

Faculty Portfolio

Dr. Annah Alalmaie

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Education:

Year of Graduation	Qualifications (Specializations if any)	University/College, Country
2023	PhD in Pharmaceutical Sciences	Philadelphia College of Pharmacy, Saint Joseph's University, Philadelphia, PA, U.S.
2013	B.Sc. in Pharmaceutical Sciences	College of Pharmacy, King Khalid University, Abha, KSA

Professional experience:

Year	Positions	University/College, Country
2023	Assistant Professor	Department of Pharmaceutics, College of Pharmacy, King Khalid University, Abha, KSA

Community service activities:

Year	Positions & Name of the Project	University/Company, Country
2023	Organizer of a community service event on "The Optimal Use of Over-the-Counter Medications"	Department of Pharmaceutics, College of Pharmacy, King Khalid University, Abha, KSA

Academic/research awards:

Year/Duration of Award	Name of the Award	University/Company, Country
2023	Most exceptional Abstract	American Chemical Society Conference
2017-2023	Full scholarship from King Khalid University to pursue a PhD degree in Pharmaceutics	Philadelphia College of Pharmacy, Saint Joseph's University, Philadelphia, PA, U.S.

Workshops/ Trainings:

Year	Title	University/Company, Country
2023	Assessment Based on Learning Outcomes	College of Pharmacy, King Khalid University, Abha, KSA
2023	Strategies for Medical Education	College of Pharmacy, King Khalid University, Abha, KSA
2022	Gromacs Workshop: A Collaboration Between Bioexcel and National Europe Competence Center	Online
2021	Cell Modeling Virtual Workshop	Online
2021	The PRACE Spring school on Modeling Materials using HPC and AI/ML	Online
2021	European UGM & Conference	Online
2021	Les Houches-TSRC Protein Dynamics workshop	Online
2021	Quantum Chemistry from Laptop to HPC @ ENCCS/PDC	Online
2021	Introduction to HPC for Life Scientists	Online
2021	Advanced topics in simulations with GROMACS @ ENCCS/BioExcel	Online
2020	BioExcel Winter School on	Online

	Biomolecular Simulations	
2020	MMBioS 2020 - Virtual Hands-on Workshop on Computational Biophysics	Online
2020	Introduction to GROMACS - A SNIC/PTRACE workshop in collaboration with BioExcel	Online
2014	Quality Assurance Mechanism in Higher Education	King Khalid University, Abha, KSA
2014	Excellency in Learning and Education	King Khalid University, Abha, KSA
2013	Basic Life Support from Saudi Heart Association	Asir Central Hospital, Abha, KSA

Research Interests:

- **Molecular Dynamics (MD) Simulation:** Employing computational techniques to explore the dynamic behavior of biomolecules at the atomic level.
- **Docking Studies:** Investigating molecular interactions and binding affinities to understand the structural basis of protein-ligand interactions.
- **CRISPR-Cas Systems:** Utilizing MD simulations to unravel the dynamic mechanisms of CRISPR-Cas, enhancing our understanding of genome editing processes.
- **Alpha Fold:** Exploring the capabilities of Alpha Fold, an AI system for predicting protein folding, to enhance structural biology and drug discovery.

Teaching experience:

- Teaching a Microbiology course, King Khalid University, College of Pharmacy, August -Present 2023.
- Teaching an Immunology course, King Khalid University, College of Pharmacy, August -Present 2023.

Professional membership:

Year	Name of the professional Body	Role
2017-Present	The American Association of Pharmaceutical Science	Member

2019-Present	The American Chemical Society	Member
2019-Present	The Biophysical Society	Member

Research grants:

Year/Duration of Grant	Title of the Project	Awarding Body
2021	Granted access to 2 million core hours on Shaheen supercomputer. " Utilizing MD Simulation to Understand the Structural and Molecular Mechanism Underlying the DNA Targeting by the Transposon-Encoded Type I-F CRISPR-Cas System "	King Abdullah University of Science and Technology. (KAUST), KSA
2022	Granted access to 4 million core hours on Shaheen supercomputer. " Mechanistic Insight into the Conformational Changes of Cas8 upon Binding to Different PAM Sequences in the Transposon-Encoded Type I-F CRISPR-Cas System "	King Abdullah University of Science and Technology. (KAUST), KSA

Publications:

- 1- Insight into the Molecular Mechanism of the Transposon-Encoded Type I-F CRISPR- Cas System Journal of Genetic Engineering and Biotechnology

Alalmaie A, Diaf S, Khashan R. Insight into the molecular mechanism of the transposon-encoded type I-F CRISPR-Cas system. J Genet Eng Biotechnol. 2023 May 16;21(1):60. doi: 10.1186/s43141-023-00507-8. PMID: 37191877; PMCID: PMC10188703.

This study aimed to unravel the molecular mechanism underlying the function of the transposon-encoded Type I-F CRISPR-Cas system

- 2- Mechanistic Insight into the Conformational Changes of Cas8 upon Binding to Different PAM Sequences in the Transposon-Encoded Type I-F CRISPR-Cas System
"Under Review "

This research aims to provide mechanistic insight into the conformational changes of Cas8, a key component of the Type I-F CRISPR-Cas system, upon binding to various PAM sequences. Molecular dynamics simulations and computational analysis were utilized to elucidate the dynamic interactions and structural changes during this process.

- 3- The Impact of Mismatches Within the RNA: DNA Hybrid in the Transposon-Encoded Type I-F CRISPR-Cas System "Under Review "

This study investigates the effects of mismatches within the RNA: DNA hybrid region in the Type I-F CRISPR-Cas system. Through comprehensive analysis and molecular modeling, the implications of these mismatches on target recognition and TniQ activation were explored.

- 4- Exploring DNA Targeting by the Transposon-Encoded CRISPR-Cas System: Insights from Molecular Dynamic Simulation, **PhD Dissertation**
- 5- Novel Resveratrol Smart Lipids; Design, Formulation, and Biological Evaluation of Anticancer Activity Corresponding "Under Review" European Journal of Pharmaceutical Sciences Sawsan A. Zaitone, Reem Fekry Diab; Tamer M. Abdelghany; Shadeed Gad, Professor; Rehab Ahmed; Nada Ahmed, **Amnah Alalmaie**, Amerh A. Alahmadi, Asmaa M. Elbakry

Conference attendance/presentations:

- 1- The American Association of Pharmaceutical Science Conference, Virtual, PA, 2020
- 2- The American Association of Pharmaceutical Science Conference, Philadelphia, PA, 2021
- 3- American Chemical Society National Meeting, San Diego, CA, ACS Spring 2022, March 2022, COMP Poster Session.
Presented poster titled: "**Utilizing MD Simulation to Understand the Molecular and Structural Mechanism Underlying the DNA Targeting by the INTEGRATE System.**"
- 4- American Chemical Society National Meeting, Indianapolis, March 26 - March 30/2023 Presented poster titled: "**Mechanistic Insight into the Conformational Changes of Cas8 upon Binding to Different PAM Sequences in the Transposon-Encoded Type I-F CRISPR-Cas System.**"