

# Ned T. Sahin

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Fellow in Cognitive Neuroscience  
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Departmental Associate in Psychology  
Harvard University, Psychology  
Cognition, Brain and Behavior  
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## EDUCATION & TRAINING

2009–2012	Fellow	Salk Institute & UC San Diego	Institute for Neural Computation
2007–2009	Post-Doctoral Fellow	Univ. of California, San Diego	Department of Radiology
2003–2007	Ph.D.	Harvard University	Psychology (Cognition, Brain & Behavior)
2000–2007	Doctoral Trainee (T32)	MGH (Mass. General Hospital)	Athinoula A. Martinos Neuroimaging Center
2000–2003	M.S.	MIT	Brain and Cognitive Sciences
1996–1997	Visiting Scholar	Oxford University	Exeter College (Credited year of B.A.)
1994–1998	B.A.	Williams College	Biology <i>and</i> Neuroscience

## THESES

- Ph.D. *Neural Circuits for Reading, Inflecting and Producing Words: Spatiotemporal Mapping with Human Intracranial Electrophysiology and fMRI.*  
Harvard. Degree dissertation, Ph.D. Department of Psychology. June, 2007.  
*(Won the dissertation prize, across all departments at Harvard for 2007: “The Richard J. Herrnstein Prize: to the best dissertation – that exhibits the excellent scholarship, originality and breadth of thought, and a commitment to intellectual independence ...”)*
- M.S. *Seeking the Neural Basis of Grammar: English Noun and Verb Morphological Processing Investigated with Rapid Event-Related fMRI and Intra-Cortical Electrophysiology.*  
MIT. Degree thesis, Masters of Science. Department of Brain and Cognitive Sciences. June, 2003.
- B.A. *Language and Brain: Effects of Arterial Occlusion on Human Brain Morphometry & Specific Language Abilities.*  
Williams College. Honors thesis, Bachelor of Arts. Department of Biology. June, 1998.

## PAPERS

- Sahin, N.T., Pinker, S., Cash, S.S., Schomer, D., & Halgren, E., **Sequential processing of lexical, grammatical, and phonological information within Broca’s Area.** *Science* **326**, 445-449 (2009).
- Womelsdorf, T., Sahin, N.T., Miller, K., Tiesinga, P., “**Microcircuit motifs underlying rhythmic gating, reverberation and long-range neuronal coordination.**” (*Nature Neuroscience* – under review)
- Sahin, N.T., Pinker, S., Thesen, T., Cash, S.S., Doyle, W., & Halgren, E., “**Large-Scale Neural Synchrony Stages to Distribute, Compute, and Reconstitute Components of a Cognitive Task.**” (In Preparation)
- Sahin, N.T., Pinker, S., Wang, C., Thesen, T., Cash, S.S., Devinsky, O., Kuzniecky, R., Doyle, W., & Halgren, E., “**Dual-pass dynamics from early visual to high-order language circuits: evidence from intracranial electrophysiology (ICE).**” (In Preparation)
- Sahin, N.T., “**Three distinct types of connectivity and networks in the brain.**” (In Preparation)

Sahin, N.T., Pinker, S., Wang, C., Thesen, T., Cash, S.S., Devinsky, O., Kuzniecky, R., Doyle, W., & Halgren, E., “**Functional connectivity in the brain’s language network: phase locking among Broca’s, Wernicke’s, Visual Word Form, and Early Visual areas during reading and grammatical processing.**” (In Preparation)

Sahin, N.T., Pinker, S., Thesen, T., Cash, S.S., Devinsky, O., Kuzniecky, R., Doyle, W., & Halgren, E., “**Frequency multiplexing in frontal circuits during language processing.**” (In Preparation)

Sahin, N.T., Pinker, S., Cash, S., Papavassiliou, E., Schomer, D., & Halgren, E. “**Inflecting Nouns and Verbs May Be More Similar than Different: Convergent evidence from fMRI and Intracranial Electrophysiology (ICE).**” (In Preparation)

Sahin, N.T., Pinker, S., and Halgren, E., **Abstract grammatical processing of nouns and verbs in Broca’s area: Evidence from fMRI.** *Cortex*, **42**(4): 540-562, 2006.

Caviness, V.S., Makris, N., Montinaro, E., Sahin, N.T., Bates, J.F., Schwamm, L., Caplan, D., and Kennedy, D.N., **Anatomy of stroke, Part I: an MRI-based topographic and volumetric System of analysis.** *Stroke*, **33**(11): 2549-56, 2002. [*Based on undergraduate thesis work.*]

Caviness, V.S., Makris, N., Montinaro, E., Sahin, N.T., Bates, J.F., Schwamm, L., Caplan, D., and Kennedy, D.N., **Anatomy of stroke, Part II: volumetric characteristics with implications for the local architecture of the cerebral perfusion system.** *Stroke*, **33**(11): 2557-64, 2002.

#### CONFERENCE PRESENTATIONS • ORAL

Sahin, N.T., **How Might a Large Brain Coordinate Large Tasks?** Oral presentation. *Computational and Systems Neuroscience (COSYNE) annual conference*, 2011: Snowbird, Utah. [*Invitational symposium on Large-Scale Brain Dynamics.*]

Sahin, N.T., **From Cells to Psycholinguistics – It’s About Time!** Oral presentation. *Human Brain Mapping annual conference*, 2010: Barcelona, Spain. [*Chair of Morning Symposium Session.*]

Sahin, N.T., Pinker, S., Cash, S., Wang, C., Devinsky, O., Kuzniecky, R., Doyle, W., and Halgren, E., **Coherent activity in Broca’s and Wernicke’s areas in delta and theta bands during noun and verb inflection, as revealed through human intracranial EEG.** Oral presentation (no parallel sessions). *10<sup>th</sup> International Conference on Cognitive and Neural Systems*, 2006: Boston, MA. [*Won competitive student fellowship.*]

Sahin, N.T., Pinker, S., Cash, S., Wang, C., Devinsky, O., Kuzniecky, R., Doyle, W., and Halgren, E., **Coherent Activity in Broca’s and Wernicke’s areas in delta and theta bands during noun and verb inflection, as revealed through human intracranial EEG.** Oral presentation (no parallel). *Architecture of Language Conference*, 2006: Pisa, Italy.

Sahin, N.T., Pinker, S., Dale, A., Ulbert, I., Schomer, D., and Halgren, E., **Human in-vivo electrophysiology of grammar – bridging computational, systems and cognitive approaches.** Program number 32 (no parallel sessions). *Computational and Systems Neuroscience (COSYNE)*, 2005: Salt Lake City, UT. [*Invited by Nature Neuroscience editor-in-chief to write a paper for the journal (Research Article length), based on this talk.*]

Sahin, N.T., Halgren, E., Schomer, D., Wu, J., Dale, A., and Pinker, S., **Convergent in-vivo electrophysiology and fMRI in Broca’s area: profiling abstract grammar computation.** Program number 595.6. *Society for Neuroscience*, 2004: San Diego, CA.

Sahin, N.T., Halgren, E., Ulbert, I., Wang, C., Schomer, D., Wu, J., and Pinker, S., **Convergent event-related fMRI & depth electrophysiology in Broca’s area during noun and verb grammatical processing.** Program number 770.2. *Society for Neuroscience*, 2003: New Orleans, LA. [*Won competitive travel award .*]

## CONFERENCE PRESENTATIONS • POSTERS

- Sahin, N.T., Pinker, S., Thesen, T., Cash, S., Devinsky, O., Kuzniecky, R., Doyle, W., and Halgren, E., **Intra-cranial electrophysiology (ICE) of language: chronicling spatiotemporal stages and connectivity from visual input to motor output.** Poster number 113. *Neurobiology of Language annual conference*, 2010: Rancho Bernardo, CA, USA.
- Sahin, N.T., Pinker, S., Thesen, T., Cash, S., Devinsky, O., Kuzniecky, R., Doyle, W., and Halgren, E., **Intra-cranial electrophysiology (ICE) of language: chronicling spatiotemporal stages and connectivity from visual input to motor output.** *Society for Neuroscience*, 2010: San Diego, CA.
- Sahin, N.T., Pinker, S., Thesen, T., Cash, S., Devinsky, O., Kuzniecky, R., Doyle, W., and Halgren, E., **Language-Related Cortex Shows Three Physiologically and Functionally Distinct Waves from Visual to Motor Areas.** Poster number 1591 M&T-AM. *Human Brain Mapping*, 2010: Barcelona, Spain.
- Sahin, N.T., Pinker, S., Thesen, T., Cash, S., Devinsky, O., Kuzniecky, R., Doyle, W., and Halgren, E., **Tracking neuronal activation and information from visual input to linguistic output - combined intracranial recordings and fMRI during reading and speaking.** Poster number 697 M-AM. *Human Brain Mapping*, 2008: Melbourne, Australia. [Abstract rated in top 50 (of 2000) and invited to be featured in the highlights presentation at the closing ceremony of the conference.]
- Sahin, N.T., Pinker, S., Cash, S., Schomer, D., and Halgren, E., **Neuronal populations in Broca's area process grammar versus articulation at separate times: convergent evidence from human intracranial recordings and fMRI.** Poster number 698 M-PM. *Human Brain Mapping*, 2008: Melbourne, Australia.
- Sahin, N.T., Pinker, S., Ulbert, I., Dehghani, N., Papavassiliou, E., Schomer, D., and Halgren, E., **Depth electrode recordings in Broca's area reveal 3-stage process for grammatical inflection.** Poster number 155 T-AM. [Citation: *NeuroImage* 36(S1): S63]. *Human Brain Mapping*, 2007: Chicago, IL. [Won competitive travel fellowship.]
- Sahin, N.T., Pinker, S., Ulbert, I., Dehghani, N., Papavassiliou, E., Schomer, D., and Halgren, E., **Multimodal and multi-scale: convergent human single-unit, LFP, and fMRI characterization of neuronal activity in cingulate/SMA during language production.** Poster number 154 T-PM. [Citation: *NeuroImage* 36(S1): S75]. *Human Brain Mapping*, 2007: Chicago, IL.
- Sahin, N.T., Pinker, S., Cash, S., Meng, N., Papavassiliou, E., Schomer, D., and Halgren, E., **Inflecting nouns and verbs may be more similar than different: evidence from fMRI and intracranial electrophysiology.** Poster number 156 T-PM. [Citation: *NeuroImage* 36(S1): S75]. *Human Brain Mapping*, 2007: Chicago, IL. [Abstract rated in top 65 (of 2200) and invited to be featured in the highlights presentation at the closing ceremony of the conference.]
- Sahin, N.T., Pinker, S., Cash, S., Thesen, T., Wang, C., Devinsky, O., Kuzniecky, R., Doyle, W., and Halgren, E., **Communication between Broca's and Wernicke's areas detected with intracranial electrophysiology in awake humans.** Poster number 152 T-PM. [Citation: *NeuroImage* 36(S1): S74]. *Human Brain Mapping*, 2007: Chicago, IL.
- Sahin, N.T., Pinker, S., and Halgren, E., **Beware the baseline: right-hemisphere activation restricted to the baseline condition of a language paradigm challenges this common task and may suggest a default-mode pathway.** Poster number 153 T-AM. [Citation: *NeuroImage* 36(S1): S63]. *Human Brain Mapping*, 2007: Chicago, IL.
- Sahin, N.T., Pinker, S., Wang, C., Devinsky, O., Kuzniecky, R., Doyle, W., and Halgren, E., **Intracranial electrophysiology and the Wernicke-Geschwind model.** Poster number M-260. [Citation: *NeuroImage* 31(S1): S56]. *Human Brain Mapping*, 2006: Florence, Italy.
- Sahin, N.T., Pinker, S., Ulbert, I., Dehghani, N., Wang, C., Papavassiliou, E., Schomer, D., and Halgren, E., **Single unit recordings in human anterior cingulate during a language task.** Poster number 81. 30<sup>th</sup> Annual Massachusetts General Hospital Research Symposium, 2006: Boston, MA.
- Sahin, N.T., Pinker, S., Ulbert, I., Dehghani, N., Wang, C., Papavassiliou, E., Schomer, D., and Halgren, E., **Single unit recordings in human anterior cingulate during a language task.** Program number 771.4, poster number 0014. *Society for Neuroscience*, 2005: Washington, DC.
- Sahin, N.T., Halgren, E., Schomer, D., Wu, J., Dale, A., and Pinker, S., **Human in-vivo electrophysiology and fMRI evidence for abstract grammatical processing in Broca's area.** *Fourth Annual MIT-RIKEN Neuroscience Symposium – New Frontiers in Neuroscience*, 2004: Cambridge, MA.

- Sahin, N.T., Halgren, E., Ulbert, I., Dale, A., Schomer, D., Wu, J., and Pinker, S., **Abstract grammatical processing in Broca’s area: evidence from fMRI and intra-cranial electrophysiology.** Program number MO 144. [Citation: *NeuroImage*, 22(S1): e232-e234]. *Human Brain Mapping*, 2004: Budapest, Hungary. [Won competitive travel fellowship.]
- Sahin, N.T., Halgren, E., Dale, A., Busa, E., and Pinker, S., **Inflectional morphology of nouns and verbs shows fMRI activation of Broca’s and related areas.** Program number 1354. [Citation: *NeuroImage* 19(2) Suppl. 1: e2684-e2688]. *Human Brain Mapping*, 2003: New York City. [Won competitive travel fellowship.]
- Sahin, N.T., Pinker, S., Greve, D., van der Kouwe, A., Dale, A., & Halgren, E., **Dissection of the components of inflectional morphology using event-related fMRI.** Program #189. *Cognitive Neuroscience Society*, 2003: New York City.
- Makris, N., Sahin, N.T., Bates, J.W., Patti, M.R., Meyer, J.W., Caplan, D.N., Caviness, V.S., Jr., and Kennedy, D.N., **MRI-based volumetric analysis of anatomical consequences of stroke.** *Human Brain Mapping*, 2001: Brighton, UK.
- Makris, N., Sahin, N.T., Bates, J.W., Patti, M.R., Meyer, J.W., Caplan, D.N., Caviness, V.S., Jr., and Kennedy, D.N., **MRI-based volumetric analysis of subcortical consequences of stroke.** *Society for Neuroscience*, 2000: New Orleans.
- Sahin, N.T., Makris, N., Bates, J.F., Patti, M.R., Meyer, J.W., Kennedy, D.N., Caplan, D.N., and Caviness, V.S., Jr., **MRI-based topographic and quantitative mapping of stroke.** Poster number 692. [Citation: *NeuroImage*, 7(4): S692]. *Human Brain Mapping*, 1998: Montreal, Canada.

## AWARDS & HONORS

- 2010-2012 Institute for Neural Computation - Cross-Departmental NIH Postdoctoral Training Grant. “*Spatiotemporal dynamics of neural computation during natural speech.*” Fellow in Cognitive Neuroscience – Salk Institute and UC San Diego. \$90,000 Stipend over 2 years (renewable).
- 2010 Chair & Organizer of Symposium Session - Human Brain Mapping annual meeting (Barcelona, June 2010). “*Human Intra-Cranial Electrophysiology (ICE) in Mind/Brain Mapping – Linking Levels of Analysis from Cells to Psychology.*”. Annual conference attendance ~2000. Symposium attendance ~500.
- 2007 Harvard PhD Dissertation Prize. “*The Richard J. Herrnstein Prize: to the best dissertation – that exhibits the excellent scholarship, originality and breadth of thought, and a commitment to intellectual independence that are in keeping with the terms of the prize and the memory of Professor Herrnstein.*”. Included a \$5000 award.
- 2004-2007 NRSA Institutional Training Grant, NIMH (T32 MH070328). “Graduate Training in Psychology and Neuroimaging.” Multi-center multidisciplinary grant linking Harvard Psychology Dept and the MGH Martinos Center for Biomedical Imaging. \$68,000 Partial Stipend + \$72,000 Tuition coverage, over 4 years.
- 2004-2006 Small Business Innovation Research (SBIR) grant. Phase II: \$730,000 + \$50,000 direct cost over 2 years (max awarded) “*SENSORS: System for Evaluating Neurological Stress with Objective & Remote Sensors*” Principle Investigator. A project for the Army to create a system to predict critical cognitive stress in soldiers.
- 2004 Graduate Student Award. Mind/Brain/Behavior (MBB) interfaculty initiative at Harvard: \$5,000 stipend (max awarded), for interdisciplinary study of the neural processing of abstract Grammar beyond language.
- 2004 Fellowship. Dartmouth Summer Workshop in fMRI Informatics, fMRI Data Center. Six-day session.
- 2004 Sackler Scholarship in Psychobiology. \$5,000 stipend (max awarded) from the Dr. Mortimer and Theresa Sackler Foundation. For advanced research in psychobiology with clinical relevance.
- 2003 Small Business Innovation Research grant (SBIR A03-063). Phase I: \$70,000 direct cost (max awarded) “*SENSORS: System for Evaluating Neurological Stress w Objective & Remote Sensors.*” Principle Inv. Won on 1<sup>st</sup> attempt.
- 2003 Elsie Hopestill Stimson grant for graduate research (Harvard). \$3,500 stipend (max awarded). “In-vivo human multi-unit activity (MUA) electrophysiology and intracranial electroencephalography (iEEG) to investigate tight neural coupling with dissociable processes in human Language processing.”
- 2003–2008 Graduate Student Fellowship, Harvard Dept of Psychology. \$60,000 Stipend over 3 years, full Tuition for 5 years.
- 2003 Walle Nauta Award for Continuing Dedication to Teaching. MIT.
- 2002– Student Representative to Faculty, Cognitive Neuroscience Group, MGH Martinos Center

- 2001– Student and Post-Doc Representative to the Faculty, MGH Martinos Center. Attend faculty meetings.  
 2001 Angus MacDonald Award for Excellence in Undergraduate Teaching. MIT.  
 2000–2003 Graduate Student Fellowship, MIT Dept of Brain & Cognitive Sciences. \$60,000 (+ full Tuition) over 3 years.  
 1998 Class of 1960 Scholar. Williams College, Neuroscience Department.  
 1996 Class of 1960 Scholar. Williams College, Biology Department.

**INVITED TALKS**

<u>Date</u>	<u>Organization</u>	<u>Series / Department</u>	<u>City</u>	<u>Title</u>
2011-11-29	Salpêtrière Hospital	150 <sup>th</sup> Anniversary of Broca's Seminal Paper	Paris	Multiplexing in time, frequency, & phase in traditional Broca's area: why the story will never be simple.
2011-10-??	Singularity University	Exponential Technologies Executive Program	Moffett Field, CA	What Brain-Computer Interfaces (BCI) Will Do For You Within Your Lifetime
2011-07-22	Harvard University	Randy Buckner Lab	Cambridge	Large-Scale Networks and Synchrony in Cognition.
2011-05-14	Institute for Neural Computation / Kavli	INC / Kavli Annual Retreat	San Diego	How might a large brain tackle large tasks?
2011-04-22	Stanford University	Josef Parvizi Lab	Palo Alto, CA	How might a large brain coordinate large tasks?
2011-03-17	UC San Diego	Brain Talks Seminar	San Diego	How might a large brain coordinate large tasks, like Language?
2010-11-29	Salk Institute	Tatyana Sharpee Lab	San Diego	Investigating the brain basis of human language as a path to uncover organizing principles of the brain's own language.
2010-11-26	UC San Diego	Center for Research in Language talk series	San Diego	Seeking Organizing Principles for Brain Computation of Language and Cognition
2010-05-25	Max Planck – Ernst Strüngmann Institute	Center for Cognitive Neuroimaging	Frankfurt	Intra-cranial electrophysiology (ICE) of language: chronicling spatiotemporal stages and connectivity from visual input to motor output
2010-05-24	San Raffaele University	Brain Mapping	Milan	Neurophysiology of human language: spatiotemporal stages and connectivity revealed with intra-cranial electrophysiology (ICE)
2010-05-21	Donders Institute for Brain, Cognition and Behaviour	Centre for Cognitive Neuroimaging	Nijmegen, Netherlands	Electrophysiology of language: chronicling spatiotemporal stages and connectivity from visual input to motor output using intra-cranial electrophysiology (ICE)
2010-05-20	University Medical Center – Utrecht	Rudolf Magnus Institute	Utrecht, Netherlands	Electrophysiology of language: chronicling spatiotemporal stages and connectivity from visual input to motor output using intra-cranial electrophysiology (ICE)
2010-05-19	Max Planck Institute for Human Cognitive and Brain Sciences	Dept. of Neuropsychology – Language Series	Leipzig, Germany	Intra-cranial electrophysiology (ICE) of language: chronicling spatiotemporal stages and connectivity from visual input to motor output
2010-05-18	Max Planck Institute for Biological Cybernetics	Institute Weekly Colloquium	Tübingen, Germany	Computational stages and cortical connectivity during language production, revealed with intra-cranial electrophysiology (ICE)
2010-05-04	University of California San Diego	Cognitive Neuroscience Brownbag Lunch	La Jolla, CA	Sequences of computation and cortical connectivity during language production, revealed with intra-cranial electrophysiology (ICE)
2010-05-01	Kavli Institute / Inst. for Neural Computing	Neurosciences Spring Retreat	La Jolla, CA	Sequential Processing in Broca's Area of Word Identity, Structure, and Sound: Revealed with Intra-cranial Electrophysiology (ICE)
2009-11-09	Stanford University	Department of Psychology	Palo Alto, CA	From cells to psycholinguistics: Language-related patterns from single-unit to system level
2009-11-04	Princeton University	Neuroscience and Psychology Depts.	Princeton, NJ	Multitasking in Broca's area and network-wide connectivity from V1 to Broca's
2009-11-04	Yale University	Neurosurgery Grand Rounds satellite	New Haven, CT	Multitasking in Broca's area and network-wide dynamics from V1 to Broca's - An end to "Broca's

				speaks and Wernicke's listens"
2009-11-03	New York University	Comprehensive Epilepsy Center	New York City	Sequential processing within and connectivity among language-related neuronal populations
2009-02-02	Univ. of California, Berkeley	Robert Knight Laboratory	Berkeley, CA	Mapping the brain's language: modular activity within and connectivity among language-related neuronal populations
2008-01-28	Univ. of California, San Diego	Marta Kutas Laboratory	San Diego, CA	Neural circuits for reading, inflecting and producing words: spatiotemporal mapping with human intracranial electrophysiology and fMRI
2006-06-06	RWTH Aachen University	Psychiatry Neuroimaging Series	Aachen	fMRI and human intracranial EEG investigations of noun & verb processing
2006-05-31	University of Bonn	Medical Psychology Research Lectures	Bonn	Chronicle connectivity between Broca's & Wernicke's areas via intracranial recordings and fMRI
2006-04-13	Harvard	Cognition, Brain & Behavior Seminar	Cambridge	Neuronal circuits for sequencing stored linguistic elements
2005-06-03	Danish Research Center for Magnetic Resonance	MRI Research Seminar	Copenhagen	Speaking in the brain's language: from single units to fMRI blobs
2005-06-02	Karolinska Institute	Cognitive Neuroscience fMRI	Stockholm	Speaking in the brain's language: from single units to fMRI blobs
2004-10-13	Georgetown University	Brain & Language Lab	Washington, DC	Noun & verb morphosyntax in Broca's region: convergent fMRI and in-vivo electrophysiology
2004-06-08	San Raffaele University	Brain Mapping	Milan	Grammar in Broca's region: fMRI and in-vivo electrophysiology
2004-05-06	Harvard	Cognition, Brain & Behavior Seminar	Cambridge	Grammar and Broca's region: in-vivo electrophysiology and fMRI studies
2004-05-03	MIT	Brain Lunch Seminar	Cambridge	In-vivo electrophysiology and fMRI convergence in Broca's region for human language grammar
2004-01-07	UCLA Medical School	Brain Mapping	Los Angeles	Convergent event-related fMRI & depth electrophysiology in Broca's area during noun & verb grammatical processing
2004-01-07	University of Southern California	Visual Cognition	Los Angeles	Convergent event-related fMRI & depth electrophysiology in Broca's area during noun & verb grammatical processing
2004-01-06	Massachusetts General Hospital	Neuropsychiatry Seminar	Charlestown	Convergent event-related fMRI & depth electrophysiology in Broca's area during noun & verb grammatical processing
2002-11-19	MIT	Cognitive Lunch Seminar	Cambridge	Inflectional processing of nouns & verbs in the brain
2002-09-17	Cambridge University	Cambridge-MIT Institute Morphology Workshop	Cambridge (UK)	Inflectional processing of nouns & verbs in the brain

## TEACHING EXPERIENCE

- 2004 Harvard University. Head Teaching Fellow: "The Human Mind" (Prof. Steven Pinker)  
*Managed 10 teaching fellows (20 sections). Managed all course logistics, policies, and teaching team. New course in Harvard's undergraduate Core curriculum.*
- 2003 MIT. Teaching Assistant and Oral Presentation Coach. "Brain Laboratory Methods" (Prof. Jim DiCarlo)  
*Walle Nauta Award for Continuing Dedication to Teaching (based on student and faculty evaluations).*
- 2002 MIT. Teaching Assistant. "Introduction to Psychology" (Prof. Steven Pinker)  
*Angus MacDonald Award for Excellence in Undergraduate Teaching (student and faculty evaluations).*
- 1997 Williams College. Teaching Assistant. "Biology 102 – The Organism"  
*Appointed "Class of 1960 Scholar" partly in recognition of teaching performance (101 + 102).*
- 1996 Williams College. Teaching Assistant. "Biology 101 – The Cell"

## AD-HOC REVIEWING

Brain  
Annals of Neurology  
NeuroImage  
Journal of Neurolinguistics  
Brain and Language  
Lingua

## PROFESSIONAL COURSES

2005 “Negotiation” Harvard Program on Negotiation, Harvard Law School. (13-week intensive course, 10 hrs/wk)  
2004 “Summer Workshop in fMRI Informatics” Dartmouth fMRI Data Center. (3-day course in 6-day session)  
2003 “Combining fMRI & EEG” Human Brain Mapping annual meeting. (1-day symposium)  
2003 “fMRI Course” Human Brain Mapping meeting. (1-day course)  
2001 “fMRI: Data Acquisition and Analysis” MIT: HST 583. (full-semester 12-unit graduate course)  
2000 “Visiting Fellows Program in fMRI” MGH Martinos Center. (5-day course)

## SOCIETY MEMBERSHIPS

2002– Sigma Xi  
2000–2005 Science’s *Next Wave*, AAAS (MIT & MGH Campus Representative)  
2000– Society for Neuroscience  
2000– Cognitive Neuroscience Society  
1998– Organization for Human Brain Mapping  
1998– Renaissance Weekend ([www.renaissanceweekend.org](http://www.renaissanceweekend.org))  
1997– Gargoyle Society (Williams College honor and service society)  
1997– American Association for the Advancement of Science (AAAS)

## LABORATORY SKILLS

- Intra-cranial Electrophysiology (ICE) – expert in acquisition, analysis, and interpretation of direct *in-vivo* recordings from the living human brain. Includes single-cell recordings as well as multi-unit activity and local field potentials.
- fMRI – expert in experiment design, acquisition, analysis, data visualization, and interpretation.
- Other current methods: scalp EEG, MEG, and behavioral testing.
- Previous methods: small animal stereotaxic surgery & care, immunohistochemistry, MRI and light microscopy, HRP retrograde labeling, BrdU staining.

## COMPUTING SKILLS

*Skilled in packages and protocols for scientific data analysis, image processing, databasing, web, and remote computing.*

- *Technical Packages:* FreeSurfer and FS-FAST (MGH), MATLAB, Neuroscan (Compumedics), MRICro, DataView, Presentation (Neurobehavioral Systems), MRI embedded control software (GE & Siemens).
- *Programming:* MATLAB, Tcl, advanced SQL, Perl, JavaScript, HTML, Wordpress, advanced Linux shell scripting (e.g. 1000-line programs to support fMRI data analysis packages).
- *Hardware:* Build and maintain custom computers for lab and home. Expert in most networks and peripherals.
- *OS/Shell experience:* Linux, Windows, Unix, DOS, MacOS, OS/2, CP/M, VMS.
- *Database:* Mission-critical Oracle and Sybase systems: programmed, administered, and extensively queried; in corporate and research environment. MS Access expert. Implemented custom databases to combine linguistic corpora, generate experimental stimuli automatically, support ICE and fMRI data analysis, and manage and pay experimental subjects.
- *Graphics/Productivity:* Expert User of most standards, e.g. Illustrator, Photoshop, Acrobat; Dreamweaver; MS Office.

## CORPORATE EMPLOYMENT

- 2002–2005 **TIAX, LLC.** Senior Technologist. Specialist in medical imaging technologies. Principle Investigator (Phase I, II), SBIR project for Department of Defense (see above, in Awards). Cambridge, MA.
- 1999–2000 **Lucent Technologies.** Project Manager and Technical On-Site Consultant. Member, Bell Labs Technical Staff. Managed 5-person project team on client site in Dublin. Member of project teams on site in Dublin and Madrid. Programmed large-scale mission-critical Oracle databases. London, UK.
- 1998–1999 **Kenan Systems.** Software Project Consultant, Telecommunications Software. Programmed Oracle and Sybase databases to translate business needs of clients. Clients included major telecommunications companies. The software products were systems to manage billing and customer care. Trained in Unix, RDBMS database, C; and client-interface and managerial skills. Cambridge, MA.

## CORPORATE BOARDS

- 2008– **BodySure, Inc.** Biomedical imaging startup.
- 2003– **Fitness Forward.** Non-profit aimed to promote healthy lifestyle and reduce childhood obesity. Science, Research, and Technology Translation Officer, Operating Advisory Board.

## REFERENCES

Eric Halgren, PhD	Post-doctoral advisor
Steven Pinker, PhD	M.S. and Ph.D. advisor
Sydney S. Cash, MD, PhD	Mentor and Collaborator
Verne S. Caviness, Jr., MD, D.Phil	B.A. thesis co-advisor
Marsel Mesulam, MD	Internship advisor

## PERSONAL

- Traveled in about 45 countries.
- Six patents pending. Two trademarks issued.
- Developed marketable software for neuroimaging data analysis and visualization.
- Managed electronic technical support forum for MGH neuroimaging software users.
- VP of entrepreneurial organization & business-plan competition in San Diego.
- Organizing a web forum and worldwide effort for intracranial electrophysiologists: collaboration & advocacy.
- Rowed at international level (competed at Henley for my Oxford college); and at Williams, MIT, & Harvard.
- Devoted hobby photographer.
- Intermediate conversational French.
- Basic Turkish.
- Starting to learn Mandarin.