

# Yuriy Baglaenko, PhD

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Postdoctoral Research Fellow

Rheumatology, Immunology, and Allergy | Brigham and Women's Hospital

Harvard Medical School | Broad Institute

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## EDUCATION

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- 2017-2018 Research Fellow | Mentor: Dr. Soumya Raychaudhuri  
Brigham and Women's Hospital, Harvard Medical School and Broad Institute. Department of Genetics, Faculty of Medicine.
- 2010 – 2016 PhD Student | Mentor: Dr. Joan E Wither  
Department of Immunology, University of Toronto, Faculty of Medicine
- 2006 – 2010 Honors Bachelor of Science with High Distinction, Immunology Specialist.  
Department of Immunology, University of Toronto, Faculty of Medicine.  
Cumulative GPA: 3.79

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## RESEARCH EXPERIENCE

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- 2017 - 2018 Postdoctoral Fellow at Brigham and Women's Hospital. Rheumatology, Immunology, and Allergy. Affiliated with Harvard Medical School and Broad Institute.  
*Using CRISPR-Cas9 technology to study the genetics of autoimmunity.*
- 2016 - 2017 Postdoctoral Fellow at the Krembil Research Institute, Department of Genetics and Development.  
*Investigating methods for CRISPR-Cas9 mediated manipulation of human primary B cells in autoimmunity. Studying the cellular changes that underlie pre-clinical autoimmunity in patients.*
- 2010 - 2016 PhD Research Project at University of Toronto.  
*Worked under the mentorship of Dr. Joan Wither on mouse models of autoimmunity including Systemic Lupus Erythematosus, Arthritis, and Multiple Sclerosis. Had ongoing collaborations with: Dr. Phillippe Monnier on the role of Repulsive Guidance Molecules in neuroimmunology and blood-brain barrier integrity; Dr. Valerie Wallace on medulloblastoma infiltrating leukocytes and lymphatics development; and Dr. Thierry Mallevaey on the role of SLAM molecules in Natural Killer T cell development and function.*
- 2010 Training Program in Infectious and Pandemic Disease in Shantou, China.  
*Program run by Dr. David J. Kelvin highlighting research techniques and socioeconomic factors contributing to pandemic and infectious disease, specifically H5N1 and H1N1*
- 2009 - 2010 Independent Research Project at Sunnybrook Health Science Institute.  
*Fourth year research project under Dr. Micheal Ratcliffe on identifying the role of chemokine and chemokine receptors in B cell development in Gallus gallus.*
- 2009 Summer Research Associate at Sunnybrook Health Science Institute. *Worked in the laboratory of Dr. Micheal Ratcliffe on understanding migration during B cell development in Gallus gallus*

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## PATENTS

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- 2018 Monnier PP, Tassew NG, **Baglaenko Y.** 2018. Methods, Compounds and Compositions for Modulating Blood Brain Barrier Integrity and Re-myelination. US 15/762,497,793; Y/R: 2015-087-04; O/R: 05014971-177 filled March 10, 2018. Patent Pending.

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## PEER REVIEWED PUBLICATIONS

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- 2018 **Baglaenko Y\***, Chang N\*, Johnson S, Hafiz W, Manion K, Ferri D, Noamani B, Bonilla D, Rusta-Sallehy S, Lisnevskaja L, Silverman E, Bookman A, Landolt-Marticorena C, Wither JE. *The presence of anti-nuclear antibodies alone is associated with changes in B cell activation and T follicular helper cells similar to those in systemic autoimmune rheumatic disease*. Arthritis Research & Therapy (in press). (**\*co-first authors**)
- 2018 Shinde R, Hezaveh K, Halaby MJ, Kloetgen A, Chakravarthy A, da Silva Medina T, Deol R, Manion KP, **Baglaenko Y**, Eldh M, Lamorte S, Wallace D, Chodisetti SB, Ravishankar B, Liu H, Chaudhary K, Munn DH, Tsirigos A, Madaio M, Gabrielsson S, Touma Z, Wither J, De Carvalho DD, McGaha TL. *Apoptotic cell-induced AhR activity is required for immunological tolerance and suppression of systemic lupus erythematosus in mice and humans*. Nat Immunol. 2018 Jun;19(6):571-582.
- 2018 Wu CM\*, Roth TL\*, **Baglaenko Y\***, Ferri DM, Brauer P, Zuniga-Pflucker JC, Rosbe KW, Wither JE, Marson A, Allen CDC. *Genetic engineering in primary human B cells with CRISPR-Cas9 ribonucleoproteins*. J Immunol Methods. 2018 Jun;457:33-40. (**\*co-first authors**)
- 2017 **Baglaenko Y**, Cruz Tleugabulova M, Gracey E, Talaei N, Manion KP, Chang N, Ferri DM, Mallevaey T, Wither JE. *Invariant NKT Cell Activation Is Potentiated by Homotypic trans-Ly108 Interactions*. J Immunol. 2017 May 15;198(10):3949-3962.
- 2017 Chang N, Manion KP, Loh C, Pau E, **Baglaenko Y**, Wither JE. *Multiple tolerance defects contribute to the breach of B cell tolerance in New Zealand Black chromosome 1 congenic mice*. PLoS One. 2017 Jun 19;12(6):e0179506.
- 2016 **Baglaenko Y**, Manion KP, Chang N, Gracey E, Loh C, Wither JE. *IL-10 Production is Critical for Sustaining the Expansion of CD5+ B and NKT cells and Restraining Autoantibody Production in Congenic Lupus-Prone Mice*. PLoS One. 2016 Mar 10;11(3):e0150515.
- 2016 Gracey E, Qaiyum Z, Almaghlouth I, Zhang Z, Yao Y, Raganathan V, **Baglaenko Y**, Inman RD. *IL-7 primes IL-17 in mucosal-associated invariant T (MAIT) cells, which contribute to the Th17-axis in ankylosing spondylitis*. Ann Rheum Dis. 2016 Dec;75(12):2124-2132 .
- 2015 Gracey E, Yao Y, Green B, Qaiyum Z, **Baglaenko Y**, Lin A, Anton A, Ayearst R, Yip P, Inman RD. *Sexual Dimorphism in the Th17 Signature of Ankylosing Spondylitis*. Arthritis Rheumatol. 2016 Mar;68(3):679-89.
- 2015 Gracey E, **Baglaenko Y**, Prayitno N, Rooijen NV, Akram A, Lin A, Chiu B, Inman RD. *The Macrophage Plays a Central Role in Innate and Adaptive Host Immunity During Chlamydia muridarum Infection*. Eur J Immunol. 2015 Dec;45(12):3417-30.
- 2015 **Baglaenko Y**, Manion KP, Chang N, Loh C, Lajoie G, Wither JE. *Suppression of autoimmunity by CD5+ IL-10-producing B cells in lupus-prone mice*. Genes and Immunity. 2015 Jul;16(5):311-20.
- 2011 Loh C, Pau E, Lajoie G, Li TT, **Baglaenko Y**, Cheung YH, Chang NH, Wither JE. *Epistatic suppression of fatal autoimmunity in New Zealand black bicongenic mice*. J Immunol. 2011 May 15;186(10):584553.

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## INVITED REVIEWS AND BOOK CHAPTERS

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- 2015 **Yuriy Baglaenko** and Joan E Wither. *Regulation of B cell Migration and Location in Response to Antigens*. Encyclopedia of Immunobiology. 2015 [invited chapter review].

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## OPERATING AND EQUIPMENT GRANTS

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- 2018 Broad SPARC Grant. "Single-cell RNA and DNA sequencing in the same cell to simultaneously confirm CRISPR-Cas editing and assess regulatory implications." Valued at \$100,000.

- 2018 Pfizer ASPIRE Grant. “Identifying causal autoimmune single nucleotide polymorphisms using CRISPR-Cas9 technologies to better define the etiology of rheumatoid arthritis”. Valued at \$150,000.
- 2017 nCounter PlexSet CRISPR Reagent Grant Program. “Studying Human Autoimmunity Disease Related Genes Using CRISPR-Cas9”. Valued at \$4,000.

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## ACADEMIC SCHOLARSHIPS AND AWARDS

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- 2015-2016 Queen Elizabeth II Graduate Scholarship Award. Awarded by the Faculty of Medicine. Valued at \$15,000
- 2012 - 2015 CIHR Doctoral Research Award. Awarded by Canadian Institute of Health Research. Valued at \$105,000.
- 2014 International Cytokine and Interferon Society Travel Award. Valued at \$600
- 2013 CIHR Travel Allowance Reimbursement for the Canadian Health Sciences Research Forum Conference in Winnipeg, Manitoba. Valued at \$1000.
- 2012 - 2013 Ontario Graduate Scholarship Doctoral Award. Valued at \$15,000 – Declined.
- 2011 - 2012 QEII-GSST Edward Dunlop Award in Science and Technology Awarded by the Faculty of Medicine, University of Toronto. Valued at \$15,000
- 2010 - 2011 OGSST Aventis Pasteur Scholarship in Science and Technology. Awarded by the Faculty of Medicine, University of Toronto. Valued at \$15,000
- 2010 University of Toronto Fellowship. Awarded by the Department of Immunology, University of Toronto. Valued at \$3,300
- 2006 - 2010 University of Toronto Dean’s List Scholar. Awarded by the University of Toronto.
- 2009 Trainee Program in Regenerative Medicine Studentship Award. Awarded by CIHR. Valued at \$4,000
- 2008 - 2009 Regents In-Course Scholarship for Academic Excellence. Awarded by Victoria College, University of Toronto. Valued at \$1,000
- 2007 - 2008 The Professor William Kingston and Dr. John Kingston Scholarship for Academic Excellence. Awarded by Victoria College, University of Toronto. Valued at \$1,000
- 2006 - 2007 Recipient of the Thora and Ralph Mill Scholarship for Academic Excellence. Awarded by Victoria College, University of Toronto. Valued at \$1,000

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## PRESENTATION AND LEADERSHIP AWARDS

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- 2016 University of Toronto Business Case Competition Winner at the Annual Immunology Retreat. Awarded by the Stem Cell Technologies. Valued at \$500.
- 2016 Hardi Cinader Prize for Excellence in Science and Arts. Awarded by the Department of Immunology. Valued at \$700
- 2015 2<sup>nd</sup> Place Poster Presentation Winner at the Ogryzlo Rheumatology Research Day. Valued at \$200
- 2015 1<sup>st</sup> Place Oral Symposium Winner at the 15<sup>th</sup> Annual Toronto Western Research Institute Research Day. Valued at \$200
- 2014 Immunology Science Outreach Award. Awarded by the Department of Immunology. Valued at \$300.
- 2014 MBiotech Innovator Award for the most innovative project presented in Biotech in Medicine, Biopartnering Seminars, Supervised Studies, and/or the Creating Life Science Products courses
- 2013 2<sup>nd</sup> Place Poster Presentation Winner at the Ogryzlo Rheumatology Research Day. Valued at \$200
- 2013 CIHR National Poster Competition Silver Award Winner at the Canadian Health Science Research Forum. Valued at \$250.
- 2012 1<sup>st</sup> Place Oral Symposium Winner at Ogryzlo Rheumatology Research Day. Valued at \$500
- 2012 2<sup>nd</sup> Place Oral Symposium Winner at the 12<sup>th</sup> Annual Toronto Western Research Institute Research Day. Valued at \$100

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## LEADERSHIP, VOLUNTEERING, AND TEACHING EXPERIENCE

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- 2016 OneStart Biotech Startup Competition Finalist. Assembled and led a team, Sagacere Therapeutics, based on collaborative unpublished research to apply for \$150,000 in undiluted funding in a start-up competition.
- 2014 - 2016 Laboratory Teaching Assistant for IMM435F, an undergraduate course on basic immunological procedures used in research and diagnostic laboratories.
- 2013 - 2016 Teaching assistant for IMM250, an undergraduate course on “Immunity and Infection” given by the Department of Immunology at the University of Toronto
- 2013 - 2015 SciChat Outreach Volunteer. Visiting public libraries to give informational talks on relevant science topics to adults. In collaboration with another volunteer, helped design a new talk on Arthritis and Autoimmunity.
- 2011 - 2016 Let’s Talk Science Classroom Volunteer. Teaching elementary and high school students about science, technology, engineering, and math.
- 2014 Authored an article for *TheConversation*, “It may feel like it sometimes, but a PhD is not a waste of time”.
- 2013 - 2014 Founder, Editor-in-Chief, writer, and designer of *IMMpress Magazine* ([impressmagazine.com](http://impressmagazine.com)): The Department of Immunology’s quarterly published magazine.
- 2014 Helped write and edit the script for an education video on T cell immunology for Adult and Pediatric Rheumatology Residents.
- 2013 - 2014 CurioCity Volunteer Writer. Writing on science topics in an online magazine to educate elementary students on science, technology, engineering, and math.
- 2011 - 2014 Graduate Student Representative and Booklet Designer for the Trainee Affairs Committee. Toronto Western Research Institute.
- 2011 - 2014 Volunteer Judge at Ontario-Quebec Undergraduate Immunology Conference.
- 2012 - 2014 CIHR Synapse Volunteer – Sanofi BioGeneius Challenge Canada – Invited Science Fair Judge
- 2014 Author of *NatureJobs Blog* posts, “Where do all the alumni go?” and “What skills do the University of Toronto department of immunology alumni take away from the postgraduate courses?”
- 2013 - 2014 Sports Representative for the Immunology Graduate Student Association
- 2013 Featured Student by the School of Graduate Studies at the University of Toronto.
- 2013 Volunteer Classroom Teacher at the Journey of Discovery at OISE.
- 2013 Head of the organizing committee for the All Science Challenge, a volunteer biojeopardy style challenge for elementary school students.
- 2013 Captain of the Co-ed volleyball Division 1 Intramural Team.
- 2012 - 2013 Seminar Leader for 2<sup>nd</sup> year medical student course, “Mechanisms, Manifestations and Management of Disease” in the Faculty of Medicine at the University of Toronto.
- 2012 Volunteer Performer for Artists for Autism Charity Concert.
- 2011 - 2012 Secretary/Division IV Representative for Immunology Graduate Student Association.
- 2008 - 2010 President and Founder of the Running, Fitness, and Health Club. University of Toronto

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## POSTER AND ORAL PRESENTATIONS

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- 2017 **Baglaenko Y**, Ferri DM, Juan Carlos Zuniga-Pflucker and Joan E. Wither. *Generation of an Efficient CRISPR-Cas9 Editing Technique in Human Primary B Cells for the Targeted Study of Autoimmune Susceptibility Genes*. Oral Presentation. At: ACR – Basic Research Conference - The Interface of Innate and Adaptive Immunity in Rheumatic Diseases. 2017 Nov. San Deigo, CA.
- 2017 **Baglaenko Y**, Ferri DM, Juan Carlos Zuniga-Pflucker and Joan E. Wither. *Generation of an Efficient CRISPR-Cas9 Editing Technique in Human Primary B Cells for the Targeted Study of Autoimmune Susceptibility Genes*. Oral Presentation. At: ACR – B cell Biology and Targets in Autoimmune disease. 2017 Nov. San Deigo, CA.
- 2016 Invited speaker at Krembil Research Institute Seminar Series. *Unraveling the role of innate lymphocytes in autoimmunity*. 2016 Sep.

- 2015 **Baglaenko Y**, Manion K, Chang N, Gracey E, Wither JE. *Expression of Signaling Lymphocyte Activating Molecules (SLAM) is vital to the Function of Invariant Natural Killer T cells*. Poster Presentation. At: OGryzlo Research Day. 2015 June. Toronto, Ontario.
- 2015 Invited Oral Speaker at 15<sup>th</sup> Annual Toronto Western Research Institute Research Day. **Baglaenko Y**, Manion K, Chang N, Gracey E, Wither JE. *Expression of Signaling Lymphocyte Activating Molecules (SLAM) is vital to the Function of Invariant Natural Killer T cells*. At: Toronto Western Research Institute Research Day. 2015 May. Toronto, Ontario.
- 2014 **Baglaenko Y**, Manion K, Chang N, Wither JE. *IL-10 is critical for the expansion of peritoneal and splenic CD5<sup>+</sup> B cells*. Poster Presentation. At: Second Annual Meeting of the International Cytokine and Interferon Society. 2014 Oct. Melbourne, Victoria.
- 2014 **Baglaenko Y**, Manion K, Chang N, Wither JE. *Polymorphisms in the Slam Family of Molecules Play a Role in the Development and Function of Invariant Natural Killer T Cells in New Zealand Black Mice*. Poster presentation. At: American College of Rheumatology Scientific Meeting. 2014 Nov. Boston, MA.
- 2013 **Baglaenko Y**, Manion K, Chang N, Wither JE. *The suppression of fatal autoimmunity is mediated by Regulatory B cells and not invariant NKT cells in Lupus-Prone Mice*. Poster Presentation. At: Canadian Health Sciences Research Forum. 2013 June. Winnipeg, Manitoba.
- 2013 **Baglaenko Y**, Manion K, Chang N, Wither JE. *The suppression of fatal autoimmunity is mediated by Regulatory B cells and not invariant NKT cells in Lupus-Prone Mice*. Poster Presentation. At: OGryzlo Research Day. 2013 June. Toronto, Ontario.
- 2013 **Baglaenko Y**, Chang N, Pau E, Wither JE. *Role of CD5<sup>+</sup> B Cells in the Suppression of Fatal Autoimmunity in Lupus-Prone Mice*. At: The Canadian Society of Immunologist Meeting. 2013 April. Whistler, British Columbia.
- 2012 Invited Oral Speaker at Ogryzlo Research Day.  
**Baglaenko Y**, Chang N, Pau E, Wither JE. *Regulatory B cells suppress the progression of fatal autoimmunity in Lupus-Prone Mice*. At: OGryzlo Research Day. 2012 June. Toronto, Ontario.
- 2012 Invited Oral Speaker at 12<sup>th</sup> Annual Toronto Western Research Institute Research Day. **Baglaenko Y**, Chang N, Pau E, Wither JE. *Regulatory B cells suppress the progression of fatal autoimmunity in Lupus-Prone Mice*. At: Toronto Western Research Institute Research Day. 2012 May. Toronto, Ontario.
- 2012 **Baglaenko Y**, Chang N, Pau E, Wither JE. *Regulatory B Cells Suppress the Progression of Fatal Autoimmunity in Lupus-Prone Mice*. In: American College of Rheumatology Scientific Meeting. 2012 Nov 9-14; Washington, DC.
- 2011 **Baglaenko Y**, Chang N, Pau E, Wither JE. *Role of CD5<sup>+</sup> B Cells in the Suppression of Fatal Autoimmunity in Lupus-Prone Mice*. In: American College of Rheumatology Scientific Meeting. 2012 Nov 5-9; Chicago, IL.
- 2011 **Baglaenko Y**, Chang N, Wither JE. *Understanding the role of CD5<sup>+</sup> B cells in the Suppression of Fatal Autoimmunity in Lupus Prone Congenic Mice*. Poster Presentation. At: 11<sup>th</sup> Annual Toronto Western Research Institute Research Day. 2011 May. Toronto, Ontario.
- 2011 **Baglaenko Y**, Chang N, Wither JE. *Role of CD5<sup>+</sup> B cells in the Suppression of Fatal Autoimmunity in Lupus Prone Mice*. Poster Presentation. At: OGryzlo Research Day. 2011 June. Toronto, Ontario.

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## OTHER ACTIVITES

Avid musician with an amateur recording studio. Owns and operates a motorcycle. Enjoys playing competitive intramural volleyball and an assortment of recreational sports.

