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Canada Research Chair in Chemogenomics and Antimicrobial Research

Assistant Professor of Biochemistry

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EDUCATION

Sep 2010 – Aug 2014

Ph.D. in Microbiology and Immunology

Schulich School of Medicine and Dentistry

The University of Western Ontario, London, Ontario, Canada.

Passed Candidacy Exam in August 2011 with Distinction.

Thesis title: “Chemical Communication of Antibiotic Resistance by Highly Resistant Bacteria.”**Supervisor:** Dr. Miguel A. Valvano

Jun 2006 – Jan 2009

M.Sc. in Pharmaceutical Microbiology

Faculty of Pharmacy, University of Alexandria, Egypt.

Passed General and Specialized graduate courses qualifying for M Sc.

Degree in Pharmaceutical Science (Pharmaceutical Microbiology) with general grade Excellent. Nov 2006 and 2007, respectively.

Thesis title: “Microbiological studies on certain antihistaminic-antibiotic combinations.”**Supervisor:** Dr. Moustafa A. El-Nakeeb

Sep 2000 – Jun 2005

B.Sc. in Pharmaceutical Sciences

Faculty of Pharmacy

University of Alexandria, Egypt.

General grade Excellent with Honor.

WORK EXPERIENCE

Aug 2020 – Present

Canada Research Chair in Chemogenomics and Antimicrobial**Research**, Faculty of Science, University of Regina

Aug 2020 – Present

Assistant Professor of Biochemistry, Faculty of Science, University of Regina

Jul 2015 – present

Lecturer, Microbiology and Immunology Department, Faculty of Pharmacy, **Alexandria University**, Alexandria, Egypt.

Oct 2015 – Jul 2020

Postdoctoral Fellow, Biochemistry and Biomedical Sciences Department and the Michael G. DeGroote Institute for Infectious Diseases Research, Faculty of Health Sciences, Michael G DeGroote School of Medicine, McMaster University, Hamilton ON, Canada. Supervisor: Dr. Eric Brown.

Sep 2014 – Sep 2015

Postdoctoral Fellow, Department of Microbiology and Immunology, Schulich School of Medicine and Dentistry, The University of Western Ontario, London ON, Canada. Supervisor: Dr. Miguel Valvano.

Sep 2010 – Aug 2014	Ph. D. candidate, Graduate Teaching and Research Assistant , Microbiology and Immunology Department, Schulich School of Medicine and Dentistry, The University of Western Ontario, London, Canada.
Feb 2009 – Jul 2015	Assistant Lecturer , Pharmaceutical Microbiology Department, Faculty of Pharmacy, Alexandria University, Alexandria, Egypt.
Sep 2005 – Jan 2009	Teaching Assistant , Pharmaceutical Microbiology Department, Faculty of Pharmacy, Alexandria University, Alexandria, Egypt.
Jun 2005 – Jun 2006	Community Pharmacist , Abd Allah El-Gedida Pharmacy, Alexandria, Egypt.

HONORS AND AWARDS

2021 – 2023	Science Meets Parliament Delegate: representing scientists at the Canadian Federal Parliament through the Canadian Science Policy Centre and the office of the Chief Science Advisor of Canada
2020 – 2025	Canada Research Chair (Tier II) in Chemogenomics and Antimicrobial Research.
Apr 2020	The Department of Biochemistry & Biomedical Sciences Postdoctoral Fellow Impact Award presented to recognize publishing excellence among postdoctoral fellows in the department. \$500
Oct 2019	The Gerard Wright Postdoctoral Award in Infection Research presented to an IIDR Postdoctoral or MD Fellow whose research has made a significant contribution to the field of infectious disease research. \$1,000
Jun 2019	Knowles' Alumni Fund Award Finalist and CSM Postdoctoral Research Symposium Participant
Aug 2018 – Jul 2020	Michael G. DeGroote Postdoctoral Fellowship Award, Michael G. DeGroote Centre for Medicinal Cannabis Research, McMaster University. 52,500 Canadian Dollars/annum.
Feb 2016 – Jan 2017	Michael G. DeGroote Fellowship Award in Basic Biomedical Science, McMaster University. 50,000 Canadian Dollars.
Nov 2014	Fisher Scientific Third Place Oral Presentation Award at the 2014 Infection and Immunity Research Forum hosted by The Department of Microbiology and Immunology, the University of Western Ontario, London, Ontario, Canada. 100 Canadian Dollars.
Oct 2014	American Society for Microbiology Student/Postdoc Travel Grant to attend the 5 th ASM Conference on Cell-Cell Communication in Bacteria, in San Antonio, Texas. 500 U.S. Dollars.
May 2013 – Apr 2014	Doctoral Ontario Graduate Scholarship (OGS) for International Students. The Government of Ontario. 15,000 Canadian Dollars.
Sep 2013	Microbiology and Immunology Department- University of Western Ontario. Travel Award to attend the International Meeting on Antimicrobial Peptides, London, United Kingdom. 1,000 Canadian Dollars.
Jan 2013	The A.C.D.I.M.A. award for the best scientific publication in the Arab countries in 2012 for the "Bioburden-responsive antimicrobial PLGA ultrafine fibers for wound healing" paper. From the Arab Company for Drug Industries & Medical Appliances (ACDIMA). 7,200 U.S. Dollars.
Apr 2012	Microbiology and Immunology Department- University of Western Ontario. Travel Award to attend the International <i>Burkholderia cepacia</i> working group conference, Montreal, Canada. 1,000 Canadian Dollars.

May 2011	First place prize for Innovation and Entrepreneurship from Alexandria Univ., for research conducted as part of multidisciplinary Nanotechnology research team at Alexandria Univ. 15,000 Egyptian Pounds.
Sep 2010 – Aug 2014	Western Graduate Research Scholarship (WGRS), University of Western Ontario. 43,200 Canadian Dollars.
Sep 2010	Microbiology & Immunology Graduate Entrance Scholarship 2010, the University of Western Ontario. This scholarship is awarded to the best students among the class entering the graduate program and those transferring from the Master's to PhD program. 3,000 Canadian Dollars.
May 2010	International Doctoral Scholarship and membership in NRW International Graduate Research School Biotech-Pharma, University of Bonn, Germany. Award term 3 years. 54,000 Euros. Declined.
Dec 2007	Certificate of merit for being the Top Graduate Student in both the general and specialized graduate courses for the M.Sc. Degree class. Faculty of Pharmacy, Alexandria Univ. 200 Egyptian Pounds.
Sep 2005	Plaque and Award for being the Second top student on my undergraduate class (~1200 students) at the cumulative total of the B.Sc. in Pharmaceutical Sciences degree, with cumulative grade Distinction with Honor. Faculty of Pharmacy, Alexandria University. 3,000 Egyptian Pounds.
Jul 2004 – Aug 2014	Travel and Training Award by the International Pharmaceutical Student's Federation and Charles University, Hradec Králové, Czech Republic, in cooperation with Pharmacy: Lékárna U Rubínu, Brno, Czech Republic.
Sep 2001 – Sep 2004	Distinction award for obtaining general grade "Distinction" in the previous academic year. Received annually for all my undergraduate years of study. Faculty of Pharmacy, Alexandria University. 480 Egyptian Pounds.
Sep 2000	Certificate of Merit and Trophy for being Top student on High School Class (~300 students). Victoria College School, Alexandria.

RESEARCH FUNDING

Apr 2022 – Mar 2027	Natural Sciences and Engineering Research Council of Canada (NSERC) – Discovery Grant Uncovering the role of polyamines in bacterial survival and antibiotic resistance \$155,000
Apr 2022 – Mar 2027	Natural Sciences and Engineering Research Council of Canada (NSERC) – Discovery Launch Supplement Uncovering the role of polyamines in bacterial survival and antibiotic resistance \$12,500
Apr 2022 – Mar 2024	New Frontiers in Research Fund (NFRF) – Exploration Grant Uncovering novel biofilm-associated virulence factors and exploring Indigenous remedies to target bacterial wound infections \$250,000
Sep 2021 – Aug 2024	Saskatchewan Health Research Foundation (SHRF) – Establishment Grant Understanding and combatting bacterial resistance to antibiotics under clinically-relevant conditions \$120,000
May 2021 – Dec 2022	Vice-President (Research), University of Regina – Funding to participate in Science Meets Parliament Program

Nov 2020 – Apr 2022	\$2,500 Vice-President (Research), University of Regina – Tri-Agency Cohort Program Fund Uncovering the role of polyamines in bacterial survival and antibiotic resistance
Sep 2020 – Aug 2022	\$3,000 Innovation Saskatchewan – Innovation and Science Fund (ISF) Infrastructure to support the Canada Research Chair in Chemogenomics and Antimicrobial Research.
Sep 2020 – Aug 2025	\$200,000 Canada Foundation for Innovation (CFI) – John R. Evans Leaders Fund Infrastructure to support the Canada Research Chair in Chemogenomics and Antimicrobial Research.
Aug 2020 – Jun 2025	\$200,000 Canadian Institutes for Health Research (CIHR) – Canada Research Chairs (CRC) Program Canada Research Chair (Tier II) research stipend.
Aug 2020 – Jun 2025	\$100,000 Canadian Institutes for Health Research (CIHR) – Canada Research Chairs (CRC) Program Canada Research Chair (Tier II) salary award.
Aug 2020 – Jun 2025	\$500,000 Faculty of Science, University of Regina – Research Grant
Aug 2020 – Jun 2024	\$125,000 Faculty of Science, University of Regina – Graduate Student Support
Aug 2020	\$62,000 Faculty of Science, University of Regina – Start-up Research Funds
	\$90,000

INVITED TALKS

Mar 2022	Targeting microbial virulence to fight superbugs. Department of Chemistry and Biochemistry seminar, University of Regina, Regina, Canada
Dec 2021	Next-generation antimicrobials to avert a “silent pandemic” of antibiotic resistance. BioKMT society for advancement of sciences 8 th research network meeting entitled “Middle East-North Africa region post COVID: A dire need for biotechnology renaissance” in partnership with Al-Galala University, Egypt.
Nov 2021	Harnessing chemical genomics to fight superbugs. University of Lethbridge. Department of Chemistry and Biochemistry seminar series through the Western University Exchange Speaker Program (WUESP).
Mar 2021	Preventing the next pandemic: Addressing antibiotic resistance. Egypt Scholars Inc., a non-profit organization, Egypt (live on YouTube via Streamyard)
Feb 2021	Fighting superbugs: understanding and subverting bacterial resistance to antibiotics. Universidad Autonoma de Nuevo Leon, Mexico (via MS Teams)
Jan 2021	Resisting resistance: new strategies to fight superbugs. Alexandria Pharmacy Students’ Association, Alexandria University, Alexandria, Egypt (via Zoom).

Dec 2020	Antibiotic Resistance: New approaches to avert a global crisis. Keynote at Invest yourself in knowledge 5 th conference, PharmaSchool Association, Mansoura University, Mansoura, Egypt (via Zoom)
Mar 2020	Antibiotic Resistance: A Global Crisis That Requires Out-of-The-Box Solutions. Keynote at 2 nd PUA International Conference on "Multidisciplinary Approaches in Pharmaceutical Sciences". Faculty of Pharmacy and Drug Manufacturing, Pharos University in Alexandria, Alexandria, Egypt. 12 March 2020 (Delivered online).
Oct 2019	Discovery of an anti-virulence agent that reverses β -lactam resistance in MRSA. To accept the Gerard Wright Postdoctoral Award in Infection Research at the Michael G. DeGroote Institute of Infectious Disease Research Trainee Day, Hamilton, Canada.
Jul 2019	The Fight against Multi-drug Resistant Bacteria. Department of Chemistry and Biochemistry seminar, University of Regina, Regina, Canada
Jul 2019	Active learning and universal design in teaching biochemistry. Department of Chemistry and Biochemistry seminar, University of Regina, Regina, Canada
May 2019	Uncovering the hidden antimicrobial potential of Cannabis. Michael G. DeGroote Centre for Medicinal Cannabis Research Conference. St. Joseph's Healthcare Hamilton, Hamilton, Ontario, Canada.
Sep 2018	Lead discovery targeting cell wall teichoic acid in <i>Staphylococcus aureus</i> . GlycoNet Medicinal Chemistry Workshop. Hospital for sick kids, Toronto, Ontario, Canada.

PUBLICATIONS

Publications' summary

• Articles.....	20
• Book Chapters.....	1
• Patents.....	3
• Dissertations.....	2

Google Scholar citation summary

https://scholar.google.ca/citations?user=_BDXWZAAAAAJ&hl=en&oi=ao

Articles (*h-index*: 14)

20. Naguib M, Feldman N, Zarodkiewicz P, Shropshire H, Biamis C, **El-Halfawy OM**, McCain J, Dezanet C, Décout J, Chen Y, Cosa G, and Valvano MA (Accepted). An evolutionary conserved detoxification system for membrane lipid-derived peroxy radicals in Gram-negative bacteria. PLOS Biology. PBIOLGY-D-21-02956

19. Farha MA[†], **El-Halfawy OM[†] (Co-first author)**, Gale RT, MacNair CR, Carfrae LA, Zhang X, Jentsch NG, Magolan J, Brown ED (2020). Uncovering the hidden antibiotic potential of Cannabis. ACS Infectious Diseases. <https://doi.org/10.1021/acsinfecdis.9b00419>. Also deposited on BioRxiv pre-print repository at <https://doi.org/10.1101/833392>

This study was highlighted by the media such as The Guardian (UK), CBC news Canada, The New York Post, the Hamilton Spectator, Now This News, Scientific American (Arabic edition), 770 CHQR Radio Calgary-Canada, the London free Press, BNR Radio (Netherlands) and others.

18. El-Halfawy OM, Czarny TL, Flannagan RS, Day J, Bozelli-Jr JC, Kuiack RC, Salim A, Eckert P, Epand RM, McGavin MJ, Organ MG, Heinrichs DE, Brown ED (2020). Discovery of an antivirulence compound that reverses β -lactam resistance in MRSA. *Nature Chemical Biology*. doi:10.1038/s41589-019-0401-8

This article was highlighted by Nature Reviews Microbiology and Nature Reviews Drug Discovery.

This article was highlighted by the media such as Forbes, CHCH TV news Hamilton, Phys.org, BBC radio news (Arabic), Scientific American, CBC TV (Egypt), Al-Jazeera, TEN TV Egypt, DMC TV Egypt and others.

17. Fang L, Zhang G, El-Halfawy OM, Simon M, Brown ED, and Pfeifer BA (2018). Broadened Glycosylation Patterning of Heterologously Produced Erythromycin. *Biotechnology & Bioengineering*; 115(11):2771-2777. doi: 10.1002/bit.26735.

16. El-Halfawy OM, Naguib MA and Valvano MA (2017). Novel antibiotic combinations proposed for treatment of *Burkholderia cepacia* complex infections. *Antimicrobial resistance and Infection control*; 6 (1), 120.

15. El-Halfawy OM, Klett J, Ingram R, Loutet S, Murphy M, Martin-Santamaria S, Valvano MA. (2017). Antibiotic capture by bacterial lipocalins uncovers an extracellular mechanism of intrinsic antibiotic resistance. *mBio*. 14; 8(2). pii: e00225-17.

14. Myers CL, Li FK, Koo BM, El-Halfawy OM, French S, Gross CA, Strynadka NC, Brown ED. (2016). Identification of two phosphate starvation-induced wall teichoic acid hydrolases provides first insights into the degradative pathway of a key bacterial cell wall component. *J Biological Chemistry*. 9; 291(50):26066-26082.

13. Loutet SA[†], El-Halfawy OM[†] (Co-first author), Jassem AN, López JMS, Medarde AF, Speert DP, Davies JE, and Valvano MA (2015). Identification of synergists that potentiate the action of polymyxin B against *Burkholderia cenocepacia*. *International J. of Antimicrobial Agents*; 46(4):376-80. doi: 10.1016/j.ijantimicag.2015.05.010.

12. El-Halfawy OM, and Valvano MA (2015). Antimicrobial Heteroresistance: an emerging field in need of clarity. *Clinical Microbiology Reviews*; 28 (1): 191-207.

11. El-Halfawy OM, and Valvano MA (2014). Putrescine reduces antibiotic-induced oxidative stress as a mechanism of modulation of antibiotic resistance in *Burkholderia cenocepacia*. *Antimicrob Agents Chemother*; 58(7):4162-71.

10. El-Halfawy OM, and Valvano MA (2013). Communication is key: do bacteria use a universal 'language' to spread resistance? *Future Microbiol*; 8(11): 1357-9.

9. El-Halfawy OM and Valvano MA (2013). Chemical Communication of Antibiotic Resistance by a Highly Resistant Subpopulation of Bacterial Cells. *PLOSOne* Jul 3;8(7):e68874.

This article was featured by PlosOne ("*Resisting Antibiotics: Some Bacteria Get By With a Little Help From Their Friends*"; <http://blogs.plos.org/everyone/2013/07/03/resisting-antibiotics-some-bacteria-get-by-with-a-little-help-from-their-friends/>).

This article was highlighted by the media such as CTV-London news, the London free press, Toronto Sun, and others.

8. El-Halfawy OM and Valvano MA (2012). Non-genetic mechanisms communicating antibiotic resistance: rethinking strategies for antimicrobial drug design. *Expert Opin Drug Discov*;7(10):923-33.

7. Rosales-Reyes R, Saldías MS, Aubert DF, El-Halfawy OM, Valvano MA (2012). The *suB* gene of *Burkholderia cenocepacia* is required for protein secretion, biofilm formation, motility and polymyxin B resistance. *Microbiology*. Sep;158:2315-24.

6. El-Nakeeb MA, Abou-Shleib HM, Khalil AM, Omar HG and El-Halfawy OM* (corresponding author) (2012). Reversal of antibiotic resistance in Gram-positive bacteria by the antihistaminic azelastine. *APMIS*;120(3):215-20.

5. Said SS, El-Halfawy OM, El-Gowell HM, Aloufy AK, Boraie NA, El-Khordagui LK (2012). Bioburden-responsive antimicrobial PLGA ultrafine fibers for wound healing. *European J. of Pharmaceutics and Biopharmaceutics*, 80(1):85-94.

This article received the A.C.D.I.M.A. award for the best scientific publication in the Arab countries in 2012 (Value of the award: \$7,200).

4. **El-Halfawy OM**, Valvano MA (2011). Heteroresistance of opportunistic bacteria to antimicrobial peptides: A new challenge to antimicrobial therapy. *Therapy* 8, (6), 591-595.
3. El-Nakeeb MA, Abou-Shleib HM, Khalil AM, Omar HG and **El-Halfawy OM*** (corresponding author) (2011). *In vitro* antibacterial activity of some antihistaminics belonging to different groups against multi-drug resistant clinical isolates. *Brazilian Journal of Microbiology* 42 (3): 980-991.
2. El-Nakeeb MA, Abou-Shleib HM, Khalil AM, Omar HG and **El-Halfawy OM*** (corresponding author) (2011). Membrane permeability alteration of some bacterial clinical isolates by selected antihistaminics. *Brazilian Journal of Microbiology* 42 (3): 992-1000.
1. Said SS, Aloufy AK, **El-Halfawy OM**, Boraie NA, El-Khordagui LK (2011). Antimicrobial PLGA ultrafine fibers: Interaction with wound bacteria. *European J. of Pharmaceutics and Biopharmaceutics*, 79 (1): 108-18.

Book Chapters

1. **El-Halfawy OM** and Brown ED (2019). High-Throughput Screening for Inhibitors of Wall Teichoic Acid Biosynthesis in *Staphylococcus aureus*. In *Methods Molecular Biology*, Vol. 1954, Inka Brockhausen (Eds): Bacterial Polysaccharides, 978-1-4939-9153-2. Springer Nature.

Patents

3. Brown ED, **El-Halfawy OM**, Czarny TL, Day J, Organ M, Flannagan RS, Heinrichs DE. Compounds that target the bacterial envelope stress response and reverse β -lactam resistance in MRSA. U.S. Provisional Patent Application No. 62800155, filed on 1 February 2019.
2. Brown ED, **El-Halfawy OM**, Farha MA, Magolan J, Gale R. Synthetic antibacterial compounds and uses thereof. U.S. Patent Application No. 62/770,398, priority filed on 21 November 2018. International Patent Application No. PCT/CA2019/051663 corresponding to USSN 62/770,398, international filing on 20 November 2019.
1. Said SS, **El-Halfawy OM**, Aloufy AK, Boraie NA, El-Khordagui LK. Smart antimicrobial polymeric ultrafine fibres for the preparation of novel wound dressings. Patent Pending applied for to the Patent office, Egyptian Ministry of Scientific Research, Application no. 2010060999 submitted on 14 June 2010.

Dissertations

2. **El-Halfawy OM** (2014). Chemical Communication of Antibiotic Resistance by Highly Resistant Bacteria. Ph.D. thesis. Graduate and Postdoctoral Studies Electronic Thesis and Dissertation Repository, The University of Western Ontario.
1. **El-Halfawy OM** (2009). Microbiological studies on certain antihistaminic-antibiotic combinations. M.Sc. thesis. Faculty of Pharmacy, Alexandria University.

Oral Presentations

6. **El-Halfawy OM**, Czarny TL, Flannagan RS, Day J, Salim A, Kuiack RC, McGavin MJ, Organ MG, Heinrichs DE, Brown ED. Discovery of an anti-virulence compound that targets the bacterial envelope stress response and reverses β -lactam resistance in MRSA. 2019 Canadian Society for Microbiologists Conference: Post-Doctoral Research Symposium. Sherbrooke, Quebec, Canada. June 13, 2019.
5. **El-Halfawy OM**, Czarny T, Brown E. (2017). Lead discovery targeting cell-envelope related virulence factors in *Staphylococcus aureus* to uncover novel bioactives that reverse β -lactam antibiotic resistance in

MRSA. The 2017 Infection and Immunity Research Forum, the Department of Microbiology and Immunology, the University of Western Ontario, London, Ontario, Canada. October 27, 2017.

4. El-Halfawy OM and Valvano MA (2014). A novel paradigm of interbacterial communication of antibiotic resistance mediated by conserved secreted bacterial lipocalins. The 2014 Infection and Immunity Research Forum, the Department of Microbiology and Immunology, the University of Western Ontario, London, Ontario, Canada. November 6, 2014.

3. El-Halfawy OM and Valvano MA (2014). Bacteria speak "Universal Language" to communicate antibiotic resistance. Western Research Forum, the University of Western Ontario, London, Canada. 19 March 2014.

2. El-Halfawy OM and Valvano MA (2012). Heteroresistance of *Burkholderia cenocepacia* to antimicrobial peptides. International Burkholderia cepacia working group conference, April 2012, Montreal, Canada.

1. Aloufy AK, Said SS, El-Halfawy OM, Boraie NA, El-Khordagui LK (2010). Interaction of Antimicrobial Nano/Ultrafine Fibers with Wound Bacteria. The 5th International Conference on Surfaces, Coatings and Nanostructured Materials (NANOSMAT-5), Reims, France. 19-21 October 2010.

Poster Presentations

12. Moulding P, El-Halfawy, OM* (2021). Uncovering new targets for the fight against MRSA infections: Targeting Polyamine Detoxification. E-poster at Saskatchewan Health Research Showcase 2021 virtual conference.

11. Jentsch NG, Zhang X, El-Halfawy OM, Farha MA, Brown ED, Magolan J. (2019). Synthesis of cannabigerol derivatives via direct ortho-allylation of phenols. Michael G. DeGroote Institute of Infectious Disease Research Trainee Day, Hamilton, Canada. October 2019.

10. Rachwalski K, El-Halfawy OM, Gale R, Brown ED. (2017). Investigation of Putative Wall Teichoic Acid Degrading Enzymes in *Staphylococcus aureus*. Canadian Society for Microbiologists Conference, Waterloo, Canada. June 2017.

9. El-Halfawy OM, Czarny TL, Brown ED. (2017). Antagonism Screen for Inhibitors of Cell Envelope Targets Uncovers Novel Bioactives That Reverse β -lactam Antibiotic Resistance in MRSA. The Canadian glycomics symposium, Banff AB, Canada. May 2017.

8. Rachwalski K, El-Halfawy OM, Brown ED. (2016). Investigation of Putative Wall Teichoic Acid Degrading Enzymes in *Staphylococcus aureus*. Michael G. DeGroote Institute of Infectious Disease Research Trainee Day, Hamilton, Canada. October 2016.

7. El-Halfawy OM, Czarny TL, Brown ED. (2016). Antagonism screen for inhibitors of bacterial cell wall biogenesis uncovers novel MRSA bioactives. The Canadian glycomics symposium, Banff AB, Canada. May 2016.

6. El-Halfawy OM and Valvano MA (2015). Antibiotic Hijacking by Bacteriocins: A novel mechanism of antibiotic intrinsic resistance. Keystone symposium on Gram-negative resistance, Tahoe city, California, USA. March 29-April 2, 2015.

5. El-Halfawy OM and Valvano MA (2014). A novel paradigm of interbacterial communication of antibiotic resistance mediated by conserved secreted bacterial lipocalins. The 5th ASM Conference on Cell-Cell Communication in Bacteria, San Antonio, Texas, USA. October 18-21, 2014.

4. El-Halfawy OM, and Valvano MA (2014). Chemical communication of antibiotic resistance by putrescine via protection against antimicrobial peptide-induced oxidative stress. London Health Research Day, London, Canada. 18 March 2014.

3. El-Halfawy OM, and Valvano MA (2013). Chemical communication of antibiotic resistance by putrescine via protection against antimicrobial peptide-induced oxidative stress. Infection and Immunity Research Forum, London, Canada. 1 Nov 2013.

2. El-Halfawy OM, and Valvano MA (2013). Chemical communication of antibiotic resistance by putrescine via protection against antimicrobial peptide-induced oxidative stress. International Meeting on Antimicrobial Peptides, London, United Kingdom. 23-24 Sep 2013.

1. El-Halfawy OM, EL-Nakeeb MA, Abou-Shleib HM, Khalil AM, Omar HG (2010). Effect of the antihistaminic azelastine on the antibacterial activity of selected antibiotics. Biovision Alexandria Conference 2010, Bibliotheca Alexandrina, Alexandria, Egypt. 11-15 April 2010.

PRESS RELEASES AND MEDIA COVERAGE

1. University of Regina News; Jun 29, 2021. "Funding helps U of R researchers address province's health challenges"
2. Discourse Research Magazine; Jun 28, 2021. "Funding announced for U of R health researchers to improve health outcomes"
3. University of Regina news; Dec 16, 2020. "Newest U of R Canada Research Chair focused on tackling antibiotic resistance". <https://www.uregina.ca/external/communications/feature-stories/current/2020/12-16.html> By University Advancement and Communications.
4. ASBMB Today, The member magazine of the American Society for Biochemistry and Molecular Biology; Nov 5, 2020. "Cannabis: A secret weapon against superbugs"
5. **MBC-Masr TV**, 'Elhekaya with Amr Adib' program. The antibiotic crisis and the impact of the COVID-19 pandemic on it. https://www.youtube.com/watch?v=tA_Xd0_5gGM, 5 October 2020.
6. University of Regina News; Sep 17, 2020. "Innovation Saskatchewan provides over \$700,000 to University of Regina research projects through Innovation and Science Fund"
7. **Infectious diseases special edition (IDSE):** Recognizing 'Heteroresistance' In Bacterial Infections. <https://www.idse.net/Bacterial-Infections/Article/07-20/Recognizing-Heteroresistance-In-Bacterial-Infections/58995> By Arlene Weintraub, 15 July 2020.
8. **Featured among the most prominent achievements of Egyptian scientists in 2019 by Scientific American (Arabic edition):** <https://www.scientificamerican.com/arabic/articles/news/the-most-prominent-achievements-of-egyptian-scientists-in-2019/> by Mohamed Mansour, 27 January 2020.
Cover story and interview: <https://www.scientificamerican.com/arabic/articles/news/omar-el-halfawy-researcher-in-the-world-of-antibiotics/> 6 February 2020.
9. **Media coverage and interviews on the antibiotic activity of Cannabis study (Jan - Feb 2020):**
 - a) **The Guardian:** <https://www.theguardian.com/society/2020/jan/19/cannabis-compound-could-be-weapon-in-fight-against-superbugs>
 - b) **CBC news:** McMaster researchers find cannabis has antibiotic potential <https://www.cbc.ca/news/canada/hamilton/mcmaster-cannabis-antibiotic-1.5476869>
 - c) **The Hamilton Spectator:** Cannabis a superbug slaying antibiotic? McMaster University researchers break new ground. <https://www.thespec.com/news/hamilton-region/2020/02/29/cannabis-a-superbug-slaying-antibiotic-mcmaster-researchers-break-new-ground.html>
 - d) **The New York Post:** Marijuana could fight drug-resistant superbugs like MRSA, study says <https://nypost.com/2020/02/28/marijuana-could-fight-drug-resistant-superbugs-like-mrsa-study-stays/>
 - e) **Now this news:** <https://nowthisnews.com/weed/cannabis-could-fight-superbugs-study-finds>
 - f) **Interview with BNR Radio Netherlands:** <https://podcastluisteren.nl/ep/Wetenschap-Vandaag-or-BNR-Antibiotica-van-cannabis-weer-een-stapje-dichterbij>
 - g) **Live Interview with the Morning Show with Sue and Andrew at 770 CHQR radio Calgary, Global news affiliate.**
 - h) **The GrowthOp:** <https://www.thegrowthop.com/cannabis-health/mcmaster-university-researchers-discover-cannabis-derived-compound-may-be-effective-in-treating-antibiotic-resistant-superbugs>
 - i) **The London Free Press:** <https://lfpres.com/cannabis-health/mcmaster-university-researchers-discover-cannabis-derived-compound-may-be-effective-in-treating-antibiotic-resistant-superbugs/wcm/5eae1042-1716-4a65-9556-f6a43d79ff96>

- j) **News 24** in partnership with **City Press**: <https://m.news24.com/SouthAfrica/Life/study-shows-cannabis-compound-could-be-our-superman-against-superbugs-20200120>
 - k) **Interview with Talk Plant Blog**: https://www.talkplant.com/cannabis-secret-weapon-against-antibiotic-resistance-crisis/?utm_source=rss&utm_medium=rss&utm_campaign=cannabis-secret-weapon-against-antibiotic-resistance-crisis
 - l) **Interview with MEA Worldwide News**: <https://meaww.com/marijuana-compound-shows-promise-in-killing-deadly-superbugs-such-as-mrsa-that-affects-90-000-in-us>
10. **Media coverage and interviews on the discovery of a novel antivirulence compound against MRSA (Nov - Dec 2019):**
- a) **Forbes**: <https://www.forbes.com/sites/victoriaforster/2019/11/26/hospital-superbug-mrsa-disarmed-by-exciting-new-compound/#647288cd105b>
 - b) **Phys.org**: <https://phys.org/news/2019-11-potent-antimicrobial-staph-infections.html>
 - c) **Interview with CHCH TV**: <https://www.chch.com/mcmaster-university-researchers-make-a-discovery-that-could-lead-to-treatment-against-superbugs/>
 - d) **Scientific American** (Arabic edition)-interview and cover story: <https://www.scientificamerican.com/arabic/articles/news/after-thirty-years-of-failure-discovery-of-an-antivirulence-compound-that-reverses-beta-lactam-resistance-in-mrsa/>
 - e) **Interview with BBC News Radio** (Arabic edition): <https://soundcloud.com/bbc-arabic/msxakxef32xs>
 - f) **Live phone interview with DMC TV (Egypt)**: <https://www.youtube.com/watch?v=3DUDb0l1WGo&app=desktop>
 - g) **CBC TV** (Egypt)- Recorded video report: <https://www.youtube.com/watch?v=4-yq-nu6VJ8&feature=youtu.be>
 - h) **Live videoconference interview with TEN TV (Egypt)**: <https://www.youtube.com/watch?v=sD6LO4iFM4c&feature=share>
 - i) **Other interviews**: Marsad al mostaqbal (Dubai, UAE), Idaat.net.
 - j) **Coverage by major newspapers and media outlets in Egypt**: including Rosalyoussef, El-Sherook,
11. **GlycoNet news**; October 16, 2018: "Inaugural meeting helps GlycoNet identify lead molecules for drug development."; by Bernie Poitras. <http://canadianglycomics.ca/inaugural-meeting-helps-glyconet-identify-lead-molecules-for-drug-development/>. Covering the Canadian glycomics Medicinal Chemistry Workshop, and my talk at the workshop at Toronto, Sep 2018.
12. **Western News**; July 9, 2015: "Postdoctoral scholar combats blockbuster foe"; by Jesica Hurst. <http://news.westernu.ca/2015/07/postdoctoral-scholar-combats-a-blockbuster-foe/>
13. **Current Affairs- Schulich School of Medicine and Dentistry**; May 20, 2015; Volume 2, Issue 5: "Like something out of a science fiction movie". http://www.schulich.uwo.ca/gradstudies/about_us/monthly_newsletter/2015/may/like_something_out_of_a_science_fiction_movie.html
14. **Toronto Sun**; July 4, 2013: "Scientists decode 'language' of drug-resistant bacteria". <http://www.torontosun.com/2013/07/04/scientists-decode-language-of-drug-resistant-bacteria>
15. **CTV News**; July 3, 2013: "Western researchers find bacteria communicate to resist antibiotics"; by Jan Sims. <http://london.ctvnews.ca/western-researchers-find-bacteria-communicate-to-resist-antibiotics-1.1352180>
16. **London Free Press**; July 3, 2013: "Scientists at Western make a potentially life-saving discovery"; by Jonathan Sher. <http://www.lfpress.com/2013/07/03/scientists-at-western-make-a-potentially-life-saving-discovery>
17. **Western Media Relations**; July 4, 2013: "Bacteria communicate to help each other resist antibiotics"; by Kathy Wallis. http://communications.uwo.ca/media/releases/2013/June/bacteria_communicate_to_help_each_other_resist_antibioanti.html

SERVICE, SCHOLARLY AND PROFESSIONAL ACTIVITIES

May 2022 – Jul 2022	CIHR Project Grant Review Genomics: Systems and computational biology (GMX) committee, Reviewer in training program
Apr 2022	Science outreach at The Knowledge Society, helping high-school students with an AMR-related science project
Mar 2022	CIHR Institute for Infection and Immunity New Investigators Forum (III-NIF 2022) Participant
Feb 2022 – Present	Member, Search committee at the Department of Chemistry and Biochemistry for Tenure-Track Faculty position
Jul 2021 – Present	Member, the University of Regina Cannabis Research Committee
Jul 2021 – Present	Member, CIHR "Fellowships - Post-PhD" Awards Committee, Canadian Institutes of Health Research
Jul 2021 – Present	Member of the Faculty of Science Student Appeals Committee at the University of Regina
Jul 2021 – Present	Member of the Department of Chemistry and Biochemistry Graduate Committee, the University of Regina
Apr 2021	Science outreach at The Knowledge Society, helping high-school students with an AMR-related science project
Mar 2021 – Present	Canada's Science Meets Parliament delegate, Canadian Science Policy Centre
Mar 2021 – Present	Member of the Canada Research Chairs internal adjudication committee at the University of Regina
Mar 2021	External reviewer: MITACS Accelerate
Jan 2021	Member of the CIHR CGS Masters Review Committee at the University of Regina
Jan 2021 – Present	Member of the British Society of Antimicrobial Chemotherapy
Nov 2020 – Dec 2020	Consultation for the Minister of Higher Education and Scientific Research of Egypt on the establishment and development of the research and educational enterprise at four new Egyptian Universities.
Mar 2019 – Present	Member of the Canadian Society of Microbiologists.
Jan 2020	Grant reviewer: Health Research Council of New Zealand
Nov 2013 – present	<i>Ad hoc</i> reviewer: mBio; Annals of the New York Academy of Sciences (Ann NY Acad Sci); Journal of Antimicrobial Chemotherapy (JAC); JAC-AMR; J. of Applied and Environmental Microbiology (JAE); Nucleic Acids Research (NAR) Journal; FEMS Microbiology letters; PLOS One; Journal of Environmental Management; African Journal of Microbiology Research; Brazilian Journal of Microbiology; Bentham Science Publishers: ebooks; Journal of Basic and Applied Zoology; Microchemical Journal.
Dec 2018 – Jan 2019	Undergraduate Science Case Competition Judge. Scinapse Science, a non-profit organization consisting of student leaders from universities across Ontario hosted in the University of Ottawa.
Oct 2017 – Nov 2018	Poster presentations Judge, Michael G. DeGroote Institute of Infectious Disease Research Trainee Day 2017 and 2018.
Jan 2016 – Sep 2016	Editor, Glyconet trainee association monthly eNewsletter
Sep 2015 – Sep 2016	Executive Committee member of the Trainee Association of the Canadian Glycomics Network "GlycoNet", a Network of Centres of Excellence of Canada.
May 2016	Organizer and Workshop Session Chair, Canadian Glycomics Network (GlycoNet) first Annual General Meeting.
Sep 2014 – present	Member of the American Society for Microbiology.

Jul 2013 – Oct 2013	Member of the Graduate Students Review panel for hiring the Department Chair. Department of Microbiology and Immunology, University of Western Ontario.
Jul 2012 – Sep 2012	Member of the Graduate Students panel for Graduate Program Review. Department of Microbiology and Immunology, University of Western Ontario.
Jun 2008 – Aug 2010	Study Design Advisor and Consultant at the fee-based microbiological testing facility. Pharmaceutical Microbiology Department, Faculty of Pharmacy, Alexandria University.
May 2009 – Jul 2010	Graduate students Representative in the Graduate Studies Committee for updating graduate programs and courses' curricula at the Faculty of Pharmacy, Alexandria University.
Aug 2007	Organization of a workshop on "PCR Technology and its applications" at the Pharmaceutical Microbiology department, Faculty of Pharmacy, Alexandria University.

TEACHING EXPERIENCE

Winter 2022	Advances in Antimicrobial Research: from Genomes to Drugs BIOC 827AY Graduate course towards MSc and Ph.D. in Biochemistry Faculty of Graduate Studies and Research, University of Regina
Winter 2022	Chemogenomics: BIOC 428AK Bachelor's Degree in Biochemistry Faculty of Science, University of Regina
Fall 2021 – Present	Coordinator: BIOC 400/401 Honor's thesis program Bachelor's Degree in Biochemistry Faculty of Science, University of Regina
Fall 2021 – Present	Coordinator: BIOC 800/801 Literature review and Research proposal MSc Degree in Biochemistry Faculty of Science, University of Regina
Mar 2021	Applications of chemogenomics in antibiotic drug discovery. Guest lecture in BIOC 430 Chemical Biology Course. Faculty of Science, University of Regina
Fall 2019	New and Emerging Applications of Medicinal Cannabis. Online module in: Therapeutic Applications of Cannabis SCC 102 Certificate on the Science of Cannabis. <i>Peter Boris Centre for Addictions Research, the Michael G. DeGroote Centre for Medicinal Cannabis Research, and McMaster Centre for Continuing Education, McMaster University.</i>
Sep 2011 – Dec 2013	Biology of Prokaryotes: Microimmun 2100. Bachelor's Degree in Medical Sciences Program. <i>Microbiology and Immunology Dept., the University of Western Ontario.</i>
Sep 2005 – Jun 2010	Practical Pharmaceutical Microbiology course. B.Sc. in Pharmaceutical Sciences Program. <i>Faculty of Pharmacy, Alexandria University.</i>
Sep 2005 – Jan 2009	Practical Public health and Parasitology course. B.Sc. in Pharmaceutical Sciences Program. <i>Faculty of Pharmacy, Alexandria University.</i>
Sep 2008 – Jan 2009	Practical microbiology course. B.Sc. in Dentistry Program. <i>Faculty of Dentistry, Alexandria University.</i>

TEACHING CERTIFICATES

Jun 2016	Western Certificate in University Teaching And Learning. Centre for Teaching and Learning. The University of Western Ontario.
Feb 2015	Instructional Skills Workshop (ISW) Program. 20 hr, administered at the Centre for Teaching and Learning. The University of Western Ontario.

TEACHING TRAINING

I. At the Paul R. MacPherson Institute for Leadership, Innovation and Excellence in Teaching, McMaster University

Emerging Educators' Development Workshops, Oct 2016

Active Learning in Engineering, Health Sciences and Science
 Marking in Engineering, Health Sciences and Science
 Using Technology in the Classroom

II. At the Centre for Teaching and Learning, University of Western Ontario.

The Teaching Mentor Program, a peer consultation program, Winter 2015.

Course Design and Renovation Workshop (12 hr), Dec 2014.

Getting Mentored: Building Successful Academic Relationships Across Cultures (2 hr), Nov 2014.

Future Professor Workshop Series (1.5 hr each):

The Concept of Universal Design for Learning: Reaching a Diverse Group of Learners, Jul 2014.
 Preparing an Effective Course Syllabus, Jul 2014.
 Using Social Media Effectively in the University Classroom, Jun 2014.
 A Look Back: Leading Effective Exam Review Sessions, Mar 2014.
 Strategies that Work: Teaching in the Sciences, Mar 2014.
 Getting Feedback on Your Teaching, Mar 2014.
 Putting Together a Teaching Dossier, Oct 2013.
 Writing A Teaching Philosophy Statement, Oct 2013.

Teaching Master Class for Graduate Students (2 hr each):

Teaching Master Class - Lecture in Statistics, Mar 2014.
 Teaching Master Class - Lecture in Physiology, Mar 2014.

Teaching Assistant Training Program (15 hr), Sep 2011.

Graduate Student Conference on Teaching (2 days), Sep 2011.

III. At the Faculty and Leadership Development Center (FLDC), Alexandria University.

The following workshops, 3 days each:

Communication skills, June 2006.
 Thinking skills, June 2006.
 Effective teaching, May 2007.
 Financial Affairs at the university, May 2007.

Credit hours, May 2007.

Research Methodology, May 2007.

Ethics of scientific research, June 2010.

International publishing of scientific papers, June 2010.

Organization of scientific conferences, July 2010.

University administration, July 2010.

Examination and students' assessment methods, July 2010.

COMMUNITY AND VOLUNTEER ACTIVITIES

Sep 2016 – Aug 2017

Aug 2007 – present

Member-at-large, Parents Council of ISH School- Hamilton ON

Founding member of the Alumni association of the Faculty of Pharmacy - Alexandria University, Egypt.