

MOHAMED A. ELREFAIY

Curriculum Vitae

Research Assistant

Center for X-ray Determination of the Structure of Matter (CXDS)

Zewail City of Science and Technology

Ahmed Zewail Road, October Gardens, 6th of October city,

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moelrefaiy@gmail.com

Education

B.SC. | 2018 | ZEWAIL CITY

- Major: Biomedical Science, Drug Design and Development (Full Scholarship).
- Minor: NanoScience
- Thesis: Combined Molecular Dynamics & Poisson–Boltzmann surface area calculation for the Discovery and the Evaluation of new p53-Mdm2 Peptidomimetics Inhibitors
- Supervisors: Dr. Reem Khidr (rkhidr@zewailcity.edu.eg) – Dr. Ahmed Taha (atayoub@ualberta.ca)

UNDERGRADUATE STUDENT | 2012-2013

- Clinical Pharmacy program, faculty of pharmacy, Cairo University, Egypt

HIGH SCHOOL EGYPTIAN NATIONAL DIPLOMA | 2012

- Score: 98.5%

Publication

ACS omega | 2019

- Ayoub, A., Elrefaiy, M., Arakawa, k. (2019). Computational Prediction of the Binding Mode of Antitumor Lankacidin C to Tubulin.

Conference Poster | 2019

- Combined Molecular Dynamics & Poisson–Boltzmann surface area calculation for the Discovery and the Evaluation of new p53-Mdm2 Peptidomimetics Inhibitors at 14th International Conference on Chemistry and Its Role in Development Mansoura University-Hurghada, Egypt.

Conference Poster | 2019

- Virtual Screening Approaches for Molecular Library Exploration of SAM-1 Riboswitch Inhibitors: Fishing for Ligands to a New Target at 14th International Conference on Chemistry and Its Role in Development Mansoura University-Hurghada, Egypt.

Conference Poster | 2015

- Evaluation of bacteriophage to reduce experimental contamination of E. coli in tomato and minced meat at 21st Biennial international phage meeting, USA.

Work Experience

RESEARCH ASSISTANT | AUGUST 2018- JUNE 2019

- Center for X-ray Determination of the Structure of Matter (CXDS), Zewail City, Egypt (3days/week)

RESEARCH ASSISTANT | AUGUST 2018-PRESENT

- Center of Drug Design, Zewail City, Egypt. (2day/week)

Teaching Experience

VOLUNTEERING TEACHING ASSISTANT | SPRING SEMESTER 2017

- Cancer biology course, Zewail city, Egypt

VOLUNTEER LAB TEACHING ASSISTANT | FALL SEMESTER 2016

- Microbiology course, Zewail city, Egypt

Training Experience

• Research Assistant | OCTOBER 2018 – NOVEMBER 2018

Kenji Arakawa's Lab (karakawa@hiroshima-u.ac.jp), Hiroshima University, Japan

• Trainee | MARCH 2018-MAY2018

Advanced clinical & Experimental Immunology Department, 57357, Cairo, Egypt.

Trainee | SEPTEMBER 2017

European Egyptian Pharmaceuticals, Alexandria, Egypt

• Trainee | AUGUST 2017-SEPTEMBER 2017

Multi-Apex Pharmaceutical company, Badr City, Egypt

• Trainee | SEPTEMBER 2016

Al Andolos Pharmaceutical company, 6th October, Giza, Egypt

• Trainee | JUNE 2016-AUGUST 2016

CAAD (Center of Aging and Associated Diseases), Zewail City of Science and Technology, Egypt.

• Research Assistant | 2013-2015

Microbiology lab, Zewail City, Egypt

Computational & Wet Lab Research Skills

- Molecular dynamics [Gromacs package/ Ambertools]
- AmberTools [antechamber – tleap - sander]
- Rigid docking, Pharmacophore, QSAR, and Homology modeling using MOE package
- Flexible Docking using Schrodinger software
- Bash language
- Programming language [Matlab (good) / python (beginner)]
- Bioinformatics basics [global alignment / Databases (NCBI – UniProt –EMBL-EBI) / Gene Annotation] ▪ Stander Microbiological Practices ▪ Molecular Biology Techniques:

- Cell Culture ○
- Protein Expression ○
- Gel Electrophoresis ○
- Western Blotting ○
- PCR

- Large-scale fermentation ▪ HNMR/Mass spectrometry

Research Experience

• Center for X-ray Determination of the Structure of Matter (CXDS), Zewail City, Egypt

- August 2018 – June 2019

- Role: Research Assistant, Advisor: Fareed Aboul-Ela

In this research, we are seeking for discovering a new fluorophore moiety for developing low-cost SAM binding Assay, as there is no valid assay until this moment. The first step is to use various computational methods to discover and evaluate the best fluorophore moiety before going to the wet lab.

• Center of Drug Design and Development, Zewail City, Egypt

- August 2018 - present

- Research Assistant, Advisor: Reem Khidr

Myeloid-Derived Suppressor Cells is considered one of the potential targets for cancer treatment due to their heterogeneous nature. They consist of different myeloid lineages that have different cell morphology, stage of differentiation and maturation, so we are focusing to discover and evaluate the most protein –DNA interactions in these cells. In addition, we want to find a small molecule inhibitor for targeting these cells. The current stage now is to find and validate the target using different molecular techniques with the help of Molecular modeling techniques.

• Joint Egyptian-Japanese Scientific Collaboration Grant, Egypt

- July 2018 - present

- Research Assistant, Advisor: Asso. Prof. Ahmed Taha / Asso. Prof. Kenji Arakawa

My role is to use molecular modeling techniques, like virtual screening, ensemble docking, molecular dynamics, and MM/PBSA calculation, to modify a certain natural product that has an antitumor effect to enhance its affinity to tubulin protein. In addition, identifying the synthetic scheme for these modifications and trying them in the lab.

• University of Science and Technology, Zewail City, Egypt

- September 2017 - June 2018

- Graduation project, Advisor: Prof. Reem Khidr / Associated prof. Ahmed Taha

My main research was focused on using computer simulation to design novel peptidomimetics inhibitors for the protein-protein interaction between p53 and mdm2 to enable reactivation of p53 to induce apoptosis in cancer cells. toward this goal I have accomplished the following:

- Discovering new peptidomimetics hit with expected IC50 greater than 4nM.
- Validate the binding site of p53 with the mdm2 protein.
- Virtual screening and docking of a peptidomimetics library ·
Molecular dynamics study for the best hits

EXTRACURRICULAR ACTIVITY

- March 2017- September 2017: Chairman of IEEE Junior program, Zewail City, Egypt
- January 2017- September 2017: Project Management Committee member, Enactus Organization, Zewail City, Egypt
- April 2017: Participant in Maker Fair, Smart Village, Egypt
- April 2017: Registration committee member, ZCEBS, Zewail City, Egypt
- September 2016: Head of School Zone, Zewail City Science Festival, Egypt
- August 2016: Organizer of Drug Design Workshop, Zewail City
- September 2015: Organizing committee member, Zewail City Science Festival
- 2016 - 2017: Facilitator member, EYouth – Engaging and Empowering Egyptian Youth organization
- January 2014: Organizer of Microbiology Workshop, Zewail City
- 2013 - 2015: HR member of Enactus Organization, Zewail City

REFERENCES

References provided upon request