

# ***PROGRESS IN SENSORIMOTOR RESEARCH***



## ***Laboratory of Sensorimotor Research 25th Anniversary Symposium***



**September 18th-20th, 2003**

Sponsored by the [National Eye Institute](#)



Alumni and friends celebrated the 25th Anniversary of the Laboratory of Sensorimotor Research and recognized the many contributions to its success by its founding chief, Bob Wurtz.

## PROGRAM

### Wednesday, September 17<sup>th</sup>

6-8:00pm: Registration/Welcoming reception (refreshments & cash bar in the Ambassador Ballroom)

### Thursday, September 18<sup>th</sup>

7:30am: Registration/Continental breakfast (Main Foyer outside Embassy Ballroom where talks are held)

8:30am: Welcome. *Lance Optican, Carl Kupfer, Sheldon Miller.*

**Vision & Development** (Chair: Bruce Cumming)

8:55am: Vision and Visual Cortex: The Early History. *Mitchell Glickstein.*

9:20am: A New View of the Primary Visual Cortex. *Robert Shapley.*

9:45am: The Neural Basis of Perceptual Learning. *Charles Gilbert.*

10:10am: Who Carries Color Signals in Cortex? *Peter Lennie.*

10:35am: - **Coffee** -

11:00am: Comparing Psychophysical and Neuronal Responses to Relative Stereoscopic Depth. *AJ Parker.*

11:25am: Meridional Anisotropy in Visual Processing. *Gerald Westheimer.*

11:50am: Substrates and Mechanisms of Rapid Plasticity in Developing Visual Cortex. *Michael P. Stryker.*

12:15pm: - **Lunch** -

**Eye Movements & Visual Motion** (Chair: Ed FitzGibbon)

1:35pm: Unresolved Questions about the Neural Control of Coordinated Eye and Head Movements. *David L. Sparks.*

2:00pm: One Hundred And One Really Useful Things To Do With A Human Saccade. *Jon Currie.*

2:25pm: Development of Saccade and Vergence in Children/Cortical Substrate. *Zoi Kapoula.*

2:50pm: VOR Signal Processing by Monkey Vestibular Neurons. *W.M. King.*

3:15pm: Pulleys and the Vestibulo-ocular Reflex (VOR). *Joseph L. Demer.*

3:40pm: - **Break** -

4:05pm: Short-Term Adaptation of the VOR Using Non-Retinal-Slip Error Signals. *David S. Zee.*

4:30pm: Contributions of Primate Area MST to Goal-Directed Behaviour. *Uwe J. Ilg.*

4:55pm: Smooth Pursuit Eye Movements: from Vision to Action. *Stephen G. Lisberger.*

5:20pm: Response Dynamics of Neurons in Macaque MT. *J. Anthony Movshon.*

5:45pm: Activity of MT Neurons is Modulated by the Demands of a Working Memory Task. *Tatiana Pasternak*

8:00pm: - **Poster Session** -

## Friday, September 19<sup>th</sup>

7:30am: Registration/Continental breakfast (Main Foyer outside Embassy Ballroom where talks are held)

**Cortical Function** (Chair: Mickey Goldberg)

8:30am: Active Vision in Parietal and Extrastriate Cortex. *Carol L. Colby.*

8:55am: Decision-Making and the Neural Representation of 'Experienced Value'. *William T. Newsome.*

9:20am: Object-Based Saccades. *Richard A. Andersen.*

9:45am: Sensorimotor Integration as a Window on Higher Cognitive Function. *Michael N. Shadlen.*

10:10am: Neural and Perceptual Mechanisms of Spatial Orientation. *Charles J. Duffy.*

10:35am: - **Coffee** -

11:00am: Contextual Influences on Visual Processing. *Thomas D. Albright.*

11:25am: Object-Centered Spatial Coding in the Frontal Lobe. *Carl R. Olson.*

11:50am: Cortical Correlates of Auditory Perception. *Gregg H. Recanzone.*

12:15pm: The Study of Task-Level Control Signals Using fMRI. *Steve Petersen.*

12:40pm - Lunch -

**Motor Control** (Chair: Okihide Hikosaka)

2:00pm: Neural Mechanisms of Copying. *Apostolos P. Georgopoulos.*

2:25pm: Twitches vs. Movements: A Story of Motor Cortex. *Charles Gross.*

2:50pm: "Muscle" and "Movement" Representation in Motor Cortex: New Anatomical and Physiological Correlates. *P.L. Strick.*

3:15pm: Use of Lateral and Medial Cortical Motor Areas for Motor Selection. *J. Tanji.*

3:40pm: Combinations of Motor Primitives in the construction of Natural Motor Behavior. *Emilio Bizzi.*

4:05pm: - Break -

4:30pm: Role of Basal Ganglia in Movement and Movement Disorders. *Mahlon R. Delong*

4:55pm: Does Cerebellum Store Memory for Prism-Learned Gaze-Reach Movements? *W.T. Thach.*

5:20pm: Explaining Saccadic Dysmetria by Delayed Cerebellar Feedback. *R. John Leigh, and Farrel R. Robinson.*

5:45pm: The Light and Dark Sides of Floccular Climbing Fibers. *J. I. Simpson.*

6:10pm: Visit LSR (Labs, Animal Facility, Shop) and the new MRI facility.

## **Saturday, September 20<sup>th</sup>**

7:30am: Registration/Continental breakfast (Main Foyer outside Embassy Ballroom where talks are held)

**Saccades & Visual Search** (Chair: Lance Optican)

8:30am: Look and See: The Selection of Visual Targets with Saccadic Eye Movements. *Peter H. Schiller.*

8:55am: Lessons from Visual Scanning and Search. *Mark A. Segraves.*

9:20am: Neural Activities in the Prefrontal Cortex During Performance of Sequential Saccade Tasks... *Ann M. Graybiel.*

9:45am: Simultaneous Representation of Saccade Targets and Salient Objects in Monkey... *Jacqueline Gottlieb.*

10:10am: Accounting for Variable Saccadic Trajectory in Visual Search Tasks. *Edward L. Keller.*

10:35am: - **Coffee** -

**Visual Processing** (Chair: Lance Optican)

11:00am: Neuregulins: an Update on Effects at Developing Synapses and on Neuronal Precursors. *Gerald D. Fischbach.*

11:25am: How might the retina compute the magnitude and sign of refractive error...? *Stuart J Judge.*

11:50am: To be announced. *Colin B. Blakemore*

12:15pm: - **Lunch** -

**Superior Colliculus** (Chair: Bob Wurtz)

1:35pm: What the Electrode Does Not See. *Joan S. Baizer.*

2:00pm: The nigro-collicular pathway: How I spent my summer vacation. *Michele A. Basso.*

2:25pm: Does the Rostral Superior Colliculus Help Specify the Goal for Pursuit and Saccades? *Richard Krauzlis.*

2:50pm: Exploring the Superior Colliculus *In Vitro*. *William C. Hall.*

3:15pm: - **Break** -

**Attention** (Chair: Bob Wurtz)

3:40pm: Spatial Scale of Attention and Saccadic Eye Movements. *Josh Wallman.*

4:05pm: Neurophysiological Mechanisms Underlying the Reflexive Orienting of Spatial Attention. *Douglas P. Munoz.*

4:30pm: Top-Down Control of Pop-Out in Area V4 of the Monkey. *Hidehiko Komatsu.*

4:55pm: Dynamics of Attentional Modulation in Monkey Cerebral Cortex. *John H.R. Maunsell.*

5:20pm: Visual Attention and Posterior Parietal Cortex. *James W. Bisley.*

8:00pm: - **Banquet (Embassy Ballroom)** -

## POSTERS (Thursday, September 18<sup>th</sup>. 8-10pm)

1. Bias and Priming Activity of Superior Colliculus Neurons During a Decision task. *N.L. Port and R.H. Wurtz.*
2. Inactivating the SC-MD-FEF Pathway Impairs both the Accuracy and Precision of Corollary Discharge. *Marc A. Sommer and Robert H. Wurtz.*
3. Neural Prediction of go/no-go Decision in Monkey Superior Colliculus. *Ryohei P. Hasegawa, Yukako T. Hasegawa and Mark A. Segraves.*
4. Saccade Target Selection after Inactivation of Superior Colliculus: Effects of Target Discriminability and Number of Distractors. *Robert M. McPeck and Edward L. Keller.*
5. Ballistic Movement Processing: Invariant Activation Threshold in Superior Colliculus Dictates Saccade Initiation. *Martin Paré.*
6. Change Detection Requiring Visual Attention is Enhanced by Stimulation of the Superior Colliculus. *J.R. Cavanaugh and R.H. Wurtz.*
7. Central Mesencephalic Reticular Formation Connections Underlying Gaze. *Paul J. May, Christine Livingston, Robert Morecraft, David M. Waitzman and Susan Warren.*
8. The Role of Neurons in Primate Central Mesencephalic Reticular Formation (cMRF) in Gaze Control. *Jay Pathmanathan, Jason Cromer, and David M. Waitzman.*
9. Climbing Fiber Activity in the Cerebellar Oculomotor Vermis During Saccadic Adaptation. *Robijanto Soetedjo & Albert Fuchs.*
10. The Circuitry of Spatial Updating: Insights from the Split-Brain Monkey. *R.A. Berman, L.M. Heiser, R.C. Saunders, C.L. Colby.*
11. Spatial Updating in Human Parietal Cortex. *Elisha P. Merriam, Christopher R. Genovese, and Carol L. Colby.*
12. Parietal Activity in a Symmetrical-Object Saccade Task. *Boris Breznen, Michael Campos, and Richard A. Andersen.*
13. Saccades Modulate the Temporal Structure of Corticocortical communication during active vision. *Purpura, Keith P., Kalik, S.F., and Schiff, N.D.*
14. Neural Correlates of Covert Spatial Attention in the Frontal Eye Field Without Saccades. *Keri L. Biscoe and Kirk G. Thompson.*
15. Context-Dependent Perisaccadic Activity in the Primate Prefrontal Cortex. *A. Messinger, M.A. Lebedev, J.D. Kralik, and S.P. Wise.*

16. Scene-Based Spatial Memory Facilitates the Programming of Saccadic Eye Movements to Invisible Targets. *Jay Edelman, Mariya Cherkasova, Stacey Richter, Ellee Kim, and Ken Nakayama.*
17. Systematic Bistable Switching of Saccadic Eye Movements by Instruction Signals. *Hiroshi Aizawa and Kiyoshi Kurata.*
18. The Saccadic System More Readily Co-Processes Orthogonal than Co-Linear Saccades. *A.Z. Zivotofsky, R. Ram-Tsur, A. Caspi, and C. Gordon.*
19. Tests of a Model of Saccade-Vergence Eye Movements. *Arun N. Kumar, Yanning H. Han, R. John Leigh.*
20. Quantitative Analysis of Enhancement of Vergence by Saccades. *L. E. Mays and C. Busettoni.*
21. Quantitative Analysis of Slowing of Saccades by Vergence. *C. Busettoni and L. E. Mays.*
22. Perception Can Influence the Vergence Eye Movements Associated with Open-Loop Gaze Shifts in 3D. *B. M. Sheliga & F.A. Miles.*
23. Human Short-Latency Vergence Responses to Horizontal and Vertical Disparity Steps: Dependence on Pattern Size and Step Size. *K.J. Chen & F.A. Miles.*
24. The Contribution of Vergence Change to the Visual System's Measurement of Relative Disparity. *Benjamin T. Backus and Daniel Matza-Brown.*
25. Modeling the Cortical Specialization for Horizontal Disparity. *Jenny C. A. Read and Bruce G. Cumming.*
26. Receptive Field Size Combined with Lack of Slant Selectivity in V1 Neurons Limits Stereoscopic Spatial Acuity. *H. Nienborg, H. Bridge, A.J. Parker, B.G. Cumming.*
27. Axis Orientation Selective Neurons in the Caudal Intraparietal Sulcus (Area CIP). *M. Kusunoki and H. Sakata.*
28. Coding of Distance in the Posterior Parietal Cortex of Primates. *Ferraina S., and Genovesio A.*
29. Matching Neuron to Muscle: Activity Dependent Synapse Elimination at the Neuromuscular Junction. *Phillip G. Nelson, Min Jia and Min\_Xu Li.*
30. Redefining the Extraocular Muscle Phenotype by Genome-Wide Expression Profiling. *John D. Porter, Anita P. Merriam, Georgiana Cheng, Xiaohua Zhao, Bendi Gong, Sheri Israel, and Sangeeta Khanna.*
31. Optimization of Eyes' Dynamics Control. *Paolo Inchingolo.*

32. The Three-Dimensional Vestibulo-Ocular Reflex in Patients with Cerebellar Disease. *M.F. Walker & D.S. Zee.*
33. Test of a Superposition Model of the Interaction between Vestibular and Visual Tracking Systems using a Parameter Estimation Technique. *Yanning H. Han, Arun N. Kuma and, R. John Leigh.*
34. From Complexity to Simplicity - Signal Processing in the Linear Vestibulo-Ocular Reflex. *Barry Peterson and Chiju Chen-Huang.*
35. Eye Movements in Chorea-Acanthocytosis. *L.Gradstein, A.Danek, J.Grafman, and E.J. FitzGibbon.*
36. The Role of Sensory Input for Symptom Generation in Laryngeal Dystonia. *C. L. Ludlow, K. Bidus, K. G. Saxon, C. Poletto, E. Mann and P. Kearney.*
37. Visual Stimulation with a Virtual Environment Based on Panoramic Photographs. *Max R. Dürsteler.*
38. The Role of Early Visual Experience in the Development of Primate Eye Movements. *Michael J. Mustari, John Economides, Andy Burrows, Vallabh, E. Das, Valeria Fu, Seiji Ono and Ronald J. Tusa.*
39. Neuronal Correlates of Face Identification in the Monkey Anterior Temporal Cortical Areas. *Satoshi Eifuku, Wania C. De Souza, Ryoi Tamura, Hisao Nishijo and Taketoshi Ono.*
40. Neural Activity Corresponding to Repetition Priming in Monkey Inferotemporal Cortex. *D.B.T. McMahon and C.R. Olson.*
41. Dopamine D2 Mediated Mechanism for the Functional Role of Rhinal Cortex in Visually Cued Reward Schedules. *Zheng Liu, Edward I. Ginns and Barry J. Richmond.*
42. Neuronal Signals Related to Reward Expectancy in the Insular Cortex of the Monkey. *M. Shidara, T. Mizuhiki and B.J. Richmond.*
43. Cognitive Signals about Motivational State, Reward Predictability and Intended Motor Activity in Substantia Nigra Pars Compacta/Ventral Tegmental Area Neurons. *S. Ravel and B.J. Richmond.*
44. Workload and Reward Contingency Modulate Neuronal Activity in Orbitofrontal Cortex. *Janine M. Simmons and Barry J. Richmond.*
45. Eyes in Motion: Processing of Global Retinal Image Slip. *Urs Schwarz and Uwe J. Ilg.*
46. Effect of Target Saliency on Human Smooth Pursuit Initiation: Spatial and Temporal Characteristics. *Hashimoto K., Suehiro K., and Kawano K.*
47. A Spatial Window of Target Salience for Smooth Pursuit Eye Movements. *D. Schoppik and S.G. Lisberger.*



48. Tight Correlation between the Time Courses of Sensory and Motor Estimates of Target Direction in Smooth Pursuit Eye Movements. *L. C. Osborne, W. Bialek and S. G. Lisberger.*

49. MST Neurons that Decode Target Speed from Area MT. *Churchland, A.K., and Lisberger, S.G.*

50. Motion Information in the Temporal Cortex. *Akichika Mikami, Shunpei Unno, Satoshi Katai, Reiko Kuno, Masato Inoue and Yasushi Nagasaka.*

51. Dynamics of Motion Integration for Tracking Eye Movements. *Guillaume S. Masson.*

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Please note: all talks will be in the Embassy Ballroom.