

ALEX SCHLEGEL

CURRICULUM VITAE

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TRAINING

- | | | |
|-------------|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| 2015 - 2016 | SAGE Center for the Study of the Mind, UC Santa Barbara | Postdoctoral Fellowship Advisor: Dr. Michael Gazzaniga |
| 2010 - 2015 | Dartmouth College | Ph.D., Cognitive Neuroscience Thesis: "The mental workspace as a distributed neural network" Advisor: Dr. Peter Tse |
| 2007 - 2010 | Arizona State University | B.F.A., Sculpture summa cum laude, May 2010 |
| 2000 - 2004 | North Carolina State University | B.S., Physics B.S., Mathematics B.A., Chemistry valedictorian, May 2004 |

RESEARCH EXPERIENCE

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| 2016 - | Researcher Vicarious, FPC Artificial Intelligence |
| 2014 | Visiting Researcher Kyoto University Primate Research Institute Laboratories of Dr. Tetsuro Matsuzawa and Dr. Ikuma Adachi Higher mental functions in chimpanzees (Pan troglodytes) |
| 2011 | ERP Boot Camp, UC Davis with Dr. Steve Luck |
| 2003 - 2010 | Research Assistant University College London, Barrow Neurological Institute Laboratories of Dr. Stephen Macknik and Dr. Susana Martinez-Conde Neural basis of visual and sensory awareness and perception |
| 2002 - 2010 | Research Assistant Dartmouth College Laboratory of Dr. Peter Tse Cognitive and neural bases of perception, attention, and consciousness |

GRANTS FUNDED

Project Title: Investigating inferential use of metaphors in chimpanzees
Funding Agency: National Science Foundation
Grant Type: NSF 13-593, East Asia and Pacific Summer Institutes
Investigator Role: PI
Funding Dates: 2014-06-01 – 2015-05-31

Project Title: Can training enhance the neural functions and structures subserving human creativity?
Funding Agency: National Science Foundation
Grant Type: NSF Graduate Research Fellowship
Investigator Role: Fellow
Funding Dates: 2012-06-01 – 2015-06-01

PUBLICATIONS

Schlegel A, Vance B, Alexander P, Tse PU. Decoding the information content of complex interactions in neural and social networks. *Under Review*.

Leal-Campanario R, Alarcon-Martinez L, Rieiro H, Martinez-Conde S, Alarcon-Martinez T, Zhao X, LaMee JP, Osborn PJ, Calhoun ME, Arribas JI, **Schlegel AA**, Stasi LL, Rho JM, Inge L, Otero-Millan J, Treiman DM, Macknik SL (2017) Abnormal capillary vasodynamics contribute to ictal neurodegeneration in epilepsy. *Scientific Reports* 7:1-14.

Schlegel A, Konuthula D, Alexander P, Blackwood E, Tse PU (2016) Fundamentally distributed information processing integrates the motor network into the mental workspace during mental rotation. *Journal of Cognitive Neuroscience* 28(8):1139-1151.

Schlegel A, Alexander P, Tse PU (2016) Information processing in the mental workspace is fundamentally distributed. *Journal of Cognitive Neuroscience* 28(2):295-307.

Alexander P, **Schlegel A**, Sinnott-Armstrong W, Roskies AL, Wheatley T, Tse PU (2016) Readiness potentials driven by non-motor processes. *Consciousness & Cognition* 39:38-47.

Schlegel A, Alexander P, Sinnott-Armstrong W, Roskies A, Tse PU, Wheatley T (2015) Hypnotizing Libet: Readiness potentials with non-conscious volition. *Consciousness & Cognition* 33:196-203.

Schlegel A, Alexander P, Fogelson SV, Li X, Lu Z, Kohler PJ, Tse PU, Meng M (2015) The artist emerges: Visual art learning alters neural structure and function. *NeuroImage* 105:440-51.

Alexander P, **Schlegel A**, Sinnott-Armstrong W, Roskies A, Tse PU, Wheatley T (2014) Dissecting the readiness potential. In A. Mele (Ed.), *Surrounding Free Will: Philosophy, Psychology, Neuroscience* (pp. 203–230). Oxford: Oxford University Press.

Schlegel A, Kohler PJ, Fogelson SV, Alexander P, Konuthula D, Tse PU (2013) Network structure and dynamics of the mental workspace. *Proceedings of the National Academy of Sciences* 110(40):16277–82.

Schlegel A, Alexander P, Sinnott-Armstrong W, Roskies A, Tse PU, Wheatley T (2013) Barking up the wrong tree: readiness potentials reflect processes independent of conscious will. *Experimental Brain Research* 229(3):329-35.

Schlegel AA, Rudelson JJ, Tse PU (2012) White matter structure changes as adults learn a second language. *Journal of Cognitive Neuroscience* 24(8):1664-70.

Troncoso XG, Tse PU, Macknik SL, Caplovitz GP, Hsieh PJ, **Schlegel AA**, Otero-Millan J, Martinez-Conde S (2007) BOLD activation varies parametrically with corner angle throughout human retinotopic cortex. *Perception* 36:808-20.

Tse PU, Martinez-Conde S, **Schlegel AA**, Macknik SL (2005) Visibility, visual awareness, and visual masking of simple unattended targets are confined to areas in the occipital cortex beyond human V1/V2. *Proceedings of the National Academy of Sciences* 102(47):17178-83.

MEDIA COVERAGE

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|------------|------------------------------------|-------------------------------------------------------------------|
| 2016-02-21 | <i>The Week</i> | “How to survive solitary confinement” |
| 2015-02-11 | <i>Pacific Standard</i> | “How learning artistic skills alters the brain” |
| 2014-04 | <i>Interalia Magazine</i> | “How do brains imagine?” (Interview) |
| 2014-01-05 | <i>To Vima</i> | “Πού κατοικεί η φαντασία” |
| 2013-10-04 | <i>Bioscience Technology</i> | “Science finds 'home' of imagination” |
| 2013-09-22 | <i>Voice of Russia, The Prism</i> | “Imagination relies on wide neural network: study” (Interview) |
| 2013-09-17 | <i>Huffington Post</i> | “Research uncovers how and where imagination occurs in the brain” |
| 2013-09-16 | <i>Popular Science</i> | “How imagination works” |
| 2013-09-16 | <i>Live Science</i> | “The roots of creativity found in the brain” |
| 2008-10-08 | <i>Gizmodo</i> | “A Safe So Complicated That No One Will Ever Open It, Ever” |
| 2008-10-07 | <i>Boing Boing</i> | “A strange and wonderful wooden safe” |
| 2008-10-07 | <i>Make Magazine Blog</i> | “Turning-drawer Wooden Safe” |
| 2008-09-10 | <i>Sci-Fi Channel</i> | Interviewed on episode of “Destination Truth” |
| 2006-02-27 | <i>National Geographic Channel</i> | Research featured on episode of “Is it Real?” |

PRESENTATIONS

CONFERENCE TALKS

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| 2015 February | “Information flow in the mental workspace.” <i>PBS / Neurology Summit</i> , Dartmouth Hitchcock Medical Center, Lebanon, NH. |
| 2014 November | “The artist emerges: tracking neural changes in visual art students.” <i>Culture, Brain, Learning</i> , Lund, Sweden. |

2012 September "Tracking perceptual learning in visual art students." *Visual Science of Art Conference*, Alghero, Sardinia.

2012 January "Readiness potentials are independent of conscious will." *Big Questions in Free Will Conference*, Tallahassee, FL.

INVITED TALKS

2015 April "The mental workspace as a distributed neural network." *Georgetown University Psi Chi Spring Colloquium*, Washington D.C.

2014 November "What do chimpanzees imagine?" *River Valley Community College*, Claremont, NH.

2014 June "Understanding the neural basis of the mental workspace." Primate Research Institute, *Kyoto University*, Inuyama, Aichi, Japan.

2013 November "A neural network supporting mental operations on visual imagery." *River Valley Community College*, Claremont, NH.

2013 June "CEF Learning: Dartmouth brain research, education summit, and future initiatives." *Creative Problem Solving Institute*, Buffalo, NY.

2012 June "How does creativity training enhance the function and structure of the brain?" *Creative Problem Solving Institute*, Atlanta, GA.

2012 December "Tracking neural reorganization in visual art students." Department of Cognitive and Neural Systems, *Boston University*, Boston, MA.

2012 July "Simple and constructive visual mental imagery are behaviorally and neurally separable." Department of Cognitive and Neural Systems, *Boston University*, Boston, MA.

2011 October "What do we mean when we talk about 'consciousness'?" Department of History, Philosophy, and Social Studies Education, *Plymouth State University*, Plymouth, NH.

2009 July Talk on sculptural video work at "Artists on Artists," *Scottsdale Museum of Contemporary Art*, Scottsdale, AZ.

DEPARTMENTAL TALKS

2015 October "The mental workspace as a distributed neural network." *UC Santa Barbara*.

2014 October "Multivariate methods for analyzing information sharing and transfer." *Dartmouth College*.

2014 September "Information flow in the mental workspace." *Dartmouth College*.

2012 April "Simple and constructive visual mental imagery are behaviorally and neurally separable." *Dartmouth College*.

2011 March "Longitudinal DTI: White matter reorganizes with second language learning." *Dartmouth College*.

2010 November “Tononi’s Information Integration Theory of Consciousness.”
Dartmouth College.

POSTERS

Schlegel A, Alexander P, Tse P (2015) Information flow in the mental workspace. Poster at *Cognitive Neuroscience Society Annual Meeting*, San Francisco, CA, 2015 March.

Schlegel A, Alexander P, Tse P (2014) Dorsolateral prefrontal cortex both represents and manipulates mental images. Poster at *Cognitive Neuroscience Society Annual Meeting*, Boston, MA, 2014 April.

Schlegel A, Kohler PJ, Fogelson S, Alexander P, Konuthula D, Tse P (2013) A neural network supporting mental operations on visual imagery. Poster at *Cognitive Neuroscience Society Annual Meeting*, San Francisco, CA, 2013 April .

Schlegel A, Kohler PJ, Fogelson S, Tse P (2012) Simple and constructive visual mental imagery are behaviorally and neurally separable. Poster at *European Conference on Visual Perception*, Alghero, Sardinia, 2012 September.

Schlegel A, Fogelson S, Li X, Lu Z, Alexander P, Meng M, Tse P (2012) Visual art training in young adults changes neural circuitry in visual and motor areas. Poster at *Vision Sciences Society Annual Meeting*, Naples, FL, 2012 May.

Schlegel A, Sinnott-Armstrong W, Wheatley T, Roskies A, Tse P (2011) Visually-evoked readiness potentials reflect anticipation and/or preparation of future movements rather than acts of will. Poster at *Vision Sciences Society Annual Meeting*, Naples, FL, 2011 May.

2014 August Information flow in the mental workspace. *Decoding Population Responses Workshop*, Center for Cognitive Neuroscience, Dartmouth College.

2013 April A neural network supporting mental operations on visual imagery. *Arts and Sciences Poster Session*, Dartmouth College.

AWARDS & HONORS

2015 *Neukom Travel Grant*, Neukom Institute

2014 *Fellow*, NSF East Asian and Pacific Summer Institute

2014 *Graduate Student Award*, Cognitive Neuroscience Society

2013 *Neukom Prize for Outstanding Graduate Research in Computational Science*, Neukom Institute

2013 *Outstanding Graduate Student Teacher Award*, Dartmouth Center for the Advancement of Learning

2013 *Graduate Poster Session Winner*, Dartmouth Arts & Sciences

2012 - 2015 *Fellow*, NSF Graduate Research Fellows Program

2011 *Full scholarship*, ERP Boot Camp, UC Davis

2003 *Arts Education Award*, Raleigh United Arts Council

2000 - 2004 *Park Scholar*, full undergraduate scholarship and stipend, NC State University

PROFESSIONAL ACTIVITIES & MEMBERSHIPS

2014 *Teacher/Mentor*, Maple Ave. Elementary School Human Systems Exhibit Project, Claremont, NH

2011 - 2014 *Organizer*, Cognitive Brown Bag Series, Dartmouth College

2008 - *Interviewer and application reviewer*, Park Scholarship Selection Committee, NC State University

PROFESSIONAL MEMBERSHIPS

Cognitive Neuroscience Society

Vision Sciences Society

JOURNAL & CONFERENCE REVIEWER

Journal of Cognitive Neuroscience

NeuroImage

European Conference on Visual Perception

TEACHING

2016 Winter *Graduate Seminar on Consciousness*, team taught with Dr. Michael Gazzaniga, Psychological & Brain Sciences, UC Santa Barbara

2014 Spring *Anatomy & Physiology II* (lecture & lab), River Valley Community College, Claremont, NH

2013 Fall *Anatomy & Physiology I* (lecture & lab), River Valley Community College, Claremont, NH

2012 - 2015 *Workshop Leader*, Summer Seminar for Composition Research, Dartmouth College

2013 Spring *Teaching Assistant*, Cognition, Dartmouth College

2012 Spring *Teaching Assistant*, Experimental Design, Methodology, and Data Analysis Procedures, Dartmouth College

2012 Winter *Teaching Assistant*, Principles of Human Brain Mapping with fMRI, Dartmouth College

2011 Winter *Teaching Assistant*, Physiological Psychology, Dartmouth College

2006 - 2007 *7th and 8th Grade Science Teacher*, NYC Teaching Fellows, Brownsville, Brooklyn, NY

2004 - 2005 *Substitute Teacher / Math Tutor*, Glendale Union High School District, Glendale, AZ

2000 - 2004 *Founder / Teacher*, CreARTivity after school art program, Raleigh, NC

GUEST LECTURES

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| 2014 Spring | On animal cognition, <i>Cognition</i> (undergraduate) |
| 2013 Fall | On free will, <i>Mind and Brain</i> (undergraduate) |
| 2013 Spring | On consciousness, <i>Cognition</i> (undergraduate) |
| 2011 Winter | On the visual system, <i>Physiological Psychology</i> (undergraduate) |

MENTORED STUDENTS

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|---------------------|--------------------------------------------------------------------------------------------------------|
| Jake Bassin | (2015 –), volunteer |
| Claire Noemer | (2015 –), volunteer |
| Sean Scheiner | (2015 –), volunteer |
| Ravenn Triplett | (2015 –), volunteer |
| Ethan Blackwood | (2014 –), full time RA, Presidential Scholar |
| Ali Siddiqui | (2014 –), Presidential Scholar |
| Gina D'Andrea-Penna | (2014 –), now completing honors thesis |
| Hamza Abbasi | (2014 –), now completing honors thesis |
| Sanjana Awasty | (2014 – 2015), completed honors thesis, now an M.D. student at Ohio State University |
| Peter Horak | (2013 –), full time RA |
| Michaela LeDoux | (2013 – 2014), Women in Science Program Scholar |
| Adam Tong | (2013 – 2014), Presidential Scholar |
| Dedeepya Konuthula | (2012 – 2014), completed honors thesis, now an M.D. student at Yale |
| Yvette Zou | (2012 – 2013), Women in Science Program Scholar |
| Natalie Salmanowitz | (2012 – 2013), Presidential Scholar, graduated valedictorian, now a Masters student at Duke University |
| Prescott Alexander | (2011 – 2014), full time RA, now a Ph.D. student at UC Davis |
| Michael Gillis | (2011 – 2012), full time RA |
| Raina Lin | (2011 – 2012), volunteer |
| Theresa Ramponi | (2011 – 2012), Howard Hughes Medical Institute Scholar |
| Christina Ma | (2010 – 2011), Women in Science Program Scholar |
| Devin Routh | (2010 – 2011), volunteer |
| Chris Woods | (2010 – 2011), Howard Hughes Medical Institute Scholar |

ARTISTIC EXHIBITIONS

- 2011 Sculpture shown at "Beacons", *Urban Institute for Contemporary Design*, Grand Rapids, MI
- 2010 "Build a rotating tumbler safe" published in *Scroll Saw Woodworking & Crafts*, Issue 40, 2010 Fall
- 2010 Sculpture shown at "Lighthouse", *Alwun House*, Phoenix, AZ
- 2009 Sculpture shown at "Totally in the Dark", *Art One*, Scottsdale, AZ
- 2009 Installation shown at "Of 6 Minds", *Gallery 100*, Tempe, AZ
- 2009 Sculpture shown at "Solid Solutions", *Step Gallery*, Tempe, AZ
- 2009 Sculpture shown at "Grand Delusion", *Bragg's Pie Factory*, Phoenix, AZ
- 2009 Video work purchased by *City of Houston Art Collection*, Houston, TX
- 2009 Video work shown at "Material Afterlife", *Urban Institute for Contemporary Arts*, Grand Rapids, MI
- 2009 Video work shown at "Imagined Geographies", *Bragg's Pie Factory*, Phoenix, AZ
- 2009 Video work shown at "ARGB!", *Step Gallery*, Tempe, AZ
- 2009 Video work shown at *Ice House*, Phoenix, AZ
- 2008 Sculpture shown at "Protoduction", *PRISM Lab*, Tempe, AZ