ALAN G. GOODMAN — ASSISTANT PROFESSOR

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EDUCATION

1998-2001	B.S., Biomedical Engineering	Johns Hopkins University, Baltimore, MD.
2002-2007	Ph.D., Bioengineering	University of Washington, Seattle, WA. Advisor: Dr. Michael G. Katze Dissertation: *$P58^{IPK}$, the Cellular eIF2α Kinase Inhibitor, Promotes Viral mRNA Translation and Limits Host Death during Influenza Virus Infection*

EMPLOYMENT

07/2014-present	Assistant Professor, Washington State University, Pullman, WA.
06/2006	Consultant, Nastech Pharmaceutical Company, Bothell, WA.
09/2000-05/2002	Undergraduate Research Assistant, Dept. of Chemical Engineering, Johns Hopkins University, Baltimore, MD.
06/2000-08/2000	Undergraduate Internship, Dept. of Biomedical Engineering, University of Wisconsin, Madison, WI.
06/1999-05/2000	Undergraduate Research Assistant, Dept. of Infectious Diseases, Johns Hopkins Medical School, Baltimore, MD.

POSTDOCTORAL TRAINING

02/2011-05/2014	Postdoctoral Fellow, Dept. of Cell Biology, University of Miami Miller School of Medicine, Miami, FL. Advisors: R. Grace Zhai and Glen N. Barber Ascertained the mechanistic and evolutionary roles of STING in innate immunity during viral and bacterial infection to identify novel targets to inhibit pathogenic infection
09/2009-02/2011	Postdoctoral Fellow, Dept. of Molecular and Cellular Biology, Centro Nacional de Biotecnología, Madrid, Spain. Advisor: Mariano Esteban I) Instituted mathematical methods to study the role of $P58^{IPK}$, a host virulence factor, during viral infection and identified nodes of therapeutic intervention. II) Designed and implemented a vaccinia virus-based T cell vaccine against influenza virus infection
01/2008-09/2009	Postdoctoral Fellow, Dept. of Microbiology, University of Washington, Seattle, WA. Advisor: Michael G. Katze

Established the contribution of the type I and II interferon receptors during influenza virus infection to identify potential therapeutic targets

FELLOWSHIPS & SCHOLARSHIPS

2000-2001	Undergraduate Research Grant, Materials Research Society
2004-2007	Predoctoral Fellowship, Viral Oncology Training Grant, NIH Institutional Training Grant, Fred Hutchinson Cancer Research Center (T32 CA09229)
2009	Postdoctoral Fellowship, Juan de la Cierva (MICINN-JDC), Spanish Ministry of Science and Innovation, Centro Nacional de Biotecnología, Declined
2010-2011	Postdoctoral Fellowship, JAE-DOC (CSIC-FSE), Spanish Ministry of Science and Innovation, Centro Nacional de Biotecnología
2011-2013	Postdoctoral Fellowship, Translational Breast Cancer Research Training Grant, NIH Institutional Training Grant, University of Miami School of Medicine (T32 CA119929)

FUNDING

Completed Research Support

1-K99-AI106963-01 Goodman (PI) 06/01/2013-05/31/2014
NIH/NIAID
Conserved Immune Response to Sensing Cytosolic DNA

125630-001 Goodman (PI) 05/15/15-08/16/16
Washington State University
Surveying the Immune Compartment of Nucleic Acid Signaling

Ongoing Research Support

4-R00-AI106963-03 Goodman (PI) 08/01/2014-07/31/2017
NIH/NIAID
Conserved Immune Response to Sensing Cytosolic DNA

Intramural Goodman (PI) 07/01/16-06/30/17
College of Veterinary Medicine – Washington State University
A STING-Mediated Inflammatory Model in Drosophila

AWARDS & HONORS

2005	Graduate Student Travel Award, American Society for Virology
2006	Graduate Student Travel Award, American Society for Virology
2008	Postdoctoral Travel Award, American Society for Virology
2008	Postdoctoral Travel Award, International Congress of Virology
2009	Postdoctoral Travel Award, International Society for Interferon and Cytokine Research
2012	Best Poster Award at University of Miami Zubrod Memorial Lecture
2013	1st Place Poster at University of Miami Postdoctoral Fellows Research Day

TEACHING EXPERIENCE

Spring 2005 **University of Washington – Introduction to Molecular Bioengineering – BIOEN 357**
I designed and delivered two laboratory and discussion sections per week. I also advised and directed term-long research projects on applied molecular biology for the students.

Spring 2013 **Miami Dade College – General Education Biology – BSC 1005**
I delivered one lecture and wrote an assignment and exam questions for the topic of Biotechnology.

Fall 2013 **University of Miami – Topics in Biochemistry and Molecular Biology – BMB 511**
I designed and delivered this interactive course focused on Molecular Virology. Course concepts include mechanisms of viral transcription, translation, replication, and structure, as well as the host immune response to viral infection.

Fall 2013 **University of Miami – Prog in Biomedical Sciences: Scientific Reasoning – PIBS 602**
I delivered one lecture, led one journal club presentation, and wrote an assignment for the topic of Viral Immunology.

Fall 2013 **University of Miami – Advanced Microbiology and Immunology – MIC 675**
I delivered one lecture, led one journal club presentation, and wrote a final exam for the topic of Innate Immunity.

Fall 2015 **Washington State University – Advanced Topics in Molecular Biosciences – MBioS 568**
I delivered two "Deconstruction of Research" lectures.

Spring 2016 **Washington State University – Selected Topics in Immunology and Virology – MbioS 548**
I led one discussion section on viral immunology.

Fall 2016 **Washington State University – Immunology – MbioS 440/540**
I delivered lectures for 5 weeks and participated in class organization for the remaining 10 weeks.

TRAINEES

Graduate

2014-present Laura Ahlers, Washington State University
Currently a Ph.D. student at Washington State University, Pullman, WA.

2015-2016 Sarah Hof, Washington State University (M.A.)
Currently enrolled in the Medical Laboratory Science program at Heritage University, Toppenish, WA.

Undergraduate

2014-2015 Miles Linde, Washington State University
Currently a graduate student at Stanford University, Palo Alto, CA.

2014-present Marina Martin, Washington State University
Currently a senior at Washington State University, Pullman, WA.

2015-present Zachary Howard, Washington State University
Currently a sophomore at Washington State University, Pullman, WA.

2015-present Grace Carrell, Washington State University
Currently a junior at Washington State University, Pullman, WA.

2017-present Chasity Trammell, Washington State University
Currently a sophomore at Washington State University, Pullman, WA.

2016-present	Sarah Borgnes, Washington State University Currently a junior at Washington State University, Pullman, WA.
2016-present	Keesha Matz, Washington State University Currently a junior at Washington State University, Pullman, WA.

SOCIETY MEMBERSHIP

Genetics Society of America
American Society for Virology
American Society for Microbiology
International Society for Interferon and Cytokine Research

PROFESSIONAL SERVICE

National

Review editor:	Frontiers in Cellular and Infection Microbiology
Ad hoc reviewer:	The Journal of Virology, Bioinformatics, PLOS One, The Journal of General Virology, Arthritis Research and Therapy, Science Immunology, Cell Host & Microbe, Frontiers in Immunology

University

5/2011-3/2013	B-CAUSE (**B**reast **C**ancer **A**dvancements and **U**pdates for **S**cience **E**nthusiasts) group leader
12/2012-5/2014	Board member of the University of Miami Postdoctoral Association
9/2014-present	SMB Graduate Studies Committee member
11/2014-present	College of Veterinary Medicine Animal Health Library Committee member
8/19/2015	Co-chair for School of Molecular Biosciences Annual Retreat
7/2016-present	SMB Graduate Recruitment Committee member

Industry

6/2006-7/2006	Illumigen Biosciences – Established a mechanism of action for an anti-viral compound during influenza virus infections
2/2008-6/2008	Cubist Pharmaceuticals – Drafted $150k budget for a pre-clinical trial to test a newly acquired anti-viral compound

Community

Spring 2012-2014	South Hialeah Elementary School Career Day
Summer 2015	Mentored Pullman High School student Gavan Keogh

PEER-REVIEWED JOURNAL PUBLICATIONS

1. Bastos, R.G., Howard, Z.P., Hiroyasu, A., **Goodman, A.G.** "Host and bacterial factors control susceptibility of *Drosophila melanogaster* to *Coxiella burnetii* infection." *Infect. Immun.* Accepted 17 April 2017. doi:10.1128/IAI.00218-17.
2. Ahlers, L.R.H., Bastos, R.G., Hiroyasi, A., **Goodman, A.G.** Invertebrate iridescent virus 6, a DNA virus, stimulates a mammalian innate immune response through RIG-I-like receptors. *PLoS One*. 2**016.** Nov; 11(11): e0166088.
3. Ahlers, L.R.H., **Goodman, A.G.** Nucleic acid sensing and innate immunity: signaling pathways controlling viral pathogenesis and autoimmunity. *Curr. Clin. Micro. Rpt.* **2016** Sep; 3(3): 132-141.

4. Vijayan, A., Gómez, C.E., Espinosa, D.A., **Goodman, A.G.**, Sanchez-Sampedro, L., Soranzo, C.O.S., Zavala, F., Esteban, M. Adjuvant-like effect of vaccinia virus 14K protein: a case study with malaria vaccine based on the circumsporozoite protein. *J. Immunol.* **2012** Jun 15; 188(12): 6407-17.
5. **Goodman, A.G.**, Heinen, P.P., Guerra, S., Vijayan, A., Sorzano, C.O.S., Gomez, C.E., Esteban, M. A human multi-epitope recombinant vaccinia virus as a universal T-cell vaccine candidate against influenza virus. *PLoS One*. **2011** Oct 5; 6(10): e25938.
6. **Goodman, A.G.**, Tanner, B.C.W., Chang, S.T., Esteban, M., Katze, M.G. Virus infection rapidly activates the $P58^{IPK}$ pathway, delaying peak kinase activation to enhance viral replication. *Virology*. **2011** Aug 15; 417(1): 27-36.
7. Cillóniz, C., Pantin-Jackwood, M., Ni, C., **Goodman, A.G.**, Peng, X., Proll, S.C., Carter, V.S., Rosenzweig, E.R., Szretter, K.J., Katz, J.M., Korth, M.J., Swayne, D.E., Tumpey, T.M., Katze, M.G. Differential regulation of inflammatory gene expression and interferon signaling in mouse models of highly pathogenic H1N1 and H5N1 influenza virus infection. *J. Virol*. **2010** Aug; 84(15): 7613-24.
8. Datta, R., Shah, G.N., Rubbelke, T.S., Waheed, A., Rauchman, M., **Goodman, A.G.**, Katze, M.G., Sly, W.S. Progressive renal injury from transgenic expression of human carbonic anhydrase IV folding mutants is enhanced by deficiency of $p58^{IPK}$. *Proc. Natl. Acad. Sci. USA*. **2010** Apr 6; 107(14): 6448-52.
9. **Goodman, A.G.**, Zeng, H., Proll, S.C., Peng, X., Cillóniz, C., Carter, V.S., Korth, M.J., Tumpey, T.M., Katze, M.G. The interferonα/β receptor provides protection against influenza virus replication but is dispensable for inflammatory response signaling. *J. Virol*. **2010** Feb; 84(4): 2027-37.
10. Billharz, R., Zeng, H., Proll, S.C., Korth, M.J., Lederer, S., Albrecht, R., **Goodman, A.G.**, Rosenzweig, E., Tumpey, T.M., García-Sastre, A., Katze, M.G. The NS1 protein of the 1918 pandemic influenza virus blocks host interferon and lipid metabolism pathways. *J. Virol.* **2009** Oct; 83(20): 10557-70.
11. **Goodman, A.G.**, Fornek, J.L., Medigeshi, G.R., Perrone, L.A., Peng, X., Dyer, M.D., Proll, S.C., Knoblaugh, S.E.**,** Carter, V.C., Korth, M.J., Nelson, J.A., Tumpey, T.T., Katze, M.G. $P58^{IPK}$: a novel "CIHD" member of the host innate defense response against pathogenic virus infection. *PLoS Pathog.* **2009** May; 5(5): e1000438.
12. Rutkowski, D.T., Kang, S.W., **Goodman, A.G.**, Garrison, J.L., Taunton, J., Katze, M.G., Kaufman, R.J., Hegde, R.S. The role of $P58^{IPK}$ in protecting the stressed endoplasmic reticulum. *Mol. Biol. Cell.* **2007** Sep; 18(9): 3681-91.
13. **Goodman, A.G.**, Smith, J.A., Balachandran, S., Perwitasari, O., Proll, S.C., Thomas, M.J., Korth, M.J., Baber, G.N., Schiff, L.A., Katze, M.G. The cellular protein, $P58^{IPK}$, regulates influenza virus mRNA translation and replication through a PKR mediated mechanism. *J. Virol.* **2007** Mar; 81(5): 2221-30.
14. Oyadomari, S., Yun, C., Fisher, E.A., Kreglinger, N., Kreibich, G., Oyadomari, M., Harding, H.P., **Goodman, A.G.**, Harant, H., Garrison, J.L., Taunton, J., Katze, M.G., Ron, D. Cotranslocational degradation protects the stressed endoplasmic reticulum from protein overload. *Cell.* **2006** Aug 25; 126(4): 727-39.
15. Kash, J.C., **Goodman, A.G.**, Korth, M.J., Katze, M.G. Hijacking of the host-cell response and translational control during influenza virus infection. *Virus Res.* **2006** Jul; 119(1): 111-20.
16. Ladiges, W.C., Knoblaugh, S.E., Morton, J.F., Korth, M.J., Sopher, B.L., Baskin, C.R., MacAuley, A., **Goodman, A.G.**, LeBoeuf, R.C., Katze, M.G. Pancreatic β-cell failure and diabetes in mice with a deletion mutation of the endoplasmic reticulum molecular chaperone gene $P58^{IPK}$. *Diabetes.* **2005** Apr;54(4): 1074-81.
17. **Goodman A.**, Tseng Y., Wirtz D. Effect of length, topology, and concentration on the microviscosity and microheterogeneity of DNA solutions. *J. Mol. Biol.* **2002** Oct 18;323(2): 199-215.
18. Franco, A.A., Cheng, R.K., **Goodman, A.**, Sears, C.L. Modulation of bft expression by the Bacteroides fragilis pathogenicity island and its flanking region. *Mol Microbiol.* **2002** Aug; 45(4): 1067-77.

INVITED PRESENTATIONS

November 2016 "Conservation of Host-Pathogen Interactions and Innate Immunity in Insects and Mammals." American Society of Microbiology Northwest Branch Meeting, Seattle, WA.

October 2016	"Host Immune Responses to Pathogenic Infection." Department of Biology, Gonzaga University, Spokane, WA.
February 2015	"Host Immune Responses to Pathogenic Infection." Department of Biological Sciences, University of Idaho, Moscow, ID.
November 2014	"Host Immune Responses to Pathogenic Infection." Seattle Fly Club, University of Washington, Seattle, WA.
January 2014	"STING Governs an Evolutionarily Conserved Innate Immune Pathway." School of Molecular Biosciences, Washington State University, Pullman, WA.
October 2013	"Evolutionary Conservation of STING, an Innate Immune Effector, in *Drosophila melanogaster*." Department of Microbiology and Immunology, University of Miami, Miami, FL.
August 2013	"Evolutionary Conservation of STING, an Innate Immune Effector, in *Drosophila melanogaster*." Department of Microbiology, University of Washington, Seattle, WA.
April 2013	"An Evolutionarily Conserved Innate Immune Response to Sensing Cytosolic Nucleic Acids." The South Florida *Drosophila* Research Conference, University of Miami, Miami, FL.
March 2012	"Dissecting the Mechanistic Roles of STING in Innate Immunity and Oncogenesis in Human Breast Tumors." Braman Family Breast Cancer Institute, University of Miami, Miami, FL.
May 2011	"From Influenza Virus to Cancer: Striding for the Cures." STRIDE Seminar, University of Washington, Seattle, WA.
November 2010	"Further Dissection of the $P58^{IPK}$ Pathway: Mathematical Models and Vaccinia Virus." Department of Cellular and Molecular Biology, Centro Nacional de Biotecnología, Madrid, Spain.
September 2009	"$P58^{IPK}$ is a Novel Member of the Host's Innate Defense Response to Virus Infection." Department of Cellular and Molecular Biology, Centro Nacional de Biotecnología, Madrid, Spain.

PUBLISHED ABSTRACTS: CONFERENCE PRESENTATIONS

1. Howard, Z.P., Bastos, R.G., Hiroyasu, A., Goodman, A.G. "Coxiella burnetii infection in Drosophila melanogaster: key factors in pathogenesis." Oral Presentation at the Genetics Society of America's 58th Annual Drosophila Meeting. San Diego, CA. March 29-April 2, 2017.
2. Ahlers, L.R.H., Carrell, C.F., Goodman, A.G. "Using the Drosophila Genetic Reference Panel to Identify Novel Genes Utilized in the Immune Response to West Nile virus subtype Kunjin virus." Poster at the Genetics Society of America's 58th Annual Drosophila Meeting. San Diego, CA. March 29-April 2, 2017.
3. Goodman, A.G., Bastos, R.G. "Host-produced Eiger/TNF and the bacterial type 4 secretion system enable susceptibility of *Drosophila melanogaster* to *Coxiella burnetii* infection." Oral Presentation at The Allied Genetics Conference. Orlando, FL. July 13-17, 2016.
4. Ahlers, L.R.H., Hiroyasu, A., Goodman, A.G. "Drosophila C virus and Insect Iridescent virus 6 retain virulence after infection in mammalian cell lines." Oral Presentation at the American Society for Virology Annual Meeting. London, Ontario. July 11-15, 2015.
5. Goodman, A.G., Kitay, B.M., Konno, K., Konno, H., Zhai, R.G., Barber, G.N. STING Governs an Evolutionarily Conserved Innate Immune Pathway. Poster at the Genetics Society of America's 55th Annual Drosophila Meeting. San Diego, CA. March 26-30, 2014.
6. Goodman, A.G., Kitay, B.M., Konno, K., Zhai, R.G., Barber, G.N. "Evolutionary Conservation of STING, an Innate Immune Sensor and DNA Sensor, in *Drosophila melanogaster*." Oral Presentation at the International Cytokine Society and the International Society of Interferon and Cytokine Research Annual Meeting. San Francisco, CA. September 30-October 3, 2013
7. Goodman, A.G., Ashlock, B.M., Lopez-Rodriguez, D.M., Mesri, E.A., Barber, G.N. "Kaposi's sarcoma-associated herpesvirus viral interferon factor 1 binds STING to inhibit the host interferon response." Poster at the World Congress of Virology. Las Vegas, NV. August 20-22, 2012.

8. Goodman, A.G., Guerra, S., Vijayan, A., Heinen, P.P., Sorzano, C.O.S., Esteban, M. "A recombinant vaccinia virus-based T cell vaccine against influenza virus reduces viral load upon challenge." Poster at the American Society of Gene and Cell Therapy Annual Meeting. Seattle, WA. May 18-21, 2011.
9. Goodman, A.G., Tanner, B.C.W., Katze, M.G. "Kinetics of $P58^{IPK}$ activation in response to influenza virus infection indicate that it is rapidly activated and delays peak kinase phosphorylation." Poster at the Tri-Societies Annual Meeting. Lisbon, Portugal. October 18–21, 2009.
10. Goodman, A.G., Zeng, H., Proll, S.C., Peng, X., Cilloniz, C., Carter, V.S., Korth, M.J., Tumpey, T.M., Katze, M.G. "The interferonα/β receptor provides protection against influenza virus replication but is dispensable for inflammatory response signaling." Poster at the Tri-Societies Annual Meeting. Lisbon, Portugal. October 18–21, 2009.
11. Goodman, A.G., Fornek, J.L., Medigeshi, G.R., Kash, J.C., Carter, V.C., García-Sastre, A., Nelson, J.A., Katze, M.G. "Mice containing a deletion mutation in $P58^{IPK}$ are more susceptible to the lethality of influenza virus infection." Oral Presentation at the International Congress of Virology. Istanbul, Turkey. August 10-15, 2008.
12. Goodman, A.G., Tanner, B.C.W., Thomas, W.E., Katze, M.G. "A mathematical model predicts the kinetics of the $P58^{IPK}$ pathway in response to influenza virus infection." Poster at the American Society for Virology Annual Meeting. Ithaca, NY. July 12-16, 2008.
13. Goodman, A.G., Fornek, J.L., Medigeshi, G.R., Kash, J.C., Carter, V.C., García-Sastre, A., Nelson, J.A., Katze, M.G. "Increased lethality of influenza virus infection in mice containing a deletion mutation in $P58^{IPK}$." Oral Presentation at the American Society for Virology Annual Meeting. Ithaca, NY. July 12-16, 2008.
14. Goodman, A.G., Kash, J.C., Fornek, J.L., Chua, M.A., García-Sastre, A., Katze, M.G. "Mice containing a deletion mutation in $P58^{IPK}$ are more susceptible to the lethality of influenza virus infection." Oral Presentation at the American Society for Virology Annual Meeting. Corvallis, OR. July 14-18, 2007.
15. Goodman, A.G., Smith, J.A., Balachandran, S., Perwitasari, O., Barber, G.N., Schiff, L.A., Katze, M.G. "$P58^{IPK}$ Regulates Viral mRNA Translation Through a PKR mediated, eIF2α-independent Mechanism." Oral Presentation at the Translational Control Meeting. Cold Spring Harbor, NY. September 6-10, 2006.
16. Goodman, A.G., Kash, J.C., Korth, M.J., Chua, M.A., Perwitasari, O., Fornek, J.L., García-Sastre, A., Katze, M.G. "The Loss of $P58^{IPK}$ Results in Pertubations of the Immune and Stress Response during Influenza Virus Infection." Oral Presentation at the American Society for Virology Annual Meeting. Madison, WI. July 15-19, 2006.
17. Goodman, A.G., Chua, M.A., Baskin, C.R., Korth, M.J., García-Sastre, A., Katze, M.G. "$P58^{IPK}$- Mediated Inhibition of PKR Causes Increased Viral Protein Synthesis During Influenza Virus Infection." Oral Presentation at the American Society for Virology Annual Meeting. State College, PA. June 18-22, 2005.
18. Goodman, A.G., Balachandran, S., Baskin, C.R., Korth, M.J., Baas, T., Barber, G.N., Katze, M.G. "$P58^{IPK}$, the Molecular Chaperone and Inhibitor of PERK and PKR eIF2α Kinases, is used by RNA Viruses as a Virulence Factor." Poster at the American Society for Virology Annual Meeting. Montreal, QC. July 10-14, 2004.
19. Goodman, A.G., Korth, M.J., Baskin, C.R., Knoblaugh, S.E., Morton, J.F., Ladiges, W.C., Katze, M.G. "$P58^{IPK}$, a Potential Virulence Factor that Regulates Influenza Viral Protein Synthesis." Poster at the Biophysical Society Annual Meeting. Baltimore, MD. February 14-18, 2004.