Medhat Elhalawany, Ph.D.

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Professional Summary

Cell and molecular biologist and biology educator with more than 15 years of experience in undergraduate and graduate teaching, biomedical research, laboratory methods, project coordination, and student mentoring. My research covers several areas of cellular and molecular biology, with a primary focus on understanding complex cellular signaling pathways involved in human health and disease, particularly cancer.

My academic and professional interests include:

- Cell Biology
- Molecular Biology
- Cancer Biology
- Human Physiology & Platelet Biology
- Biotechnology/Biochemistry
- Bioinformatics.

Teaching Experience

Throughout my academic career, I have taught and mentored undergraduate, graduate, and postdoctoral students in cell and molecular biology, physiology, and the biomedical sciences. My teaching experience includes introductory biology, Human Anatomy and Physiology, Cell and Molecular Biology, and Cancer Biology. I design these courses to help students develop a clear understanding of biological concepts while building the critical-thinking, problem-solving, and practical skills needed for academic and professional success.

Education

Ph.D. in Cell & Molecular Biology
Nagoya University, Japan

Thesis: Identification and Molecular Characterization of Cysteine Protease Inhibitors and Vps4 in social amoeba *Dictyostelium discoideum*.

M.Sc. in Molecular Biology
Cairo University, Egypt

Thesis: Molecular Cloning of some Schistosome Genes Coding for Antigenic Proteins.

B.Sc. in Zoology "Distinction"
Cairo University, Egypt

Academic and Research Appointments

Lecturer of Biology — 08/2026 – Present
School of Science and Engineering, Department of Biology, San Marcos TX

- Teach undergraduate students Biology courses.

Assistant Professor of Biology — 08/2024 – 07/2026
Texas College, Division of Natural & Computational Sciences, Tyler TX

- Teach undergraduate students Biology courses.

Postdoctoral Research Associate 05/2022 – 07/2024
University of Texas at Tyler, Ben and Maytee Fisch College of Pharmacy, Tyler TX.

- My research focused on studying nAChR positive allosteric modulators (PAMs) as a novel treatment of nAChR subpopulations for smoking cessation and neurodegenerative diseases in humans.

Research Scientist 09/2020 - 04/2022
Texas A&M Irma Lerma Rangel School of Pharmacy, Kingsville TX.

- My research primarily focused on platelet biology, emphasizing the intracellular signaling mechanisms responsible for regulating platelet function in health and disease.

Instructor 02/2019 - 08/2020
University of Texas Southwestern Medical Center, Dallas TX.

- My research focused on establishing patient-derived 3D organoids to understand the complexities of the tumor microenvironment in pancreatic cancer.

Associate Professor of Cell & Molecular Biology 07/2016 - 01/2019
Department of Zoology, Faculty of Science, Cairo University, Egypt.

- Teach undergraduate and graduate students Biology courses.

- My research has focused on characterizing molecular and cellular components contributing to the development of hepatocellular carcinoma and breast cancer. Additionally, I served as a principal investigator and coordinator for the first Structural Biology Facility at Cairo University from 2013 to 2018.

Assistant Professor of Cell & Molecular Biology 05/2005 - 06/2016
Department of Zoology, Faculty of Science, Cairo University, Egypt.

- Teach undergraduate and graduate students Biology courses.

- My research has focused on characterizing molecular and cellular components contributing to developing hepatocellular carcinoma and breast cancer.

Postdoctoral Training

Talents Fellow 11/2011 - 04/2013
Cluster in Biomedicine (CBM), Elettra, Trieste, Italy.

Project Title: Structure and Function of TRIM E3 Ligases in the Ubiquitylation Cascade.

Postdoctoral Fellow 12/2008 - 09/2009
Department of Microbiology and Immunology, Faculty of Science, University of British Columbia, Canada.

Project Title: The function of Ras genes in the model organism *Dictyostelium discoideum*.

Postdoctoral Fellow 01/2008 - 08/2008
Department of Chemistry, Faculty of Science, Calgary University, Canada.

Project Title: X-ray Absorption Spectroscopy (XAS) as an analytical tool in biology.

Awards

- **TALENTS Fellowship** – People Specific Program FP7 Marie Curie Actions. 11/2011 - 04/2013 (approximately $2500/month).

- **Ph.D. Monbukagusho Scholarship** – Nagoya University, Japan – A full Ph.D. 03/2001 - 03/2005 Scholarship by the Ministry of Education of Japan (approximately $1600/month after tuition fees).

Research Funding (PI)

- Capacity Building Grant (2013 - 2018), approximately $400K funded by Science and Technology Development Fund "STDF, Egypt" – Title: Establishing the first Structural Biology Facility at Cairo University, Egypt.

- Research Grant (2016) – approximate $10K funded by Science and Technology Development Fund "STDF, Egypt" – Title: Utilizing RNA-Seq data for better understanding Breast Cancer Biology.

Publications

1. Romero A, Sanchez A, Jones J, Ledesma K, **El-Halawany MS**, Hamouda AK, Bill B. (2024) Optimization of zebrafish larvae 6-OHDA exposure for neurotoxin induced dopaminergic marker reduction. *Zebrafis*h, 21(4):287-293.
2. Alkhlaif Y, **El-Halawany MS**, Toma W, Park A, Hamouda AK, Damaj MI (2023). L-theanine attenuates nicotine reward and withdrawal signs in mice. *Neurosci Lett* 11; 807:137279.
3. Villalobos-García D, Ali HA, Alarabi AB, **El-Halawany MS**, Alshbool FZ, Khasawneh FT (2022). Exposure of Mice to Thirdhand Smoke Modulates *In Vitro* and *In Vivo* Platelet Responses*. Int J Mol Sci* 23(10):5595.
4. Lozano PA, Alarabi AB, Garcia SE, Boakye ET, Kingbong HT, Naddour E, Villalobos-García D, Badejo O, **El-Halawany MS**, Khasawneh FT and Alshbool FZ (2022). The Antidepressant Duloxetine inhibits platelets function and protects against thrombosis. *Int J Mol Sci* 23(5):2587.
5. Ali HA, Alarabi AB, Karim ZA, Rodriguez V, Hernandez KR, Lozano PA, **El-Halawany MS**, Alshbool FZ, Khasawneh FT. In utero thirdhand smoke exposure modulates platelet function in a sex-dependent manner (2021). *Haematologica* 107(1): 312–315.
6. Lazzari E, **El-Halawany MS**, De March M, Valentino F, Cantatore F, Migliore C, Onesti S, Meroni G (2019). Analysis of the Zn-Binding Domains of TRIM32, the E3 Ubiquitin Ligase Mutated in Limb Girdle Muscular Dystrophy 2H. *Cells* 16;8(3).
7. Ali AS, **El-Halawany MS**, Ibrahim SA, Plückthun O, Khalil AG, Mayer Günter (2019). Aptasensor for Quantifying Pancreatic Polypeptide. *ACS Omega* 4(2) 2948-2956.
8. Eissa MI, El-Sherbiny MA, Ibrahim AM, Abdelsadik A, Mohamed MM, **El-Halawany MS** (2019). Biochemical and Histopathological studies on female and male Wistar rats fed on genetically modified soybean meals (Roundup Ready). *J Basic & Applied Zool* 80:54.
9. Abdel Wahab AA, **El-Halawany MS**, Emam AA, Elfiky A, Abd Elmageed ZY (2017). Identification of circulating protein biomarkers in patients with hepatocellular carcinoma concomitantly infected with chronic hepatitis C virus. *Biomarkers* 22:621-628.
10. El-Guendy N, Helwa R, **El-Halawany MS**, Ali SA, Tantawy MA, Alieldin NH, Fouad SA, Saeid H, and Abdel-Wahab AA (2016). The Liver MicroRNA Expression Profiles Associated with Chronic Hepatitis C Virus (HCV) Genotype-4 Infection: A Preliminary Study. *Hepat Mon* 16:e33881.
11. El-Shinawi M, Mohamed HT, Abdel-Fattah HH, Ibrahim SA, **El-Halawany MS,** Nouh MA, Schneider RJ, Mohamed MM (2015). Inflammatory and Non-inflammatory Breast Cancer: A Potential Role for Detection of Multiple Viral DNAs in Disease Progression. *Ann Surg Oncol* 23:494-502.
12. **El-Halawany MS**, Ismail HM, Zeeneldin, Elfiky A, Tantawy M, Kobaisi MH, Hamed I, Abdel Wahab AA. (2015). Investigating the pre-treatment miRNA expression patterns of advanced hepatocellular carcinoma patients in association with response to TACE treatment. *Biomed Res Int* 2015:649750.
13. **El-Halawany MS** (2013). TOR protein: Pieces of Information in a Logic Puzzle. *JBPR* 1: 91-93.
14. El-Halawany MS, Shibata H, Hitomi K and Maki M (2005). Revaluation of the predicted gene structure of Dictyostelium cystatin A3 and its phylogenetic position in the cystatin superfamily. *Mol Biol Rep* 32:257-264.
15. Ohkouchi S, **El-Halawany MS**, Argua F, Shibata H, Hitomi K and Maki M (2004). DdAlix, an Alix/AIP1 homolog in *Dictyostelium discoideum*, is required for multicellular development under low Ca+ conditions. *Gene* 4:131- 139.
16. **El-Halawany MS**, Ohkouchi S, Shibata H, Hitomi K and Maki M (2004). Identification of cysteine protease inhibitors that belong to cystatin family 1 in the cellular mold *Dictyostelium discoideum*. *Biol Chem* 385:547- 550.

17. Sharaf AA, El-Sayed NK, **El-Halawany MS**, and Saber MA (1998). Characterization of *Schistosoma mansoni* gene coding for antigenic protein, isolated from UV irradiated cercariae cDNA expression library. *Egypt J Zool* 31:149-162.

Presentations

1. **Elhalawany MS** and Hamoouda KA (2023). Upregulation of α4β2 nAChRs by Positive Allosteric Modulators. 39th SBEC, LA; Abstract #14, New Orleans, LA.
2. Alarabi AB, Ali HA, Lozano PA, Arodrigues L, **El-Halawany MS**, Khasawneh FT and Alshbool FZ (2022). In Utero Thirdhand Smoke Modulates Platelet Gene Expression in Exposed Mice. ASPET Annual Meeting at EB 2022; Abstract # R4821, Philadelphia, PA.
3. Mohamed HT, Abdel-Fattah HH, El-Shinawi M, Ibrahim SA, **El-Halawany MS**, El Ghazaly H, Schneider R, Mohamed M (2015). Inflammatory breast cancer: Mixed viral infections within carcinoma tissues and the expression of Ki-67 proliferation marker. ASCO Annual Meeting, USA. J Clin Oncol 33, 2015 (suppl; abstr e22238).
4. **El-Halawany MS** (2011). Importance of SESAME and establishing Egypt-Struct for the scientific community in Egypt. Sharing Knowledge across the Mediterranean (6), Malta.
5. **El-Halawany MS** (2010). Egypt-Struct: The first Egyptian structural biology center. The 1st Cairo University International Biotechnology Innovation Conference, Egypt.
6. Al-Sherbiny M and **El-Halawany MS** (2005). Application of synchrotron beam in identifying praziquantel target epitopes in schistosomiasis. 4th SESAME users meeting, Jordan.
7. **El-Halawany MS**, Ohkouchi S, Shibata H, Hitomi K and Maki M. (2004). Analysis of the effects of overexpression of dominant negative Dictyostelium Vps4 on development and endocytosis. Cellular slime molds Workshop, Japan.
8. **El-Halawany MS**, Ohkouchi S, Shibata H, Hitomi K and Maki M (2003). Identification of cysteine protease inhibitors in cellular slime mold *Dictyostelium discoideum*. 3rd general meeting of the International Proteolysis Society, Japan.
9. Saber MA, Abdel-Hamid H, El-Hamshary M, Mohareb M, Ahmed H, Romeih M, El-Gerbi F, El-Dabaa E, Mahmoud M and **El-Halawany MS** (1998). ESTs generated from *Schistosoma mansoni* cDNA expression libraries of different life cycle stages. International Conference on Schistosomiasis, SRP, Egypt.

Technical Skills

- Proficient in a wide range of cell and molecular biology techniques, including cell-based assays, real-time PCR, flow cytometry, Western blotting, ELISA, and molecular cloning.
- Experienced with mammalian 2D and 3D cell culture systems, including organoids and spheroids.
- Skilled in protein expression, purification, and characterization.
- Competent in handling and processing clinical specimens, including blood, urine, and tissue samples.
- Extensive hands-on experience with radioligand binding assays.
- Knowledgeable in multi-omics data integration and secondary analysis of publicly available RNA-seq datasets.
- Working knowledge of Python for data analysis.

Editorial Work

Editorial Board member of International Journal of Clinical Therapeutics and Diagnosis - IJCTD (2014 - 2017).

Memberships

- American Association for Cancer Research (AACR): 2015 – Present.
- American Heart Association (AHA): 2021.