

# Andrew S. Flies, Ph.D.

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Web (outreach): <http://scipubtas.org.au/>

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## **Education**

*Michigan State University*, East Lansing, MI 2006-2012

**Dual Ph.D.** in Zoology and Ecology, Evolutionary Biology, and Behavior (EEBB)  
Concentration: Disease Ecology and Conservation Medicine

*Johns Hopkins University*, Baltimore, MD 2004-2006

Advanced Academic Programs - Environmental Sciences

*Minnesota State University*, Mankato, MN 1997-2002

**B.S.** in Computer Science

Minors: Math, Chemistry

## **Research and Work Experience**

*University of Tasmania*, Hobart, TAS, Australia 2014-present

Title: ARC Discovery Early Career Research Fellow 2018-present

Title: Postdoctoral research fellow - Immunology 2016-2017

Title: Morris Animal Foundation postdoctoral research fellow 2014-2016

Vaccine for the Tasmanian devil facial tumour disease

Cancer immunotherapy for companion animals

*University of South Australia*, Adelaide, SA, Australia 2013-2017

Title: Postdoctoral research fellow/assistant/associate/demonstrator

Vaccine for the Tasmanian devil facial tumour disease

Peanut allergy therapeutics

Recombinant viral vaccines

*Michigan State University*, East Lansing, MI 2006-2012

Title: Graduate student (NSF Graduate Research Fellow 2007-2010)

Comparative analysis of wild and captive carnivore serum

Characterization of spotted hyena (*Crocuta crocuta*) humoral immune response

Gene expression analysis of toll-like receptors and cytokines

*Michigan State University* Hyena Research Project, Maasai Mara, Kenya 2007-2011

Title: Field researcher and camp manager

Radio telemetry tracking and immobilization of spotted hyenas for sample collection

Daily management of Hyena Research Project

*Johns Hopkins University*, School of Medicine, Baltimore, MD 2004-2006

Title: Laboratory coordinator

Cell culture, FACS, animal procedures, monoclonal antibody production and testing  
 Manage budget and assist with development of animal ethics protocols  
*The Mayo Clinic*, Rochester, MN 2003-2004  
 Title: Research technologist  
 Assist research associates with data collection for publication  
 Responsible for transitioning the laboratory from the Mayo Clinic to Johns Hopkins

*Unisys Corporation*, Roseville, MN 2001-2002  
 Title: Student technical – software engineer  
 Object-oriented design and programming in C++ for debugger program

**Fellowships and Grants Received (\* Denotes USD, all others in AUD)**

UTAS/Menzies – Stimulus Funding	\$17,558	2018
UTAS Foundation – Guiler Tasmanian Devil Research Grant	\$34,256	2018
ARC DECRA	\$365,058	2017
ARC Discovery Project	\$303,931	2017
UTAS Cancer Research Trust	\$36,155	2017
UTAS/Menzies – Stimulus Funding	\$25,000	2017
UTAS/Menzies - Equipment and Infrastructure Funding	\$16,000	2017
UTAS Foundation – Guiler Tasmanian Devil Research Grant	\$35,000	2017
Entrepreneurs' Programme – Research Connections with Nexvet	\$140,000	2016
UTAS/Menzies – Equipment and Infrastructure Funds	\$10,000	2016
UTAS Foundation – Guiler Tasmanian Devil Research Grant	\$35,000	2015
National Science Week Grant – Science in the Pub Tasmania	\$5,000	2015
Ilhan Food Allergy Foundation	\$45,000	2015-2016
Channel 7 - Children's Research Foundation	\$75,000	2015-2016
National Science Week Grant – Science in the Pub Adelaide	\$1,250	2014
Royal Society of South Australia – Science in the Pub Adelaide	\$750	2014
Morris Animal Foundation Postdoctoral Fellowship*	\$99,360	2014-2016
Sansom Institute Small Grants Scheme	\$10,000	2013
UTAS Foundation – Guiler Tasmanian Devil Research Grant	\$20,000	2013
Morris Animal Foundation – Veterinary Student Scholars Program*	\$2,000	2011
Army Research Office - STIR Program*	\$25,000	2008
Sigma Xi Grants-in-Aid of Research*	\$500	2008
National Science Foundation (NSF) Graduate Research Fellowship*	\$110,000	2007
American Society of Mammalogists Grants-in-Aid of Research*	\$1,500	2007
Mayo Foundation Scholarship*	\$16,000	1997-2001
Total funding received	\$1,386,760	

**Peer-Reviewed Publications** (visit [WildImmunity.com/publications](http://WildImmunity.com/publications) for Altmetrics)

22) **Flies AS**, Lennard PL, Murphy PM, Darby JM, Pinfold TL, Wood, GM. (submitted). Fluorescent Adaptable Simple Theranostic (FAST) proteins for comparative immunology

21) Ong CEB, Lyons AB, Woods GM, **Flies AS**. (submitted). Inducible IFN- $\gamma$  expression for MHC-I upregulation in devil facial tumor cells.

- 20) Woods GM, Fox S, **Flies AS**, Tovar CD, Jones M, Hamede R, Pemberton D, Lyons AB, Bettiol SS. (in press). Two decades of the impact of Tasmanian Devil Facial Tumour Disease (DFTD) (Review)
- 19) **Flies AS**, Wood, GM. (accepted). Wild Immunology – The answers are out there. Research topic editorial
- 18) **Flies AS**, Blackburn NB, Lyons AB, Hayball JD, Woods GM (2017). Comparative analysis of immune checkpoint molecules and their potential role in the transmissible Tasmanian devil facial tumor disease. DOI: [10.3389/fimmu.2017.00513](https://doi.org/10.3389/fimmu.2017.00513)
- 17) **Flies AS**, Lyons AB, Corcoran LM, Papenfuss AT, Murphy JM, Knowles GW, Woods GM, Hayball JD. 2016. PD-L1 is not constitutively expressed on Tasmanian devil facial tumor cells but is strongly upregulated in response to IFN- $\gamma$  and can be expressed in the tumor microenvironment. Frontiers in Immunology. DOI: [10.3389/fimmu.2016.00581](https://doi.org/10.3389/fimmu.2016.00581)
- 16) Flies EJ, **Flies AS**, Weinstein P, Williams CR. 2016. Regional comparison of mosquito bloodmeals in South Australia: implications for Ross River virus ecology. Journal of Medical Entomology. DOI: [10.1093/jme/tjw035](https://doi.org/10.1093/jme/tjw035)
- 15) **Flies AS**, Mansfield LS, Flies (nee Johnston) EJ, Grant CK, and Holekamp, KE. 2016. Socioecological predictors of immune defenses in wild spotted hyenas. Functional Ecology. DOI: [10.1111/1365-2435.12638](https://doi.org/10.1111/1365-2435.12638)
- 14) **Flies AS**, Mansfield LS, Grant CK, Weldele ML, and Holekamp KE. 2015. Markedly elevated antibody responses in wild versus captive spotted hyenas show that environmental and ecological factors are important modulators of immunity. Plos One. DOI: [10.1371/journal.pone.0137679](https://doi.org/10.1371/journal.pone.0137679)
- 13) Luo L, Zhu G, Xu H, Yao S, Zhou G, Zhu Y, Tamada K, Huang L, **Flies AS**, Broadwater M, Ruff W, van Deursen, JMA, Melero I, Zhu Z, Chen L. 2015. B7-H3 promotes pathogenesis of autoimmune disease and inflammation by regulating the activity of different t cell subsets. PLoS One. DOI: [10.1371/journal.pone.0130126](https://doi.org/10.1371/journal.pone.0130126)
- 12) **Flies AS**, Maksimoski MT, Mansfield LS, Weldele ML, and Holekamp KE. 2014. Characterization of toll-like receptors 1–10 in spotted hyenas. Veterinary Research Communications. DOI: [10.1007/s11259-014-9592-3](https://doi.org/10.1007/s11259-014-9592-3)
- 11) Johnston E, Weinstein P, Slaney D, **Flies AS**, Williams CR. 2014. Mosquito communities with trap height and rural-urban gradient in Adelaide, South Australia: implications for disease vector surveillance. Journal of Vector Ecology. DOI: [10.1111/j.1948-7134.2014.12069.x](https://doi.org/10.1111/j.1948-7134.2014.12069.x)
- 10) Nelson KG, Engh, AL, McKnight, CA, Kiupel M, Wise AG, Maes RK, Stevens H, Heylen E, De Keyser K, Rector A, Van Ranst M, **Flies AS**, and Holekamp KE. 2013. Papillomavirus-associated Cutaneous Papillomas in a Population of Wild Spotted Hyenas (*Crocuta crocuta*). Journal of Wildlife Diseases. 49, 620-627. DOI: [10.7589/2011-09-262](https://doi.org/10.7589/2011-09-262)
- 9) **Flies AS**, Grant CK, Mansfield LS, Smith EJ, Weldele M, and Holekamp KE. 2011. Development of a hyena immunology toolbox. Veterinary Immunology and Immunopathology. 145, 110-119, DOI: [10.1016/j.vetimm.2011.10.016](https://doi.org/10.1016/j.vetimm.2011.10.016)

8) Zhu G, Augustine MM, Azuma T, Luo L, Yao S, Anand S, Rietz AC, Huang J, Xu H, **Flies AS**, and Chen L. 2009. B7-H4 deficient mice display augmented neutrophil-mediated innate immunity. *Blood*. 113:1759-1767. DOI: [10.1182/blood-2008-01-133223](https://doi.org/10.1182/blood-2008-01-133223)

7) Azuma T, Yao S, Zhu G, **Flies AS**, Flies, SJ, and Chen L. 2008. B7-H1 is a ubiquitous antiapoptotic receptor on cancer cells. *Blood*. 111:3635-3643. DOI: [10.1182/blood-2007-11-123141](https://doi.org/10.1182/blood-2007-11-123141)

6) Goldberg MV, Maris CH, Hipkiss EL, **Flies AS**, Zhen L, Tuder RM, Grosso JF, Harris TJ, Getnet D, Whartenby KA, Brockstedt DG, Dubensky TW, Chen L, Pardoll DM, and Drake CG. 2007. Role of PD-1 and its ligand, B7-H1, in early fate decisions of CD8 T cells. *Blood*. 110:186-192. DOI: [10.1182/blood-2006-12-062422](https://doi.org/10.1182/blood-2006-12-062422)

5) Tsushima F, Yao S, Shin T, **Flies AS**, Flies SJ, Xu H, Tamada K, Pardoll DM, and Chen L. 2007. Interaction between B7-H1 and PD-1 determines initiation and reversal of T-cell anergy. *Blood*. 110:180. DOI: [10.1182/blood-2006-11-060087](https://doi.org/10.1182/blood-2006-11-060087)

4) Xu Y, **Flies AS**, Flies DB, Zhu G, Anand S, Flies SJ, Xu H, Anders RA, Hancock, WW, Chen L, and Tamada K. 2007. Selective targeting of the LIGHT-HVEM costimulatory system for the treatment of graft-versus-host disease. *Blood*. 109:4097-4104. DOI: [10.1182/blood-2006-09-047332](https://doi.org/10.1182/blood-2006-09-047332)

3) Zhu Y, Zhu G, Luo L, **Flies AS**, and Chen L. 2007. CD137 stimulation delivers an antigen-independent growth signal for T lymphocytes with memory phenotype. *Blood*. 109:4882-4889. DOI: [10.1182/blood-2006-10-043463](https://doi.org/10.1182/blood-2006-10-043463)

2) Anand S, Wang P, Yoshimura K, Choi I, Hilliard A, Chen Y, Wang C, Schulick R, **Flies AS**, Flies DB, and Chen L. 2006. Essential role of TNF family molecule LIGHT as a cytokine in the pathogenesis of hepatitis. *Journal of Clinical Investigation*. 116:1045-1051. DOI: [10.1172/JCI27083](https://doi.org/10.1172/JCI27083)

1) Luo L, Chapoval AI, Flies, DB, Zhu G, Hirano F, Wang S, Lau JS, Dong H, Tamada K, **Flies AS**, Liu Y, and Chen L. 2004. B7-H3 Enhances Tumor Immunity In Vivo by Costimulating Rapid Clonal Expansion of Antigen-Specific CD8+ Cytolytic T Cells. *The Journal of Immunology*. 173:5445-5450. DOI: [10.4049/jimmunol.173.9.5445](https://doi.org/10.4049/jimmunol.173.9.5445)

### **Non-Peer-Reviewed Publications**

3) **Flies AS**, Baker, ML, Le Nours, J, Rossjohn J. [Response to "The future of humans as model organisms"](#). eLetter in *Science*.

2) **Flies AS**. 2017. [Spotted hyenas rarely die from disease: we set out to discover why](#). *The Conversation*.

1) **Flies AS**, Woods, GM. 2016. [Deadly disease can 'hide' from a Tasmanian devil's immune system](#). *The Conversation*.

### **Teaching Experience**

Teaching Assistant – Human Physiology (HP100, 1 semesters)

*University of South Australia*, Adelaide, South Australia

Demonstrate lab techniques and evaluate student learning

Instructor - Behavioral Ecology of African Mammals study abroad - Kenya (ZOL 490, 1 semester)

Co-instructor - Behavioral Ecology of African Mammals study abroad - Kenya (ZOL 490, 1 semester)

*Michigan State University*, East Lansing, MI  
 Developed curriculum and daily management of course preparation  
 Coordinated travel and preparations for students  
 Wrote daily lectures and discussions on behavioral ecology while in Kenya  
 Wrote and graded tests, quizzes, and homework

Graduate Teaching Assistant – Cells and Development (ZOL 425, 2 semesters)  
*Michigan State University*, East Lansing, MI  
 Developed full semester project including immunoprecipitation, ELISA and immunoblotting  
 Instruct undergraduate students in cell culture and molecular biology techniques

Graduate Teaching Assistant - Histology (ZOL 408, 3 semesters)  
*Michigan State University*, East Lansing, MI  
 Instruct undergraduate students in basic histology techniques

Graduate Teaching Assistant – Fundamental Genetics – online (ZOL 341, 1 semester)  
*Michigan State University*, East Lansing, MI  
 Served as logistics coordinator for the lead instructor for an online course with 210 enrolled students

Graduate Teaching Assistant – Organisms and Populations laboratory (BS 110, 2 semesters)  
*Michigan State University*, East Lansing, MI  
 Instruct undergraduate students in basic biology lab techniques

**Students Mentored (\* denotes primary supervisor of record)**

*Chrissie Ong (University of Tasmania - Honours 2016, PhD 2017-present)	2016-present
*Peter Murphy (University of Tasmania – UROP, Honours)	2017-present
*Candida Wong (University of Tasmania – Honours)	2018-present
*Gerardo Lacapra (University of Tasmania – Honours)	2018-present
Katherine Erickson (Scripps College, USA - Undergraduate)	2018
Ayda Issa (University of Tasmania - UROP)	2017-2018
Jack Fennel (University of Tasmania - UROP)	2018-present
Sambavi Singarasa (University of Tasmania – UROP)	2018
*Patrick Lennard (University of Tasmania, Undergraduate, Honours 2017-present)	2016-2017
Weijia Jiang (University of Tasmania - PhD)	2016-2017
Mahalia Kingsley (University of Tasmania - UROP)	2017
Kris Nand (University of Tasmania - UROP)	2017
Nirdesh Poudel (University of Tasmania)	2016-2017
Brad Cowen (University of Tasmania - Honours 2016)	2015-2016
Sandon James (University of Tasmania - UROP)	2016
Sandon Lowe (University of Tasmania - UROP)	2015
Anita Kral (University of Adelaide)	2013-2015
David Adcock (University of South Australia)	2014-2015
Emilio Petito (University of South Australia)	2015
Jowell Garcia (University of South Australia)	2015
Anita Kral (University of South Australia - Honours 2014)	2013-2015
Matt Maksimoski (University of Cincinnati Medical School – M.D. 2017)	2010-2012
Brandtly Yakey (Lincoln Memorial University – D.O. 2018)	2010-2012
Charlie Kolodziejewski (MSU Hyena Research Project - 2014)	2010-2011

Theresa Kowalski (University of Michigan - M.S. 2015)	2012
Eric Smith (Lake Erie College of Osteopathic Medicine – D.O. 2015)	2008-2010
Katie Leatherman	2010

**Presentations, Posters, and Guest Lectures**

CAMS 306 Advanced Research Skills (UTAS)	2018
Australian Research Management Society conference (Oral - SciPubTas)	2018
Guest lecture at Peppermint Bay	2018
Advanced immunology course (UTAS)	2018
School of Natural Sciences seminar series (UTAS)	2018
Day of Immunology (Royal Hobart Hospital)	2018
Host competence workshop (Deakin University)	2018
Society for Integrative and Comparative Biology Annual Meeting	2018
University of the Third Age (U3A) – Hobart	2017
Innovation Connections Roadshow - UTAS	2017
Menzies Institute for Medical Research seminar series	2017
NextCure, Inc (invited speaker)	2016
International Congress of Immunology	2016
Society for Integrative and Comparative Biology Annual Meeting (session chair)	2016
Molecular and Experimental Pathology Society of Australasia (MEPSA)	2015
Australasian Society for Immunology – Immunology Group of Victoria retreat (session chair)	2015
Australian Society for Medical Research annual meeting (poster)	2015
Guest lecture for IHBV Honours program – University of South Australia	2015
Guest lecture for Cancer Biology – University of South Australia	2015
Guest lecture for Cancer Biology – University of South Australia	2014
Adelaide Immunology Retreat – Australasian Society for Immunology	2014
Guest lecture for Bioapplications 301 – University of South Australia	2014
World Immunology Day – South Australian Health and Medical Research Institute	2014
Ultrarunning and Education –Rotary Club of Mt. Barker	2014
Guest lecture for Cancer Biology – University of South Australia	2013
Society for Integrative and Comparative Biology Annual Meeting	2013
Defense of dissertation research – Michigan State University	2012
RCNE Ecoimmunology Conference (poster) – University of Michigan	2012
Graduate Academic Conference – Michigan State University	2012
Morris Animal Foundation Wildlife Meeting (poster)	2012
EEBB Colloquium Series – Michigan State University	2012
Society for Integrative and Comparative Biology Annual Meeting	2012
Phi Zeta Research Day - Michigan State University, College of Veterinary Medicine	2011
Michigan Alliance for Gifted Education	2011
Phi Zeta Research Day (poster) - Michigan State University	2010
Guest lecture for Analyzing Anthropomorphism seminar - Michigan State University	2010
Guest lecture for Democracy and the Environment course - Michigan State University	2010
Guest lecture for Advanced Biology course - Plainview High School	2009
Phi Zeta Research Day - Michigan State University, College of Veterinary Medicine	2009
Maasai Mara Basecamp invited lecture - Maasai Mara, Kenya	2009
Graduate Student Organization seminar series - Michigan State University	2008
Clinical Problems in Large Animal Clinical Sciences - Michigan State University	2007
Behavioral Ecology of African Mammals - MSU study abroad course	2007

### **Media Coverage**

<a href="#">The Naked Scientist podcast</a> (aired on BBC radio UK and Radio National Australia)	Sept. 2018
Science in the Pub Tasmania – ABC Radio 936 Hobart	July. 2018
Tasmanian devil research – ABC Radio 936 Hobart	Mar. 2018
Science Worth Seeing – ABC Radio 936 Hobart	Feb. 2018
Tasmanian Museum Sunday Session – ABC Radio 936 Hobart	Feb. 2018
Science in the Pub Tasmania – ABC Radio 936 Hobart	Oct. 2017
Science in the Pub Tasmania – ABC Radio 936 Hobart	Sept. 2017
Spotted hyena research – ABC Radio Hobart and Northern Tasmania	Apr. 2017
“New devil facial cancer hope” – The Mercury, Hobart	Jan. 2017
Tasmanian devil research – ABC Radio Northern Tasmania	Jan. 2017
Science in the Pub Tasmania – ABC Radio 936 Hobart	Jan. 2017
“ <a href="#">No, I Don’t Need a Flu Shot: I’m an Alpha Female</a> ” – Smithsonian Magazine	Oct. 2016
Hyena immunology – Breakfast on Radio Adelaide 101.5 FM	Sept. 2015
Science Club – ABC Radio 936 Hobart	Sept. 2015
Science in the Pub Tasmania – The Mercury, Hobart	Sept. 2015
Science in the Pub Tasmania – ABC Radio 936 Hobart	Sept. 2015
Science in the Pub Adelaide – Coast FM Radio Adelaide	Feb. 2015
“Wildlife can get cancer, too” – Morris Animal Foundation, Animal News 14.3	Sept. 2014
“Science sessions step out of the lab and into the beer garden” – The City, Adelaide	Sept. 2014
In-vitro magazine interview - Sigma-Adlrlich, Issue 3, 2009	Feb. 2009
“Disease Ecology and Immunology of the Spotted Hyena” - The Vector, Vol. 1 Issue 3	Oct. 2007

### **Sequences submitted to GenBank**

Sarcophilus harrisii RNA-seq in peripheral blood mononuclear cells	BioProject: 381841
Sarcophilus harrisii PDCD1 (VISTA) mRNA, complete cds.	ACCESSION: KY856749
Sarcophilus harrisii CD47 (IAP) mRNA, complete cds.	ACCESSION: KY856750
Sarcophilus harrisii TIM3 (CD366) mRNA, complete cds.	ACCESSION: KY856751
Sarcophilus harrisii PDCD1 (PDCD1) mRNA, complete cds.	ACCESSION: KY075915
Sarcophilus harrisii CD274 (CD274) mRNA, complete cds.	ACCESSION: KY075916
Sarcophilus harrisii PDCDL2 (PDCDL2) mRNA, complete cds.	ACCESSION: KY075917

### **Diseases and Pathogens Studied**

Adenoviruses  
 Campylobacter jejuni (pathogenic strains)  
 Cancer  
 Canine transmissible venereal tumor (CTVT)  
 Canine distemper virus (CDV)  
 Chikungunya virus  
 Coronaviruses  
 Ectromelia virus  
 Escherichia coli (pathogenic strains)  
 Feline immunodeficiency virus (FIV)  
 Feline leukemia virus (FeLV)  
 Peanut allergy  
 Proteus mirabilis

Dipetalonema spp.  
Hepatzoan spp.  
Ross River Virus  
Tasmanian devil facial tumor (DFT)  
Vaccinia virus (Copenhagen, MVA, SCV)

### **Community Outreach and Volunteer Activities**

<a href="#">BeakerStreet@TMAG - Wild Immunity Flourobox</a>	2018
Open Day at UTAS - Wild Immunity Fluorobox	2018
<a href="#">Peppermint Bay Community Talk</a>	2018
Science March guest speaker (#ScienceMarch)	2018
Science Worth Seeing (UTAS)	2018
Day of Immunology (Royal Hobart Hospital)	2018
Co-founder of <a href="#">Science in the Pub Tasmania (@SciPubTas)</a>	2015-present
Founder of <a href="#">Wild Immunity (@WildImmunity)</a>	2015-present
Science March participation and promotion (#ScienceMarch)	2017
U3A Community Outreach Talk (Hobart, Tasmania)	2017
Oceania Tobacco Control Conference (OTCC) volunteer	2017
Menzies Institute Corporate Networking Event volunteer	2015
Co-founder of <a href="#">Science in the Pub Adelaide (@SciPubAdelaide)</a>	2014-2015
UniSA Open Day volunteer	2014
UniSA Sandalwood-Acacia project volunteer	2014
South Australia Road Runners Club (SARRC)	2013-2014
Rebuilding Together – Ingham County	2012
Citizen lobbyist for Sierra Club at Michigan State Legislature, District 68	2007-2012
Darwin Day – Michigan State University Museum	2007-2010
Baltimore Ecosystem Study – Long Term Ecological Research (LTER)	2005

### **Journal and/or Book Editor**

Frontiers in Immunology, Guest Associate Editor, <a href="#">Wild Immunology research topic</a>	2017
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### **Peer Reviewer**

Frontiers in Ecology and Evolution  
Frontiers in Immunology  
Hypothesis  
Journal of Wildlife Diseases  
Molecular Immunology

### **Professional Activities**

UTAS Medical Sciences Precinct - Laboratory Management Committee	2018-present
MSU EEBB program, student co-president	2011
MSU Zoology department student representative to the curriculum committee	2010-2011

### **Memberships**

Australasian Society for Immunology	2014-present
Society for Integrative and Comparative Biology	2010-present
Sierra Club	2004-present
National Wildlife Federation	2006-present
World Wildlife Fund	2010-present



Molecular and Experimental Pathology Society of Australasia (MEPSA)	2015
Royal Society of South Australia	2014-2015
South Australia Road Runners Club	2014
Explorer's Club	2011-2013
National Geographic Society	2006-2013

### **Certifications**

Wilderness Medicine First Responder	2007-2011
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### **Computer Skills**

Programming in Java, C/C++, R, Assembly, and Lisp  
 Recursive search functions, object oriented design, LaTeX,  
 ArcGIS 9 and ArcView 3.2  
 Statistical Packages: SAS, R

### **Photos Published**

The Conversation (Spotted hyena)	Dec. 2016
The Conversation (Tasmanian devil)	Dec. 2016
Functional Ecology Fig. 1 (Spotted hyena)	Sept. 2016
WILX News 10 - Photo of the Week	Feb. 2008
National Geographic Magazine – Your Shot, The Daily Dozen promotional photo	Dec. 2007
National Geographic Magazine – Your Shot	Nov. 2007
National Geographic Magazine – Your Shot, The Daily Dozen	Oct. 2007

### **Languages**

Native: English  
 Beginner: German, Chinese, Swahili