

CURRICULUM VITAE

Dr. Dawn M. E. Bowdish

h-index = 24 (Google Scholar)

Business Address:

Department of Pathology & Molecular Medicine
Associate Member of Chemistry & Chemical Biology
McMaster Immunology Research Centre
MG DeGrootte Institute for Infectious Disease Research
McMaster University, MDCL 4020
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Educational Background:

2005 – 2008



Canadian Institute of Health Research Post-doctoral Fellow

University of Oxford, Department of Pathology, Oxford U.K
Laboratory of Prof. Siamon Gordon
“Genetic and Functional Analysis of the scavenger receptor, MARCO”

2000 – 2005



PhD. (Microbiology & Immunology)

University of British Columbia, Dept. of Microbiology & Immunology
Vancouver, Canada
Laboratory of Prof. R.E.W. Hancock
“Interactions of the human host defence peptide, LL-37 and the innate immune response”

1995 – 1999



BSc. Honours (Microbiology)

University of Guelph, Dept. of Microbiology, Guelph, Canada
Undergraduate project and summer studentship in the lab of Prof. J.S. Lam and supervised by Dr. Lori Burrows
“Genetics of the O-antigen of the O5 serogroup of *Pseudomonas aeruginosa*”

Honours:

2014-2019	Canada Research Chair in Aging & Immunity, Tier 2
2014	Best Teacher Award from the Department of Pathology & Molecular Medicine
2013	Nomination for the President's Award for Excellence in Graduate Student Supervision
2012	Ontario Lung Association-Pfizer Canada Research Award
2011	G. Jeanette Thorbecke New Investigator Award, Society of Leukocyte Biology
2010	ASPIRE, Pfizer Young Investigator Award for study of post-influenza pneumonia in the elderly
2006 – 2008	JMH Junior Research Fellowship awarded by Linacre College at the University of Oxford
2006	Cangene Gold Award, Awarded by the Canadian Society of Microbiology for the highest ranked PhD thesis in Microbiology
2005 – 2008	Post-doctoral Fellowship awarded by the Canadian Institutes of Health Research
2003 – 2005	Canada Graduate Scholarship awarded by the Canadian Institute of Health Research
February, 2005	Honorarium for having abstract chosen to present at the Innate Immunity in Human Disease Research Day: BC Research Institute for Children's & Women's Health
November, 2004	Travel Allowance awarded by the International Endotoxin Society 8th Biennial Conference of the International Endotoxin Society, Kyoto, Japan

Current Status at McMaster University:

July 1, 2014 – present	Associate Professor, Tenure-Track Department of Pathology & Molecular Medicine MG DeGroot Institute for Infectious Disease Research McMaster Research Immunology Centre “The role of macrophage receptors in innate immunity and host defence”
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February 1, 2009 – Assistant Professor, Tenure-Track

June 30, 2014

Department of Pathology & Molecular Medicine
MG DeGroot Institute for Infectious Disease Research
McMaster Research Immunology Centre

“The role of macrophage receptors in innate immunity and host defence”

Professional Organizations:

Canadian Society of Microbiology
Canadian Thoracic Society
Society for Leukocyte Biology
Canadian Society for Immunology
American Society for Immunology

Employment History:

Academic

July 2014- present: Associate Professor, Department of Pathology & Molecular Medicine, McMaster Immunology Research Centre, McMaster University, Hamilton, ON.

February 1, 2009- June 30, 2014: Assistant Professor, Department of Pathology & Molecular Medicine, McMaster Immunology Research Centre, McMaster University, Hamilton, ON.

Scholarly & Professional Activities:

Journal Referee (ad hoc)

- Journal of Developmental Origins of Health & Disease
- Journal of Leukocyte Biology
- Molecular Therapeutics
- Mucosal Immunology
- Frontiers in Immunology
- American Journal of Respiratory Cell and Molecular Biology
- Journal of Immunology
- FASEB
- European Journal of Immunology
- EMBO Journal
- Futures Microbiology
- Anti-Infective Agents in Medicinal Chemistry
- PLoS ONE
- Journal of Innate Immunity
- Journal of Royal Society Interface
- Journal of Inflammation
- Infection & Immunity

External Grant Reviews

- Biotechnology & Biological Sciences Research Council (UK) (2014, 2015)
- The Lung Association (Basic Science panel, March 2014)

- Israeli Science Foundation (2014)
- CIHR Microbiology & Infectious Disease Panel (Operating Grant, May 2013)
- NSERC (Discovery Grant Competition, Jan 2011 & 2013)
- Multiple Sclerosis Society of Canada (Operating Grant competition, Jan 2011 & 2013)
- ANR (Agence Nationale du Recherche), France (2012)
- Asthma UK (2012)

Contributions to Scientific Societies

- Board of Directors, Ontario Lung Association (2014-2019)
- co-Chair of the 15th Annual Buffalo Immunology Conference
- Vice-chair of the 2016 Gordon conference on Acute Respiratory Infections (Galveston, Texas)
- co-Chair of the 2018 Gordon conference on Acute Respiratory Infections

Administrative Responsibilities:

Committee Membership

University Focus Group on Identification and Support of Emerging Leaders at the Assistant and Associate Professor Levels (October 2014-ongoing)

Animal Research Ethics Board member (2014-ongoing)

Graduate Council Scholarships Member: Rank scholarships for OGS, NSERC, CIHR (Oct 2010 – Aug 2013)

Department Institute for Infectious Disease Research Communications Committee Aug 2013-Aug 2014

Institute for Infectious Disease Research Opening Symposium Organizing Committee – Aug-Oct 2010

Organizer of Trainee Poster Presentations and Awards: Michael G. DeGroot Institute for Infectious Disease Research Opening Symposium (October 24th, 2009)

Faculty Executive Committee of the M. G. DeGroot Institute for Infectious Disease Research (July 2013-ongoing)

Infection & Immunity Area Co-ordinator for the Medical Sciences Graduate Program (2012-2013).

FHS Research Plenary Award Selection Committee: Selected graduate winners of awards presented at the Inaugural Faculty of Health Sciences Research Plenary (May 14th, 2010)

Judge – Poster session: 1st Annual FHS Postdoctoral Research Day (June, 3rd, 2010)

Judge – Student Award Symposium: Canadian Society of Microbiology 2010 Annual Conference (June 2010)

Areas of Interest:

Research: immunosenescence, macrophage biology, macrophage receptor expression, scavenger receptor and phagocytic receptor function and signalling, aging and immunity, innate immunity & host defence, bacterial colonization and infections (e.g. *Streptococcus pneumoniae*), animal models of pneumonia and post-influenza pneumonia, microbiome of the upper respiratory tract, pathogens & commensals of the upper respiratory tract

Teaching: immunology, innate immunity, host defence, immunosenescence, host-pathogen interactions

Courses Taught:

Course Title

Undergraduate

HTH SCI 4I13	Advanced Immunology (Jan 2011-ongoing)
HTH SCI 1DT3	Introduction to Immunology (Jan 2014-ongoing, 2 lectures/term)
Biol4C09	Biology Senior Thesis (Sept 2015-Apr 2016)
SCIENCE 3EX6	Applied Placement Course (Sept 2014-Apr 2015)
HTH SCI 4DM3	Demystifying Medicine (Sept 2013-Dec 2013)
ISCI 4A12	Independent Study (Sept 2013-Apr 2014, 2 students)
Life Sci 3C09	Independent Study (Sept 2013-Apr 2014)
SCIENCE 3RP3	Research Practicum (Jan 2012-Apr 2012)
HTH SCI 4A09	Independent Study (Sept 2012-Apr 2013)
Biochem 3A03	Independent Study, (Sept- Dec 2012)
HTH SCI 4A09	Independent Study, (Sept 2010-Apr 2011)
Biochem 4B03	Independent Study, (Sept 2010-Apr 2011)
Biochem 3A03	Independent Study, (May- Jun 2010)
Biochem 4B06	Independent Study, (Sept 2009-Apr 2010)
HTH SCI 3H03	Independent Study, (Sept 2009-Apr 2010)
SCIENCE 4C09	Independent Study, (Sept 2009-Apr 2010)

Graduate Courses: MS 799 Independent Study in Medical Sciences (2010 & 2012)

Graduate Lectures: MS715 Advanced Immunobiology (1 lecture per term 2010-ongoing)

Supervisorships:

(For a complete list of awards and distinctions received by trainees see www.bowdish.ca/people)

MSc (in progress)

Nick Yap	2014-ongoing	“Phylogenetic approaches to characterize the evolution of pattern recognition receptors”
(co-supervised with Brian Golding)		
Netusha	2013-ongoing	“Age related changes in the microbiome of the URT predispose the elderly to <i>S. pneumoniae</i> infection”
Thevaranjan		
Aveshni Naidoo	2013-ongoing	“Age-associated inflammation impairs the anti-bacterial activity of macrophages.”

MSc (completed)

Fiona Whelan	2010 - 2012	“Evolution of the class A scavenger receptors”.
Zhongyuan Tu	2010 - 2012	“Discovery of novel signalling motifs in the cytoplasmic domain of MARCO”.
Mariliis Kroos	07/2007- 09/2008	Co-supervised with Prof. Siamon Gordon, University of Oxford “The role of the cytoplasmic domain of MARCO in adhesion and motility”.

PhD (in progress)

Pat Schenck	2014-ongoing	“The composition of the airway microbiota influences infection risk”
(co-supervised with Mike Surette)		
Sara Makaremi	2014-ongoing	“Structural requirements for macrophage adhesion”
(co-supervised with Jose Miran-Mirabel)		
Kyle Novakowski	2012- ongoing	“The importance of the scavenger receptor cysteine rich domain of MARCO in bacterial recognition & signalling”.
Dessi Loukov	2013-ongoing	“Age-associated inflammation drives macrophage dysfunction and susceptibility to pneumococcal infection.”
Mike Dorrington	2010 – ongoing	“The role of MARCO in control of pneumococcal colonization of the nasopharynx”.
Fan Fei	2013-ongoing	“Metabolomic analysis of the inflammatory response of macrophages from young and old mice.”

PhD (completed)

Alicja Puchta	2010- 2014	“Age associated macrophage dysfunction
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contributes to susceptibility to pneumonia”.

Post-doctoral (in progress)

Dr. Chris Verschoor 2010- ongoing

“Age-associated myeloid cell immunosenescence contributes to susceptibility of the elderly to *Streptococcus pneumoniae*”.

Post-doctoral (completed)

Dr. Peter Pelka 2011 – 2012

“Host immune responses to the microbiota of the upper respiratory tract”.

Dr. Preethi Jayanth 2011 – 2013

Co-supervised with Dr. Mike Surette
“Mechanisms of host immune evasion by the *Streptococcus milleri* group”

Undergraduate students

Zhongyuan Tu	05/2009-08/2010	Biochemistry -4 th year thesis
Alex Jiang	06/2009-04/2012	BHSc- 3 rd & 4 th year thesis
Harikesh Wong	07/2009-04/2010	Biochemistry- 4 th year thesis
Sarah Chauvin	06/2010-04/2011	Biochemistry- 3 rd year project & 4 th year thesis
Jaskiran Nanda	05/2011-08/2011	Biology -Summer research student
Michael Danesi	05/2011-08/2011	Biology & Psychology –Summer Research
Charles Yin	05/2012-08/2012	iSci- 3 rd year thesis student
	09/2013-04/2013	4 th year thesis student (ISCI 4A12)
Keith Lee	05/2012-04/2013	BHSc- 4 th year thesis student
Peter Mu	08/2011-04/2013	Undergraduate Lab Manager
Samathy Balachandran	01/2013-04/2013	Pharmacology – 4 th year thesis student
Netusha Thevaranjan	05/2013-04/2014	Undergraduate Technician, Summer student, Biology- 4 th year thesis student (Life Sci 4C09)
James Han	05/2013-04/2014	iSci- 4 th year thesis student (ISCI 4A12)
Prashant Kalvapalle	05/2013-08/2013	MITACS summer studentship recipient
Jessica Wallace	09/2013-04/2014	Biology 4 th year thesis student
Robert Valencia	09/2013-04/2014	Lab Co-ordinator
Dessi Loukov	01/2014-04/2014	4 th year thesis student
Philip Lauman	01/2014-04/2014	iSci-3 rd year thesis student
Melissa Ling	01/2014-04/2014	iSci-3 rd year thesis student
	09/2014-04/2015	iSci- 4 th year thesis student
Ben Su	09/2014-04/2015	Academic advisor for SCIENCE 3EX6 Applied Placement
Alan Zhou	01/2015-04/2015	iSci-3 rd year thesis student
	09/2015-04/2016	iSci -4 th year thesis student
Mohamad Malik	01/2015-08/2015	Biotechnology co-op student
Vikash Chawla	09/2015-04/2016	Biology Senior Thesis student (Biol 4C09)
Thilini Delungahawatta	09/2015-04/2016	Biology Senior Thesis student (Biol 4C09, co-supervised with David Rollo)

Supervisory Committees (in progress)

Phil Staibano (Nazi, Medicine)

2015-ongoing

Ashley Beaulieu (Stampfli, Pathology)	2015-ongoing
Trevor Lau, MSc (Schertzer, Biochemistry)	2015-ongoing
Ken Mwasi, PhD (Bramson, Pathology)	2015-ongoing
Sarah Karampatos, MSc (Maly, Rehabilitation Science)	2015-ongoing
Vi Dang, PhD (Werstuck, Biochemistry)	2014-ongoing
Sohail Mahmood, MSc (Ask, Pathology)	2014-ongoing
Brian Tuinema, PhD (Coombes, Biochemistry)	2014-ongoing
Bushra Ilyas, MSc (Coombes, Biochemistry)	2014-ongoing
David Hare, PhD (Mossman, Pathology)	2013-ongoing
Pamela Shen, PhD (Stampfli, Pathology)	2011 - ongoing
Michelle Mendonça, PhD (Surette, Biochemistry)	2011 - ongoing

Supervisory Committees (completed)

Tatianna Wong, MSc (Gilberger, Biochemistry)	2013 - 2015
Ken Mwasi, MSc (Mahoney, Pathology)	2013 - 2014
Vi Dang, MSc (McCarry/Britz-McKibbin), Chemistry)	2013 - 2014
Alexandra Ruyter, MSc (Mahoney, Pathology)	2011 - 2013
Julie Kaiser, MSc (Surette, Biochemistry)	2011 - 2013
Tamara Krneta, MSc (Ashkar, Pathology)	2010 - 2012
Elena Pretus, MSc (Stampfli, Pathology)	2010 - 2012
Lauren Waller, MSc (Coombes, Biochemistry)	2010 - 2012
Elsbeth Smith, MSc (Lichty, Pathology)	2010 - 2012
Josip Marcinko, MSc (Jordana, Pathology)	2009 - 2011
Devanghi Mehta , MSc (Mossman, Pathology)	2009 - 2011

External Examiner - Comprehensive Examiner

Kyle Flannigan	March 3, 2014	McMaster University
Varun Anipindi	May 7, 2012	McMaster University
Bethany Heinrick	July 15, 2010	McMaster University
Dannie Bernard	June 5, 2009	McMaster University

Comprehensive Exam advisor

Pamela Shen	May 8, 2013	McMaster University
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External Examiner- PhD Transfer

Uyen Nguyen (Biochemistry)	Apr 29, 2013	McMaster University
Brian Tuinema (Biochemistry)	Feb 7, 2013	McMaster University
Leticia Gonzalez Jara (Biochemistry)	June 21, 2012	McMaster University
Carly Horvath (Pathology)	July 7, 2010	McMaster University
Afia Aziz Ur Rehman (Medicine)	Dec 17, 2010	McMaster University

Chair- PhD Transfer

John-Paul Oliveria	June 13, 2013	McMaster University
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Chair- PhD Defence

Victor Ferriera November 6, 2014 McMaster University

External Examiner- MSc defense

Sarah Poynter	August, 5, 2013	Sir Wilfred Laurier University
Joshua Kong	September 16, 2013	McMaster University
Elena Pretus	August 15, 2012	McMaster University
Elishka Pek	July 3, 2009	McMaster University
Aman Thatte	December 18, 2009	McMaster University

External Examiner- PhD defense

Paula Beaumont	September, 12, 2014	University of Edinburgh
Aswin Hari	October 30, 2013	University of Calgary
Kenneth Chalcraft	March 20, 2013	McMaster University
Katherine J. Kasper	January 30, 2013	University of Western Ontario
Amal Al-Gawari	June 25, 2012	McMaster University

Other contributions to teaching

University of Guelph MICR*4010 Bacterial Pathogenesis (1 lecture) January 2014

Dundas Central-Grade 1 class “Good germs/bad germs” (2 science classes) January 2014

Mohammed Malik (Jan 2015-Aug 2015), Co-op student, Biotechnology program

Kazi Akther (August 2014), High School Student, winner of the IIDR internship for the Bay Area Science & Engineering Fair

Priynka Dhillon (August 2014), High School Student, winner of the IIDR internship for the Bay Area Science & Engineering Fair

Catharine Bowman, High School Student, performed a science fair project for the Bay Area Science and Engineering Fair (Jan- Mar 2014).

Dessi Loukov, Co-op student, industrial student with Qu Biologics (May –Dec 2013)

Prashant Kalvapalie, MITACS summer exchange student (May-Aug 2013)

Eisha Ahmed, High School Student, competing in the International Science Fair (Apr -Aug 2013), supervised preparation for the International Science fair & hosted with Dr. Mike Surette for her receipt of the IIDR Summer Student Internship

Leonard Rivet, High School Student, member of Youth Engaged in Science (YES) Mentorship program (Sept 2012-June 2013, with Dr. Alba Guarné)

Jason Fan, High School Student, IIDR internship winner (May- Aug 2012)

Julia Lee, High School Student, member of Youth Engaged in Science (YES) Mentorship program (Oct 2009-Mar 2010)

Research Funding:

Currently Held:

01/01/2015	Ontario Research Fund	\$10,655,996
-	Solving the Antibiotic Resistance Crisis	
01/01/2020	Principal Applicant: Gerry Wright	
	Co-applicants: D. Bowdish, E. Brown, L. Burrows, B. Coombes, A. Capretta, N. Magarvey, M. Surette, D. Mertz, A. Savchenko, M. Organ	
01/05/2015	NSERC (National Science & Engineering Research Council of Canada)	\$45,000/yr x
-	“Uncovering mechanisms of phagocytosis by class A scavenger	5yr
31/04/2020	receptors”	
	- Principal Applicant	
01/01/2013	Labarge Optimal Aging Initiative	\$58,000
-	“Establishing age-related chronic inflammation as a modifiable risk	
01/01/2015	factor for poor immune function in the elderly”	
	- co-Applicant with Dr. Mark Loeb, Dr. Chris Verschoor, Dr. Guillaume Pare	
01/06/2014	Health Canada	\$316,000/yr x
-	Health Canada Biotechnology Initiative	3yrs
31/05/2017	“Enhanced Scientific Capacity for Risk Assessment of the	\$6000 to D.
	Pathogenicity Potential of Microbes Associated with Biotechnology”	Bowdish
	-collaborator (Principal Applicants Drs. Philip S. Shwed, Azam F. Tayabali)	
09/01/2014	Ontario Early Researcher Award	\$100,000 total
-	“Interplay between inflammation & impaired anti-bacterial	
03/31/2019	immunity in the elderly”	
	-Principal Applicant	
01/01/2013	Labarge Optimal Aging Initiative	\$200,000 total
-	“Probiotics to Prevent Respiratory Infections in the Elderly”	
01/01/2016	- co-Applicant with Dr. Mark Loeb, Dr. Jonathan Bramson, Dr. Mike Surette, Dr. Jennie Johnstone, Dr. Param Nair	
09/01/2012	Canadian Institute for Health Research (CIHR)	\$ 709,615 total
-	“The Viral toxin: understanding binding, internalization and	
08/01/2017	signaling of dsRNA”	

-co-Applicant with Karen Mossman

09/01/2012	Canadian Institute for Health Research (CIHR)	\$1,047,395
-	“Macrophage function changes with age and contributes to	total
08/01/2017	susceptibility to infectious disease”	
	-Principal Applicant	
09/01/2010	Canadian Institutes for Health Research (CIHR)	\$500,000 total
-	Emerging Team Grant	
31/08/2015	“Respiratory tract microbiome dynamics and the interplay of	
	commensal bacteria with resident pathogens”	
	-co- Applicant with Dr. Mike Surette	
01/09/2010	Canadian Foundation for Innovation (CFI)	\$352,693 total
-	Leaders Opportunity Fund	
31/08/2015	“Drug Discovery in a post-antibiotic world: Infrastructure for	
	development of novel immunomodulators	
	- Principal Applicant	

Previously held:

01/05/2010	NSERC (National Science & Engineering Research Council of Canada)	\$33,000/yr x
-	“Novel signaling motifs in macrophage pattern recognition	5yr
31/04/2015	receptors”	
	- Principal Applicant	
03/01/2013	Canadian Institute for Health Research (CIHR)	\$146,863/yr
-	Probiotics: Prevention of Severe Pneumonia and Endotracheal	
02/28/2015	Colonization Trial (PROSPECT): A Feasibility and Proof of	
	Concept Pilot Trial	
	-co-applicant with Drs. Deborah Cook (PI), Daren Heyland, Jennie	
	Johnstone, John Marshall, Maureen Meade, Mike Surette & Lehana,	
	Thabane	
03/01/2012	Role of MARCO in Susceptibility & Resistance to Tuberculosis	\$29,000/yr x
-	Subcontract – Lead PI Kaori Sakamoto at University of Georgia	3 yrs
02/28/2015		
03/31/2014	Connect Canada Internship awards supporting Kyle Novakowski	\$20,000
-	(MSc student) and Dr. Chris Verschoor (PDF)	
09/01/2014	“Lung Cancer Diagnostic”	
	-co-applicant with Miami Mice	
03/31/2014	Ontario Centres of Excellence	\$20,000
-	“Lung Cancer Diagnostic”	
09/01/2014	-co-applicant with Miami Mice	

03/31/2014	NSERC-Engage	\$25,000
-	Quantitative immunoassay for TLE1 protein	
09/01/2014	-Principal Applicant	
	Industrial collaboration with Miami Mice	
05/2013- 12/2013	Industrial Contract – Qu Biologics “SSI treatment as a novel immunotherapeutic”	\$25,200
08/01/2012	Ontario Lung Association-Pfizer Canada Research Award “Age-	\$50,000/yr
-	associated pneumonia results from impaired immune control of	
08/01/2013	nasopharyngeal carriage” -Principal Applicant	
01/01/2012	Effects of pneumococcal colonization on SSI therapy	\$25,575.68 x
-01/05- 2012	Industrial contract- Qu Biologics (Vancouver).	0.5yrs
07/01/2010	National Institutes of Health (NIH)	\$50,000/yr x
-	RO1- subcontract	3yr
06/01/2013	“Control of <i>Streptococcus pneumoniae</i> carriage” -co-applicant with Dr. Jeffrey Weiser	
01/01/2011	ASPIRE-Pfizer	\$100,000/1yr
-	New Investigator Award	
31/12/2011	“Intranasal administration of Linezolid to prevent seasonal & post- influenza pneumococcal pneumonia in the elderly.”	
06/01/2010	Canadian Institutes for Health Research (CIHR)	\$50,000/1yr
-	Catalyst Grant	
05/31/2011	“Molecular mechanisms of monocyte/macrophage immunosenescence and susceptibility to <i>Streptococcus pneumoniae</i> infection in the nursing home elderly” - Principal Applicant	
12/01/2010	Ontario Lung Association	\$50,000/1yr
-	Grant-in-Aid	
12/01/2011	“Macrophage scavenger receptors – novel recognition receptors for <i>Mycobacterium tuberculosis</i> ” - Principal Applicant	
03/01/2010	CIHR (Canadian Institutes of Health Research)	\$100,000/yr x
-	“The role of macrophage function in prevention of <i>Streptococcus</i>	1 yr
31/03/2011	<i>pneumoniae</i> infection in the nursing home elderly”	

- Principal Applicant

01/5/2010- 31/04/2011	Institute for Infectious Disease Research (IIDR) “Clinical markers of monocyte immunosenescence” -Co- applicant with Dr. Jonathan Bramson & Dr. Jack Gaudie	\$10,000/yr x 1 yr
05/2009- 06/2010	Institute for Infectious Disease Research, McMaster University, “Colonization vs Infection: Why aren’t macrophage responses to <i>Streptococcus pneumoniae</i> immunizing?” - Principal Applicant	\$20,000/yr x 1 yr

Patents

- Profile of immunophenotypic markers associated with age-related disease. C. Verschoor & D. Bowdish. *In progress*.
- Blockade of TNFalpha for treatment of age related tissue damage and impaired anti-bacterial activity. D. Bowdish & A. Puchta. Provisional patent filed May 23rd, 2014, Serial No. 62/002,40, 6.
- Effectors of innate immunity. R.E.W. Hancock, B. Finlay, M. Scott, D. Bowdish, C. Rosenberger and J.P. Powers. U.S. provisional patent No 60/336,632, filed Dec. 3, 2001 Full US application 10/308,905 filed Dec. 2, 2002; published Sept 16, 2004. US patent 7,507,787, granted March 24, 2009.
- Effectors of innate immunity. R.E.W. Hancock, B. Finlay, M. Scott, D. Bowdish, C. Rosenberger, J.P. Powers, N. Mookherjee, J. Yu. CIP of US application 10/308,905; Application no. US11/400,411, filed April 7, 2006.
- Effectors of innate immunity. R.E.W. Hancock, B. Finlay, M. Scott, D. Bowdish, C. Rosenberger and J.P. Powers. South African Patent No. 2004/4919, granted May 31, 2006.
- Effectors of innate immunity. R.E.W. Hancock, B. Finlay, M. Scott, D. Bowdish, C. Rosenberger and J.P. Powers. Australian Patent No. 200223365675, granted April 5, 2007.
- Effectors of innate immunity. R.E.W. Hancock, B. Finlay, M. Scott, D. Bowdish, C. Rosenberger and J.P. Powers. Chinese Patent No. 02827327.3, granted Dec 2, 2007.
- Effectors of innate immunity. R.E.W. Hancock, B. Finlay, M. Scott, D. Bowdish, C. Rosenberger and J.P. Powers. Hong Kong Patent HK1075677, granted August 22, 2008.

Lifetime Publications (Peer reviewed, trainees in bold):

Contributions to books (Book chapters)

- 1 **Lee, Keith M, Yin, Charles, Verschoor, Chris P, and Bowdish, Dawn ME** (Sep 2013) Macrophage Function Disorders. In: eLS. John Wiley & Sons Ltd, Chichester. <http://www.els.net> [doi: 10.1002/9780470015902.a0002174.pub3]
- 2 **Verschoor CP, Puchta A, Bowdish DME**. The Macrophage. *Methods Mol Biol.* (2012);844:139-56. doi: 10.1007/978-1-61779-527-5_10.
- 3 **Bowdish, D.M.E.** & Gordon. S. Macrophage Function Disorders: a genetic perspective. *Encyclopaedia of Life Sciences.* (2009) DOI:10.1002/9780470015902.a0002174.pub2

- 4 **Bowdish, D.M.E., Gordon, S.** Introduction to macrophage biology. In: Protozoans in Macrophages. Landes Biosciences. Edited by E.Y. Denkers and R. Gazzinelli. (2007)1-15.
- 5 **Bowdish, D.M.E., Davidson, D.J., Hancock, R.E.W.** Immunomodulatory properties of defensins and cathelicidins. In: Current Topics in Microbiology and Immunology. Edited by W. Shafer (2006)306:27-66.

Journal articles

Accepted (1):

In revision (2):

In review (5):

Preparation for Submission (4):

Journal Articles (published):

- 1 **Verschoor CP, Loukov D, Naidoo A, Puchta A,** Johnstone J, Millar J, Lelic A, **Novakowski KE, Dorrington MG,** Loeb M, Bramson JL, **Bowdish DM.** Circulating TNF and mitochondrial DNA are major determinants of neutrophil phenotype in the advanced-age, frail elderly. *Mol Immunol.* 2015 Feb 4;65(1):148-156. doi: 10.1016/j.molimm.2015.01.015.
- 2 Stearns JC, Davidson CJ, McKeon S, Whelan FJ, Fontes ME, Schryvers AB, **Bowdish DM,** Kellner JD, Surette MG. Culture and molecular-based profiles show shifts in bacterial communities of the upper respiratory tract that occur with age. *ISME J.* 2015 Jan 9. doi: 10.1038/ismej.2014.250
- 3 **Verschoor C.P.,** Johnstone J., Loeb M., Bramson J.L., and **Bowdish D.M.E.** Anti-pneumococcal deficits of monocyte-derived macrophages from the advanced-age, frail elderly and related impairments in PI3K-AKT signalling. *Hum Immunol.* 2014 Oct 13;75(12):1192-1196. doi: 10.1016/j.humimm.2014.10.004
- 4 **Verschoor,C.P., Naidoo, A., Wallace, J.G.,** Johnstone, J., Loeb, M., Bramson, J.L., **Bowdish, D.M.E.** Circulating muramyl dipeptide is negatively associated with interleukin-10 in the advanced-age, frail elderly. *Inflammation.* 2014 Oct 3. [Epub ahead of print]
- 5 Kaiser JC, **Verschoor CP,** Surette MG, **Bowdish DM.** Host cytokine responses distinguish invasive from airway isolates of the *Streptococcus milleri/anginosus* group. *BMC Infect Dis.* 2014 Sep 11;14(1):498. doi: 10.1186/1471-2334-14-498.
- 6 **Verschoor C.P., Dorrington M.G.,** Kaiser J., **Novakowski K.,** Radford, K., Surette, M.G., Nair P. and **Bowdish D.M.E.** MicroRNA-155 is a critical regulator of the IL-17A-mediated recruitment of macrophages during *S. pneumoniae* colonization.
- 7 **Verschoor CP,** Johnstone J, Millar J, Parsons R, Lelic A, Loeb M, Bramson JL, **Bowdish DM.** Alterations to the frequency and function of peripheral blood monocytes and associations with chronic disease in the advanced-age, frail elderly. *PLoS One.* 2014 Aug 8;9(8):e104522. doi: 10.1371/journal.pone.0104522. eCollection 2014

- 8 Love RJ, Patenaude M, **Dorrington M, Bowdish DM**, Hoare T, Jones KS. An investigation of scavenger receptor mediated leukocyte binding to polyanionic and uncharged polymer hydrogels. *J Biomed Mater Res A*. 2014 Aug 2.
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Conference Proceedings

1. Lee, E. A., **Whelan, F. J.**, **Bowdish, D. M. E.**, & Wong, A. K. C., (2013, October). Characterizing Amino Acid Variations in Aligned Pattern Clusters of Scavenger Receptors. In: *Proceedings of the ACM Conference on Bioinformatics, Computational Biology and Biomedicine* (pp. 818). ACM.

Review articles

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- 2 Prabhudas M, **Bowdish D**, Drickamer K, Febbraio M, Herz J, Kobzik L, Krieger M, Loike J, Means TK, Moestrup SK, Post S, Sawamura T, Silverstein S, Wang XY, El Khoury J. Standardizing scavenger receptor nomenclature. *J Immunol.* 2014 Mar 1;192(5):1997-2006. doi: 10.4049/jimmunol.1490003.
- 3 **Whelan, FJ.**, Yap, N., Golding, B. **Bowdish, DME.** Bioinformatics for Immunologists. *Frontiers in Immunology.* 2014. 4, 416. doi: 10.3389/fimmu.2013.00416
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Presentations at Meeting (Invited):

- 1 Province of Ontario Neurodevelopmental disorders network, science day. “Inflammation, infection, cognition and age”, May 8, 2015.
- 2 Ottawa-Carleton Institute of Biology Student Conference. “Aging gracefully: how aging and immunity intersect.” Keynote speaker. April 29, 2015.
- 3 Buffalo Immunology Conference. Maryville NY. “The aging microbiome drives age-associated inflammation.” April 23-24, 2015.
- 4 EMPHASIS seminar series, McMaster University. Keynote speaker. “The metabolism of age-associated inflammation”. Keynote speaker. April 23, 2015.
- 5 University of Georgia Invited Speaker Series. “The role of phagocytic receptors in *Streptococcus pneumoniae* infections.” March 28, 2015
- 6 Keystone Symposia on Dendritic Cells and Macrophages Reunite. Workshop presentation “Metchnikoff’s theory of aging: Intestinal permeability drives age-associated inflammation and macrophage dysfunction.” Mar 8 -10, 2015, Montreal, QC.
- 7 Farncombe Institute of Digestive Health Seminar Series. “Age, inflammation & the microbiota: Why the choices that you make in youth haunt/help you in old age”. January 7, 2015

- 8 Biology of Aging Seminar Series. "Aging or inflamm-aging? Which causes immune decline with age?" McMaster University, Hamilton, ON. December 5, 2014.
- 9 Pfizer sponsored Research Exchange Meeting in conjunction with the Canadian Immunization conference. "Age-associated inflammation contributes to susceptibility to pneumococcal infection". Ottawa, Ontario. December 3rd, 2014
- 10 Health Canada Invited speaker series. "Aging, inflammation and the microbiome". Ottawa, Ontario. December 3rd, 2014
- 11 Labarge Optimal Aging Research Day. "Probiotics to prevent respiratory infections in the frail nursing home elderly. November 10, 2014.
- 12 Respiratory Research Rounds. Firestone institute. November 25 2014. "Age-associated inflammation impairs host-defence towards *Streptococcus pneumoniae*"
- 13 Nathan Shock Aging Center. "The microbiome drives age-associated inflammation." San Antonio, Texas. October 18, 2014.
- 14 Albany Medical School. Invited Speaker Series. "Inflammation drives macrophage dysfunction and susceptibility to pneumococcal infection". Sept 25, 2014
- 15 University of Guelph. Department of Pathobiology. Invited Speaker Series. "Macrophage scavenger receptors are required for control of colonization in the upper respiratory tract." Sept 19, 2014
- 16 British Society of Immunology. Inflammation and Immunity. University of Manchester, UK. September 9-10, 2014. "Metchnikoff 's theory of aging: the intestinal microbiota drives age-associated inflammation and impaired macrophage function"
- 17 Federation of Clinical Immunology Societies (FOCIS) Annual Meeting. July 25-28, 2014. Chicago Illinois. "Phagocytosis, Endocytosis and Motility: Scavenger Receptor Functions at the Interface of Homeostasis and Host Defense."
- 18 IIDR Colloquium. "A Breath of Fresh Air: Preventing pneumonia in older adults." May 30, 2014. McMaster University.
- 19 The American Association of Immunologist Annual Meeting -Immunology 2014. May 2-6, 2014. Pittsburgh, Pennsylvania. "Scavenger receptors and host-pathogen interactions."
- 20 Lung Association Webinar. "A Breath of Fresh Air: Preventing Pneumonia in Older Adults". April 14, 2014.
- 21 iSci Symposium Keynote Speaker. McMaster University. Apr 3, 2014. "Pneumo a no no: Preventing pneumonia in older adults."
- 22 Biology of Acute Respiratory Infection Gordon Research Conference. Feb 23-28, 2014. Lucca Italy. Invited speaker, "Pneumonia, inflammation and age."
- 23 Lung Association. Better Breathing Conference. Pfizer sponsored keynote lecture "Age, inflammation and pneumonia." February 2, 2014
- 24 McMaster University. Department of Chemistry & Chemical Biology Seminar Series. "Does macrophage metabolism decrease with age?" January 7th, 2014.

- 25 Vaccine Preventable Disease Program at Hamilton Public Health Services. November, 21, 2013. Hamilton. "Vaccine Hesitancy – why has the public turned against vaccines?"
- 26 University of Western Ontario Department of Microbiology & Immunology Invited Speakers Series. "Macrophage phagocytosis is required for control of nasopharyngeal colonization." November 7th, 2013
- 27 McMaster Immunology Research Centre Infection & Immunity Seminar Series. May 29th, 2013. "Macrophages- my favourite cell."
- 28 Panel on the Status of Women in Science & Technology. The Canadian Science Policy Centre. Panel participant. April 23rd, 2013. <http://www.youtube.com/watch?v=18psL0ilZOk>
- 29 Macrophage Immunobiology, Current Research and Prospects. Kavli Royal Society International Centre U.K. April 13, 2013. "Macrophage scavenger receptors and immune defence in the upper respiratory tract."
- 30 MRC Centre for Inflammation Research Seminar Program. Edinburgh, U.K. April 12, 2013. "Interplay between chronic inflammation, age & anti-bacterial activity."
- 31 Molecular & Integrative Physiological Sciences seminar series. Harvard School of Public Health. Boston, U.S. March 26th, 2013. "Macrophage phagocytosis - old cells protecting old people."
- 32 Respiratory Research Rounds. Firestone institute. February 12th, 2013. "Phagocytosis & age-associated inflammation - an evolutionary approach."
- 33 Scavenger Receptors Nomenclature Workshop, Division of Allergy, Immunology, and Transportation, National Institute of Allergy and Infectious Diseases , National Institute of Health, Bethesda, Maryland. November 29 - 30, 2012. "Scavenger Receptors and Host-Pathogen Interactions."
- 34 Demystifying Medicine Seminar Series, McMaster University, November 5, 2012. "Pneumonia, still the old man's friend?"
- 35 Infection and Immunity Seminar Series, McGill University. October 25, 2012. "Aging gracefully with the pattern recognition receptors."
- 36 South-Western Ontario Pathogenesis Working Group meeting. University of Guelph. September 29, 2012. "Those "other" pattern recognition receptors: Phagocytic receptors in host defence to *Streptococcus pneumoniae*."
- 37 University of Calgary Invited Speaker. September 25, 2012. "The role of phagocytic receptors in recognition of *Streptococcus pneumoniae*."
- 38 Firestone Institute. St. Joe's Research Rounds. January 27, 2012. "Age-Associated Changes in Monocyte/Macrophage Function Predispose the Elderly to Infectious Disease."
- 39 Department of Microbiology & Immunology. Queen's University, Kingston. Jan 19, 2011. "Save the Grandparents! How an aging immune system predisposes the elderly to pneumonia."
- 40 Department of Pathobiology. University of Guelph. Invited speaker series. Jan 14, 2011. "Mechanisms of Immune Control of *Streptococcus pneumoniae* in the Upper Respiratory Tract".

- 41 Society for Leukocyte Biology/International Endotoxin Society Meeting. Vancouver. Oct 7, 2010. "Immunosenescent macrophages cannot control *Streptococcus pneumoniae* colonization, resulting in invasive pneumococcal disease"
- 42 Institute of Molecular Biology and Biochemistry (IBMB) Invited Speaker Series. "The Scavenger Receptors: Ancient Pattern Recognition Receptors essential for the innate immune response" University of Waterloo. January, 26, 2010.
- 43 Department of Chemical Engineering. Invited Speaker Series. McMaster University. Nov. 11, 2009 "Macrophage scavenger receptors: roles in adhesion, uptake & motility."
- 44 IIDR Opening Symposium. McMaster University. Oct. 24, 2009. New insights into an ancient disease: A novel macrophage receptor essential for host defence towards tuberculosis.
- 45 Bench-to-Bedside. McMaster University. Sept. 21, 2009. "Recurrent Pneumococcal Infections: A breach in Innate Immunity".
- 46 Bowdish, D. (2009), "Cationic peptides in innate immunity", in Gordon, S. (ed.), Innate Immunity: Host recognition and response in health and disease, The Biomedical & Life Sciences Collection, Henry Stewart Talks Ltd, London (online at <http://www.hstalks.com/?t=BL0612078-Bowdish>)
- 47 Invited speaker. The University of British Columbia. May 15, 2009`. "The Class A Scavenger receptors are associated with host defence to tuberculosis."
- 48 Tuberculosis and International Child Health meeting. Imperial College London, U.K., March 7, 2008. "Macrophage Receptors in Innate Immunity: The class A scavenger receptors in mycobacterial and neisserial disease."
- 49 The Karolinska Institute. Stockholm, Sweden. January 20, 2008. "Genetic analysis of the scavenger receptor, MARCO".
- 50 The Whitechapel Society Invited Speaker Series. London, U.K. June 14, 2007. "MARCO – a macrophage receptor associated with mycobacterial infection".
- 51 Invited Speaker Series. Trinity College, Dublin, Ireland. April 27, 2007. "MARCO – a macrophage receptor associated with mycobacterial infection"
- 52 5th PhD Students Workshop. January 25, 2007. Riva del Gara, Italy. "Fundamental Concepts in Immunology"
- 53 6th Annual Meeting of the Canadian Society of Microbiology. June, 21, 2006. "LL-37, a host defence peptide with immunomodulatory properties".
- 54 Invited Speaker Series. University of Gothenburg, Sweden. March 3, 2006. "LL-37, a human host defence peptide with immunomodulatory properties"
- 55 Innate Immunity in Human Disease: BC Research Institute for Children's & Women's Health, February, 1, 2005. "LL-37 is a host defence peptide which interacts directly with monocytes & epithelial cells and modulates the innate immune response"
- 56 8th Biennial Conference of the International Endotoxin Society, Kyoto, Japan, November 15-18, 2004. "The host defence peptide LL-37 is a multi-functional immunomodulator"
- 57 International Symposium SFB 617 – Molecular Mechanisms of Epithelial Defense, Kiel, Germany, June 11-13, 2004 "The Involvement of Peptides in Host Defense against Infections."

Community Engagement presentations (Invited):

- 1 “Lung Health is Good Health in Older Adults”. Presentation to Hamilton Probus club. April 14, 2015.
- 2 “My career path as a scientist”. Westdale High School- Career day. Hamilton, Ontario. March 31, 2015.
- 3 Lung Association Breathe Gala. Interview in support of lung health. January 29, 2015.
- 4 Café Scientifique “Breathing Easy: Lung Health is Good Health for Older Adults”. Public event co-sponsored by the Ontario Lung Association and the Canadian Longitudinal Study of Aging. Hamilton, Ontario. November 27th, 2014.
- 5 Ontario Lung Association Board meeting. “Aging and Lung Health – spreading the word.” Toronto, ON. October 24, 2014.
- 6 McMaster Undergraduates in Research Association (MURSA). October 22, 2014. “Undergraduate opportunities in Research”
- 7 Presentation of donation from Gamma-Dynacare to the Lung Association. “Lung Health is Good Health in Older Adults” July 16, 2014
- 8 PROSPECT trial mechanistic sub-study retreat. “What are endotoxins and cytokines?” June 9, 2014.
- 9 MIRC Trainee Association Event. August 12, 2013. “Choosing a post-doctoral position, in Canada or overseas.”
- 10 Café Scientifique. Canadian Human Immunology Network. Hamilton, ON, April 26th, 2013. Panel speaker. “Vaccines: Truths and Myths.”
- 11 FHS Post-doctoral fellow association. June 5, 2013. “Advice on applying for a faculty position.”
- 12 Presentation for the Hamilton chapter of CAGIS (Canadian Association of Girls in Science). McMaster University. March 7th 2013. “Good germs/Bad germs.”
- 13 Biomedical Leadership conference. University of Guelph. January, 26th, 2013. “My career path: From McMaster & back again.”
- 14 McMaster Undergraduates in Research Association (MURSA). October 12, 2012. “Undergraduate opportunities in Research”

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