CURRICULUM VITAE

Mohammad A. Alsenaidy, M.Sc., Ph.D.

Associate Professor of Pharmaceutical Biotechnology
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EDUCATION

2009 - 2013

Doctor of Philosophy (Ph.D.) Macromolecule and Vaccine Stabilization Center, Department of Pharmaceutical Chemistry, School of Pharmacy, University of Kansas, Lawrence, KS 66045, USA.

Dissertation Title:
"Applicability of Using Physical Stability Data and Advanced Visualization Methods in Protein Comparability Studies"
Mentor: Prof. David Volkin (Ronald T. Borchardt Distinguished Professor)

2009 - 2011

Master of Science (M.Sc.) Macromolecular and Vaccine Stabilization Center, Department of Pharmaceutical Chemistry, University of Kansas, Lawrence, KS 66045, USA.

2001 - 2007

Bachelor of Pharmaceutical Sciences (B. Pharm.), College of Pharmacy, King Saud University, P.O. BOX 2457, Riyadh 11451, Saudi Arabia.

EXPERIENCE

Jan 2019 – Present	**Board Member,** Saudi Vaccine and Biomanufacturing Center (SVBC), King Abdullah University of Science and Technology (KAUST).
Mar 2018 – Present	**Chairman,** Department of Pharmaceutics, College of Pharmacy, King Saud University. P.O. Box 2457, Riyadh 11451, Saudi Arabia.
May 2018 – Aug 2018	**Research Associate,** Center for Vaccine Development at Baylor College of Medicine. Houston, Texas, USA.
April, 2018	**Member,** SFDA Inspection Team, Sanofi Pasteur, Marcy l'Etoile Plant, France.
July 2017 – March 2019	**Member Consultant,** Advisory Committee for Clinical Studies, Saudi Food and Drug Authority, Saudi Arabia.
July 2017 – July 2018	**Member Consultant,** Biologics Regulations, Pricing, and Evaluation task force, Saudi Food and Drug Authority, Saudi Arabia.
Jan 2016 – Mar 2018	**Director** of the Research Center, College of Pharmacy, King Saud University. P.O. Box 2457, Riyadh 11451, Saudi Arabia.
June 2015 – Aug, 2015	**Visiting Scientist**, Biologics Product and Process Development Research Unit. Pfizer laboratories, Greater St. Louis Area, MO, USA.
June 2014 – June 2016	**Adjunct Researcher**, KACST-UCSD Center of Excellence in Nanomedicine (CENM), King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia.
Match 2019 – Present	**Associate Professor**, College of Pharmacy, King Saud University, P.O. Box 2457, Riyadh 11451, Saudi Arabia.
Feb 2014 – March 2019	**Assistant Professor**, College of Pharmacy, King Saud University, P.O. Box 2457, Riyadh 11451, Saudi Arabia.
Aug 2009 – Dec 2013	**Graduate Research Assistant**, Macromolecular and Vaccine Stabilization Center, Department of Pharmaceutical Chemistry, University of Kansas, Lawrence, KS 66045, USA.
April 2007 – July 2009	**Graduate Teaching Assistant**, College of Pharmacy, King Saud University, P.O. Box 2457, Riyadh 11451, Saudi Arabia.

SELECTED PAST AND ONGOING RESEARCH PROJECTS:

- Physiochemical Characterization and Stability Evaluation Studies for The Development of BRENZYS® (Etanercept Biosimilar) – Collaboration with Merck and Samsung Bioepis.
- Stabilization of Recombinant Protective Antigen (rPA) for Use as a Vaccine Against *Bacillus anthracis*; Mutation and Formulation Approaches.
- Insight into Glycosylation Influence on the Biophysical Stability and Conformational Integrity of an IgG1 Monoclonal Antibody (mAb) and an IgG1-Fc.
- Vaccine-Aluminum Salt Adjuvants System; Optimization and Analysis for Vaccine Development Programs.
- Conformational Stability of "Second-generation" Functional Mutants of Acidic Fibroblast Growth Factor (FGF-1) for Wound Healing.

TRAINING AND WORKSHOPS (Taken)

Sep 30th – Oct 4th 2019	**Bioprocessing Operations, National Institute for Bioprocessing Research and Training,** Dublin, Ireland.
Oct, 2015	**QA/QC Strategy for Biologics and Biopharmaceuticals**. Malvern, PA, USA.
Aug, 2014	**Clinical Proteomics and Biomarker Discovery**. National Institutes Health (NIH). Bethesda, MD, USA.
Jan – Oct, 20014	**New Faculty Orientation and Preparation Program**, Accredited by SEDA. King Saud University.
May, 2009	**Handling Chemicals and Biohazard Materials Workshop**, University of Kansas. Lawrence, KS, USA.
May, 2009	**Laboratory Safety Workshop**, University of Kansas. Lawrence, KS, USA.

TRAINING AND WORKSHOPS (Given)

Jan 7th – Jan 8th 2020	**Quality Assurance and Quality Control of Biologics and Vaccines,** Holiday-inn Izdihar, Riyadh, Saudi Arabia

Jan 2019 – Feb 2019	**PHARMACEUTICAL BIOTECHNOLOGY: Principles, Manufacturing, and Regulations of Biopharmaceutical Products,** Biologics Evaluation Unit, SFDA.
Sep 20th – 21st, 2018	**Quality Assurance and Quality Control of Biologics and Vaccines,** King Saud University Medical City, Riyadh, Saudi Arabia.

TECHNICAL SKILLS HIGHLIGHT

- Production of recombinant proteins and antigens using yeast and *E. coli* expression systems.
- Optimization of purification protocols using various chromatographic methodologies;
    - ● Affinity Chromatography ● Hydrophobic Interaction Chromatography
    - ● Ionic Exchange Chromatography ● Gel Permeation Chromatography
- Characterization of proteins and antigens using multiple biophysical, biochemical, chromatographic, and electrophoretic methodologies;
    - ● Circular Dichroism spectroscopy ● Fourier-transform infrared spectroscopy
    - ● Fluorescence spectroscopy (Intrinsic, Extrinsic and Front Face)
    - ● Differential Scanning Calorimetry ● Isothermal Titration Calorimetry
    - ● Capillary Isoelectric Focusing ● Analytical Ultracentrifugation
- Evaluation of the stability profiles of therapeutic proteins and antigens under accelerated stress conditions (freeze-thaw, heat, agitation, oxidants and pH) and long term storage.
- Formulation development of therapeutic proteins and vaccines using high-throughput excipient screening.

RESEARCH GRANTS

May 2019 – May 2022	Project Title: **"Stabilization of Recombinant Protective Antigen (rPA) for use as a vaccine against *Bacillus anthracis*"** Approved by RDO-MOE, 5,400,000 SAR
Feb 2020 – Feb 2022	Project Title: "**Development of MERS-CoV Papain Like Protease (PLpro) inhibitors using High Throughput Screening Methodology"** Approved by KACST, 749,468 SAR

July 2016 – July 2017	Project Title: **"Evaluation of Insulin's Potency and Structural Integrity Across Different Parts of Saudi Arabia"** Funded by: Deanship of Scientific Research, 70,000 SAR.
Dec 2014 – Dec 2016	Project Title: **"Elucidation of unfolding-refolding mechanism of wild type and mutants of camel eye lens protein zeta-crystallin"** Funded by: National Science, Technology and Innovation Plan (NSTIP), 1,857,000 SAR.
May 2012 – May 2013	Project Title: **"Characterization, Stabilization, and Development of an arginine free formulation of a TNF receptor 2-Fc fusion protein, a candidate biosimilar form of Enbrel®"** Funded by: Merck, $300,000.

TEACHING EXPERIENCE

Graduate Level:

Code	Description	Credit Hours	Level
PHT 626	Advanced Pharmaceutical Biotechnology	2	Ph.D
PHT 616	Stabilization of Biopharmaceuticals	2	Ph.D
PHT 594	Advanced Topics in quality control for pharmaceuticals	3	Master

Undergraduate Level:

Code	Description	Credit Hours	Level
PHT 426	Pharmaceutical Biotechnology	2	Pharm.D
PHT 432	Industrial Pharmacy	4	B. pharm.
PHT 437	Advanced Pharmaceutical Biotechnology	2	Pharm.D
PHG 424	Pharmaceutical Biotechnology	3	B. pharm.

PUBLICATIONS

1- *The status of licensed pharmacy workforce in Saudi Arabia: a 2030 economic vision perspective*, Yazed AlRuthia, **Mohammad A Alsenaidy**, Haitham K Alrabiah, Abdullah AlMuhaisen, Mohammad Alshehri.

2- *Molecular insight into binding behavior of polyphenol (rutin) with beta lactoglobulin: Spectroscopic, molecular docking and MD simulation studies*, Nasser Abdulatif Al-Shabib, Javed Masood Khan, Ajamaluddin Malik, **Mohammad A Alsenaidy**, Md Tabish Rehman, Mohamed F AlAjmi, Abdulrahman M Alsenaidy, Fohad Mabood Husain, Rizwan Hasan Khan.

3- *Characterization of colchicine binding with normal and glycated albumin: In vitro and molecular docking analysis*, Nayyar Rabbani, Shams Tabrez, Badar ul Islam, Md Tabish Rehman, Abdulrahman M Alsenaidy, Mohamed F AlAjmi, Rais Ahmad Khan, **Mohammad A Alsenaidy**, Mohd Shahnawaz Khan.

4- *Unraveling the molecular mechanism of the effects of sodium dodecyl sulfate, salts, and sugars on amyloid fibril formation in camel IgG*, Mohamad Alhasan Ismael, Javed Masood Khan, Ajamaluddin Malik, **Mohammad A Alsenaidy**, Syed Hidayathulla, Rizwan Hasan Khan, Priyankar Sen, Mohammad Irfan, Abdulrahman M Alsenaidy.

5- *Aggregation and conformational stability evaluation of myoglobin in the presence of ionic surfactant*, **Mohammad A Alsenaidy.**

6- *Sodium louroyl sarcosinate (sarkosyl) modulate amyloid fibril formation in hen egg white lysozyme (HEWL) at alkaline pH: a molecular insight study*, Javed Masood Khan, Mohd Shahnawaz Khan, **Mohammad Alsenaidy**, Anwar Ahmed, Priyankar Sen, Mohammad Oves, Nasser Abdulatif Al-Shabib, Rizwan Hasan Khan.

7- *Unveiling the stimulatory effects of tartrazine on human and bovine serum albumin fibrillogenesis: Spectroscopic and microscopic study*, Nasser Abdulatif Al-Shabib, Javed Masood Khan, **Mohammad A Alsenaidy**, Abdulrahman M Alsenaidy, Mohd Shahnawaz Khan, Fohad Mabood Husain, Mohammad Rashid Khan, Mohammad Naseem, Priyankar Sen, Parvez Alam, Rizwan Hasan Khan.

8- *Negatively charged food additive dye "Allura Red" rapidly induces SDS-soluble amyloid fibril in beta-lactoglobulin protein*, Nasser Abdulatif Al-Shabib, Javed Masood Khan, Ajamaluddin Malik, Abdulrahman M Alsenaidy, **Mohammad A Alsenaidy**, Fohad Mabood Husain, Monis Bilal Shamsi, Syed Hidayathulla, Rizwan Hasan Khan.

9- *Optimization of expression and purification of human mortalin (Hsp70): Folding/unfolding analysis*, Mohd Shahnawaz Khan, Anwar Ahmed, Shams Tabrez, Badar ul Islam, Nayyar Rabbani, Ajamaluddin Malik, Mohamad A Ismael, **Mohammad A Alsenaidy**, Abdulrahman M Alsenaidy.

10- *pH induced single step shift of hydrophobic patches followed by formation of an MG state and an amyloidogenic intermediate in Lima Bean Trypsin Inhibitor (LBTI)*, Javed

Masood Khan, **Mohammad A Alsenaidy**, Mohd Shahnawaz Khan, Priyankar Sen, Rizwan Hasan Khan, Sadaf Fatima.

11- *Spectral and thermal properties of novel eye lens ζ-crystallin*, Ajamaluddin Malik, Shurog Albogami, Abdulrahman M Alsenaidy, Abeer M Aldbass, **Mohammad A Alsenaidy**, Shams Tabrez Khan.

12- *Biophysical evaluation of amyloid fibril formation in bovine cytochrome c by sodium lauroyl sarcosinate (sarkosyl) in acidic conditions*, **Mohammad A Alsenaidy.**

13- *Shortage of psychotropic medications in community pharmacies in Saudi Arabia: Causes and solutions*, Yazed Sulaiman Al-Ruthia, Wael Mansy, Mohammad Barasin, Yazeed Mohammad Ghawaa, Mohammed AlSultan, **Mohammad A Alsenaidy**, Solaiman Alhawas, Sultan AlGhadeer.

14- *Cationic gemini surfactant (16-4-16) interact electrostatically with anionic plant lectin and facilitates amyloid fibril formation at neutral pH*, Javed Masood Khan, Mohd Shahnawaz Khan, Atiyatul Qadeer, **Mohammad A Alsenaidy**, Anwar Ahmed, Nasser Abdulatif Al-Shabib, Rizwan Hasan Khan.

15- *MERS-CoV papain-like protease (PLpro): expression, purification, and spectroscopic/thermodynamic characterization*, Ajamaluddin Malik, **Mohammad A Alsenaidy.**

16- *Synthetic food additive dye "Tartrazine" triggers amorphous aggregation in cationic myoglobin*, Nasser Abdulatif Al-Shabib, Javed Masood Khan, Mohd Shahnawaz Khan, Mohd Sajid Ali, Abdulrahman M Al-Senaidy, **Mohammad A Alsenaidy**, Fohad Mabood Husain, Hamad A Al-Lohedan.

17- *Denaturation induced aggregation in α-crystallin: differential action of chaotropes*, Mohd Shahnawaz Khan, Sheraz Ahmad Bhat, Shams Tabrez, Mohammed Nabil Alama, **Mohammad A Alsenaidy**, Abdulrahman M Al-Senaidy.

18- *Glycation induced generation of amyloid fibril structures by glucose metabolites*, Mohammad S Khan, Nayyar Rabbani, Shams Tabrez, Badar Ul Islam, Ajamaluddin Malik, Anwar Ahmed, **Mohammad A Alsenaidy**, Abdulrahman M Alsenaidy.

19- *Expression, Purification and Properties of Redox-Sensitive Eye Lens Zeta-Crystallin of Arabian Camel*, Ajamaluddin Malik, Mohammed Rabbani, Nayyar Rabbani, Abdulrahman M Al-Senaidy, **Mohammad A Alsenaidy.**

20- Physico-chemical stress induced amyloid formation in insulin: Amyloid characterization, cytotoxicity analysis against human neuroblastoma cell lines and its prevention using black seeds (Nigella sativa), Mohd Shahnawaz Khan, Shams Tabrez, Nayyar Rabbani, Mohammad Oves, Aaliya Shah, **Mohammad A Alsenaidy**, Abdulrahman M Al-Senaidy.

21- *Physical stability comparisons of IgG1-Fc variants: effects of N-glycosylation site occupancy and Asp/Gln residues at site Asn 297*, **Mohammad A Alsenaidy**, Solomon Z Okbazghi, Jae Hyun Kim, Sangeeta B Joshi, C Russell Middaugh, Thomas J Tolbert, David B Volkin.

22- *Protein comparability assessments and potential applicability of high throughput biophysical methods and data visualization tools to compare physical stability profiles*, **Mohammad A Alsenaidy**, Nishant K Jain, Jae H Kim, C Russel Middaugh, David B Volkin.

23- *High-Throughput Biophysical Analysis and Data Visualization of Conformational Stability of an IgG-1 Monoclonal Antibody After Deglycosylation*, **Mohammad A Alsenaidy**, Jae Hyun Kim, Ranajoy Majumdar, David D Weis, Sangeeta B Joshi, Thomas J Tolbert, C Russell Middaugh, David B Volkin.

24- *An empirical phase diagram approach to investigate conformational stability of "second-generation" functional mutants of acidic fibroblast growth factor-1*, **Mohammad A Alsenaidy**, Tingting Wang, Jae Hyun Kim, Sangeeta B Joshi, Jihun Lee, Michael Blaber, David B Volkin, C Russell Middaugh.

PRESENTATIONS AND ABSTRACTS

1. **MOHAMMAD A. ALSENAIDY**, Challenges related to physicochemical characterization and analytical comparability of biologicals and biosimilars. Dubai International Pharmaceuticals & Technologies Conference & Exhibition, 26th Feb – 1st March, 2018, Dubai, UAE.
2. **MOHAMMAD A. ALSENAIDY**, MERS-CoV Papain-Like Protease (PLpro); Expression, Purification and Spectroscopic/Thermodynamic Characterization in an Effort for Developing MERS-CoV Protease Inhibitors. Dubai International Pharmaceuticals & Technologies Conference & Exhibition, 7-9 March, 2017, Dubai, UAE.
3. **MOHAMMAD A. ALSENAIDY**, Physiochemical Characterization of Biologics and Biosimilars. Biologics, where are we now conference, Oct, 2016, Bahrain.
4. **MOHAMMAD A. ALSENAIDY**, SOLOMON Z. OKBAZGHI , JAE HYUN KIM , SANGEETA B. JOSHI , C. RUSSELL MIDDAUGH , THOMAS J. TOLBERT , DAVID B. VOLKIN. Physical Stability Comparisons of IgG1-Fc Variants: Effects of N-Glycosylation Site Occupancy and Asp/Gln Residues at Site Asn 297. CASSS High order structures meeting, April, 2015.
5. **Mohammad A. Alsenaidy**, Jae Hyun Kim, Ranajoy Majumdar, David D. Weis, Sangeeta B. Joshi, Thomas J. Tolbert, C. Russell Middaugh, David B. Volkin. High-Throughput Biophysical Analysis and Data Visualization of Conformational Stability of an IgG1 Monoclonal Antibody (mAb) After Deglycosylation. Protein Stability Conference, Colorado, USA, 2013.

6. **Mohammad A. Alsenaidy**, Jae Hyun Kim, Thomas J. Tolbert, C. Russell Middaugh, David B. Volkin. Evaluation of EPDs and Radar charts to compare physical stability of differentially glycosylated IgG1-Fc proteins. The Faculty of Pharmaceutical Chemistry Fall Retreat Week, Lawrence, KS, USA, 2013.
7. **Mohammad A. Alsenaidy**, Thomas J. Tolbert, C. Russell Middaugh, David B. Volkin. Comparing physical stability of differentially glycosylated IgG1-Fc proteins. The Twenty- Sixth Annual Graduate Honors Symposium and Poster Session. Lawrence, KS, USA, 2012.
8. **Mohammad A. Alsenaidy**, Tingting Wang, Jae Hyun Kim, Jihun Lee, Michael Blaber, Sangeeta Joshi, David B. Volkin, C. R. Middaugh. Investigating Conformational Stability of "Second-generation" Functional Mutants of Acidic Fibroblast Growth Factor. Protein Stability Conference, Colorado, USA, 2012.
9. **Mohammad A. Alsenaidy**, Tingting Wang, Jae Hyun Kim, Jihun Lee, Michael Blaber, Sangeeta Joshi, David B. Volkin, C. R. Middaugh. Conformational Stability of "Second-generation" Functional Mutants of Acidic Fibroblast Growth Factor. The Twenty- Fifth Annual Graduate Honors Symposium and Poster Session. Lawrence, KS, USA, 2011.

SCIENTIFIC AND PROFESSIONAL SOCIETIES

- American Association of Pharmaceutical Scientists (AAPS).
- Saudi Pharmaceutical Society (SPS).
- California Separation Science Society (CASSS).
- American Society for Virology (ASV).