CURRICULUM VITAE

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PERSONAL DATA

Birth date and place: August 6, 1953; Avellaneda, Buenos Aires, Argentina.
Citizenship: Canadian

EDUCATION

1983-86 **Research Fellow**, Prokaryotic molecular biology and bacterial pathogenicity. Oregon Health Sciences University, Portland, Oregon, USA.
Supervisor: Jorge H. Crosa, Ph.D.
Relevant experience: Genetics and molecular biology techniques applied to the analysis of virulence factors in enteric bacteria.

1981-83 **Research Fellow**, Clinical research and molecular epidemiology of pediatric infectious diseases. Children's Hospital of Buenos Aires, Argentina.
Supervisor: Saul Grinstein, MD., M.Sc.
Relevant experience: Phenotypic analysis of virulence factors in pathogenic *Escherichia coli* and *Klebsiella pneumoniae*.

1980-81 **Research Fellow**, Clinical Research on Pediatric Infectious Diseases. Children's Hospital of Buenos Aires, Argentina.
Supervisor: Saul Grinstein, MD., M.Sc.
Relevant experience: Application of rapid diagnostic techniques in the epidemiology of pediatric infectious diseases.

1980 **Clinical Pediatrics**, Children's Hospital of Buenos Aires, Argentina.

1976 **Medical Doctor**, School of Medicine, University of Buenos Aires, Argentina.

EMPLOYMENT HISTORY (ACADEMIC AND PROFESSIONAL)

2012- **Professor, Chair on Microbiology and Infectious Diseases**, Centre for Infection and Immunity, Queen's University of Belfast, U.K.

2012-15 **Adjunct Professor**, Department of Microbiology & Immunology, University of Western Ontario, London, Ontario, Canada.

2010-13 **Member**, Centre for Human Immunology, University of Western Ontario.

2009-12 **Canada Research Chair** in Infectious Diseases and Microbial Pathogenesis

2004-12 **Chair**, Department of Microbiology & Immunology, University of Western Ontario, London, Ontario, Canada.

2002-09 **Canada Research Chair** in Infectious Diseases and Microbial Pathogenesis.

1999-12 **Full Professor** (Cross-Appointment), Department of Medicine, University of Western Ontario, London, Ontario, Canada.

1998-12 **Full Professor**, Department of Microbiology & Immunology, University of Western Ontario, London, Ontario, Canada.

1993-98 **Associate Professor** (with Tenure), Department of Microbiology & Immunology, University of Western Ontario, London, Ontario, Canada.

1988-93 **Assistant Professor**, Department of Microbiology & Immunology, University of Western Ontario, London, Ontario, Canada.

1986-88 **Research Assistant Professor**, Department of Microbiology & Immunology, Oregon Health Sciences University, Portland, Oregon, USA

1983-86 **Research Fellow**, National Council of Research, Argentina, Department of Microbiology & Immunology, Oregon Health Sciences University, Portland, Oregon, USA.

1981-83 **Research Fellow**, National Council of Research, Argentina, Children's Hospital of

Buenos Aires.

1982-83 **Supervisor** of the Rapid Diagnostic Section, Laboratory of Serology and Virology, Children's Hospital of Buenos Aires.

1980-81 **Research Fellow**, Municipality of Buenos Aires.

1977-80 **Resident** in Pediatrics, Children's Hospital of Buenos Aires. *Relevant experience:* Clinical pediatrics and infectious diseases.

1971-77 **Teaching Assistant**, Department of Histology, Cytology & Embryology, School of Medicine, University of Buenos Aires.

HONOURS AND AWARDS (last 3 years)

2015 Visiting Professor, Institute of Genetics and Microbiology, Wroclaw University, Poland

2013 Professor Emeritus, University of Western Ontario

2011-12 Zeller Senior Scientist Award, in recognition to outstanding contributions to Cystic Fibrosis Canada as an established investigator.

2009-16 Tier I Canada Research Chair in Infectious Diseases and Microbial Pathogenesis. Salary award: $200,000/year; renewable. Resigned in December 31, 2012.

RESEARCH INTERESTS

We have made seminal contributions in two areas: (i) the biogenesis of lipopolysaccharide (LPS) and (ii) the molecular pathogenesis of the opportunistic pathogen *Burkholderia cenocepacia*. My team has advanced the understanding of the initiation of LPS O antigen synthesis and the translocation of the lipid-linked O antigen unit across the bacterial inner membrane. Both processes are of fundamental biological importance not only for bacteria but also for all cells. This research also led to proof of principle evidence that novel compounds can be identified (called antibiotic adjuvants), which can increase the permeability of the bacterial outer membrane to common antibiotics and antimicrobial peptides. My team has also gained international recognition as a leader in *Burkholderia* research. Our pioneering work demonstrated for the first time the biology of the *Burkholderia cenocepacia* infection in macrophages, and developed novel genetic tools that have allowed us to manipulate and better understand this difficult organism that causes devastating airways infections in patients with cystic fibrosis (CF).

SUMMARY OF CAREER CONTRIBUTIONS

1. Identification of the aerobactin iron uptake system, a recognized virulence factor, as encoded in the chromosome of E. coli pathogenic strains. This research contributed foundational evidence to the notion of pathogenicity islands in the genomes of pathogenic bacteria. **Valvano**, M.A., R.P. Silver, and J.H. Crosa. 1986, Infection and Immunity 52:192-199

2. Pioneered the molecular cloning of lipopolysaccharide (LPS) O antigen genes in E. coli. This research provided the molecular bases to begin characterizing the biosynthesis and assembly of O antigens. Marolda, C.L., and M.A. **Valvano***. 1995, Journal of Bacteriology 177:5539-5546 and references therein

3. Established a new genetic nomenclature for polysaccharide genes in bacteria. Worked with Peter Reeves to devise a uniform nomenclature of glycosyltransferase and other assembly genes for cell surface polysaccharide synthesis, which require a departure of the traditional Demerec-style gene nomenclature rules, especially to accommodate the great variations in glycosyltransferases. The nomenclature was adopted worldwide. Reeves, P.R., M. Hobbs, M.A. **Valvano**, et al. 1996, Trends in Microbiology 4:495-503

4. Elucidated the pathway for synthesis of the ADP-heptose precursor for LPS lipid A-core oligosaccharide assembly and identified novel heptose kinase and phosphatase reactions unique to this system, which have been targeted for antimicrobial development. All the proteins in the pathway were purified and crystallized. Taylor, P., S. Sugiman-Marangos, K. Zhang, M.A. **Valvano**, G. Wright, and M. Junop. 2010, Biochemistry 49:1333-1341; Taylor, P.L., K.M. Blakely, G.P. de Leon, J.E. Walker, F. McArthur, E. Evdakimova, K. Zhang, M.A. **Valvano**, G.D. Wright, and M.S. Junop. 2008. Journal of Biological Chemistry 283:2835-2845; De Leon, G.P, N.H. Elowe, K.P. Koteva, M.A. **Valvano**, G.D. Wright. 2006, Chemistry & Biology 13:437-441. **(Featured Article);** McArthur, F., E. Andersson, S. Loutet, S. Mowbray, and M.A. **Valvano***. 2005. Journal of Bacteriology 187:5292-5300; Kneidinger, B., C.L. Marolda, M. Graninger, A. Zamyatina, F. McArthur, P. Kosma, M.A. **Valvano***, and P.

Messner*. 2002, Journal of Bacteriology 184:363-369; **Valvano***, M.A., C.L. Marolda, M. Bittner, M. Glaskin-Clay, T.L. Simon, and J.D. Klena. 2000, Journal of Bacteriology 182: 488-497; Brooke, J.S. and M.A. **Valvano***. 1996, Journal of Bacteriology 178: 3339-3341.

5. Foundational studies to unravel the mechanism of membrane translocation of lipid-linked sugar precursors for the assembly of O antigen and other cell surface glycans. Participated in the identification of Rft1, the eukaryotic flippase in the endoplasmic reticulum for the translocation of the lipid-linked oligosaccharide precursor for protein glycosylation. Alaimo, C., I. Catrein, L. Morf, C.L. Marolda, N. Callewaert, M.A. **Valvano**, M.F. Feldman, and M. Aebi. 2006, EMBO Journal 25:967-976. **(Article evaluated as "Recommended" in the Faculty of 1000: http://www.f1000biology.com/article/16498400/evaluation**); Helenius, J., D.T.W. Ng, C.L. Marolda, P. Walter, M.A. **Valvano**, and M. Aebi. 2002, Nature 415:447-450. **(Article highlighted in News and Views, "Protein sweetener", by Parodi, A. Nature, 415:382-3, 2002, and evaluated as "Recommended" in Faculty of 1000: http://www.f1000biology.com/article/11807558/evaluation);** Feldman, M.F., C.L. Marolda, M.A. Monteiro, M.B. Perry, A.J. Parodi, and M.A. **Valvano***. 1999, Journal of Biological Chemistry 274:35129-35138.

6. Foundational studies determining key functional residues in the O antigen ligase WaaL and establishing its mechanism of action as a metal ion-independent, inverting glycosyltransferase, while disproving the notion that the enzyme works with ATP-hydrolysis. Ruan, X., D.E. Loyola, C.L. Marolda, J.M. Perez-Donoso, and M.A. **Valvano***. 2012, Glycobiology 22:288-299; Pérez, J.M, M.A. McGarry, C.L. Marolda, and M.A. **Valvano***. 2008, Molecular Microbiology 70:1424-1440.

7. Contributed with specific mutants that helped to rule out LPS contribution to the activation of NOD1 during innate immune responses. Chamaillard, M., M. Hashimoto, Y. Horie, J. Masumoto, Q. Su, L. Saab, Y. Ogura, A. Kawasaki, K. Fukase, S. Kusumoto, M.A. **Valvano**, S. J. Foster, T.W. Mak, G. Nuñez, and N. Inohara. 2003, Nature Immunology 4:702-707. **(Article highlighted in News and Views, "Intracellular debugging", by Kobayashi, K.S., E. E. Eynon, and R.A. Flavell. Nature Immunology, 4:652-654, 2003) (Article evaluated as "Must Read" in Faculty of 1000: http://www.f1000biology.com/article/12796777/evaluation)**.

8. Pioneered discovery of Burkholderia cenocepacia survival in amoebae and macrophages. Hamad, M.A, A.M. Skeldon, and M.A**. Valvano***. 2010. Applied and Environmental Microbiology 76:3170-3176; Saini, L.S., S. Galsworthy, M.A. John, and M.A. **Valvano***. 1999, Microbiology 145:3465-3475; Marolda, C.L. B. Hauröder, M.A. John, R. Michel, and M.A. **Valvano***. 1999, Microbiology 145:1509-1517. **(Article highlighted in the Hot off the Press Section, "The enemy within", by M. Jones. Microbiology Today, 26:136, 1999).**

9. Developed molecular tools for the genetic analysis of B. cenocepacia and other Burkholderia species, which accelerated research in these organisms. Many laboratories worldwide currently use these tools. Flannagan, R.S, T. Linn, and M.A. **Valvano***. 2008, Environmental Microbiology 10:1652-1660; Flannagan, R.S., D. Aubert, C. Kooi, P.A. Sokol, and M.A. **Valvano***. 2007, Infection and Immunity 75:1679-1689; Cardona, S.T., C.L. Mueller, and M.A. **Valvano***. 2006; Applied and Environmental Microbiology 72:2547-2555; Cardona, S.T. and M.A. **Valvano***. 2005, Plasmid 54:219-228; Hunt, T.A., C. Kooi, P.A. Sokol, and M.A. **Valvano***. 2004, Infection and Immunity 72:4010-4022. **(Listed among the "Top most requested" articles for Infection and Immunity, Jul-Sep 2004);** Lefebre, M.D. and M.A. **Valvano***. 2002, Applied and Environmental Microbiology 68: 5956-5964.

10. Pioneered studies in the cellular microbiology of B. cenocepacia and other Bcc bacteria establishing they can survive intracellularly in modified membrane vacuoles that function as an arrested autophagosome. Gavrilin, M.A, D.H.A. Abdelaziz, M. Mostafa, B.A. Abdulrahman, J. Grandhi, A. Akhter, A. Abu Khweek, D.F. Aubert, M.A. **Valvano**, M.D. Wewers, and A.O. Amer. 2012, Journal of Immunology 188:3469-77; Rosales-Reyes, R., A.M. Skeldon, D.F. Aubert, and M.A. **Valvano***. 2012, Cellular Microbiology 14: 255-273; Flannagan, R.S., V. Jaumouillé, K.K. Huynh, J.D. Plumb, G.P. Downey, M.A. **Valvano**, and S. Grinstein. 2012, Cellular Microbiology 14: 239-254; Abdulrahman, B.A., A. Abu Khweek, A. Akhter, K. Caution, S. Kotrange, D.H.A. Abdelaziz, C. Newland, R. Rosales-Reyes, B. Kopp, K. McCoy, R. Montione, L.S. Schlesinger, M.A. Gavrilin, M.D. Wewers, M.A. **Valvano**, and A.O. Amer. 2011, Autophagy 7:1759-1770. **(Featured article: A. Nemchemko, Autophagy, 7: 1271, 2001; R.J. Devenish, Autophagy, 7:1269, 2011);** Kotrange, S. B. Kopp, A. Akhter, D. Abdelaziz, A. Abu Khweek, K. Caution, B. Abdulrahman, M.D. Wewers, K. McCoy, C. Marsh, S.A. Loutet, X. Ortega, M.A. **Valvano**, and A.O. Amer. 2011. Journal of Leukocyte Biology 89:481-488; Huynh, K.K., J.D. Plumb, M.A. **Valvano**, and S. Grinstein. 2010, Journal of Innate Immunity 2:522-533; Keith, K.E. D.W. Hynes, J.E. Sholdice, and M.A. **Valvano***. 2009. Microbiology 155:1004-1015; Lamothe, J., and M.A. **Valvano***. 2008, Microbiology 154:3825-34; Aubert, D.F., R.S. Flannagan, and M.A. **Valvano***. 200, Infection and Immunity 76:1979-1991; Saldías, M.S., J. Lamothe, R. Wu, and M.A. **Valvano***. 2008, Infection and Immunity 76:1059-1067; Lamothe, J., K.K. Huynh, S. Grinstein, and M.A. **Valvano***. 2007, Cellular Microbiology 9:40-53; Maloney, K.E., and M.A. **Valvano***. 2006, Infection and Immunity 74:5477-5486; Lamothe, J., S. Thyssen, and M.A. **Valvano***. 2004, Cellular Microbiology 12:1127-1138. **(Article evaluated as "Must Read" in the Faculty of 1000: http://www.f1000biology.com/article/15527493/evaluation)**.

11. Determined the important role of aminoarabinose modification of the LPS molecule in Burkholderia as a molecular signature required for LPS export to the outer membrane and

antimicrobial peptide resistance. Loutet, S.A., F. Di Lorenzo, C.A. Clarke, A. Molinaro, and M.A. **Valvano***. 2011, BMC Genomics 12:472; Loutet, S.A., L.E. Mussen, R.S. Flannagan, and M.A. **Valvano***. 2011, Environmental Microbiology Reports 3:278-285; Ortega, X., A. Silipo, M.S. Saldías, C.C. Bates, A. Molinaro, and. M.A. **Valvano***. 2009, Journal of Biological Chemistry 284:21738-21754; Loutet, S.A., S.J. Bartholdson, J.R.W. Govan, D.J. Campopiano, and M.A. **Valvano***. 2009. Contributions of two UDP-glucose dehydrogenases to viability and polymyxin B resistance of *Burkholderia cenocepacia*. Microbiology 155:2029-2039; Ortega, X.P., S.T. Cardona, A.R. Brown, S.A. Loutet, R.S. Flannagan, D.J. Campopiano, J.R.W. Govan, and M.A. **Valvano***. 2007, Journal of Bacteriology 189:3639-3644. **(Article highlighted in Nature Reviews in Microbiology, 5:335, 2007; "Sweet news for CF sufferers);** Loutet, S.A., R.S. Flannagan, C. Kooi, P.A. Sokol, and M.A. **Valvano***. 2006, Journal of Bacteriology 188:2073-2080.

12. Discovered novel mechanisms of intrinsic antimicrobial resistance based on the production and secretion of small molecules communicating resistance to neighbouring bacterial cells. These molecules (the polyamine putrescine and the bacteriocalin YceI) are produced under antibiotic-induced stress. El-Halfawy, O.M, and M.A. **Valvano***. 2014, Antimicrobials Agents and Chemotherapy 58:4162-4171; El-Halfawy, O.M., and M.A. **Valvano***. 2013, Plos One Jul 3;8(7):e68874. doi: 10.1371/journal.pone.0068874; El-Halfawy, O.M., and M.A. **Valvano***. 2014. Antimicrobial heteroresistance: An emerging field in need of clarity. Clinical Microbiology Reviews (in press).

SCHOLARLY AND PROFESSIONAL ACTIVITIES (last 3 years)

Membership to Professional Societies, Research Consortia and Educational Programs

2014-18 Member, Biological Systems Theme Panel VI, Biochemical Society, UK.
2013-to date Biochemical Society, UK.
2013-to date Society for General Microbiology, UK.
2012-2015 COST Action BM1003, "Microbial cell surface determinants of virulence as targets for new therapeutics in cystic fibrosis"

Grant Review Panels

2015-21 Member, Pool of Experts, Biotechnology and Biological Sciences Research Council, UK.
2014 Chair, Expert Committee (Cell Imaging), Canada Foundation for Innovation.
2014 Member, Peer-Review Panel for the Infect-ERA Joint Translational Call 2014 on "Coordination of European funding for infectious diseases research".
2012 Member, Natural Sciences and Engineering Research Council of Canada, Genes, Cell & Molecules Grant Evaluation Group.

External Review of Grant Proposals (2012 - to date)

Cystic Fibrosis Canada (formerly Canadian Cystic Fibrosis Foundation); Canada Research Chairs Program; Natural Sciences and Engineering Research Council; Belgium Research Fund; Cystic Fibrosis Foundation (USA); Cystic Fibrosis Trust (UK); Italian Cystic Fibrosis Research Foundation; National Fund of Scientific and Technologic Research (FONDECYT), Chile.

Review of Scientific Manuscripts

Applied and Environmental Microbiology; Cellular Microbiology; FEMS Microbiology Letters; Glycobiology; Infection & Immunity; Journal of Bacteriology; Journal of Cystic Fibrosis; Journal of Innate Immunity; Lancet Infectious Diseases; Microbial Pathogenesis; Microbiology; Microbiology and Molecular Biology Reviews; Molecular Microbiology; Nature Research Communications; PLoS Pathogens; Proceedings of the National Academy of Sciences (USA); Virulence.

Editorial Boards

2013 - Associate Editor, World Journal of Microbiology and Biotechnology
2013 - Member, Editorial Board, Microbial Pathogenesis
2013-16 Member, Editorial Board, Infection and Immunity
2010 - Member, Editorial Board, MicrobiologyOpen
2010-12 Associate Editor, PLoSOne

Organization of Scientific Conferences

2013 Session Chair, 36th European Cystic Fibrosis Conference, Lisbon, Portugal, June 12-15.
2012 Chair, International *Burkholderia cepacia* Work-study Group, Montreal, Canada, April 18-21.

Invited Lectures (last 3 years)

- Jun 10, 2015, "Lipopolysaccharide assembly: lessons learned from the topology of assembly proteins". Institute of Immunology, Polish Academy of Sciences, Wroclaw, Poland.
- Feb 26, 2015, "From fibers to fire: *B. cenocepacia*, actin and the pyrin inflammasome". RCSI Molecular Medicine, Royal College of Surgeons in Ireland, Beaumont Hospital, Beaumont, Dublin, Ireland.
- Oct 30, 2014, "*Burkholderia cenocepacia*, macrophages and cystic fibrosis: bacteria taking advantage of defective autophagy", Institute of Infection, Immunity & Inflammation, University of Glasgow.
- Oct 14, 2014, "Novel mechanisms of intrinsic antibiotic resistance in *Burkholderia cenocepacia*", COST BM1003 Final Conference, Napoli, Italy.
- Sep 22, 2014, "Functional information derived from the topology of lipopolysaccharide assembly proteins", Mini-Symposium on Bacterial Glycobiology, Boku University, Vienna, Austria.
- Sep 12, 2014, "Bacterial protein secretion systems: Type 6 Secretion and inflammation", Dublin Training School on "Ion Transport, Airway Liquid dynamics & Host Pathogen Interactions in CF lung epithelia. COST Action BM1003, Royal College of Surgeons in Ireland, Beaumont Hospital, Dublin, Ireland.
- Aug 1, 2014, "*Burkholderia cenocepacia*: an intracellular opportunistic pathogen full of surprises", Plenary Lecture, International Union of Microbiological Societies Congress, Jul 27 - Aug 1, Montreal, Canada.
- Jul 17,2014, "Novel mechanisms of antibiotic resistance in *Burkholderia cenocepacia*", Department of Microbiology and Immunology, Faculty of Pharmacy and Biochemistry, Universidad de Buenos Aires, Argentina.
- Jun 2, 2014, "Intracellular survival and pro-inflammatory mechanisms of *Burkholderia* species: implications for cystic fibrosis disease", Young Microbiologists Symposium on Microbe Signalling, Organisation and Pathogenesis, 2-3 June 2014, University of Dundee.
- May 14, 2014, "Novel mechanisms of antimicrobial resistance involving chemical communication among bacterial cells", Wellcome Trust Mini-Symposium, Queen's University Belfast.
- Apr 18, 2014, "Mechanisms of intracellular survival of *Burkholderia* species in macrophages", Symposium, Centre for Infection and Immunity, Queen's University Belfast.
- Apr 1, 2014, "Lipopolysaccharide and intrinsic antimicrobial resistance in *Burkholderia cenocepacia*", Borstel Research Centre, Germany.
- Mar 20, 2014, "*Burkholderia cenocepacia*: a cystic fibrosis pathogen", The Laboratory for Molecular Infection Medicine Sweden, Umea, Sweden**.**
- Mar 19, 2014, "Microbes R'us: A doctor's adventures with microbial pathogens", Inaugural Lecture, Queen's University Belfast.
- Feb 17, 2014, "*Burkholderia* and *Achromobacter* infections: macrophages and autophagy", Symposium on Respiratory Infections, Centre for Infection and Immunity, Queen's University Belfast, UK.
- Feb 6, 2014, "Intracellular survival of *Burkholderia cenocepacia* in macrophages: the moonlighting lifestyle of an opportunistic pathogen", School of Microbiology, University College of Cork, Cork, Ireland.
- Jan 23, 2014, "Molecular pathogenesis and intrinsic antimicrobial resistance of *Burkholderia cenocepacia*, a cystic fibrosis pathogen", School of Biosciences, University of Exeter, UK.
- Oct 15, 2013, "Myths and facts in lipopolysaccharide O antigen assembly", School of Immunity and Infection, University of Birmingham, UK.
- Oct 4, 2013, "My adventures with microbes: Lipopolysaccharides, macrophages and opportunistic infections", Postdoctoral Fellows Symposium, School of Medicine, Dentistry, and Biomedical Sciences, Queen's University.
- Sep 24, 2013, "Molecular typing based on O-antigen gene diversity", Autumn Training School, COST BM1003, Faculty of Biological Science, University of Wroclaw, Poland.
- June 15, 2013, "Bcc infection resistance and virulence" in Symposium 26 - Burkholderia cepacia complex: still a problem? European Cystic Fibrosis Society Conference, Lisbon, Portugal.
- May 2, 2013, "Interactions of *Burkholderia cenocepacia* with macrophages: A "tic-tact-toe" game, London School of Hygiene and Tropical Medicine, London, UK.

- Jan 15, 2013, "Novel mechanisms of intrinsic antibiotic resistance", Centre for Infection and Immunity, Queen's University Belfast, UK.
- Nov 12, 2012: "Interactions of *Burkholderia cenocepacia* with macrophages: A two-way stream", Spanish Congress of Microbiology, Mallorca, Spain.
- Oct 31, 2012, "*Burkholderia cenocepacia*: a model opportunistic pathogen with multiple lifestyles", Keynote Lecture, XXI ALAM, Latin American congress of Microbiology, Santos, Brazil.
- Oct 30, 2012, "Novel mechanisms of antimicrobial intrinsic resistance", Round Table 1, XXI ALAM, Latin American congress of Microbiology, Santos, Brazil.
- Jun 8, 2012, "Aminoarabinose is essential for lipopolysaccharide export and intrinsic antimicrobial peptide resistance in *Burkholderia cenocepacia*", 8th International Symposium on Glycosyltransferases, Hannover, Germany.
- Jun 4, 2012, "To sleep or not to sleep: elucidating dormancy genes in *Burkholderia cenocepacia*", COST BM1003 Workshop on Molecular Determinants of Bacterial Diseases, Naples, Italy.
- Feb 26, 2012, “Challenges and solutions for *Burkholderia cepacia* infections in patients with cystic fibrosis”, Essex-Kent CF Chapter, Willistead Manor, Windsor, Ontario.

SUPERVISION OF GRADUATE STUDENTS AND OTHER TRAINEES (last 3 years)

Career Total: 140 trainees over 24 years

Queen's University (current)

Research Associates

J. Torres-Bustos, Research Assistant, 2012 -.

Graduate Students

M. NaGuib, M.Sc. (Alexandria University, Egypt), Ph.D. Student, 2015 -
F. Bisaro, Ph.D. Student, 2015 -
A. Ford, Ph.D. Student, 2013 -.
Y. Fathy, M.Sc. (Alexandria University, Egypt), Ph.D. Student, 2013 -.

Fellows

C. Mujica, Ph.D. (University Andres Bellow, Chile), Postdoctoral Research Assistant, 2012 -.
E. Perrin, Ph.D. (University of Florence), Visiting Postdoctoral Fellow (FEMS Award), 2015 -.

Honour’s Students

K. Dadswell; C. Doherty.

Visiting International Students

A. Zurita-Guisado, Universidad Complutense de Madrid (Erasmus), 2015

University of Western Ontario (current)

Research Associates

K. Nurse, Research Technician, 2010-15.

Graduate Students

M. Khodai-Kalaki, M.Sc. (UWO), Ph.D. Student, 2010-15.

Fellows

O. El-Halfawy, M.Sc. (Alexandria University, Egypt), Ph.D. (UWO), Postdoctoral Fellow, 2014-15.
F. Tavares, Ph.D. (University of Mexico), Postdoctoral Fellow, 2012-15.
A. Andrade, Ph.D. (University of Mexico), Postdoctoral Fellow, 2011-15.

RESEARCH FUNDING

Valvano	Role of CFTR in bacterial clearance by macrophages; Cystic Fibrosis Trust; 01/09/13-31/08/15; £139,594
Valvano	Non-genetic mechanisms of intrinsic antimicrobial resistance; Marie Curie Career Integration Grant (CIG), NONANTIRES, 618095; 01/09/13-31/08/15; £40,000
Valvano	*Burkholderia cenocepacia* survival strategies in macrophages; Cystic Fibrosis Canada; Operating; 01/04/11-31/03/14; $CDN 297,000 (£ 187,802)
Valvano	Outer membrane permeability and stress responses in *Burkholderia cenocepacia*; Cystic Fibrosis Canada; Operating; 01/04/12-31/03/15; $CDN 219,300 (£ 138,670)

Valvano Lipopolysaccharide export and assembly in gram-negative bacteria; Canadian Institutes of Health Research; Operating; 01/04/12-30/03/17; CDN $ 850,000 (£ 537,400)

PUBLICATIONS(last 3 years)

Career total: 155 peer-reviewed articles; 23 review articles and book chapters.
Sum of the Times Cited: ~6380; **H-index = 42**
* Corresponding author; Name of supervised trainee(s) are underlined

I. Peer-reviewed articles

165. Loutet, S.A., El-Halfawy, O.M, Jassem, A.N., Sánchez López, J.M., Fernández Medarde, A., Speert, D.P., Davies, J.E., and M.A. **Valvano***. 2015. Identification of synergists that potentiate the action of polymyxin B against *Burkholderia cenocepacia*. International Journals of Antimicrobial Agents (in press).
164. Tavares-Carreón, F., K.B. Patel, and M.A. **Valvano***. 2015. *Burkholderia cenocepacia* and *Salmonella enterica* ArnT proteins that transfer 4-amino-4-*deoxy*-L-arabinose to lipopolysaccharide share membrane topology and functional amino acids. Scientific Reports Jun1, 5:10773. doi: 10.1038/srep10773.
163. Khodai-Kalaki, M., A. Andrade, Y. Fathy Mohamed, and M.A. **Valvano***. 2015. *Burkholderia cenocepacia* lipopolysaccharide modification and flagellin glycosylation affect virulence but not innate immune recognition in plants. mBio (in press).
162. Wong. A., D. Lange; S. Houle, N.P. Arbatsky, M.A. **Valvano**, Y.A. Knirel, C.M. Dozois, and C. Creuzenet. 2015. Role of capsular modified heptose in the virulence of *Campylobacter jejuni*. Molecular Microbiology (in press).
161. Schmerk, C.L, P.V. Welander, M.A. Hamad, K.L. Bain, M.A. Bernards, R.E. Summons, and M.A. **Valvano***. 2015. Elucidation of the *Burkholderia cenocepacia* hopanoid biosynthesis pathway uncovers functions for conserved proteins in hopanoid-producing bacteria. Environmental Microbiology 17: 735-750.
160. Furlong, S.E., A. Ford, L. Albarnez-Rodriguez, and M.A. **Valvano***. 2015. Topological analysis of the Escherichia coli WcaJ protein reveals a new conserved configuration for the polyisoprenyl-phosphate hexose-1-phosphate transferase family. Scientific Reports 5, 9178; DOI:10.1038/srep09178.
159. Hanuszkiewicz, A., P. Pittock, F. Humphries, H. Moll, A. Roa Rosales, A. Molinaro, P.N. Moynagh, G.A. Lajoie, and M.A. **Valvano***. 2014. Identification of the flagellin glycosylation system in *Burkholderia cenocepacia* and the contribution of glycosylated flagellin to evasion from human innate immune responses. Journal of Biological Chemistry 289: 19231-19244. **("Recommended" in Faculty1000; Eberl; 2014)**
158. El-Halfawy, O.M, and M.A. **Valvano***. 2014. Putrescine reduces antibiotic-induced oxidative stress as a mechanism of modulation of antibiotic resistance in *Burkholderia cenocepacia*. Antimicrobials Agents and Chemotherapy 58:4162-4171.
157. Andrade, A. and M.A **Valvano***. 2014. A *Burkholderia cenocepacia* gene encoding a non-functional tyrosine phosphatase is required for the delayed maturation of the bacteria-containing vacuoles in macrophages. Microbiology 160:1332-1345.
156. Fathy Mohamed, Y. and M.A. **Valvano***. 2014. A *Burkholderia cenocepacia* MurJ (MviN) homologue is essential for cell wall peptidoglycan synthesis and bacterial viability. Glycobiology 24:564-576.
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II. Review articles and book chapters

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III. Edited Books

1. Knirel, Y.A. and M.A. **Valvano** (eds.). 2011. Bacterial lipopolysaccharides: Structure, chemical synthesis, biogenesis and interaction with host cells. 411 pages. Springer Verlag, Wien. ISBN-978-3-7091-0732-4. **(4314 chapters downloaded by June 2014; top 50% most downloaded eBooks).**

IV. Non-peer reviewed articles

4. El-Halfawy, O.M, and M.A. **Valvano***. 2013. EDITORIAL: Communication is key: do bacteria use a universal 'language' to spread resistance? Future Microbiology 8:1357-1359.
3. El-Halfawy, O.M., and M.A. **Valvano***. 2011. EDITORIAL: Heteroresistance of opportunistic bacteria to antimicrobial peptides: A new challenge to antimicrobial therapy. Therapy 8:591-595.

V. Abstracts

Trainees in my laboratory regularly present work in progress at local, national, and international meetings and conferences. I do not keep a record of the abstracts, but typically 6 to 8 abstracts are submitted from my laboratory to conferences and scientific meetings per year.