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## **Dr. A. Dean Befus**

Correspondence language: English

Sex: Male

Date of Birth: 10/08

Canadian Residency Status: Canadian Citizen

Country of Citizenship: Canada

## **Contact Information**

The primary information is denoted by (\*)

### **Address**

#### Courier

Room 559 Heritage Medical Research Bldg  
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#### Primary Affiliation (\*)

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### **Website**

Corporate <http://www.departmentofmedicine.ualberta.ca/prg/befus.html>



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## Dr. A. Dean Befus

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### Language Skills

Language	Read	Write	Speak	Understand
English	Yes	Yes	Yes	Yes
French	Yes	No	No	No

### User Profile

Disciplines Trained In: Biochemistry, Immunology, Microbiology, Pathology

Research Disciplines: Immunology, Microbiology, Pathology, Virology

Areas of Research: Allergies, Asthma

Fields of Application: Biomedical Aspects of Human Health, Education, Public Health

Research Specialization Keywords: Mast cells, Neuroimmunology, mucosal immunity, Protein synthesis and processing, Immunoassays, Stress and its biomarkers, inflammation, asthma, nitric oxide, Patient education and self management

### Degrees

1975/6 - 1978/6	Post-doctorate, Postdoctoral Fellowship, Mucosal Immunology, McMaster University Degree Status: Completed Supervisors: J. Bienenstock
1972/9 - 1975/7	Doctorate, PhD, Immunoparasitology, University of Glasgow Degree Status: Completed Supervisors: Professor C. A. Hopkins
1970/5 - 1972/8	Master's Thesis, MSc - Masters, Parasitology, University of Toronto Degree Status: Completed Supervisors: Dr. R. S. Freeman
1966/9 - 1970/4	Bachelor's, BSc, Zoology, University of Alberta Degree Status: Completed

### Recognitions

2017/9	Fellowship, Canadian Academy of Health Sciences (Canadian dollar) Canadian Academy of Health Sciences Honor
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2014/10	The Jerry Dolovich Award (for excellence in research; a role model) Canadian Society of Allergy and Clinical Immunology Prize / Award
2013/11	“Dr. Dean Befus, Clinica del Asma,” Jose Antonio Saldana, National General Pneumonology and Family Medicine Hospital, El Salvador. - 0 El Salvador Ministry of Health Honor
2013/1	President’s Excellence Award for Outstanding Achievements in Research: Asthma Working Group, Respiratory Clinical Network, Alberta Health Services; Group Co-Chair - 0 Alberta Health Services Prize / Award
2007/1	Killam Award for Excellence in Mentoring - 5,000 University of Alberta Prize / Award

## Employment

2017/7	Professor Emeritus Medicine, Faculty of Medicine and Dentistry, University of Alberta
2012/4	Co-Leader, Biomarkers and Bioinformatics Programme, Allergen NCE Inc Biomarkers and Bioinformatics (B&B) Enabling Platform, Allergen NCE Inc.
2016/12 - 2018/6	Co-Director, Alberta Respiratory Centre; a formal Centre of the University of Alberta University of Alberta
1993/1 - 2017/6	AstraZeneca Canada Inc., Chair in Asthma Research Department of Medicine, Faculty of Medicine and Dentistry, University of Alberta
1993/1 - 2017/6	Professor Medicine, Faculty of Medicine and Dentistry, University of Alberta
1993/1 - 2016/12	Director, Alberta Asthma Centre Medicine, Faculty of Medicine and Dentistry, University of Alberta
1993/1 - 2015/6	Adjunct Professor, Medical Microbiology and Immunology University of Alberta, University of Alberta
2010/1 - 2013/6	Consultant Alberta Health Services Alberta Health Services
2007/1 - 2012/4	Programme B Co-Leader, Allergen NCE Inc Diagnostics and Therapeutics, Allergen NCE Inc.
2010/1 - 2012/2	Consultant, AIM Therapeutics Inc AIM Therapeutics Inc
2009/9 - 2010/5	Associate-Chair, Research, Medicine, Faculty of Medicine and Dentistry, University of Alberta
2009/9 - 2010/5	Research Lead, School of Internal Medicine Faculty of Medicine and Dentistry, University of Alberta
2004/10 - 2005/6	Visiting Scientist Albuquerque, New Mexico, USA, NA, Lovelace Respiratory Research Institute
1985/7 - 1992/12	Associate Professor, Full Professor Microbiology and Infectious Diseases Microbiology and Infectious Diseases, University of Calgary, The University of Calgary

1999/1 - 1992/8	Visiting Scientist Protein Chemistry, NA, Zymogenetics Inc.
1978/7 - 1985/6	Assistant-Associate Professor Department of Pathology, Health Sciences, McMaster University
1983/1 - 1983/7	Visiting Scientist The Gambia, West Africa, NA, Medical Research Council (UK) Laboratories

## Affiliations

The primary affiliation is denoted by (\*)

(\*) 2017/7                      Professor Emeritus, Faculty of Medicine and Dentistry, University of Alberta

## Leaves of Absence and Impact on Research

2012/11 - 2014/6	Medical, University of Alberta Dr. Befus was on full medical leave from November 1, 2012 until December 4, 2012. He worked 30% of the time from December 5, 2012 to September 30, 2013; then 50% from October 1, 2013 to June 30, 2014. This medical leave (Nov 2012 to July 2013) and subsequent disability leave (July 2013 - June 2014) significantly delayed his research productivity and publication of work from his laboratory. Because of his illness, he did not take on new trainees, and this further delayed his research programme. He is now fully recovered and working. He is a Professor Emeritus and continues his work devoted to research, trainees and mentorship.
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## Research Funding History

### Completed [n=2]

2018/4 - 2019/3 Co-investigator	Assessing the Effectiveness of a Stress Reduction Intervention in Ulcerative Colitis: a Prospective RCT  <b>Funding Sources:</b> 2018/4 - 2019/3      University Hospital Foundation, Edmonton Operating Competition (annual) Total Funding - 35,000 (Canadian dollar) Funding Competitive?: Yes
2016/6 - 2019/3 Principal Investigator	Studies of CABS1 as a Biomarker and Potential Agent in Stress  <b>Funding Sources:</b> 2016/7 - 2019/3      AllerGen NCE Strategic Initiative Total Funding - 150,000 (Canadian dollar) Funding Competitive?: Yes

## Student/Postdoctoral Supervision

### Bachelor's [n=1]

Principal Supervisor Chris St Laurent (Completed) , University of Alberta  
 Student Degree Start Date: 2005/7  
 Present Position: Research Technologist

### Master's Thesis [n=1]

Co-Supervisor Kurtis Ng (Completed) , University of Alberta  
 Student Degree Start Date: 2015/9  
 Student Degree Received Date: 2018/8  
 Project Description: Studying the role of human mast cells in defence against influenza A virus infection of human lung epithelial cells. A soluble anti-viral factor has been identified from mast cells and Kurtis is working to define this factor.  
 Present Position: Graduate Student

### Doctorate [n=3]

Principal Supervisor Eduardo Reyes-Serratos (In Progress) , University of Alberta  
 Student Degree Start Date: 2016/7  
 Student Degree Expected Date: 2022/12  
 Project Description: Eduardo is studying Calcium Binding Protein, Spermatid-Associated 1 as a possible biomarker of stress in humans, including molecular forms of the protein that may predict resilience to stress.  
 Present Position: PhD Student

Co-Supervisor Marcet-Palacios, Marcelo (Completed) , University of Alberta  
 Student Degree Start Date: 2003/1  
 Student Degree Received Date: 2006/12  
 Present Position: Instructor, Biological Sciences, Northern Alberta Institute of Technology

Principal Supervisor Kalyanasundaram Ramaswamy, BVSc, MVSc (Completed) , University of Calgary  
 Student Degree Start Date: 1986/1  
 Student Degree Received Date: 1990/1  
 Project Description: Characteristics and Modulation of Pulmonary Inflammation in Parasitic Infection Identification of a novel neuroendocrine pathway that modulates pulmonary inflammation.  
 Present Position: Professor and Head, Department of Biomedical Sciences College of

### Post-doctorate [n=4]

Principal Supervisor Morris St. Laurent, Katherine (Completed) , University of Alberta  
 Student Degree Start Date: 2006/1  
 Student Degree Received Date: 2009/1  
 Project Description: Control of the production of SMR1 in rat saliva. Identification of a human orthologue of SMR1, calcium binding protein, spermatid-associated 1 (CABS1)  
 Present Position: Instructor, Biol Sciences, School of Sustainable Building and Environmental Management, NAIT

- Principal Supervisor Ulanova, Marina (Completed) , University of Alberta  
 Student Degree Start Date: 2000/4  
 Student Degree Received Date: 2005/7  
 Project Description: Syk antisense and lung inflammation  
 Present Position: Professor, Immunology, Div of Med Sci, N Ontario School of Med, Lakehead Univ, Thunder Bay, ON
- Principal Supervisor Forsythe, Paul (Completed) , University of Alberta  
 Student Degree Start Date: 1999/1  
 Student Degree Received Date: 2003/6  
 Project Description: Role of nitric oxide in regulation of mast cell functions. Development of polyclonal antibodies to SMR1, a prohormone under neuroendocrine regulation and with anti-inflammatory activities  
 Present Position: Associate Professor, McMaster University, Hamilton, Ontario
- Principal Supervisor Lisa Carter (Completed) , University of Calgary  
 Student Degree Start Date: 1988/1  
 Student Degree Received Date: 1991/1  
 Project Description: Studies of mechanisms of action of the anti-inflammatory peptide derived from the prohormone, SMR1  
 Present Position: Professor and Dean, Faculty of Science & Technology Athabasca University, Alberta

**Research Associate [n=1]**

- Principal Supervisor Tae Chul Moon (Completed) , University of Alberta  
 Student Degree Start Date: 2005/9  
 Present Position: Research Associate

**Mentoring Activities**

- 2017/4 Early career mentor for junior faculty; formal departmental program, University of Alberta  
 Number of Mentorees: 1  
 Formal mentor for junior faculty with 75% research commitment. Provide advice and guidance on career development with particular emphasis on establishment of laboratory, hiring and working with staff and trainees, budgeting and financial oversight, grant and manuscript writing, etc.
- 2012/7 - 2014/6 Career Advisor, University of Alberta  
 Number of Mentorees: 1  
 The clinical fellowship award of Alberta Innovates: Health Solutions has been restructured and requires a Career Advisor to work with the candidate and the mentorship committee to foster the career development of the candidate. Mentee: Dr. Georg Schmolzer, MD (pediatric neonatal intensive care specialist)
- 2007/1 - 2014/6 Academic Mentor, formal Mentorship Program of the Institution, University of Alberta  
 Number of Mentorees: 1  
 Academic Mentor to Dr. Piush Mandhane, Assistant Professor, Department of Pediatrics, University of Alberta. Now Associate Professor
- 2006/1 - 2013/6 Academic Mentor, formal Mentorship Program of the Institution, University of Alberta  
 Number of Mentorees: 1  
 Academic Mentor to James Stafford, Assistant Professor, Department of Biological Sciences, Faculty of Science, University of Alberta. Now Associate Professor.

- 2005/1 - 2013/6 Academic Mentor, formal Mentorship Program of the Institution, University of Alberta  
Number of Mentorees: 1  
Academic Mentor to Fabrizio Giuliani, Assistant Professor, Department of Medicine, University of Alberta. Now Associate Professor
- 2001/1 - 2010/6 Academic Mentor, formal Mentorship Program of the Institution, University of Alberta  
Number of Mentorees: 1  
Academic Mentor to Darryl Adamko, Assistant Professor, Department of Pediatrics, Faculty of Medicine & Dentistry, University of Alberta. Currently, Associate Professor, Univ Saskatchewan

## Knowledge and Technology Translation

- 1996/1 Co-founder, Biotechnology Start-up, Involvement in/Creation of Start-up  
Target Stakeholder: Industry/Business-Small (<100 employees)  
Outcome / Deliverable: The startup company fostered the development of novel discoveries of a neuro-endocrine pathway that has anti-inflammatory activity in vivo. It filed patents, made novel drugs and conducted extensive pre-clinical studies in animal models, as well as Phase 1 and Phase 2a studies in human asthma.  
Evidence of Uptake/Impact: The work has helped foster extensive research in other laboratories and opened new lines of research in my lab on stress and biomarkers, as well as anti-inflammatory mechanisms. Unfortunately, the phase 2a trial in human asthma was unsuccessful, despite success in two animal models of allergic inflammation.  
Activity Description: Co-founder of Salpep Biotechnologies Inc in partnership with University Technologies Inc, University of Calgary. Based on scientific discoveries of neuro-endocrine regulation of inflammatory responses that began while I was a faculty member at the University of Calgary, with colleagues Drs Joe Davison and Ron Mathison, Salpep was founded. It merged in 2007 with another company and became AIM Therapeutics. AIM has conducted both Phase 1 and Phase 2a clinical trials (in atopic asthma) with its lead anti-inflammatory compound AIM 102. We have now filled a patent on CABS1, a biomarker of stress with anti-inflammatory activity, and have established a partnership and licensing agreement with GB Diagnostics to develop this molecule and associated technology for clinical testing in stress and chronic inflammatory conditions.
- 1993/1 Director, Alberta Asthma Centre, Research Uptake Strategies  
Target Stakeholder: Healthcare Personnel  
Activity Description: Development and implementation of a needs assessment for asthma education in the health system and subsequent development, testing (randomized clinical trial), refinement and implementation of a pediatric asthma education program (Roaring Adventures of Puff, the Asthmasaurus, "RAP"). The results of the clinical trial have been published and others have also conducted clinical trials in Ontario and Manitoba (confirming the effectiveness and impact of RAP on health care utilization). RAP has been highlighted on the CDC (USA) website as an evidence-based children's education program for asthma. Components of RAP have been modified for cultural appropriateness for first nations communities in Canada and for use in asthma management in El Salvador. As of December 2016 renamed the Alberta Respiratory Centre with a broader mandate in respiratory diseases.

- 1976/1 - 2020/6  
Principal Investigator, plenary speaker, symposium chair, Research Uptake Strategies  
Target Stakeholder: Academic Personnel  
Outcome / Deliverable: We disseminated to the scientific community and in part to the public the results of our research on mast cell biology, as well as on a novel neuroendocrine pathway that has identified a new biomarker of stress that has anti-inflammatory activity.  
Activity Description: A major focus of my research has been on mast cell biology and on neuroimmunology. I have published extensively on this research, have been invited to speak in numerous scientific settings and to organize major symposia and plenary sessions. I have consulted with various pharmaceutical and biotechnical companies on mast cells, their roles in pathophysiology and as potential targets for therapeutic inventions. More recently, our discovery of a novel neuroendocrine pathway with a biomarker of stress and with anti-inflammatory activity has stimulated considerable interest in the pharmaceutical/diagnostic communities.
- 2006/11 - 2020/3  
Committee Member, Business Innovation  
Group/Organization/Business Serviced: Allergan NCE Inc  
Target Stakeholder: Academic Personnel  
Outcome / Deliverable: This national committee of experts in research and development works to evaluate scientific discoveries of the Allergan NCE program and to focus the protection of intellectual property, to advise on patenting, market assessments, development planning and licensing or other agreements with the business and other organizations working towards economic and social benefit for Canada.  
Evidence of Uptake/Impact: The committee has helped make important decisions on funding, on strategies for advances in commercialization and has also made recommendations to make major changes in research and development approaches.  
References / Citations / Web Sites: Allergan NCE Annual Reports  
Activity Description: Network Support Intellectual Property Committee (NSIP), Allergan Network of Centres of Excellence. This is the intellectual property (IP) committee of Allergan NCE Inc. The committee oversees all the potential patent, copyright and licensing activities of the investigators within the network. I have been a committee member since its founding and represent the Network investigators on the Committee.
- 2014/1 - 2018/12  
Co-chair Asthma Working Group, Respiratory Health Strategic Clinical Network, Alberta Health Service, Technology, Product, Process, Service Improvement/Development  
Group/Organization/Business Serviced: Alberta Health Services  
Target Stakeholder: Government Personnel  
Outcome / Deliverable: To improve asthma care in Alberta  
Activity Description: Member of the Respiratory Health Strategic Clinical Network, Alberta Health Services and Co-chair of the Asthma Working Group. Initially involved in the development and implementation of evidence-based pediatric asthma clinical pathways (emergency department, inpatients and primary care) and subsequently in the development of new approaches to improve asthma diagnosis and asthma self-management education in Alberta.

## Presentations

1. (2019). CABS1: A novel biomarker of stress with anti-inflammatory activity. National Scientific Conference, Allergan NCE Inc, January 2019, Edmonton, Canada  
Main Audience: Researcher  
Invited?: Yes

2. (2018). Supervision of Graduate Students and Postdoctoral Fellows. Faculty and Career Development Workshop, Edmonton, Canada  
Main Audience: Researcher  
Invited?: Yes
3. (2017). Supervision of Trainees and Staff. Faculty and Career Development Workshop, Edmonton, Canada  
Main Audience: Researcher  
Invited?: Yes
4. (2016). A long journey from discovery to translation: an anti-inflammatory and biomarker of stress. Case Western Reserve University, Department of Pharmacology, Cleveland, United States  
Main Audience: Researcher  
Invited?: Yes

## Publications

### Journal Articles

1. Liu C, Ademola A, Zhang M, Garven A, Kopka M, Salo PT, Hart DA, Befus AD, Hildebrand K. (2020). Human mast cell tryptase levels in elbow fractures or dislocations and its association with injury severity. *J Orthop Res.* 29: 1-5.  
Co-Author  
Published  
Refereed?: Yes
2. Bosonea AM, Sharpe H, Wang T, Bakal JA, Befus AD, Svenson LW, Vliagoftis H. (2020). Developments in asthma incidence and prevalence in Alberta between 1995 and 2015. *Allergy Asthma & Clin Immunol.* 16;87: 1-11.  
Published  
Refereed?: Yes
3. Reyes-Serratos E, Marcet-Palacios M, Rosenfield D, Ritz T, Befus AD. (2020). A method to study protein biomarkers in saliva using an automated capillary nano-immunoassay platform (Wes TM). *J Immunol Methods.* 479: 1-6.  
Last Author  
Published  
Refereed?: Yes
4. Marcet-Palacios M, Reyes-Serratos RA, Gonshor A, Buck R, Lacy P, Befus AD. (2020). Structural and post-translational analysis of human Calcium Binding Protein, Spermatid-associated 1. *J Cell Biochem.* 121: 0-00.  
Last Author  
In Press  
Refereed?: Yes  
Number of Contributors: 6
5. Sharpe H, Claveria F, Davidson WJ, Kemp K, Young E, Befus AD, the Asthma Working Group of the Respiratory Health Strategic Clinical Network, Alberta Health Services, Walker BL. (2020). Adult asthma diagnosis: physician reported challenges in Alberta-based primary health care practices. *SAGE Open Nursing (SON).* 6: 1-9.  
Co-Author  
Published  
Refereed?: Yes

6. Ng K, Raheem J, St Laurent CD, Marcet CT, Vliagoftis H, Befus AD, Moon TC. (2019). Responses of human mast cells and epithelial cells following exposure to influenza A virus. *Anti-viral Res.* 171: 1-8.  
Co-Author  
Published  
Refereed?: Yes
7. Matenchuk BA, Tamana SK, Lou WYW, Lefebvre DL, Sears MR, Becker AB, Azad MB, Moraes TJ, Turvey SE, Subbarao P, Kozyrskyj AL, Mandhane PJ; CHILD Study Investigators (AD Befus CHILD Study investigator). (2019). Prenatal depression and birth mode sequentially mediate maternal education's influence on infant sleep duration. *Sleep Med.* 59: 24-32.  
Published  
Refereed?: Yes
8. Krzeczkowski JE, Lau A, Fitzpatrick J, Tamana S, Smithson L, de Souza R, Kozyrskyj AL, Lefebvre D, Becker AB, Subbarao P, Turvey SE, Pei J, Schmidt LA, Sears MR, Van Lieshout RJ, Mandhane PJ; CHILD Study Investigators (AD Befus, CHILD Study Investigator). (2019). Maternal metabolic complications in pregnancy and offspring behavior problems at 2 years of age. *Matern Child Health J.* 23: 43.  
Published  
Refereed?: Yes
9. Tun HM, Bridgman SL, Chari R, Field CJ, Guttman DS, Becker AB, Mandhane PJ, Turvey SE, Subbarao P, Sears MR, Scott JA, Kozyrskyj AL; Canadian Healthy Infant Longitudinal Development (CHILD) Study Investigators (AD Befus CHILD study investigator). (2018). Roles of birth mode and infant microbiota in intergenerational transmission of overweight and obesity from mother to offspring. *JAMA Pediatr.* 172(4): 368-377.  
Published  
Refereed?: Yes
10. Tun MH, Tun HM, Mahoney JJ, Konya TB, Guttman DS, Becker AB, Mandhane PJ, Turvey SE, Subbarao P, Sears MR, Brook JR, Lou W, Takarao TK, Scott JA, Kozyrskyj AL; CHILD Study Investigators (AD Befus CHILD Study Investigator). (2018). Postnatal exposure to household disinfectants, infant gut microbiota and subsequent risk of overweight in children. *Canadian Medical Association Journal* doi:10.1503/cmaj.170809. 190(37): E1097-1107.  
Published  
Refereed?: Yes
11. Kamal M, Tamana SK, Smithson L, Ding L, Lau A, Chikuma J, Mariasine J, Lefebvre DL, Subbarao P, Becker AB, Turvey SE, Sears MR; Canadian Healthy Infant Longitudinal Development (CHILD) Study Investigators (AD Befus, CHILD Investigator), Pei J, Mandhane PJ. (2018). Phenotypes of sleep-disordered breathing symptoms to two years of age based on age of onset and duration of symptoms. *Sleep Medicine.* 48: 93-100.  
Published  
Refereed?: Yes
12. Dharma C, Lefebvre DL, Tran MM, Lu Z, Lou WYW, Subbarao P, Becker AB, Mandhane PJ, Turvey SE, Moraes TJ, Azad MB, Sears MR; CHILD Study Investigators (AD Befus, CHILD Study Investigator). (2018). Diagnosing atopic dermatitis in infancy: Questionnaire reports vs criteria-based assessment. *Paediatr Perinat Epidemiology.* 32(6): 556-567.  
Published  
Refereed?: Yes
13. Kang LJ, Koleva PT, Field CJ, Giesbrecht GF, Wine E, Becker AB, Mandhane PJ, Turvey SE, Subbarao P, Sears MR, Scott JA, Kozyrskyj AL; CHILD Study Investigators (AD Befus CHILD Study Investigator). (2018). Maternal depressive symptoms linked to reduced fecal Immunoglobulin A concentrations in infants. *Brain Behav Immun.* 68: 123-131.  
Published  
Refereed?: Yes

14. Smithson L, Baird T, Tamana SK, Lau A, Mariasine J, Chikuma J, Lefebvre DL, Subbarao P, Becker AB, Turvey SE, Sears MR; CHILD Study Investigators (AD Befus, CHILD Investigator), Beal DS, Pei J, Mandhane PJ. (2018). Shorter sleep duration is associated with reduced cognitive development at two years of age. *Sleep Medicine*. 48: 131-139.  
Published  
Refereed?: Yes
15. Miliku K, Robertson B, Sharma AK, Subbarao P, Becker AB, Mandhane PJ, Turvey SE, Lefebvre DL, Sears MR; CHILD Study Investigators (AD Befus, CHILD Investigator), Bode L, Azad MB. (2018). Human milk oligosaccharide profiles and food sensitization among infants in the CHILD Study. *Allergy*. 73(10): 10.1111/all.13476.  
Published  
Refereed?: Yes
16. Tamana SK, Smithson L, Lau A, Mariasine J, Young R, Chikuma J, Lefebvre DL, Subbarao P, Becker AB, Turvey SE, Sears MR; CHILD Study Investigators (AD Befus CHILD Study investigator), Pei J, Mandhane PJ. (2018). Parent-reported symptoms of sleep-disordered breathing are associated with increased behavioral problems at 2 years of age: The Canadian Healthy Infant Longitudinal Development Birth Cohort Study. *Sleep*. 41(1): 10.1093/sleep/zsx177.  
Published  
Refereed?: Yes
17. Dharma C, Lefebvre DL, Tran MM, Lou WYW, Subbarao P, Becker AB, Mandhane PJ, Turvey SE, Sears MR and the CHILD Study investigators (AD Befus a CHILD Study investigator). (2018). Patterns of allergic sensitization and atopic dermatitis from 1 to 3 years: effects on allergic diseases. *Clin Exp Allergy*. 48(1): 48-59.  
Published  
Refereed?: Yes
18. Tran MM, Lefebvre DL, Dharma C, Dai D, Lou WYW, Subbarao P, Becker AB, Mandhane PJ, Turvey SE, Sears MR; Canadian Healthy Infant Longitudinal Development Study investigators (AD Befus CHILD Study investigator). (2018). Predicting the atopic march: results from the Canadian Healthy Infant Longitudinal Development Study. *J Allergy Clin Immunol*. 141(2): 601-607.  
Published  
Refereed?: Yes
19. Forbes JD, Azad MB, Vehling L, Tun HM, Konya TB, Guttman DS, Field CJ, Lefebvre D, Sears MR, Becker AB, Mandhane PJ, Turvey SE, Moraes TJ, Subbarao P, Scott JA, Kozyrskyj AL; Canadian Healthy Infant Longitudinal Development (CHILD) Study Investigators (AD Befus CHILD Investigator). (2018). Association of Exposure to Formula in the Hospital and Subsequent Infant Feeding Practices With Gut Microbiota and Risk of Overweight in the First Year of Life. *Jama Pediatr*. 172(7): e181161.  
Published  
Refereed?: Yes
20. Cusack L, Sbihi H, Larkin A, Chow A, Brook JR, Moraes T, Mandhane PJ, Becker AB, Azad MB, Subbarao P, Kozyrskyj A, Takaro TK, Sears MR, Turvey SE, Hystad P; CHILD Study Investigators (AD Befus, CHILD Study Investigator). (2018). Residential green space and pathways to term birth weight in the Canadian Healthy Infant Longitudinal Development (CHILD) Study. *Int J Health Geogr*. 17(1): 43.  
Co-Author  
Published  
Refereed?: Yes

21. Azad MB, Vehling L, Chan D, Klopp A, Nickel NC, McGavock JM, Becker AB, Mandhane PJ, Turvey SE, Moraes TJ, Taylor MS, Lefebvre DL, Sears MR, Subbarao P and CHILD Study Investigators (AD Befus CHILD Study Investigator). (2018). Infant feeding and weight gain: separating breast milk from breastfeeding and formula from food. *Pediatrics* doi:10.1542/peds.2018-1092. 142(4): pii: e20181092. Published  
Refereed?: Yes
22. Klopp A, Vehling L, Becker AB, Subbarao P, Mandhane PJ, Turvey SE, Lefebvre DL, Sears MR; CHILD Study Investigators (AD Befus CHILD Study Investigator), Azad MB. (2017). Modes of infant feeding and the risk of childhood asthma: a prospective birth cohort study. *J Pediatr*. 190: 192-199. Published  
Refereed?: Yes
23. Koleva PT, Tun HM, Konya T, Guttman DS, Becker AB, Mandhane PJ, Turvey SE, Subbarao P, Sears MR, Scott JA, Kozyrskyj AL; CHILD Study Investigators (AD Befus CHILD Study investigator). (2017). Sex-specific impact of asthma during pregnancy on infant gut microbiota. *Eur Respir Journal*. 50(5): 10.1183/13993003. Published  
Refereed?: Yes
24. Kopka M, Monument MJ, Befus AD, Zhang M, Hart DA, Salo PT, Schneider PS, Cun-Yi F, Liang X, Garven A and KA Hildebrand. (2017). Serum mast cell tryptase as a marker of post traumatic joint contracture in a rabbit model. *J Orthop Trauma*. 31: e86-e89. Co-Author  
Published  
Refereed?: Yes  
Number of Contributors: 11
25. Bridgman SL, Azad MB, Field CJ, Haqq AM, Becker AB, Mandhane PJ, Subbarao P, Turvey SE, Sears MR, Scott JA, Wishart DS, Kozyrskyj AL, and the CHILD Study Investigators (AD Befus CHILD study investigator). (2017). Fecal short-chain fatty acid variations by breastfeeding status in infants at 4 months: differences in relative versus absolute concentrations. *Front Nutr*:. 4(11): 10.3389/fnut.2017.00. Published  
Refereed?: Yes
26. Graham C, Chooniedass R, Stefura WP, Lotoski L, Lopez P, Befus AD, Becker AB, and HayGlass KT. (2017). Stability of pro-and anti-inflammatory immune biomarkers for human cohort studies. *J Transl Med*: 15:53. Doi 10.1186/s12967-017-1154-3. 15(53) Co-Author  
Published  
Refereed?: Yes  
Number of Contributors: 8
27. Azad MB, Vehling L, Lu Z, Dai D, Subbarao P, Becker AB, Mandhane PJ, Turvey SE, Lefebvre DL, Sears MR and the CHILD Study investigators (AD Befus CHILD study investigator). (2017). Breastfeeding, maternal asthma and wheezing in the first year of life: a longitudinal birth cohort study. *Eur Respir J* 49: 1602019. doi.org/10.1183/13993003.02019-2016.49  
Published  
Refereed?: Yes
28. Graham C, Chooniedass R, Stefura WP, Becker AB, Sears MR, Turvey SE, Mandhane PJ, Subbarao P, CHILD Study Investigators (AD Befus CHILD Study investigator) and HayGlass KT. (2017). *In vivo* immune signatures of healthy human pregnancy: inherently or anti-inflammatory?. *PLOS ONE*. 12(6): e0177813. Published  
Refereed?: Yes

29. Tun HM, Konya T, Takaro TK, Brook JR, Chari R, Field CJ, Guttman DS, Becker AB, Mandhane PJ, Turvey SE, Subbarao P, Sears MR, Scott JA, Kozyrskyj AL; CHILD Study Investigators (AD Befus CHILD study investigator). (2017). Exposure to household furry pets influences the gut microbiota of infants at 3-4 months following various birth scenarios. *Microbiome* Apr6;5(1):40. doi: 10.1186/s40168-017-0254-x. 5(1)  
Published  
Refereed?: Yes
30. Ritz T, Rosenfield D, St. Laurent\* CD, Trueba AF, Werchan CA, Vogel PD, Auchus RJ, Reyes-Serratos\* E and AD Befus. (2017). A novel biomarker associated with distress in humans - Calcium Binding Protein, Spermatid Specific 1 (CABS1). *Am J Physiol – Regul Integr Comp Physiol*: Apr 5: 312: R1004-R1016.  
Last Author  
Published  
Refereed?: Yes  
Number of Contributors: 9
31. Yasmin F, Tun HM, Konya TB, Guttman DS, Chari RS, Field CJ, Becker AB, Mandhane PJ2, Turvey SE, Subbarao P, Sears MR; CHILD Study Investigators, (AD Befus CHILD Study investigator), Scott JA, Dinu I, Kozyrskyj AL. (2017). Cesarean section, formula feeding, and infant antibiotic exposure: separate and combined impacts on gut microbial changes in later infancy. *Front Pediatr*. 5(200): 10.1038/ijo.2017.189.  
Published  
Refereed?: Yes
32. Tran MM, Lefebvre DL, Dai D, Dharma C, Subbarao P, Lou W, Azad MB, Becker AB, Mandhane PJ, Turvey SE, Sears MR and CHILD Study investigators (AD Befus CHILD study investigator). (2017). Timing of food introduction and development of food sensitization in a prospective birth cohort. *Pediatr Allergy Immunol*. May 29. doi: 10.1111/pai.12739.  
Published  
Refereed?: Yes
33. Azad MB, Sharma AK, de Souza RJ, Dolinsky VW, Becker AB, Mandhane PJ, Turvey SE, Subbarao P, Lefebvre DL, Sears MR, and the Canadian Healthy Infant Longitudinal Development Study Investigators (Befus AD an investigator). (2016). Association between artificially sweetened beverage consumption during pregnancy and infant body mass index. *JAMA Pediatr*: doi:10.1001/jamapediatrics.2016.0301.  
Co-Author  
Published  
Refereed?: Yes
34. Stiemsma LT, Arrieta MC, Dimitriu PA, Cheng J, Thorson L, Lefebvre DL, Azad MB, Subbarao P, Mandhane P, Becker A, Sears MR, Kollmann TR, the CHILD investigators (AD Befus CHILD study investigator), Mohn WW, Finlay BB, Turvey SE. (2016). Shifts in *Lachnospira* and *Clostridium* sp. in the 3-month stool microbiome are associated with preschool age asthma. *Clin Sci*. 1;130(23): 2199-2207. doi: 10.1042/CS20160349. 130(23)  
Co-Author  
Published  
Refereed?: Yes
35. Cave AL, Sharpe H, Anselmo M, Befus, AD, Currie G, Davey C, Drummond N, Graham J, Green L, Grimshaw J, Kam K, Manca D, Nettel-Aguirre A, Potestio M, Rowe B, Scott S, Williamson T, and DW Johnson. (2016). Primary care pathway for childhood asthma: Protocol for a randomized cluster-controlled trial. *J Med Intern Res: Res Protocols*. 5(1): 10.2196/resprot.5261.  
Published  
Refereed?: Yes

36. Bolduc FV, Lau A, Rosenfelt CS, Langer S, Wang N, Smithson L, Lefebvre D, Alexander RT, Dickson CT, Li L, Becker AB, Subbarao P, Turvey SE, Pei J, Sears MR, Mandhane PJ and The CHILD Study Investigators (Befus AD an investigator). (2016). Cognitive enhancement in infants associated with increased maternal fruit intake during pregnancy: results from a birth cohort study with validation in an animal model. *EBioMedicine*: doi.org/10.1016/j.ebiom.2016.04.025.  
Published  
Refereed?: Yes
37. Bridgman SL, Konya T, Azad MB, Sears MR, Becker AB, Turvey SE, Mandhane PJ, Subbarao P, CHILD Study Investigators (Befus AD), Scott JA, Field CJ, and AL Kozyrskyj. (2016). Infant gut immunity: a preliminary study of IgA associations with breastfeeding. *J Dev Orig Health Dis*. 7: 68-72.  
Co-Author  
Published  
Refereed?: Yes

### Book Chapters

1. Befus AD, McNagny K and Denburg JA. (2019). Mast cells and basophils: ontogeny, characteristics and functional diversity. In: *Wintrobe's Clinical Hematology, 14th Edition*,. (1)  
First Listed Author  
Published, Lippincott Williams & Wilkins, a Wolters Kluwer business, Philadelphia.  
Refereed?: No

### Conference Publications

1. A-M Bosonea, AD Befus, H Vliagoftis, L. Svenson, H Sharpe. (2018). Trends in asthma epidemiology in Alberta 1995-2015. Annual Scientific Meeting of the Canadian Society for Allergy and Clinical Immunology  
Poster  
Co-Author  
Accepted, Invited?: No
2. Reyes-Serratos E, St. Laurent C, Marcet-Palacios M, Ritz T, Watanabe M, Befus AD. (2018). Calcium binding protein, spermatid-associated 1: a biomarker of stress with an anti-inflammatory motif. Symposium of the Collegium Internationale Allergologicum  
Poster  
Last Author  
Accepted, Invited?: Yes
3. Reyes-Serratos EA, Marcet-Palacios M, Ritz T, Befus AD. (2018). Validation of analytical platforms to study calcium binding protein, spermatid-associated 1 (CABS1) as a biomarker of psychological stress in human saliva. International Stress and Behavioral Society Conference  
Paper  
Last Author  
Accepted, Invited?: No
4. Hildebrand K, Schneider P, Zhang M, Salo P, Hollenberg M, Befus AD, Hart D. (2018). Aprepitant inhibits joint capsul cell-mediated collagen gel contraction. Orthopedic Research Society  
Poster  
Co-Author  
Accepted, Invited?: No

5. Reyes-Serratos E, Befus AD. (2017). Characterization and comparison of antibodies to calcium binding protein- spermatid specific 1 (CABS1) in studies of human submandibular gland (hSMG)extracts. Annual Research Day, May 2017, Department of Medicine, University of Alberta  
Poster  
Last Author  
Accepted, Invited?: No

## Intellectual Property

### Patents

1. Calcium Binding Protein, Spermatid Specific 1, as a Biomarker for Diagnosis or Treatment of Stress. United States. International Patent Application Serial No. PCT/CA2017/050331. 2017/03/14.  
Patent Status: Allowed  
Year Issued: 2020
2. Peptides for treatment of inflammation and shock. United States. 7,094,760. 2006/08/22.  
Patent Status: Granted/Issued  
Year Issued: 2006
3. Peptides for treatment of inflammation and shock. United States. 6,852,697. 2005/02/08.  
Patent Status: Granted/Issued  
Year Issued: 2005

### Licenses

1. Studies on a biomarker of stress with and anti-inflammatory sequence.  
Granted  
Date Issued: 2019/12  
Filing Date: 2019/12/06

### Registered Copyrights

1. Roaring Adventures of Puff, Childhood Asthma Education Program  
Registered  
Year Issued: 2019  
Filing Date: 2018/12/19
2. The Legend of Tahnee, the Wolf: My Asthma Journey  
Registered  
Year Issued: 2018  
Filing Date: 2017/01/17