in Non-Human Primates." Project Bilateral decision networks for eye and arm movements. Principle Investigator: I. Kagan, Co-Principle Investigator: M. Wilke. *319.500 Euro*

2012 – 2015 DFG Einzelantrag (WI 406/1-1). Neural basis of spatial neglect symptoms in thalamo-cortical circuits. Principle Investigator: M. Wilke, Co-Principle Investigator: I. Kagan. *276.985 Euro*

Teaching experience

Graduate courses

2024 *Lecturer:* ICPBR Summer School In Non-Human Primate Systems Neuroscience, Shanghai, China

2019, 2022 *Lecturer:* International Summer School "Primate Cognitive Neuroscience", Bad Bevensen, Germany

2022 *Lecturer:* Functional MRI and causal perturbations, In2PrimateBrains Thematic Workshop, Rome, Italy

2018 – 2019 *Lecturer:* International Summer School "Clinical and Translational Neurology", Goettingen, Germany

2011 – 2024 *Lecturer:* "Higher brain functions: reward and decision-making, social neuroscience", M.Sc. Neuroscience Program, International Max Planck Research School, Goettingen, Germany

2017, 2019 *Lecturer*: Primate Neurobiology Methods – MRI-guided targeting, fMRI and causal interference, Graduate Training in Primate Neuroscience (GTPN), Goettingen, Germany

2014 *Lecturer*: Behavioral and neural correlates of spatial decision-making in monkeys and humans, Biopsychology seminar, Erfurt University, Germany

2013, 2018 *Lecturer*: fMRI workshop, Methods course, Behavior and Cognition PhD program, Goettingen, Germany

1998 – 2002 *Teaching Assistant: "*Brain and computer", "Biological signal processing lab", "Introduction to measurement and processing of physiological signals", Technion, Israel

Undergraduate courses

2016 *Lecturer:* Experimental Praktikum Psychology Bachelor program, Goettingen University, Germany

2011 – 2014 *Lecturer:* "Imaging the brain", Molecular Medicine, Goettingen University, Germany

2000 *Teaching Assistant: "*Basic bio-electrical design", Technion, Israel

Supervisory experience

https://neurotree.org/neurotree/tree.php?pid=21727

Postdoctoral researchers

1. Zahra Yousefi Darani 2023 – present
2. Liubov Vasileva 2021 – present
3. Khanh Nguyen 2020 – 2022
4. Lukas Schneider 2019 – present
5. Anton Unakafov 2016 – 2019
6. Sebastian Moeller 2016 – present

Faculty, Goettingen Graduate Center for Neurosciences, Biophysics, and Molecular Biosciences

Systems Neuroscience, Sensory and Motor Neuroscience, Neurosciences (IMPRS), Theoretical and Computational Neuroscience

PhD students and pre-doctoral trainees

1. Mariia Kadochnikova 2023 – present
   Primary supervisor
2. Ryo Segawa 2021 – 2023
   Co-supervisor, Primary supervisor: Melanie Wilke
3. Mathieu Pachoud, PhD 2018 – 2022
   Primary supervisor
4. Kristin Kaduk, PhD 2017 – 2022
   Primary supervisor
5. Lydia Gibson, PhD 2013 – 2018
   Primary supervisor

6. Lukas Schneider, PhD — 2013 – 2018
   Primary supervisor
7. Danial Arabali, PhD — 2013 – 2018
   Primary supervisor
8. Adan Ulises Dominguez Vargas, PhD — 2012 – 2017
   Primary supervisor
9. Caio Moreira, PhD — 2012 – 2016
   Primary supervisor
10. Elena Spanou — 2012 – 2014
    Co-supervisor, Primary supervisor: Stefan Treue

Bachelor and Master students

1. Yasmin Fiedler (Master, IMPRS Neuroscience) — 2023 – 2024
   Co-supervisor, Primary supervisor: Niels Focke
2. Dafna Ljubotina (Master, IMPRS Neuroscience) — 2021 – 2022
   Co-supervisor, Primary supervisor: Jorge Jaramillo
3. Vladyslav Ivanov (Master, IMPRS Neuroscience) — 2021 – 2022
   Primary supervisor
4. Max Andreas Bosse Hinrichs (Master, Psychology) — 2020 – 2021
   Primary supervisor
5. Pietro Amerio (Master, IMPRS Neuroscience) — 2020 – 2021
   Primary supervisor
6. Alexandra Witt (Master, IMPRS Neuroscience) — 2020 – 2021
   Primary supervisor
7. Peter Neumann (Master, Psychology) — 2019 – 2021
   Primary supervisor
8. Roberta Nocerino (Master, The University of Trieste) — 2019 – 2020
   Primary supervisor
9. Tony Carricarte (Master, IMPRS Neuroscience) — 2018 – 2019
   Co-supervisor, Primary supervisor: Melanie Wilke
10. Isabel Ganter (Bachelor thesis, Psychology, Ph.D. supervisor Kristin Kaduk) — 2018 – 2019
    Primary supervisor
11. Marina Slashcheva (Master, IMPRS Neuroscience) — 2018 – 2019
    Primary supervisor
12. Tarana Nigam (Master, IMPRS Neuroscience) — 2018 – 2019
    Primary supervisor
13. Isabel Wunder (Master, external, Giessen University) — 2016 – 2017
    Co-supervisor, Primary supervisor: Britta Krueger
14. Uwe Zimmermann (Master, Developmental, Neural and Behavioral Biology) — 2016 – 2017
    Primary supervisor
15. Alexandra Nagel (Bachelor thesis, Psychology, Ph.D. supervisor Lydia Gibson) — 2016
    Primary supervisor: Igor Kagan
16. Kristin Kaduk (Master, Psychology) — 2015 – 2016
    Primary supervisor
17. Alexander Kratzenberg (Master, Developmental, Neural and Behavioral Biology) — 2015
    Primary supervisor

Other students (internships, lab rotations)

1. Ece İdil (IMPRS Neuroscience, lab rotation) 2024
2. Zeynep Büşra Ayar (IMPRS Neuroscience, lab rotation) 2024
3. Aruna Nyssanbay (IMPRS Neuroscience, lab rotation) 2024
4. Maryia Khvatava (Jagiellonian University, Krakow, Poland 2023
5. Maren Cremer (IMPRS Neuroscience, lab rotation) 2023
6. Yixuan Chen (IMPRS Neuroscience, lab rotation) 2023
7. Rebecca Divarco (IMPRS Neuroscience, lab rotation) 2022
8. Robert Haret (IMPRS Neuroscience, lab rotation) 2022
9. Uğur Coşkun (IMPRS Neuroscience, lab rotation) 2022
10. Keren Profesorsky (Ben Gurion University – Erasmus Biology Goettingen U) 2022
11. Dafna Ljubotina (IMPRS Neuroscience, lab rotation) 2021
12. Margaret Young (IMPRS Neuroscience, lab rotation) 2021
13. Hanna Rula (IMPRS Neuroscience, lab rotation) 2020
14. Asude Tura (IMPRS Neuroscience, lab rotation) 2020
15. Bruno Carniatto Marques Garcia (IMPRS Neuroscience, lab rotation) 2020
16. Alexandra Witt (IMPRS Neuroscience, lab rotation) 2020
17. Jaya Sowkyadha (IMPRS Neuroscience, lab rotation) 2020
18. Tihana Hamzaj (Developmental, Neural and Behavioral Biology, lab rotation) 2020
19. Sarath Ravindran (research associate internship) 2019
20. Ivan Skorodumov (IMPRS Neuroscience, lab rotation) 2019
21. Lukas Amman (IMPRS Neuroscience, lab rotation) 2019
22. Marina Slashcheva (IMPRS Neuroscience, lab rotation) 2018
23. Anna Müllen (IMPRS Neuroscience, lab rotation) 2018
24. Tarana Nigam (IMPRS Neuroscience, lab rotation) 2018
25. Rena Birner (B. Sc. Cognitive Science, Osnabrueck University) 2018
26. Elisheba Crecca (M. Sc. Cognitive Science, Roma Tre University) 2017
27. Esther Olubukola Akinola (M. Sc. Neuroscience, Bremen University) 2017
28. Anisiga Thirunavukkarasu (B. Sc. Psychology, Göttingen University) 2017
29. Hannah Loenneker (B. Sc. Psychology, Tübingen University) 2017
30. Isabel Kreis (M. Sc. Psychology, Bielefeld University, internship) 2017
31. Iryna Schommartz (TU Dresden, lab rotation) 2017
32. Paula Wunsch (Tuebingen University, internship) 2017
33. Jiaqi Shang (Northwestern University, internship) 2017
34. Uwe Zimmermann (Developmental, Neural and Behavioral Biology, lab rotation) 2016
35. Alexandra Nagel (Psychology, lab rotation) 2015
36. Alex Kratzenberg (Developmental, Neural and Behavioral Biology, lab rotation) 2014
37. Max Rollwage (Psychology Diplom, Phillips-University Marburg, lab rotation) 2014
38. Kristin Kaduk (Psychology Bachelor student, lab rotation) 2014
39. Vanessa Hohn (Psychology Bachelor student, lab rotation) 2013
40. Shoba Kapoor (Master student, IMPRS Neuroscience, lab rotation) 2013
41. Kirsten Emmert (Master student, IMPRS Neuroscience, lab rotation) 2012
42. Annika Grass (Master student, IMPRS Neuroscience, lab rotation) 2012
43. Olga Dyakova (internship) 2011 – 2012

44. Malte Koester (internship) 2011 – 2012

PhD Thesis committee member (Göttingen)

1. Jannik Luff (Systems Neuroscience Ph.D. Program) 2023 – present
2. Selma Kouaiche (Theoretical and Computational Neuroscience) 2023 – present
3. Shamim Sasani (Cardiovascular Science Ph.D. Program) 2023 – present
4. Beyza Akkoyunlu (Systems Neuroscience Ph.D. Program) 2022 – present
5. Roberta Nocerino (Systems Neuroscience Ph.D. Program) 2022 – present
6. Tiffany Claire Bosshard (Behavior and Cognition Ph.D. Program) 2021 – present
7. Marysol Segovia Oropeza (Systems Neuroscience Ph.D. Program) 2021 – present
8. Julia Wanda Novak (Systems Neuroscience Ph.D. Program) 2018 – 2022
9. Rowan Titchener (Behavior and Cognition Ph.D. Program) 2018 – 2022
10. Philipp Ulbrich (Psychology) 2018 – 2021
11. Stefan Greulich (Systems Neuroscience Ph.D. Program) 2016 – 2021
12. Daniela Buchwald (Sensory and Motor Neuroscience Ph.D. Program) 2016 – 2020
13. Anne Sommerfeld (Behavior and Cognition Ph.D. program) 2015 – 2020
14. Wiebke Hammerschmidt (Behavior and Cognition Ph.D. program) 2015 – 2018
15. Nicolas Becker (Behavior and Cognition Ph.D. program) 2015 – 2018
16. Anja Richter (Behavior and Cognition Ph.D. program) 2014 – 2017
17. Jeroen Buil (Systems Neuroscience Ph.D. program) 2014 – 2017
18. Kathleen Williams (European Neuroscience Institute) 2014 – 2018
19. Katja Brodmann (Behavior and Cognition Ph.D. program) 2013 – 2016
20. Annika Grass (Behavior and Cognition Ph.D. program) 2013 – 2016
21. Sarah Wolter (Behavior and Cognition Ph.D. program) 2013 – 2017
22. Rijk- in ‘t Veld (Systems Neuroscience Ph.D. program) 2013 – 2016

Publications

https://scholar.google.com/citations?user=GvDzCecAAAAJ&hl=en

https://orcid.org/0000-0002-1814-4200

1. Schneider F., Calapai A., Mundry R., Báez-Mendoza R., Gail A., **Kagan I.**, Treue S. (2024). Confidence over competence: Real-time integration of social information in human continuous perceptual decision-making. *eLife* 13:RP101021. https://doi.org/10.7554/eLife.101021.1

2. Dang S., Antono J.E., **Kagan I.**, Pooresmaeili A. (2014). Modality-specific and modality-general representations of subjective value in frontal cortex. *Communications Biology* in press. https://doi.org/10.1038/s42003-024-07253-8

3. Kaduk K., Wilke M., **Kagan I.** (2024). Dorsal pulvinar inactivation leads to spatial selection bias without perceptual deficit. *Scientific Reports* 14:12852. https://doi.org/10.1038/s41598-024-62056-5.

4. Crayen M.A., **Kagan I.**, Esghaei M., Hoehl D., Thomas U., Prückl R., Schaffelhofer S., Treue S. (2024) Using camera-guided electrode microdrive navigation for precise 3D targeting of macaque brain sites. *PLOS ONE* 19:e0301849. https://doi.org/10.1371/journal.pone.0301849.

5. Ivanov V., Manenti G.L., Plewe S.S., **Kagan I.**, Schwiedrzik C.M. (2024). Decision-making processes in perceptual learning depend on effectors. *Scientific Reports* 14:1–15. https://doi.org/10.1038/s41598-024-55508-5.

6. Stinson C., **Kagan I.**, Pooresmaeili A. (2024). The contribution of sensory information asymmetry and bias of attribution to egocentric tendencies in effort comparison tasks. *Front. Psychol.* 15:1304372. https://doi.org/10.3389/fpsyg.2024.1304372.

7. Schneider L., Dominguez-Vargas A.-U., Gibson L., Wilke M., **Kagan I**. (2023). Visual, delay, and oculomotor timing and tuning in macaque dorsal pulvinar during instructed and free choice memory saccades. *Cerebral Cortex* 33: 10877–10900. https://doi.org/10.1093/cercor/bhad333.

8. Wilke M., **Kagan I.** (2023). Visuospatial and Motor Deficits Following Pulvinar Lesions. In: The Cerebral Cortex and Thalamus (Usrey WM, Sherman SM, eds), Oxford University Press. https://doi.org/10.1093/med/9780197676158.003.0071.

9. Benedetto A., **Kagan I.** (2023). Active vision: How you look reflects what you are looking for. *Current Biology* 33:R303–R305. https://doi.org/10.1016/j.cub.2023.03.012.

10. Moeller S., Unakafov A. M., Fischer J., Gail A., Treue S., **Kagan I.** (2023). Human and macaque pairs employ different coordination strategies in a transparent decision game. *eLife* 12:e81641. https://doi.org/10.7554/eLife.81641

11. The PRIMatE Data and Resource Exchange (PRIME-DRE) Global Collaboration Workshop and Consortium (2021). Toward next-generation primate neuroscience: A collaboration-based strategic plan for integrative neuroimaging. *Neuron*. https://doi.org/10.1016/j.neuron.2021.10.015.

12. **Kagan I.**, Gibson L., Spanou E., Wilke M. (2021). Effective connectivity and spatial selectivity-dependent fMRI changes elicited by microstimulation of pulvinar and LIP. *NeuroImage* 240, 118283. https://doi.org/10.1016/j.neuroimage.2021.118283.

13. Klink P.C.*, Aubry J.-F., Ferrera V.P., Fox A.S., Froudist-Walsh S., Jarraya B., Konofagou E.E., Krauzlis R.J., Messinger A., Mitchell A.S., Ortiz-Rios M., Oya H., Roberts A.C., Roe A.W., Rushworth M.F.S., Sallet J., Schmid M.C., Schroeder C.E., Tasserie J., Tsao D.Y., Uhrig L., Vanduffel W., Wilke M., **Kagan I.***, Petkov C.I.* (2021). Combining brain perturbation and neuroimaging in non-human primates. *NeuroImage* 235, 118017. https://doi.org/10.1016/j.neuroimage.2021.118017. * Shared corresponding authors

14. Milham M., … **Kagan I.**, … (2020). Accelerating the Evolution of Nonhuman Primate Neuroimaging. *Neuron* 105, 600–603. https://doi.org/10.1016/j.neuron.2019.12.023.

15. Heins R.C., Mirza M.B., Parr T., Friston K., **Kagan I.**, Pooresmaeili A. (2020). Deep Active Inference and Scene Construction. *Front. Artif. Intell.* 3. https://doi.org/10.3389/frai.2020.509354.

16. Rollwage M., Pannach F., Stinson C., Toelch U., **Kagan I.***, Pooresmaeili A.* (2020). Judgments of effort exerted by self and others are influenced by task contingent rewards. *Scientific Reports* 10: 1868. https://doi.org/10.1038/s41598-020-58686-0. * Shared senior authors

17. Wilson V.A.D., Kade C., Moeller S., Treue S., **Kagan I.**, Fischer J. (2020). Macaque Gaze Responses to the Primatar: A Virtual Macaque Head for Social Cognition Research. *Front. Psychol.* 11. https://doi.org/10.3389/fpsyg.2020.01645.

18. Miloserdov K., Schmidt-Samoa C., Williams K., Weinrich C. A., **Kagan I.**, Bürk K., Trenkwalder C., Bähr M., & Wilke M. (2020). Aberrant functional connectivity of resting state networks related to misperceptions and intra-individual variability in Parkinson‘s disease. *NeuroImage: Clinical*, 25: 102076. https://doi.org/10.1016/j.nicl.2019.102076.

19. Schneider L., Domínguez-Vargas A. U., Gibson L., **Kagan I.***, Wilke M.* (2020). Eye position signals in the dorsal pulvinar during fixation and goal-directed saccades. *Journal of Neurophysiology,* 123: 367-391. https://doi.org/10.1152/jn.00432.2019. * Shared senior authors

20. Unakafov A. M., Schultze T., Gail A., Moeller S., **Kagan I.***, Eule S.*, Wolf F.* (2020). Emergence and suppression of cooperation by action visibility in transparent games. *PLOS Computational Biology*, 16(1): e1007588. https://doi.org/10.1371/journal.pcbi.1007588. * Shared senior authors

21. Unakafov A. M., Schultze T., **Kagan I.**, Moeller S., Gail A., Treue S., Eule S., Wolf F. (2019). Evolutionary successful strategies in a transparent iterated Prisoner's Dilemma. *EvoApplications 2019, Lecture Notes in Computer Science*, 11454: 204–219. https://doi.org/10.1101/524348.

22. Unakafov A.M., Möller S., **Kagan I.**, Gail A., Treue S., Wolf F. (2018). Using imaging photoplethysmography for heart rate estimation in non-human primates. *PLOS ONE* 13(8): e0202581.

23. Hammerschmidt W., **Kagan I.**, Kulke L., Schacht A. (2018). Implicit reward associations impact face processing: Time-resolved evidence from event-related brain potentials and pupil dilations. *NeuroImage* 179: 557-569.

24. Christopoulos V.N., **Kagan I.**, Andersen R.A. (2018). Lateral intraparietal area (LIP) is largely effector-specific in free-choice decisions. *Scientific Reports* 8: 8611.

25. Moreira C.M., Rollwage M., Kaduk K., Wilke M., **Kagan I.** (2018). Post-decision wagering after perceptual judgments reveals bi-directional certainty readouts. *Cognition* 176: 40-52.

26. Wilke M., Schneider L., Domínguez-Vargas A.U., Schmidt-Samoa C., Miloserdov K., Nazzal A., Dechent P., Cabral-Calderin Y., Scherberger H., **Kagan I**., Bähr M. (2018). Reach and grasp deficits following damage to the dorsal pulvinar. *Cortex* 99: 135-149.

27. **Kagan I.**, Burr D.C. (2017). Active Vision: Dynamic Reformatting of Visual Information by the Saccade-Drift Cycle. *Current Biology* 27(9): R341-R343.

28. Domínguez-Vargas A.U., Schneider L., Wilke M.*, **Kagan I.*** (2017). Electrical Microstimulation of the Pulvinar Biases Saccade Choices and Reaction Times in a Time-Dependent Manner. *Journal of Neuroscience* 37(8):2234-2257.

29. Paschke K., **Kagan I.**, Wüstenberg T., Bähr M., Wilke M. (2015). Trunk rotation affects temporal order judgments with direct saccades: Influence of handedness. *Neurophychologia* 79: 123-137.

30. Christopoulos V.N., Bonaiuto J., **Kagan I.**, Andersen R.A. (2015). Inactivation of parietal reach region affects reaching but not saccade choices in internally guided decisions. *Journal of Neuroscience* 35(33): 11719-11728.

31. Przybyszewski A.W., **Kagan I.**, Snodderly D.M. (2014). Primate area V1: largest response gain for receptive fields in the straight-ahead direction. *Neuroreport* 25(14):1109-1115.

32. **Kagan I.**, Hafed Z.M. (2013). Active vision: microsaccades direct the eye to where it matters most. *Current Biology* 23(17): R712 – R714.

33. Wilke M., **Kagan I.**, Andersen R.A. (2013). Effects of pulvinar Inactivation on spatial decision-making between equal and asymmetric reward options. *Journal of Cognitive Neuroscience* 25(8): 1270-1283.

34. **Kagan I.** (2012). Microsaccades and image fading during natural vision. Response to McCamy et al. Microsaccadic efficacy and contribution to foveal and peripheral vision. *Journal of Neuroscience https://www.jneurosci.org/content/32/27/9194/tab-e-letters#microsaccades-and-image-fading-during-natural-vision*

35. Wilke M.*, **Kagan I.***, Andersen R.A. (2012). Functional imaging reveals rapid reorganization of cortical activity after parietal inactivation in monkeys. *Proc Natl Acad Sci USA* 109(21): 8274-8279. * *Equal contribution*

36. **Kagan I.** (2012) Active vision: fixational eye movements help seeing space in time. *Current Biology* 22(6): R186 - R188.

37. **Kagan I.**, Iyer A., Lindner A., Andersen R.A. (2010). Space representation for eye movements is more contralateral in monkeys than in humans. *Proc Natl Acad Sci USA* 107(17): 7933-7938. *Epub 2010 Apr 12.*

38. Iyer A., Lindner A., **Kagan I.**, Andersen R.A. (2010). Motor preparatory activity in posterior parietal cortex is modulated by subjective absolute value. *PLoS Biol 8(8): e1000444. doi:10.1371/journal.pbio.1000444*

39. Lindner A., Iyer A., **Kagan I.**, Andersen R.A. (2010). Human posterior parietal cortex plans where to reach and what to avoid. *Journal of Neuroscience 30(35):* 11715-11725. *doi:10.1523/JNEUROSCI.2849-09.2010.*

40. Snodderly D.M., **Kagan I.**, Gur M. (2010). Linearity and selectivity of neuronal responses in awake visual cortex. Importance of the cell sample. *Reply to:* The linearity and selectivity of neuronal responses in awake visual cortex. Chen et al. (2009) *Journal of Vision* 9(9):12. doi:10.1167/9.9.12

41. **Kagan I.**, Gur M., Snodderly D. M. (2008). Saccades and drifts differentially modulate neuronal activity in V1: Effects of retinal image motion, position, and extraretinal influences. *Journal of Vision* 8(14):19: 1-25.

42. Gur M., **Kagan I.**, Snodderly D.M. (2005). Orientation and direction selectivity of neurons in V1 of alert monkeys: Functional relationships and laminar distributions. *Cerebral Cortex* 15 (8): 1207-1221.

43. **Kagan I.**, Shik M.L. (2004). How the mesencephalic “locomotor region” recruits hindbrain neurons. *Progress in Brain Research* 143: 221-230.

44. **Kagan I.**, Gur M., Snodderly D.M. (2002). Spatial organization of receptive fields of V1 neurons of alert monkeys: a comparison with responses to gratings. *Journal of Neurophysiology* 88: 2557-2574.

45. Snodderly D.M., **Kagan I.**, Gur M. (2001). Selective activation of visual cortex neurons by fixational eye movements: Implications for neural coding. *Visual Neuroscience* 18 (2): 259-277.

46. Bar-Gad I., **Kagan I.**, Shik M.L. (1999). Behavior of hindbrain neurons during the transition from rest to evoked locomotion in a newt. *Progress in Brain Research* 123: 285-294.

Preprints, submitted and in revision

https://www.biorxiv.org/search/author1%3AIgor%2BKagan

1. Bothe R., Isbaner S., Chen X., **Kagan I.**, Gail A., Mani N. (2024) Little scientists & social apprentices: Active word learning in dynamic social contexts using a transparent dyadic interaction platform. https://doi.org/10.31234/osf.io/fx2bg *In review in Developmental Science*

2. Babin D., Schneider L., **Kagan I.**, Wilke M., Karnath H-O. (2024) Ipsilesional attentional capture but intact perceptual processing of contralesional stimuli in spatial neglect.

3. Wilke M.*, **Kagan I.***, Andersen, R. A. Pulvinar Contributes to Visuomotor Decisions by Shaping Cortical Representations of Spatial Goals. In revision. * Equal contribution

Invited talks and seminars

1. Application of invasive EEG to studying higher cognitive functions. Eröffnungssymposium Epilepsiezentrum, Goettingen, Germany, 2024
2. Behavioral and Neuronal Mechanisms of Dynamic Social Interactions. Bonn Melbourne Seminar in Decision Making and Computational Psychiatry, Bonn, Germany, 2024
3. Pulvinar-cortical circuitry contributions to sensorimotor decisions and actions. CIN Exchanges, Eberhard Karls Universität Tübingen, Germany, 2022

4. Contributions of thalamic dorsal pulvinar to visuomotor processing and cortical representations. Institute of Cognitive Sciences Marc Jeannerod, Lyon, France, 2021
5. Coordination in human and macaque pairs in a dyadic decision game with face-to-face action visibility. Institute of Experimental Psychology, Dusseldorf, Germany, 2021
6. Individual and social decision-making in macaques and humans. Institute of Cognitive Sciences Marc Jeannerod, Lyon, France, 2019
7. Retrospective metacognition and reward in humans and social decision-making in humans and macaques. Experimental Psychology Seminar, GEMI, Goettingen, Germany, 2018
8. Retrospective metacognition and reward in humans and social decision-making in humans and macaques. Department of Experimental Psychology - Cognitive & Behavioural Neuroscience Seminar series, Oxford, UK, 2018
9. Decision making with the left and the right brain. OMV, Vienna, Austria, 2016
10. Contribution of thalamic pulvinar to cortical spatial representations and visuomotor decisions. 6th Motivational and Cognitive Control (MCC) Symposium, St Andrews, Scotland, 2016
11. Contribution of thalamic pulvinar to cortical spatial representations and visuomotor decisions. The Institute of Movement Neuroscience, UCL, London, UK, 2016
12. Influence of reward, effort, and causal brain interference on spatial decisions. Emotional, attentional and motivational influences on visual perception, U4 Workshop, Ghent, Belgium, 2016
13. Influence of reward on spatial awareness and decisions. Extra-retinal influences on vision, U4 Workshop, Goettingen, Germany, 2015
14. Integration of reward, effort and risk in decision-making. Brain Circuits for Positive Emotions conference, Ascona, Switzerland, 2014
15. Bihemispheric mechanisms of spatial decision-making in human and non-human primates, NeuroBridges conference, Goettingen, Germany, 2014
16. Behavioral and neural correlates of spatial decision-making in monkeys and humans. Institute of Experimental Psychology, Dusseldorf, Germany, 2014
17. Risk-seeking behavior during value-based decisions in monkeys is decreased by effort. EBBS symposium: Diverse functions of the brain's reward system**,** EWCBR-EBBS conference, Brides-les-Bains, France, 2014
18. Intra- and interhemispheric neuronal interactions during spatial decision making. Hertie Institut, Tuebingen, Germany, 2012
19. Intra- and interhemispheric interactions during spatial decision-making. Northwestern University, Chicago, IL, 2011
20. Interhemispheric interactions during spatial decision-making. McClelland/Newsome labs, Stanford University, CA, 2010
21. Intra- and inter-hemispheric integration of spatial and effector decision signals. ICM, Paris, France, 2010
22. BOLD dynamics of visuomotor representations in free-choice and reward-based decision. Okinawa Institute of Science and Technology, Japan, 2009
23. Saccades and drifts differentially modulate neuronal activity in V1: effects of retinal image motion, position, and extraretinal influences. Active Sensing Workshop, Weizmann Institute of Science, Israel, 2008
24. High-field event-related functional MRI in alert behaving monkeys during goal-directed saccades. National Institutes of Health, MD, 2006
25. High-field functional MRI in alert behaving monkeys during goal-directed saccades. Department of Biomedical Engineering, Technion, Israel, 2006
26. Functional MRI and neurophysiology in alert behaving monkeys. Neurophilosophy: The State of the Art - McDonnell Project Workshop, Caltech, CA, 2006

27. Effects of fixational eye movements and nonlinear response properties in V1 of alert monkeys. Institute for Brain Science, Brown University, RI, 2002

Selected abstracts and conference presentations

1. Kagan I. Visuomotor functions of the pulvinar nuclei: perturbation and electrophysiological studies in primates. *Thalamocortical Networks conference 2024*, Donostia–San Sebastián, Spain (symposium talk).
2. Kagan I., Moeller S., Darani Z.Y., Treue S., Gail A. Behavioral mechanisms and premotor cortex representations of dyadic coordination in transparent games. *Social Brain Magdeburg 2023 (blitz talk and poster).*
3. Moeller S., Dann B., Scherberger H., Treue S., Gail A., Kagan I. Neural correlates of dynamic coordination in macaque premotor cortex. *SfN 2023 (talk).*
4. Pachoud M., Arabali D., Schneider L., Wilke M., Kagan I. Bihemispheric effects of dorsal pulvinar inactivation on saccade and reach representations in parietal cortex. *SfN 2018.*
5. Moeller S., Unakafov A.M., Gail A., Treue S., Kagan I. Transparent games: Investigating the influence of action visibility on social and economic decisions in human and macaque pairs. *SfN 2018 (talk).*
6. Wilke* M., Schmidt-Samoa* C., Dechent P., Miloserdov K., Mahdavi S., Dominguez-Vargas A.U., Liman J., Holzgraefe M., Williams K., Kagan I., Bähr M. Contribution of the thalamic pulvinar to saccade and reach behavior in humans and monkeys. *SfN 2018.*
7. Kagan I., Domínguez-Vargas A. U., Schneider L., Gibson L., Wilke M. Contribution of dorsal pulvinar to visuomotor behavior and spatial decision-making. *SfN 2016.*
8. Christopoulos V.N., Kagan I., Andersen R.A. Choice bias after lateral intraparietal (LIP) area inactivation predominantly reflects a decision rather than an attention deficit. *SfN 2016.*
9. Gibson L., Wilke M., Kagan I. Comparison of BOLD activity induced by microstimulation of pulvinar and LIP in a behaving monkey. *SfN 2015.*
10. Domínguez-Vargas A. U., Schneider L., Kagan I.*, Wilke M.* Time-dependent effects of pulvinar microstimulation on visually-guided saccades and target selection. *SfN 2014.*
11. Gibson L., Spanou E., Wilke M., Kagan I. The effects of pulvinar microstimulation on cortical BOLD activity in behaving monkey. *SfN 2014.*
12. Christopoulos V.N., Kagan I., Cho R., Andersen R.A. Inactivation of Parietal Reach Region (PRR) affects reach but not saccade choices in spatial decisions. *SfN2014.*
13. Paschke K., Kagan I., Baehr, M., Wilke M. Trunk orientation and saccadic choice behavior: effects of egocentric midline shift. *SfN 2013.*
14. Schmidt-Samoa C., Wilke M., Dechent P., Andersen R.A., Kagan I. Spatial decision differently activates frontoparietal network in humans and in monkeys. *SfN 2012.*
15. Schmidt-Samoa C., Dechent P., Kagan I., Wilke M. FMRI of memory-guided instructed and decision in a slow event-related designs. *Human Brain Mapping 2012.*
16. Domínguez-Vargas A. U., Grass A., Wilke M., Treue S., Kagan I. High reward and risk modulate effort-based spatial decisions in monkeys. *SfN 2012.*
17. Bonaiuto J.J., Kagan I., Andersen R.A. Competition and cooperation in a computational model of spatial decision-making and neglect. *SfN 2012.*
18. Christopoulos V.N., Bonaiuto J.J., Kagan I., Andersen R.A. Parietal Reach Region (PRR) inactivation causes deficits in reach target selection. *SfN 2012.*
19. Snodderly D.M., Przybyszewski A.W., Kagan I. Response bias of V1 complex cells for dark objects in the straight-ahead direction. *SfN 2012.*
20. Bonaiuto J.J., Kagan I., Andersen R.A. Synthetic brain imaging on a computational model of inter-hemispheric interactions during spatial decision-making. *SfN 2011.*

21. Christopoulos V.N., Kagan I., Wilke M., Andersen R.A. Functional connectivity analysis in an oculomotor memory decision task after lateral intraparietal area (LIP) inactivation. *SfN 2011.*
22. Kagan I., Wilke M., Andersen R.A. Spatial awareness after pulvinar inactivation. *ASSC 2011, Kyoto, Japan.*
23. Wilke M., Kagan I., Andersen R.A. Pulvinar inactivation alters cortical responses during spatial decision making. *SfN 2010*.
24. Kagan I., Wilke M., Andersen R.A. Interhemispheric interactions in parietal cortex during spatial decision making. *SfN 2010*.
25. Wilke M., Kagan I., Andersen R.A. BOLD responses during pharmacologically induced hemi-neglect in the parietal cortex. *SfN 2009 (talk)*.
26. Kagan I., Wilke M., Andersen R.A. fMRI dynamics in monkeys reflect spatial decisions and preferences in free-choice and reward context tasks. *SfN 2009 (talk)*.
27. Wilke M., Kagan I., Andersen R.A. BOLD signal changes associated with reversible visual neglect in monkeys. *Japan Neuroscience Society 2009.*
28. Kagan I., Wilke M., Andersen R.A. (2009). BOLD fMRI dynamics in monkeys reflects spatial decisions in free-choice and reward context tasks. *Japan Neuroscience Society 2009.*
29. Snodderly D.M., Kagan I., Gur M. (2008). Stimulus-response relationships of complex cells in V1 of behaving monkeys. *SfN 2008.*
30. Lindner A., Kagan I., Iyer A., Andersen R.A. (2008). Prospective coding of alternative actions in human parietal and premotor cortex. *FENS 2008.*
31. Kagan I., Lindner A., Iyer A., Wagner S., Andersen R.A. (2007). Time-courses of fMRI BOLD signals in frontal and parietal cortex reflect monkeys' decisions in a free-choice oculomotor task. *SfN 2007 .*
32. Lindner A., Kagan I., Iyer A., O'Doherty J.P., Schultz W., Andersen R.A. (2007). Expected reward magnitude modulates fMRI-activity in monkey ventral and dorsal cortical streams and the striatum during a goal-directed saccade task. *SfN 2007.*
33. Kagan I., Lindner A., Iyer A., Wagner S., Andersen R.A. (2007). Time-courses of fMRI BOLD signals in frontal and parietal cortex reflect monkeys' decisions in a free-choice oculomotor task. *SfN 2007.*
34. Kagan I., Iyer A., Lindner A., Andersen R.A. (2007). Event-related fMRI of goal-directed behavior in alert monkeys and humans: spatially-specific and nonspecific signals during delayed response tasks. *CoSyNe 2007.*
35. Snodderly D.M., Kagan I., Gur M. (2007). Modulation of neuronal activity in V1 by fixational and voluntary eye movements: Separating effects of retinal image motion, retinal image position, and extraretinal influences. *SfN 2007.*
36. Kagan I., Lindner A., Iyer A., Andersen R.A. (2007). fMRI of eye movements in monkeys and humans: spatially-specific and non -specific preparatory signals for memory- and visually-guided saccades. *ECEM2007.*
37. Kagan I., Iyer A., Lindner A., Wagner S., Andersen R.A. (2006). Event-related fMRI in alert behaving monkeys and humans during visually-guided and memory saccades. *SfN 2006.*
38. Kagan I., Iyer A., Lindner A., Andersen R.A. (2005). Functional MRI in alert behaving monkeys during goal-directed saccades. *SfN 2005.*
39. Kagan I., Gur M., Snodderly D.M. (2005). Complementary functions of saccadic, position/drift, and extraretinal responses to eye movements in V1 neurons. *ASSC9 symposium.*
40. Ersoy B., Kagan I., Snodderly D.M., Rucci M. (2004). Predicting the responses of V1 complex cells in alert monkeys. *SFN 2004.*
41. Gur M., Kagan I., Snodderly D.M. (2004). Response variability of single cells in V1 of alert monkeys. *SFN 2004.*
42. Ersoy B., Kagan I., Rucci M., Snodderly D.M. (2004). Modeling the responses of V1 complex cells to natural temporal inputs. *VSS 2004.*

43. Gur M., Kagan I., Snodderly D.M. (2004). Lack of short-term adaptation in V1 cells of the alert monkey. *VSS 2004.*
44. Kagan I., Gur M., Snodderly D.M. (2004). Modeling complex cells in V1 of alert monkeys. *CoSyNe 2004.*
45. Kagan I., Gur M., Snodderly D.M. (2003). Position vs. saccade responses in V1 of alert monkeys. *SfN 2003 (talk).*
46. Gur M., Kagan I., Snodderly D.M. (2003). Early generation of stimulus specificity in V1 of alert monkeys. *SfN 2003.*
47. Kagan I., Przybyszewski A.W., Gur M., Snodderly D.M. (2003). Responses of macaque V1 neurons to fixational and voluntary eye movements correlate with receptive field properties. *VSS 2003.*
48. Gur M., Kagan I., Snodderly D.M. (2003). Orientation selectivity in V1 of alert monkeys. *VSS 2003.*
49. Przybyszewski A.W., Kagan I., Snodderly D.M. (2003). Eye position influences contrast responses in V1 of alert monkey. *Perception* **32:** 76-77 Suppl. S
50. Kagan I., Gur M., Snodderly D.M. (2002). Diversity of responses to gratings in V1 of alert monkey. *SFN 2002*.
51. Kagan I., Gur M., Snodderly D.M. (2002). Analysis of responses to drifting and stationary gratings in V1 of alert monkey. *VSS 2002*.
52. Snodderly D.M., Kagan I., Gur M. (2002). Receptive fields and quasi-linear response modulation in V1 of alert macaques. *VSS 2002*.
53. Kagan I., Gur M., Snodderly D.M. (2001). In V1 duplex cells, the form of responses to gratings depends on temporal frequency. *Neural Plasticity* **8 (3)**: 180
54. Snodderly D.M., Kagan I., Gur M. (2000). Simple cells and other cells in striate cortex of alert monkeys. *ARVO 2000*
55. Shik M.L., Kagan I. (2000). Persistent instability of firing of hindbrain neurons during extended latency of evoked locomotion in salamander. *Eur. J. Neurosci.* **12**: 163-163 Suppl. S 2000
56. Gur M., Kagan I., Snodderly D.M. (1999). "Duplex", not simple, cells are the major cell type in striate cortex of alert monkeys. *Soc. Neurosci. Abstr.* **29**: 1548
57. Kagan I., Gur M., Snodderly D.M. (1999). The influence of fixational eye movements on grating-elicited responses of V1 neurons. *Neuroscience Letters* **54**, Suppl.: S22-S22
58. Kagan D., Kagan I., Shik M.L. (1999). Behavior of hindbrain neurons during latency of evoked locomotion in salamander. *Fifth IBRO World Congress of Neuroscience Proceedings*, 88
59. Kagan I., Gur M., Snodderly D.M. (1998). "Duplex", not simple, cells are the major cell type in striate cortex of alert monkeys. *Neuroscience Letters* **51**, Suppl.: S20-S21
60. Kagan I., Shik M.L. (1996). Responses of hindbrain neurons to the threshold repetitive stimulation of the mesencephalic "locomotor region" in urodele. *Israel J. of Med. Sci.* **32**, Suppl.: S34
61. Bar-Gad I., Kagan I., Shik M.L. (1995). Responses of single neurons in the hindbrain of the newt to threshold repetitive stimulation of the mesencephalic "locomotor region". *Israel J. of Med. Sci.* **31**: 762

Patents

Melanie Wilke, Igor Kagan, Richard A. Andersen (2014) Brain repair using electrical stimulation of healthy nodes. *US 8831733 B2*.