

# Anita Koshy

## Curriculum Vitae

### Contact Information:

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### Education:

1994 B.S., Stanford University, Stanford, CA  
Biological Sciences

1999 M.D., Duke University, Durham, NC

### Academic Appointments:

2010 – 2012	Instructor	Stanford University
2012-	Assistant Professor	Dept of Neurology, University of Arizona
	Assistant Professor	Dept of Immunobiology
	Assistant Research Scientist	Bio5 Institute
	Member, GIDP	Neuroscience

### Clinical Training:

1991 – 2001	Resident, Internal Medicine	University of Washington
2001 – 2004	Resident, Neurology	U. of California, San Francisco
2005 – 2012	Fellow, Infectious Disease	Stanford University

### Employment:

1994 – 1995	Laboratory technician, Lawrence Berkeley Labs
2004 – 2005	Consultant, East Bay Region Associates in Neurology
2004 – 2005	Pool Physician, Kaiser Permanente California
2006 – 2010	Postdoctoral Fellow, Infectious Disease, Stanford University
2010 – 2012	Instructor, Infectious Disease, Stanford University
2012 -	Assistant Professor in Neurology, University of Arizona

### Clinical Appointments:

2004 – 2005	Teaching Fellow, Department of Neurology, UCSF
2009 – 2012	Attending, Department of Neurology, Stanford University (2 weeks/year)
2012 -	Attending, Department of Neurology, University of Arizona (25% time)

### Certification and Licensure:

2001 – 2013	California Medical License (Retired status currently)
2012 -	Arizona Medical License
2006 -	Diplomate, Neurology Boards, American Board of Psychiatry and Neurology

### Honors & Awards:

1997 – 1999	Engel Society, Duke University Medical School
1997 – 1999	Howard Hughes Medical Institute Medical Student Fellowship
2001	Husby Award, University of Washington housestaff teaching award

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2003 AOA membership, awarded for outstanding teaching to UCSF medical students  
2008 – 2010 Chief Fellow, Division of Infectious Disease, Stanford University  
2013 University of Arizona, Dept of Neurology Outstanding Faculty Educator Award

### Service and Outreach:

#### National and International

##### *Editorial Service/Manuscript Review*

2010 Invited Referee, *Therapeutic Advances Neurological Disorders*  
2011 Invited Referee, *PNAS* (1 manuscript)  
2011 Referee for Guidelines, *Neurology* (1 manuscript/year)  
2013 Invited Referee, *PLoS One*

##### *Professional Societies and Affiliations:*

2001 - Member, American Academy of Neurology

#### Departmental: Neurology (NEU) or Immunobiology (IMB)

2013 Resident Education Committee (NEU)  
2013 Organizing Committee, MCB/CMM/CBC/IMB retreat  
2013 Mentor (NEU resident: Eniko Nagy-Wilde)  
2013 Ad hoc Resident Mentor for seminar talks (NEU resident: Nagy-Wilde, Lamb)  
2013 Fall: Co-organized the Microbiology Lunch Seminar series (IMB)

#### Graduate Programs: Arizona Biomedical and Biological Sciences (ABBS) or Neuroscience Graduate Interdisciplinary Program (GIDP)

2013 Graduate Student Recruitment (GIDP)  
2013 Graduate Student Recruitment (ABBS)

#### BIO5 Institute

##### *Other*

2013 CTSI Recruitment (for both Aging and Neurology)  
06/2013 Presentation/laboratory tour Upward Bound Program  
07/2013 KOLD TV Interview for Tucson News Now  
07/2013 Presentation/laboratory tour UA out-of-state recruiters  
07/2013 Serving on the building design committee for the new BIO5 building

#### College of Medicine

##### *Other*

2012- Active member, Women in Academic Medicine

#### Teaching & Mentoring:

##### *Tutoring/Teaching*

2001 – 2004 Small group Instructor, UC San Francisco  
2009 – 2012 Neurology Clerkship, Stanford University  
2009 – 2012 Ad Hoc Resident Mentor for Neurology QA, Stanford University  
2011 – 2012 Neuro-ID curriculum for residents (Director), Stanford University

##### *Rotation Student Supervisor*

2008 Anya Poukchanski (Boothroyd Lab)

##### *Amgen/Stanford Summer Research Program*

2009 Jason Melehani (Boothroyd Lab), now MD, PhD student, UNC

##### *Undergraduates*

2012- Patrick O'Connor  
2013- Dana Zack, UBRP scholar

##### *Neurology Residents*

2010 – 2012 Reena Thomas, MD, PhD (Stanford)

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### Graduate Students

2013- Shraddha Tuladhar, Immunobiology

### Publications:

#### Peer-reviewed

1. Almlı LM, Hamrick SE, **Koshy AA**, Tauber MG, Ferriero DM. 2001. Multiple pathways of neuroprotection against oxidative stress and excitotoxic injury in the immature primary hippocampal neurons. *Dev Brain Research*; 132: 121-129. PMID: 11744116
2. Jiang X, Mu D, Manabal C, **Koshy AA**, Christen S, Tauber MG, Vexler ZS, Ferriero D. 2004. Differential vulnerability of immature murine neurons to oxygen-glucose deprivation. *Exp Neurology*; 190(1): 224-32. PMID: 15473995
3. Chiu, CY\*, Rouskin S\*, **Koshy A\***, Urisman A, Fischer K, Yagi S, Schnurr D, Eckburg PB, Tompkins LS, Blackburn BG, Ganem D, DeRisi JC. 2006. Microarray detection of human parainfluenzavirus 4 infection associated with respiratory failure in an immunocompetent adult. *Clin Infect Dis*; 43 (8): e71-e76 PMID: 16983602 (\*equal contributors.)
4. **Koshy AA**, Fouts AE, Lodoen MB, Alkan O, Blau HM, Boothroyd JC. 2010. *Toxoplasma* secreting Cre recombinase for analysis of host-parasite interactions. *Nat Meth*; 7(3):307-9. PMID: 20208532
5. **Koshy AA**, Dietrich HK, Christian DA, Melehani JH, Shastri AJ, Hunter CA, Boothroyd JC. 2012. *Toxoplasma* co-opts host cells it does not invade. *PLoS Pathog*; 8(7): e1002825. PMID: 22910631 PMCID: PMC3406079.
6. Caffaro CE, **Koshy AA**, Liu L, Zeiner GM, Hirschberg CB, Boothroyd JC. 2013. A nucleotide sugar transporter (NST1) involved in glycosylation of the *Toxoplasma* cyst wall is required for efficient persistence of bradyzoite. *PLoS Pathog* 9 (5):e1003331. PMID: 23658519 PMCID: PMC3642066
7. Lopez J, Lomen-Hoerth C, Deutsch G, Kerchner GA\*, **Koshy AA\***. Influenza-associated global amnesia and hippocampal imaging abnormality. *Accepted, Neurocase* (\*equal contributors)
8. Coombs JL, Charsar BA, Han SJ, **Koshy AA**, Striepen BS, Robey EA. 2013. Motile invaded neutrophils in the small intestine of *Toxoplasma gondii* infected mice reveal a potential mechanism for parasite spread. *PNAS* 110:e1913-22. PMID: 23650399 PMCID: PMC3666704
9. Han SJ, Melichar HJ, Coombes JL, Chan SW, **Koshy AA**, Boothroyd JC, Barton GA, Robey EA. Inflammatory monocytes as a source and target for type I interferon during infection with *Toxoplasma gondii*. *In preparation*
10. Cekanaviciute E, Dietrich HK, Axtell RC, Williams AM, EgusquizaR, Wai KM, **Koshy AA\***, Buckwalter MS\*. Astrocytic TGF- $\beta$  signaling fine-tunes the brain's immune response to *Toxoplasma gondii* infection. *In preparation* (\*equal contributors)

#### Chapters

1. **Koshy A**. Fever and Headache. *Emergency Management of Infectious Diseases*, RL Chin, MS Diamond, and TA Reynolds, Eds. (New York: Cambridge University Press, 2008), pp 221 – 231.
2. **Koshy AA**, Jay CA. Infections of the Nervous System. *Clinical Adult Neurology, 3<sup>rd</sup> Edition*, J Corey-Bloom and R David, Eds. (New York: Demos Medical Publishing, 2009), pp 335 – 361.
3. **Koshy AA**, Blackburn BG, Singh U. Free-Living Amebas. *Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases, 7<sup>th</sup> Edition*, G Mandell, J Bennett, and R Dolin, Eds. (Oxford: Churchill Livingstone) pp 3427– 3436. *8<sup>th</sup> Edition now in preparation*

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4. **Koshy AA**, Roos K. Infections of the Nervous System: Bacterial and Fungal. *Neurology in Clinical Practice, 6<sup>th</sup> Edition*, WG Bradley, RB Daroff, G Fenichel, and J Jankovic, Eds. (Philadelphia: Elsevier) pp 1259 – 1267.

### Presentations and Conferences:

- 2009 Speaker, “Using Cre-recombinase to understand host-*Toxoplasma* interactions.” Dept of Microbiology& Immunology, Dept Seminar Series, Stanford University
- 2009 Invited Speaker, “Meningitis.” Dept of Neurology, Grand Rounds, UCSF
- 2009 Poster, “*Toxoplasma gondii* secreting Cre-recombinase– a potent toll for studying host-pathogen interactions.” Molecular Parasitology Meeting, Woods Hole.
- 2009 Invited Speaker, “Parasitic Infections of the CNS.” Dept of Neurology and Neurological Sciences, Grand Rounds, Stanford University.
- 2010 Poster, “Using *Toxoplasma*-Cre to study how pathogens cross the blood-brain-barrier.” Gordon Research Conference: Barriers of the CNS.
- 2010 Invited Speaker, “Unlocking CNS-parasite interactions with *Toxoplasma*-Cre.” Dept of Cell Biology and Neuroscience, Neuroscience Seminar, UC Riverside.
- 2012 Poster, “Using Imaging to show that *Toxoplasma* co-opts cells it does not invade.” Stanford Symposium for Biomedical Imaging, Stanford University.
- 2012 Poster, “*Toxoplasma* co-opts cells it does not invade.” Molecular Parasitology Meeting, Woods Hole.
- 2012 Invited Speaker, “*Toxoplasma*: a novel model for understanding neuronal drivers of Neuroinflammation.” Immunobiology Seminar Series. University of Arizona.
- 2013 Invited Speaker, “Astrocytic TGF- $\beta$  signaling fines tunes the immune response to acute CNS toxoplasmosis.” Frontiers in Immunobiology & Immunopathogenesis Symposium. University of Arizona.
- 2013 Selected talk, “*Toxoplasma* preferentially interacts with cortical neurons *in vivo*.” 12<sup>th</sup> International Congress on Toxoplasmosis. Oxford, England.
- 2013 Selected-talk, “Astrocytic TGF- $\beta$  signaling fine tunes the brain’s immune response to *Toxoplasma gondii*.” Gordon Research Conference: Infections of the Nervous System. Hong Kong, China.

### Grants and Fellowships Awards:

#### Current Grant Support

K08 NS65116 NINDS, NIH Career Development Award

P.I. Anita Koshy, MD

Title: “Host cell influences on the development of toxoplasmic encephalitis.”

Duration: 9/15/09 – 8/31/14

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Arizona Center for the Biology of Complex Diseases Pilot Grant

Co-PI: Anita Koshy

Title: Using *Toxoplasma*-Cre to understand intrinsic self defense mechanisms of neurons

Duration: 1/1/2013 – 12/31/2013

Arizona Alzheimer's Disease Core Center Pilot Grant

PI: Anita Koshy

Title: Using host-pathogen interactions to find new treatments for Alzheimer's Disease

Duration: 7/1/2013 – 6/30/2014

### *Past Funding*

California HIV/AIDS Research Project Postdoctoral Fellowship

Title: *Toxoplasma gondii* and the Central Nervous System

Duration: 9/1/2007 – 8/31/2009 (Terminated 8/31/2008 to accept the Berry Fellowship)

Walter and Idun Berry Postdoctoral Fellowship

Title: "Host cell influences on the development of toxoplasmic encephalitis."

Duration: 10/1/2008 – 9/30/2011 (Terminated 9/14/2009 to accept the NINDS K08)

Center for Biomedical Imaging at Stanford

P.I. Anita Koshy, MD

Title: "Using imaging to determine how and why *Toxoplasma gondii* injects rhoptry proteins into cells it does not invade."

Duration: 8/1/2010 – 7/31/2011 (Completed)

Digestive Disease Center Pilot Feasibility Award (PI: Marion Buckwalter)

Role: Co-Investigator

Title: Role of TGF- $\beta$  signaling in enteric glia in immune responses to gut pathogens

Duration: 03/01/10 – 02/28/11 (Completed)

Stanford Institute for Immunity, Transplantation, and Infection Interdisciplinary Research Award (co-PIs: Marion Buckwalter and John Boothroyd)

Role: Co-Investigator

Title: The role of astrocytes in modulating brain immune responses

Duration: 04/01/11 – 03/31/12 (Completed)