

BIOGRAPHICAL SKETCH

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NAME Schall, Jeffrey D.		POSITION TITLE Professor of Psychology, Ophthalmology & Visual Science	
eRA COMMONS USER NAME (credential, e.g., agency login) Schalljd		E. Bronson Ingram Professor of Neuroscience	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
University of Denver	B.S. Chem.	05/82	Chemistry
University of Utah School of Medicine	Ph.D.	06/86	Anatomy (Neurobiology)
Massachusetts Institute of Technology	Postdoc	07/89	Brain Cognitive Science

A. Personal Statement

I have been affiliated with the Vanderbilt Kennedy Center since I joined the faculty in 1989. My research has been funded continuously by NEI and NIMH R01 since 1991. My laboratory investigates how the brain selects the target for, controls the production of and monitors the consequences of visually guided eye movements by monitoring neural activity in behaving monkeys. To accomplish this research we require a large amount of customized apparatus and instrumentation that is not available commercially. Therefore, the Scientific Instrumentation Service has been of vital importance for my research program.

My qualifications to oversee the Scientific Instrumentation Service begin with my experience working with this instrumentation shop since it was established. In addition, as PI of a P30 grant from NEI that also supports this shop, I have been very involved in ensuring the efficient and effective operation of this instrumentation shop. The importance of this service to the institution has been underscored by the additional investment through the *Center for Integrative & Cognitive Neuroscience* that has provided another FTE as well as enhanced machine tools.

None of the publications listed below could have been produced without the Scientific Instrumentation Service

B. Positions and Honors

- 1989-2003 Assistant, Associate & Full Professor, Department of Psychology, Vanderbilt University
- 1990-1992 Alfred P. Sloan Research Fellow
- 1997-2000 Investigator Award, *McKnight Endowment Fund for Neuroscience*
- 1998 Troland Research Award, *National Academy of Sciences*
- 1998- Director, Vanderbilt Vision Research Center and Vision Training Program
- 2000- Director, Center for Integrative and Cognitive Neuroscience, Vanderbilt University
- 2003- E. Bronson Ingram Professor of Neuroscience
- 2004 Fellow, *Association of Psychological Science*
- 2009 Chancellors Research Award (with Logan & Palmeri), Vanderbilt University

Editorial Boards & Grant Review

Journal of Neurophysiology, Frontiers in Neuroscience, Advisory Board for Faculty of 1000 Biology Reports 2005-2009 Central Visual Processing, Chair 2007-2009

C. Selected publications during previous grant period (112 total peer-reviewed articles) [citations]

1. Cohen, JY; Pouget, P; Heitz, RP; Woodman, GF; Schall, JD (2009) Biophysical Support For Functionally Distinct Cell Types In The Frontal Eye Field. JOURNAL OF NEUROPHYSIOLOGY 101:912-916 PMID: PMC2657052 [15]

2. Ray, S; Pouget, P; Schall, JD (2009) Functional Distinction Between Visuomovement And Movement Neurons In Macaque Frontal Eye Field During Saccade Countermanding. JOURNAL OF NEUROPHYSIOLOGY 102:3091-3100 PMID: PMC2804409 [18]
3. Cohen, JY; Heitz, RP; Woodman, GF; Schall, JD (2009) Neural Basis Of The Set-Size Effect In Frontal Eye Field: Timing Of Attention During Visual Search. JOURNAL OF NEUROPHYSIOLOGY 101:1699-1704 PMID: PMC2695643 [22]
4. Cohen, JY; Heitz, RP; Woodman, GF; Schall, JD (2009) Neural Basis Of The Set-Size Effect In Frontal Eye Field: Timing Of Attention During Visual Search Reply. JOURNAL OF NEUROPHYSIOLOGY 102:1342-1343 PMID: PMC2695643 [1]
5. Murthy, A; Ray, S; Shorter, SM; Schall, JD; Thompson, KG (2009) Neural Control Of Visual Search By Frontal Eye Field: Effects Of Unexpected Target Displacement On Visual Selection And Saccade Preparation. JOURNAL OF NEUROPHYSIOLOGY 101:2485-2506 PMID: PMC2681430 [23]
6. Cohen, JY; Heitz, RP; Schall, JD; Woodman, GF (2009) On The Origin Of Event-Related Potentials Indexing Covert Attentional Selection During Visual Search. JOURNAL OF NEUROPHYSIOLOGY 102:2375-2386 PMID: PMC2775385 [14]
7. Cohen, JY; Crowder, EA; Heitz, RP; Subraveti, CR; Thompson, KG; Woodman, GF; Schall, JD (2010) Cooperation And Competition Among Frontal Eye Field Neurons During Visual Target Selection. JOURNAL OF NEUROSCIENCE 30:3227-3238 PMID: PMC2844339 [11]
8. Heitz, RP; Cohen, JY; Woodman, GF; Schall, JD (2010) Neural Correlates Of Correct And Errant Attentional Selection Revealed Through N2Pc And Frontal Eye Field Activity. JOURNAL OF NEUROPHYSIOLOGY 104:2433-2441 PMID: PMC2997024 [8]
9. Purcell, BA; Heitz, RP; Cohen, JY; Schall, JD; Logan, GD; Palmeri, TJ (2010) Neurally Constrained Modeling Of Perceptual Decision Making. PSYCHOLOGICAL REVIEW 117:1113-1143 PMID: PMC2979343 [38]
10. Nelson, MJ; Boucher, L; Logan, GD; Palmeri, TJ; Schall, JD (2010) Nonindependent And Nonstationary Response Times In Stopping And Stepping Saccade Tasks. ATTENTION PERCEPTION & PSYCHOPHYSICS 72:1913-1929 PMID: PMC3237060 [16]
11. Emeric, EE; Leslie, M; Pouget, P; Schall, JD (2010) Performance Monitoring Local Field Potentials In The Medial Frontal Cortex Of Primates: Supplementary Eye Field. JOURNAL OF NEUROPHYSIOLOGY 104:1523-1537 PMID: PMC2944693 [12]
12. Stuphorn, V; Brown, JW; Schall, JD (2010) Role Of Supplementary Eye Field In Saccade Initiation: Executive, Not Direct, Control. JOURNAL OF NEUROPHYSIOLOGY 103:801-816 PMID: PMC2822692 [34]
13. Godlove, DC; Emeric, EE; Segovis, CM; Young, MS; Schall, JD; Woodman, GF (2011) Event-Related Potentials Elicited By Errors During The Stop-Signal Task. I. Macaque Monkeys. JOURNAL OF NEUROSCIENCE 31:15640-15649 PMID: PMC3241968 [9]
14. Godlove, DC; Garr, AK; Woodman, GF; Schall, JD (2011) Measurement Of The Extraocular Spike Potential During Saccade Countermanding. JOURNAL OF NEUROPHYSIOLOGY 106:104-114 PMID: PMC3129738 [4]
15. Pouget, P; Logan, GD; Palmeri, TJ; Boucher, L; Pare, M; Schall, JD (2011) Neural Basis Of Adaptive Response Time Adjustment During Saccade Countermanding. JOURNAL OF NEUROSCIENCE 31:12604-12612 PMID: PMC3173043 [8]
16. Schall, JD; Purcell, BA; Heitz, RP; Logan, GD; Palmeri, TJ (2011) Neural Mechanisms Of Saccade Target Selection: Gated Accumulator Model Of The Visual-Motor Cascade. EUROPEAN JOURNAL OF NEUROSCIENCE 33:1991-2002 PMID: PMC3111938 [11]
17. Thakkar, KN; Schall, JD; Boucher, L; Logan, GD; Park, S (2011) Response Inhibition And Response Monitoring In A Saccadic Countermanding Task In Schizophrenia. BIOLOGICAL PSYCHIATRY 69:55-62 PMID: PMC3006077 [7]
18. Schall, JD; Godlove, DC (2012) Current Advances And Pressing Problems In Studies Of Stopping. CURRENT OPINION IN NEUROBIOLOGY 22:1012-1021 PMID: PMC3496825 [1]

Program Director/Principal Investigator (Last, First, Middle): Schall, Jeffrey D.

19. Purcell, BA; Schall, JD; Logan, GD; Palmeri, TJ (2012) From Saliency To Saccades: Multiple-Alternative Gated Stochastic Accumulator Model Of Visual Search. JOURNAL OF NEUROSCIENCE 32:3433-3446 PMID: PMC3340913 [9]
20. Reinhart, RMG; Heitz, RP; Purcell, BA; Weigand, PK; Schall, JD; Woodman, GF (2012) Homologous Mechanisms Of Visuospatial Working Memory Maintenance In Macaque And Human: Properties And Sources. JOURNAL OF NEUROSCIENCE 32:7711-7722 PMID: PMC3373257 [5]
21. Heitz, RP; Schall, JD (2012) Neural Mechanisms Of Speed-Accuracy Tradeoff. NEURON 76:616-628 PMID: PMC3576837 [3]
22. Purcell, BA; Heitz, RP; Cohen, JY; Schall, JD (2012) Response Variability Of Frontal Eye Field Neurons Modulates With Sensory Input And Saccade Preparation But Not Visual Search Saliency. JOURNAL OF NEUROPHYSIOLOGY 108:2737-2750 PMID: PMC3545114 [2]
23. Purcell, BA; Weigand, PK; Schall, JD (2012) Supplementary Eye Field During Visual Search: Saliency, Cognitive Control, And Performance Monitoring. JOURNAL OF NEUROSCIENCE 32:10273-10285 PMID: PMC3417208 [2]
24. Heitz, RP; Schall, JD (2013) Neural Chronometry And Coherency Across Speed-Accuracy Demands Reveal Lack Of Homomorphism Between Computational And Neural Mechanisms Of Evidence Accumulation. PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B 368:20130071- PMC3758212 [0]
25. Purcell, BA; Schall, JD; Woodman, GF (2013) On The Origin Of Event-Related Potentials Indexing Covert Attentional Selection During Visual Search: Timing Of Selection By Macaque Frontal Eye Field And Event-Related Potentials During Pop-Out Search. JOURNAL OF NEUROPHYSIOLOGY 109:557-569 PMID: PMC3545467 [1]

D. Research Support

Ongoing Research Support

R01 EY008890-22

Schall (PI)

02/01/2011-01/31/2015

Saccade target selection-frontal cortex

This grant supports research on how the brain decides where to look. Patterns of neural activity in frontal eye field of macaque monkeys performing visual search tasks will be analyzed to evaluate specific hypotheses about how target selection is accomplished among pools of neurons, to describe how sensory-motor mapping occurs between visual and saccade neurons and to determine how short-term and long-term experience influences saccade target selection.

Role: PI

R01EY021833-02

Palmeri, Logan, Schall (PI's) 09/01/2011-08/31/2014

Stochastic Models of Visual Search

The long-term goal is to understand how computational models of performance of visual tasks like locating and shifting gaze to a target a visual array map onto specific neural processes producing that performance. Elucidating this mapping provides converging constraints for discriminating between competing model architectures and provides functional explanations of neural circuit function. The aims of this proposal test, extend, refine, and integrate two major new computational models of target selection during visual search that we have recently developed. The models provide quantitative accounts of detailed patterns of correct and error saccade behavior during visual search and also provide explanations for the temporal modulation of neurons in a visuomotor area called the frontal eye field.

R01 EY019882-04

Woodman (PI)

12/01/2009-11/31/2013

Comparative Electrophysiology: Visual Event-Related Potentials in Monkey and Man

The overall goal of this research program is to perform comparative studies of human and monkeys using common electrophysiological measures. Then, to develop techniques to determine whether nonhuman primates exhibit event-related potentials indexing the same cognitive processes as those used to study mental and other health disorders in humans.

Role: Co-investigator

Program Director/Principal Investigator (Last, First, Middle): Schall, Jeffrey D.

R01 MH0055806-16

SCHALL (PI)

09/21/2012-08/31/2017

Neural control of voluntary movement

This grant supports research on how the brain controls saccade initiation and monitors gaze performance. Behavior and neurophysiological data are obtained from frontal eye field, supplementary eye field and cingulate cortex in macaque monkeys performing countermanding (stop signal) tasks. The long-term goal of this research is to understand how the brain controls and monitors the actions it produces to gain insight into the causes of dyscontrol underlying various psychopathologies.

Role: PI

T32 EY007135-19

SCHALL (PI)

01/01/2010-12/31/2014

Training Grant in Vision Research

This Training Grant provides stipend support for five predoctoral and two postdoctoral trainees in the area of vision and eye research.

ROLE: PI

P30 EY008126-24

Schall (PI)

05/01/2009-04/30/2014

Core Grant for Vision Research

The mission of this Core Grant is to enhance the effectiveness of individual and collaborative vision research at Vanderbilt. The Core Grant provides funds for staffing the Vanderbilt Vision Research Center modules that provide technical services to vision researchers on campus.

Role: PI