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CURRICULUM VITAE OF IGOR KAGAN

Personal

Date and place of birth: June 01, 1972, St. Petersburg (Leningrad), Russia.

Citizenship: Israel.

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

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

Neurophysiology and functional imaging of cognitive and visuomotor functions in primates, with focus on bihemispheric network processing of sensory information for action planning and decision-making in the context of goal-directed behaviors. Pulvinar and pulvinar-cortical interactions. Human-monkey cross-species comparison using imaging, pharmacological inactivation, and behavioral approaches. Neuronal basis of fMRI signals. Neurophysiology of active vision in primary visual cortex.

Working experience

- 2011-current Head of Decision and Awareness Group, German Primate Center, Goettingen, Germany.
- 2009-2010 Senior Research Fellow, Richard Andersen Lab, Caltech, Pasadena, CA. Multielectrode bihemispheric electrophysiological recordings in area LIP for comparison with fMRI data, and for investigation of inter-hemispheric interactions. Collaboration with Dr. Melanie Wilke on 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 functional event-related fMRI techniques (4.7T vertical scanner lab) to study visuomotor brain functions in behaving monkeys, and direct cross-species comparison with humans 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

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

Visual and motor neurophysiology experiments with alert monkeys: single- and multi-electrode extracellular recordings, electrical microstimulation, and pharmacological inactivation. Behavioral training of monkeys on visuomotor and cognitive tasks.

Neurophysiological data analysis and visualization, signal and image processing, statistical analysis of experimental results (MATLAB, LabVIEW, C/C++).

Extensive programming skills, including programming visual stimuli using custom (C/C++, DirectX, OpenGL) and Cambridge Research Systems (VSG SDL scripts and VSL) software. Programming data acquisition systems and behavioral control software (C/C++, Rpvds real-time DSP circuits, LabVIEW Real-Time).

Modeling responses of cortical cells using analytical methods and computer simulations.

Surgical procedures: headpost, recording chamber, and cannulae implantations, craniotomies, eye coil implantation. Surgery planning using contrast agents, high-resolution MRI scans and frameless stereotaxic systems.

Professional activities

2015 – 2017 Steering board member, Leibnitz Science Campus “Primate Cognition”.

Ad hoc reviewer for journals: Age, Acta Psychologica, Current Biology, Cerebral Cortex, European Journal of Neuroscience, Frontiers in Zoology, Journal of Neurophysiology, Journal of Economic Psychology, NeuroImage, Physical Review, Trends in Cognitive Sciences, Vision Research

Ad hoc reviewer for funding agencies: ANR - The French National Research Agency, BSF – Binational Science Foundation (US – Israel), 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

2016 – 2017 Participating 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*

2016 – 2017 Seed fund, Leibnitz Science Campus Primate Cognition, with Arezoo Pooresmaeili. *9.960 Euro.*

2015 – 2016 Seed fund, Leibnitz Science Campus Primate Cognition, with Anne Kathrin Schacht. *7.630 Euro.*

- 2014 – 2017 DFG RU Primate Systems Neuroscience FOR 1847/KA 3726/2. The Physiology of Distributed Computing Underlying Higher Brain Functions in Non-Human Primates: Bilateral decision networks for eye and arm movements. PI: I. Kagan, Co-PI: M. Wilke.
319.500 Euro for 36 months.
- 2012 – 2015 DFG Einzelantrag (WI 406/1-1). Neural basis of spatial neglect symptoms in thalamo-cortical circuits. PI: M. Wilke, Co-PI: I. Kagan.
276.985 Euro for 36 months.

Teaching experience

Graduate courses:

- 2011-2016 *Lecturer:* “Higher cognitive functions: reward and decision-making”, M.Sc. Neuroscience program, International Max Planck Research School, Goettingen, Germany.
- 2014 Behavioral and neural correlates of spatial decision-making in monkeys and humans. Biopsychology seminar, Erfurt University, Germany.
- 2013 *Lecturer:* fMRI analysis 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

PhD students

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| 1. Kristin Kaduk
Primary supervisor: Igor Kagan | 2017-present |
| 2. Lydia Gibson
Primary supervisor: Igor Kagan, Co-supervisor: Melanie Wilke | 2013-present |
| 3. Lukas Schneider
Primary supervisor: Igor Kagan, Co-supervisor: Melanie Wilke | 2013-present |
| 4. Danial Arabali
Primary supervisor: Igor Kagan | 2013-present |
| 5. Caio Moreira
Primary supervisor: Igor Kagan | 2012-2016 |
| 6. Adan Ulises Dominguez Vargas
Primary supervisor: Igor Kagan, Co-supervisor: Melanie Wilke | 2012-2017 |
| 7. Elena Spanou
Primary supervisor: Stefan Treue, Co-supervisor: Igor Kagan | 2012-2014 |

Bachelor and Master students

1. Isabel Wunder (Master, external, Giessen University) 2016-2017
Primary supervisor: Igor Kagan
2. Uwe Zimmermann (Master, Developmental, Neural and Behavioral Biology) 2016-2017
Primary supervisor: Igor Kagan, Co-supervisor: Melanie Wilke
3. Alexandra Nagel (Bachelor thesis, Psychology, Ph.D. supervisor Lydia Gibson) 2016
Primary supervisor: Igor Kagan
4. Kristin Kaduk (Master, Psychology) 2015-2016
Primary supervisor: Igor Kagan
5. Alexander Kratzenberg (Master, Developmental, Neural and Behavioral Biology) 2015
Primary supervisor: Igor Kagan, Co-supervisor: Melanie Wilke

Other students (internships, lab rotations)

1. Iryna Schommartz (TU Dresden, lab rotation) 2017
2. Paula Wunsch (Tuebingen University, internship) 2017
3. Jiaqi Shang (Northwestern University, internship) 2017
4. Uwe Zimmermann (Developmental, Neural and Behavioral Biology, lab rotation) 2016
5. Alex Kratzenberg (Developmental, Neural and Behavioral Biology, lab rotation) 2014
6. Max Rollwage (Psychology Diplom, Phillips-University Marburg, lab rotation) 2014
7. Kristin Kaduk (Psychology Bachelor student, lab rotation) 2014
8. Vanessa Hohn (Psychology Bachelor student, lab rotation) 2013
9. Shoba Kapoor (Master student, lab rotation) 2013
10. Kirsten Emmert (Master student, lab rotation) 2012
11. Annika Grass (Master student, lab rotation) 2012
12. Olga Dyakova (internship) 2011-2012
13. Malte Koester (internship) 2011-2012

Thesis committee member

1. Stefan Greulich (Systems Neuroscience Ph.D. Program) 2016-present
2. Daniela Buchwald (Sensory and Motor Neuroscience Ph.D. Program) 2016-present
3. Wiebke Hammerschmidt (Behavior and Cognition Ph.D. program) 2015-present
4. Anne Sommerfeld (Behavior and Cognition Ph.D. program) 2015-present
5. Nicolas Becker (Behavior and Cognition Ph.D. program) 2015-present
6. Anja Richter (Behavior and Cognition Ph.D. program) 2014-2017
7. Jeroen Buil (Systems Neuroscience Ph.D. program) 2014-present
8. Kathleen Williams (European Neuroscience Institute Göttingen) 2014-present
9. Katja Brodmann (Behavior and Cognition Ph.D. program) 2013-2016

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| 10. Annika Grass (Behavior and Cognition Ph.D. program) | 2013-2016 |
| 11. Sarah Wolter (Behavior and Cognition Ph.D. program) | 2013-present |
| 12. Rijk- in 't Veld (Systems Neuroscience Ph.D. program) | 2013-2016 |

Publications

1. **Kagan I.**, Burr D.C. (2017). Active Vision: Dynamic Reformatting of Visual Information by the Saccade-Drift Cycle. *Current Biology* 27(9): R341-R343.
2. 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.
3. Paschke K., **Kagan I.**, Wüstenberg T., Bähr M., Wilke M. (2015). Trunk rotation affects temporal order judgments with direct saccades: Influence of handedness. *Neuropsychologia* 79: 123-137.
4. 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.
5. 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.
6. **Kagan I.**, Hafed Z.M. (2013). Active vision: microsaccades direct the eye to where it matters most. *Current Biology* 23(17): R712 – R714.
7. 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.
8. **Kagan I.** (2012). Microsaccades and image fading during natural vision. Electronic response to McCamy et al. Microsaccadic efficacy and contribution to foveal and peripheral vision. *Journal of Neuroscience* 2012; 32(27):9194-9204 doi:10.1523/JNEUROSCI.0515-12.2012).
9. 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
10. **Kagan I.** (2012) Active vision: fixational eye movements help seeing space in time. *Current Biology* 22(6): R186 - R188.
11. **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.*
12. 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
13. 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.
14. 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

15. **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.
16. 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.
17. **Kagan I.**, Shik M.L. (2004). How the mesencephalic “locomotor region” recruits hindbrain neurons. *Progress in Brain Research* 143: 221-230.
18. **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.
19. 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.
20. 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.

Submitted and in preparation

1. Wilke M.*, Kagan I.*, Andersen, R. A. Pulvinar Contributes to Visuomotor Decisions by Shaping Cortical Representations of Spatial Goals. *In revision, PLoS Biology*. * Equal contribution
2. Moreira C. M., Rollwage, M., Kaduk, K., Wilke M., Kagan I. Certainty bi-directionality and the efficient use of metacognition. *Submitted*.
3. Schmidt-Samoa C., Wilke M., Dechent P., Andersen R.A., Kagan I. Spatial decision differently activates frontoparietal network in humans and in monkeys. *In preparation*.
4. Kagan I., Iyer A., Lindner A., Andersen R.A. Event-related fMRI of delayed response saccades in monkeys and humans: spatially-specific and non-specific preparatory signals. *In preparation*.
5. Kagan I., Gur M., Snodderly D.M. Stimulus-response relationships of complex cells in V1 of behaving monkeys. *In preparation*.

Selected abstracts and conference presentations

1. 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*.
2. Gibson L., Wilke M., Kagan I. Comparison of BOLD activity induced by microstimulation of pulvinar and LIP in a behaving monkey. *SfN 2015*.
3. 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*.
4. Gibson L., Spanou E., Wilke M., Kagan I. The effects of pulvinar microstimulation on cortical BOLD activity in behaving monkey. *SfN 2014*.
5. 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. *SfN 2014*.
6. Paschke K., Kagan I., Baehr, M., Wilke M. Trunk orientation and saccadic choice behavior: effects of egocentric midline shift. *SfN 2013*.
7. 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*.

8. 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.
9. 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.
10. Bonaiuto J.J., Kagan I., Andersen R.A. Competition and cooperation in a computational model of spatial decision-making and neglect. *SfN* 2012.
11. Christopoulos V.N., Bonaiuto J.J., Kagan I., Andersen R.A. Parietal Reach Region (PRR) inactivation causes deficits in reach target selection. *SfN* 2012.
12. Snodderly D.M., Przybyszewski A.W., Kagan I. Response bias of V1 complex cells for dark objects in the straight-ahead direction. *SfN* 2012.
13. 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.
14. 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.
15. Kagan I., Wilke M., Andersen R.A. Spatial awareness after pulvinar inactivation. *ASSC 2011, Kyoto, Japan*.
16. Wilke M., Kagan I., Andersen R.A. Pulvinar inactivation alters cortical responses during spatial decision making. *SfN* 2010.
17. Kagan I., Wilke M., Andersen R.A. Interhemispheric interactions in parietal cortex during spatial decision making. *SfN* 2010.
18. Wilke M., Kagan I., Andersen R.A. BOLD responses during pharmacologically induced hemi-neglect in the parietal cortex. *SfN* 2009.
19. 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.
20. Wilke M., Kagan I., Andersen R.A. BOLD signal changes associated with reversible visual neglect in monkeys. *Japan Neuroscience Society* 2009.
21. 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.
22. Snodderly D.M., Kagan I., Gur M. (2008). Stimulus-response relationships of complex cells in V1 of behaving monkeys. *SfN* 2008.
23. Lindner A., Kagan I., Iyer A., Andersen R.A. (2008). Prospective coding of alternative actions in human parietal and premotor cortex. *FENS* 2008.
24. 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.
25. 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.
26. 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.
27. 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.

28. 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*.
29. 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*.
30. 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*.
31. Kagan I., Iyer A., Lindner A., Andersen R.A. (2005). Functional MRI in alert behaving monkeys during goal-directed saccades. *SfN 2005*.
32. 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*.
33. Ersoy B., Kagan I., Snodderly D.M., Rucci M. (2004). Predicting the responses of V1 complex cells in alert monkeys. *SFN 2004*.
34. Gur M., Kagan I., Snodderly D.M. (2004). Response variability of single cells in V1 of alert monkeys. *SFN 2004*.
35. Ersoy B., Kagan I., Rucci M., Snodderly D.M. (2004). Modeling the responses of V1 complex cells to natural temporal inputs. *VSS 2004*.
36. Gur M., Kagan I., Snodderly D.M. (2004). Lack of short-term adaptation in V1 cells of the alert monkey. *VSS 2004*.
37. Kagan I., Gur M., Snodderly D.M. (2004). Modeling complex cells in V1 of alert monkeys. *CoSyNe 2004*.
38. Kagan I., Gur M., Snodderly D.M. (2003). Position vs. saccade responses in V1 of alert monkeys. *SfN 2003*.
39. Gur M., Kagan I., Snodderly D.M. (2003). Early generation of stimulus specificity in V1 of alert monkeys. *SfN 2003*.
40. 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*.
41. Gur M., Kagan I., Snodderly D.M. (2003). Orientation selectivity in V1 of alert monkeys. *VSS 2003*.
42. 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
43. Kagan I., Gur M., Snodderly D.M. (2002). Diversity of responses to gratings in V1 of alert monkey. *SFN 2002*.
44. Kagan I., Gur M., Snodderly D.M. (2002). Analysis of responses to drifting and stationary gratings in V1 of alert monkey. *VSS 2002*.
45. Snodderly D.M., Kagan I., Gur M. (2002). Receptive fields and quasi-linear response modulation in V1 of alert macaques. *VSS 2002*.
46. 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
47. Snodderly D.M., Kagan I., Gur M. (2000). Simple cells and other cells in striate cortex of alert monkeys. *ARVO 2000*
48. 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

49. 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
50. 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
51. 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
52. 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
53. 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
54. 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

Invited talks and seminars

1. Decision making with the left and the right brain. OMV, Vienna, Austria, 2016
2. Contribution of thalamic pulvinar to cortical spatial representations and visuomotor decisions. 6th Motivational and Cognitive Control (MCC) Symposium, St Andrews, Scotland, 2016
3. Contribution of thalamic pulvinar to cortical spatial representations and visuomotor decisions. The Institute of Movement Neuroscience, UCL, London, UK, 2016
4. Influence of reward, effort, and causal brain interference on spatial decisions. Emotional, attentional and motivational influences on visual perception, U4 Workshop, Ghent, Belgium, 2016
5. Influence of reward on spatial awareness and decisions. Extra-retinal influences on vision, U4 Workshop, Goettingen, Germany, 2015
6. Integration of reward, effort and risk in decision-making. Brain Circuits for Positive Emotions conference, Ascona, Switzerland, 2014
7. Bihemispheric mechanisms of spatial decision-making in human and non-human primates, NeuroBridges conference, Goettingen, Germany, 2014
8. Behavioral and neural correlates of spatial decision-making in monkeys and humans. Institute of Experimental Psychology, Dusseldorf, Germany, 2014
9. 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
10. Intra- and interhemispheric neuronal interactions during spatial decision making. Hertie Institut, Tuebingen, Germany, 2012
11. Intra- and interhemispheric interactions during spatial decision-making. Northwestern University, Chicago, IL, 2011
12. Interhemispheric interactions during spatial decision-making. McClelland/Newsome labs, Stanford University, CA, 2010
13. Intra- and inter-hemispheric integration of spatial and effector decision signals. ICM, Paris, France, 2010
14. BOLD dynamics of visuomotor representations in free-choice and reward-based decision. Okinawa Institute of Science and Technology, Japan, 2009

15. 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
16. High-field event-related functional MRI in alert behaving monkeys during goal-directed saccades. National Institutes of Health, MD, 2006
17. High-field functional MRI in alert behaving monkeys during goal-directed saccades. Department of Biomedical Engineering, Technion, Israel, 2006
18. Functional MRI and neurophysiology in alert behaving monkeys. Neurophilosophy: The State of the Art - McDonnell Project Workshop, Caltech, CA, 2006
19. Effects of fixational eye movements and nonlinear response properties in V1 of alert monkeys. Institute for Brain Science, Brown University, RI. 2002

Patents

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