Alaa Ropy Mahmoud Sayed, Ph.D. CV

Research Assistant Professor, Department of Pharmacotherapy and Translational Research, College of Pharmacy, University of Florida, Email: a.sayed@ufl.edu, ORCID ID: 000-0002-3357-310X

WORK EXPERIENCE

03/2023 to Present: Research Assistant Professor, University of Florida, USA

I am working in many projects related to antibacterial resistance and mechanism of action of most known β-lactam antibiotics. My research studies including assay development and performance of the penicillin-binding Proteins (PBPs) binding studies on β-lactam antibiotics and β-lactamase inhibitors in various bacteria. We are applying advanced biochemical, molecular and pharmaceutical analyses, flow cytometry and confocal microscopy. In addition, I served as teaching assistant on Translational Pharmacology course PHA6133-404C (18376), spring 2023.

02/2019 to 03/2023: Senior Postdoctoral Research Associate, University of Florida, USA

I am applying latest molecular, biochemical and pharmaceutical analyses in many projects at UF. We are studying special enzymes called penicillin-binding proteins (PBPs) and β-lactamases mediating the mechanism of action of β-lactam antibiotics and β-lactamase inhibitors. PBPs are target proteins for β-lactam antibiotics while β-lactamases tend to hydrolyze and inactivate β-lactamase enzymes. Furthermore, PBPs are important enzymes responsible for synthesis and maturation of the bacterial cell wall that is essential for bacterial protection and viability. We have identified and studied these proteins in many bacterial species. We are also applying receptor-binding assays for b-lactams, flow cytometry, fluorescence microscopy, target site penetration and mass spectrometry. Participated in a series of advanced mathematical modeling workshops in pharmacokinetic/pharmacodynamic research.

03/2015 to 02/2019: Lecturer in biochemistry and molecular biology, Fayoum Univ., Faculty of Science, Egypt.

This role included giving lectures in biochemistry and molecular biology, doing research and supervising some PhD and MSc students. I worked on diverse research projects. One exciting study entitled “Effect of dietary sodium butyrate supplementation on growth, blood biochemistry, hematology and histomorphometry of intestine and immune organs of Japanese quail” was published on 2018 from my postdoc research at Fayoum University. We studied the effects of dietary sodium butyrate supplementation on blood hematology and biochemistry of Japanese quail. In addition, we checked the variations in levels of serum glucose, creatinine, uric acid, urea, total protein, albumin, globulin, triglycerides, cholesterol, and alanine transaminase and aspartate transaminase activity. Another study was published on 2020 entitled “molecular characterization of five bacillus isolates displaying remarkable carboxymethyl cellulase activities”. Various cellulase-producing bacterial strains were identified and examined for their cellulase activities.

I shared in the supervision of the following theses at Fayoum University, Egypt;

1. Ph.D. thesis entitled “Long non-coding RNAs in acute myocardial infarction related to hypercholesterolemia.”
2. M.Sc. thesis entitled “P.Oxynase-1 activity and diabetic markers for diabetic patients of type 2.”
3. M.Sc. thesis entitled “Production, purification and characterization of cellulase from a thermophilic *Bacillus* sp. and their industrial applications.” This thesis was funded by M.Sc. grant from of Scientists for Next generation (Grant reference SNG-2015-104) funded by the Academy of Scientific Research and Technology, Egypt.
4. M.Sc. thesis entitled “Production, purification and characterization of hydrolytic enzymes from *Trichoderma* isolates collected from different rhizosphere and assessment of their biocontrol efficiency against some pathogenic fungi.” This thesis was funded by M.Sc. grant from of Scientists for Next generation (Grant reference SNG-2015-106) funded by the Academy of Scientific Research and Technology, Egypt.

09/2017 to 10/2017: Visiting researcher, Instituto de Investigación Sanitaria Illes Balears (IdISBa), Hospital Universitario Son Espases, Palma de Mallorca, Spain. I received training on RT-PCR and molecular biology techniques.

12/2014 to 03/2015: Teaching assistant, Fayoum University, Faculty of Science, Egypt.

I shared in the following activities; Teaching a biochemistry course to undergraduate students & Teaching laboratory experiments and techniques in biochemistry (e.g. enzymes, proteins, blood chemistry) and chemistry.& Helping students during practical sessions to run experiments understand the techniques principles and the results.

10/01/2010 to 11/24/2014: Doctoral Fellow, Molecular Biosciences, Autonomous University of Madrid (Universidad Autónoma de Madrid - **UAM**), Center for Molecular Biology "Severo Ochoa" CBMSO, Madrid, **Spain**.

My phD work included cloning, expression, purification and characterization of AmpC b-lactamase enzyme and HPLC analysis of membrane peptidoglycans. This study aimed to highlight and characterize the functions of Pae-AmpC and the role of LMM-PBPs PBP4, PBP5 and PBP7 in PG composition and bacterial resistance in *P. aeruginosa*; also, to study the role of these LMM-PBPs in Pae-ampC regulation and to see if they are needed for the recovery of rod shape of imipenem-induced round cells in P. aeruginosa. To fulfill this study we characterized several Pae-AmpC forms (wild type and mutants) in *E. coli* and *P. aeruginosa* PAO1 strain which were tested for their PG composition by HPLC analysis and for bacterial resistance by disc diffusion method. Also, we constructed single and combined mutants of dacB, dacC, pbpG and ampC in PAO1 strain which were tested for their PG composition, ampC expression by RT-PCR, β-lactams susceptibility and their PBPs pattern by Bocillin-FL binding test. PG composition and PBPs pattern were studied in imipenem-induced round cells and their rod shape recovered cells in PAO1. Results revealed that some Pae-AmpC mutants had a very low β-lactamase activity (AmpC-F4:C3 and AmpC-F4:C6); the mature form of Pae-AmpC had a high β-lactamase activity and a secondary DD-endopeptidase and DD-carboxypeptidase activities; only dacB single and combined mutations produced high ampC expression and β-lactam resistance; only dacC single and combined mutations produced maximum increase of PG pentapeptides. The triple mutant of dacB, dacC and pbpG displayed the largest increase in ampC expression and β-lactams resistance. Microscopic examination of all the constructed Pae mutants showed retaining of their rod shape morphology similar to their parental PAO1 strain. It was concluded that activities of DacB, DacC and PbpG are not essential for recovery of rod shape in imipenem-induced spheres in *P. aeruginosa*.

07/2013 to 09/2013 **Visiting researcher,** Instituto de Investigación Sanitaria Illes Balears (IdISBa), Hospital Universitario Son Espases, Palma de Mallorca, Spain.

I received training on molecular biology techniques and did PBP gene Knock-outs on *P. aeruginosa.*

11/2006 to 09/2010 **Lab Demonstrator,** Fayoum University, Faculty of Science, Egypt.

I shared in the following activities; Assisted in teaching laboratory experiments in biochemistry and chemistry & Helped students during practical sessions to run experiments & Did research training for master degree in biochemistry & Studied some biochemistry courses.

FELLOWSHIPS

10/2014 to 09/2014 **Pre-doctoral fellowship** (JAE, 2010-2014), Spanish National Research Council (Consejo Superior de Investigaciones Científicas, CSIC), Madrid, Spain.

Awards

02/2023 Winner for best postdoctoral scholar research oral competition at the 36th Annual Research Showcase, Oral competition, College of Pharmacy, University of Florida, February 7, 2023.

2015 Research award from the Balearic Medical Academy (Recerca de la Acadèmia Mèdica Balear) for our published article "Role of Pseudomonas aeruginosa low-molecular-mass penicillin-binding proteins in AmpC expression, β-lactam resistance, and peptidoglycan structure" that was published in the journal of Antimicrobial Agents and Chemotherapy in 2015.

Named investigator on grants

1. Bulitta JB (PD/PI), **Alaa R.M. Sayed (PD/PI)**, Lang Y (Co-I). Determination of receptor binding profiles and stability of novel drug candidates. FEDORA PHARMACEUTICALS; 10/1/2023- 3/31/2024. **Role:** PD/PI (i.e. lead investigator). **Status:** awarded
2. Drusano GL (co-equal multi PD/PI [contact]; PD/PI Project 2 and Amin Core), Bulitta JB (co-equal multi PD/PI [non-contact]; PD/PI Project 1; Co-I Admin Core), Louie A (PD/PI Project 3), Lang Y (Mechanistic Assay Core Lead, Co-I of Project 1), Neely MN (Mathematical Modeling Core Lead), Boyce JD (Co-I), Schweizer HP (Co-I), **Ropy Sayed A (Co-I)**, Lee RE (Co-I), Copik A (Co-I), Basso KB (Co I), Bonomo RA (Co-I), Balasubramanian V (Other). Translational development of new agents alone and in combination to combat Gram-negative pathogens important in Ventilator- Associated Bacterial Pneumonia: Leveraging the Gram-negative toolbox that is ready for prime time. National Institutes of Health, NIH / NIAID, P01; 1/1/2024- 12/31/2028, $11,817,521. Role: Co-Investigator. **Status:** Under review

EDUCATION

07/2012 to 11/2014	**Ph.D. Molecular Biosciences** (Molecular Biology, Biochemistry, Biotechnology and Biomedicine), Autonomous University of Madrid (Universidad Autónoma de Madrid - **UAM**), Madrid, Spain
10/2010 to 06/2011	**M.Sc. Cellular and Molecular Biology,** Autonomous University of Madrid (UAM), Madrid, Spain
11/2007 to 09/2008	**Pre-master courses in Biochemistry,** Fayoum University, Egypt
09/2002 to 07/2006	**B.Sc. Chemistry and Biochemistry,** Fayoum University, Egypt

Workshops & audited courses at University of Florida

Workshops:

1. Workshop in OPEN-SOURCE softwarePK-Sim® & MoBi® on PBPK and PBPK-based QSP. UF Research and Academic Center (UFRAC), Saturday & Sunday 9-10th March 2019. https://esqlabs.com/event-20190309-2/
2. MonolixSuite Workshop at UF, UFRAC, CPSP, Orlando, FL. Thur., October 24th 2019. https://lixoft.com/blog/2019/07/16/2019uf_ws_monolixsuite/
3. Simbiology/Matlab workshop at UF, Guidewell Innovation Center, Orlando. Friday, October 25th 2019. https://www.mathworks.com/licensecenter/classroom/ML_U Florida_Oct2019/

Courses:

1. PHA6125-13GH(25588) Pharmacokinetics and Biopharmaceuticals, Spring 2020.
2. PHA6418 Introduction to Model-Informed Drug Development (MIDD), Fall 2020.
3. PHA6133-404C(20734) Translational Pharmacology, Spring 2021.

Service as Reviewer for journals

I did review of 3 manuscripts for the journal of Current Microbiology (1432-0991 & 0343-8651, Springer) and one review for Journal of Biotechnology and Applied Biochemistry (1470-8744 & 0885-4513, International Union of Biochemistry and Molecular Biology).

RESEARCH GRANTS

(i) GRANT APPLICATIONS – Under Review

1. Copik A (PD/PI, contact), Altomare D (PD/PI), Zhang W (Co-I), Bulitta JB (Co-I), Ropy Sayed A (Co-I), Lang Y (Co-I), Basso K (Co-I). Bacterial vesicles for stimulation of Natural Killer cells to treat cancer. National Institutes of Health, **NIH / NCI**, R01 - PAR-22-085 (Microbial-based Cancer Imaging and Therapy - Bugs as Drugs); 07/01/2024 – 06/30/2029, $3,562,020. **Role:** Co-Investigator.
2. Bulitta JB (PD/PI), Alaa R.M. Sayed (PD/PI), Lang Y (Co-I). Determination of receptor binding profiles and stability of novel drug candidates. FEDORA PHARMACEUTICALS; 10/1/2023-3/31/2024, $28,983. **Role:** PD/PI (*i.e.* lead investigator)
3. Bulitta JB (PD/PI), Rodrigo Cristofoletti (Co-I), Alaa R.M. Sayed (Co-I), Lang Y (Co-I). Characterizing antibiotic efficacy via latest hollow fiber infection models. NIH; 6/3/2024- 6/2/2025, $2,370,587. **Role:** Co-Investigator

4. Drusano GL (co-equal multi PD/PI [contact]; PD/PI Project 2 and Amin Core), Bulitta JB (co-equal multi PD/PI [non-contact]; PD/PI Project 1; Co-I Admin Core), Louie A (PD/PI Project 3), Lang Y (Mechanistic Assay Core Lead, Co-I of Project 1), Neely MN (Mathematical Modeling Core Lead), Boyce JD (Co-I), Schweizer HP (Co-I), Ropy Sayed A (Co-I), Lee RE (Co-I), Copik A (Co-I), Basso KB (Co I), Bonomo RA (Co-I), Balasubramanian V (Other).
   Translational development of new agents alone and in combination to combat Gram-negative pathogens important in Ventilator- Associated Bacterial Pneumonia: Leveraging the Gram-negative toolbox that is ready for prime time. National Institutes of Health, NIH / NIAID, P01; 1/1/2024- 12/31/2028, $11,817,521. **Role:** Co-Investigator

5. Bulitta JB (PD/PI), Drusano GL (Co-I), Lang Y (Co-I), Louie A (Co-I), Boyce J (Co-I), Bonomo R (Co-I), Lee R (Co-I). Mechanistically optimized beta-lactam combination dosing strategies to combat resistant *Klebsiella pneumoniae*. National Institutes of Health, **NIH / NIAID**, R01 for PA-20-185; 07/01/2023 – 06/30/2028, $3,743,664. **Role:** Sr. Postdoc named on grant application

(ii) ONGOING PROJECTS – Awarded

1. Drusano GL (PD/PI), Louie A (Co-I), Bulitta JB (Co-I), Lang Y (Co-I), Kim S (Co-I), Neely M (Co-I), Prideaux B (Co-I). Optimizing Multi-drug *Mycobacterium tuberculosis* Therapy for Rapid Sterilization and Resistance Suppression. National Institutes of Health, **NIH / NIAID**, PA-20-185; 12/01/2022 – 11/30/2027, $6,627,424. **Role:** named (Sr. Postdoc) and working on grant.
2. Bulman ZP (PD/PI), Mankin A (Co-I), Bulitta JB (Co-I), Lang Y (Co-I), Li J (Co-I), Hauser AR (Co-I), Ozer EA (Co-I). Precise Combination Strategies Targeting Carbapenem-Resistant *Klebsiella pneumoniae*. National Institutes of Health, **NIH / NIAID**, PA-20-185; 09/01/2022 – 08/31/2027, $3,772,557. **Role:** named (Sr. Postdoc) and working on grant
3. Roemer T (PD/PI), Louie A (UF-subaward PI), Bulitta JB (Co-I), Lang Y (Co-I), Drusano (GL) SBIR: Prokaryotics SBIR Phase 2b.Development of a PO-administered beta-lactam-tarocin combination agent to treat methicillin susceptible and methicillin resistant staphylococci.
   National Institutes of Health, **NIH / NIAID**, R44AI136213; 7/1/2022 – 6/30/2025, $814,903 (UF-subaward). Role: named (Sr. Postdoc) and working on grant.
4. Tsuji BT (PD/PI), Bulitta JB (PD/PI), Louie A (Co-I), Moya B (Co-I, Drusano GL (Co-I), Chen L (Co-I), Kreiswirth BN (Co-I), Bulman ZP (Co-I). Novel Strategies for Antibiotic Combinations to Combat Gram-negative Superbugs. National Institutes of Health, **NIH / NIAID**, 1R01AI148560-01; 12/20/2019 – 11/30/2024, $3,920,000. **Role:** working on grant.

(iii) COMPLETED PROJECTS

1. First characterization of antibiotic target site penetration and receptor binding by β-lactam antibiotics in *Mycobacterium tuberculosis*. UF College of Pharmacy, Research Enhancement, PROSPER Seed / Pilot Funding. 7/1/2021 – 1/31/2022, $20,000. **Role:** Postdoc named and worked on grant application.
2. Next-generation combination dosing strategies to combat resistant *Acinetobacter baumannii*
   National Institutes of Health, **NIH / NIAID**, 1R01AI130185-01;
   11/08/2017 – 10/31/2022, $3,409,000**. Role:** Postdoc, worked on grant.
3. Bulitta JB (PI), Lee RE (Co-I), Schweizer HP (Co-I), Louie A (Co-I), Moya B (Co-I), Drusano GL (CoI), Basso KB (Co-I), Copik A (Co-I), Bonomo R (Co-I), Balasubramanian V (Co-I).
   Combating resistant superbugs by understanding the molecular determinants of target site penetration and binding. National Institutes of Health, **NIH / NIAID**, 1R01 AI136803-01;
   8/10/2018 – 7/31/2023, $5,728,000. Role: Postdoc, worked on grant.

PUBLICATIONS

My name in publications: Alaa **Ropy** (previously) & Alaa R.M. **Sayed** (currently).

PubMed Bibliography: https://www.ncbi.nlm.nih.gov/myncbi/1t9SemWBiNUIlf/bibliography/public/

List of publications:

1. Zhou J, Qian Y, Lang Y, Zhang Y, Tao X, Moya B, **Sayed ARM**, Landersdorfer CB, Shin E, Werkman C, Smith NM, Kim TH, Kumaraswamy M, Shin BS, Tsuji BT, Bonomo RA, Lee R, Bulitta JB. Comprehensive stability analysis of 13 β-lactam and β-lactamase inhibitors in in vitro media, and novel supplement dosing strategy to mitigate thermal drug degradation. Antimicrob Agents Chemother. Accepted Jan 6, 2024.
2. Shin E, Zhang Y, Zhou J, Lang Y, **Sayed ARM**, Werkman C, Jiao Y, Kumaraswamy M, Bulman Z, Luna BM, Bulitta JB. Surprisingly high aminoglycoside penetration into human lung epithelial lining fluid revealed by population pharmacokinetics. Antimicrob Agents Chemother. 2024 Jan 3:e0139323. PMID: 38169309
3. López-Argüello S, Montaner M, **Sayed ARM**, Oliver A, Bulitta JB, Moya B. 2023. Penicillin-Binding Protein 5/6 Acting as a Decoy Target in *Pseudomonas aeruginosa* identified by Whole-Cell Receptor Binding and Quantitative Systems Pharmacology. Antimicrob Agents Chemother doi:10.1128/aac.01603-22:e0160322. PMID: 37199612
4. Lang Y*, Shah NR*, Tao X, Reeve SM, Zhou J, Moya B, **Sayed ARM**, Dharuman S, Oyer JL, Copik AJ, Fleischer BA, Shin E, Werkman C, Basso KB, Deveson Lucas D, Sutaria DS, Megroz M, Kim TH, Loudon-Hossler V, Wright A, Jimenez-Nieves RH, Wallace MJ, Cadet KC, Jiao Y, Boyce JD, LoVullo ED, Schweizer HP, Bonomo RA, Bharatham N, Tsuji BT, Landersdorfer CB, Norris MH, Shin BS, Louie A, Balasubramanian V, Lee RE, Drusano GL, Bulitta JB. *Combating multidrug-resistant bacteria by integrating a novel target site penetration and receptor binding assay platform into translational modeling***.** Clinical Pharmacology & Therapeutics. **2021**; 109:1000-1020. https://pubmed.ncbi.nlm.nih.gov/33576025/
5. **Sayed ARM**, Shah NR, Basso KB, Kamat M, Jiao Y, Moya B, Sutaria DS, Lang Y, Tao X, Liu W, Shin E, Zhou J, Werkman C, Louie A, Drusano GL, Bulitta JB. *First penicillin-binding protein occupancy patterns for 15 β-lactams and β-lactamase inhibitors in Mycobacterium abscessus.* Antimicrob Agents Chemother, **2020**; 65:e01956-20. https://pubmed.ncbi.nlm.nih.gov/33106266/
6. Abd Elhameed E, **Sayed ARM**, Radwan TEE, Hassan G. *Biochemical and Molecular Characterization of Five Bacillus Isolates Displaying Remarkable Carboxymethyl Cellulase Activities.* Current Microbiology **2020**; 77:3076-3084. https://pubmed.ncbi.nlm.nih.gov/32710168/
7. Elnesr SS, **Ropy A** and Abdel-Razik AH. *Effect of dietary sodium butyrate supplementation on growth, blood biochemistry, haematology and histomorphometry of intestine and immune organs of Japanese quail.* Animal **2019**; 13:1234-1244. https://pubmed.ncbi.nlm.nih.gov/30333074/
8. **Ropy A**, Cabot G, Sanchez-Diener I, Aguilera C, Moya B, Ayala JA, Oliver A. *Role of Pseudomonas aeruginosa Low-Molecular-Mass Penicillin-Binding Proteins in AmpC Expression, beta-Lactam Resistance, and Peptidoglycan Structure.* Antimicrobial agents and chemotherapy **2015**; 59:3925-3934. https://pubmed.ncbi.nlm.nih.gov/25896695/
9. **Ropy A** and Ayala JA. The effect on peptidoglycan composition of uncharacterized Pae-AmpC mutants probes its functionality as DD-peptidase. International Journal of Microbiology Research **2015**; 7:710- 716. https://bioinfopublication.org/pages/article.php?id=BIA0002615

CONFERENCES

1. **Sayed ARM**, Elsayed AAS, Cadet KC, Jimenez-Nieves RH, Shin E, Moya B, Lang Y, Zhou J, Zhang Y, Werkman C, Tsuji BT, Drusano GL, Bulitta JB. Time-course of whole-cell Penicillin-Binding Protein (PBP) binding and morphological alterations by eleven β-lactam antibiotics in *Klebsiella pneumoniae* (KP). Houston, Texas, June 15-19, 2023 (Poster and Oral Rapid Fire presentation).
2. Zhou J, Lang Y, Zhang Y, **Sayed AR,** Shin E, Werkman C, Louie A, Tsuji BT, Bulman ZP, Drusano GL, Bulitta JB. Intracellular accumulation and washout kinetics of three aminoglycosides (AGS) in a highly AGS-resistant Klebsiella pneumoniae with a 16S rRNA methyltransferase. ASM Microbe. Houston, TX. Jun 15-19, 2023.

3. Shin E, **Sayed AR,** Lang Y, Zhou J, Oyer JL, Moya B, Elsayed AAS, Sutaria DS, Shah NR, Werkman C, JimenezNieves RH, Cadet KC, Tao X, Jiao Y, Copik AJ, Bonomo RA, Schweizer HP, Lee RE, Boyce JD, Tsuji BT, Drusano GL, Bulitta JB. Next-generation Quantitative and Systems Pharmacology Modeling of Synergistic Penicillin-Binding Protein (PBP) occupancy patterns in Klebsiella pneumoniae (KP). ASM Microbe. Houston, TX.Jun 15-19, 2023.
4. Werkman C, Oyer JL, Shah NR, Megroz M, Deveson Lucas D, Moya B, **Sayed AR**, Elsayed AAS, Wright A, Sutaria DS, Tao X, Lang Y, Zhou J, Shin E, Landersdorfer CB, Jimenez-Nieves RH, Cadet KC, Jiao Y, Copik AJ, Bonomo RA, Louie A, Drusano GL, Boyce JD, Bulitta JB. Quantifying β-lactam penetration by flow cytometry and confocal microscopy in a double β-lactamase and double efflux pump knockout strain of Acinetobacter baumannii (AB). ASM Microbe. Houston, TX. Jun 15-19, 2023.
5. Jimenez-Nieves RH, Megroz M, Cadet KC, Deveson Lucas D, Wright A, Zhang Y, Moya B, **Sayed AR,** Boyce JD, Bulitta JB. Impact of two chromosomal efflux pumps and two β-lactamases on the susceptibility of 42 βlactams and β-lactamase inhibitors using eight isogenic in Acinetobacter baumannii (AB) knockout strains. ASM Microbe, Houston, TX; June 15-19, 2023.
6. **Sayed ARM**, Elsayed AAS, Cadet KC, Jimenez-Nieves RH, Shin E, Moya B, Lang Y, Zhou J, Zhang Y, Werkman C, Tsuji BT, Bulitta JB. Whole cell binding extents of ertapenem, ceftazidime, aztreonam, avibactam, and mecillinam with penicillin-Binding Proteins in *Klebsiella pneumoniae*. NIAMRRE 2023 Annual Conference. Hilton University of Florida Conference Center, Gainesville, Florida, May 16-18, 2023.
7. Jimenez-Nieves RH, Megroz M, Cadet KC, Lucas DV, Wright A, Zhang Y, Moya B, **Sayed ARM**, Boyce JD, Bulitta JB. Impact of two chromosomal efflux pumps and two β-lactamases on the susceptibility of 42 β-lactams and β-lactamase inhibitors using eight isogenic in *Acinetobacter baumannii* (AB) knockout strains. NIAMRRE 2023 Annual Conference. Hilton University of Florida Conference Center, Gainesville, Florida, May 16-18, 2023
8. Lang Y, Zhang Y, Zhou J, Myrick JR, **Sayed ARM**, Elsayed A, Werkman C, Shin E, Cadet KC, Jimenez-Nieves RH, Louie A, Drusano GL, Bulitta JB. Combating Mycobacterium tuberculosis (Mtb) by mechanistic insights from a highly sensitive UPLC-MS/MS assay for the parent and M2 metabolite of bedaquiline associated with Mtb and their impact on mycobacterial energy metabolites. 33rd European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Copenhagen, Denmark; April 15-18, 2023.
9. Shin E, **Sayed ARM**, Lang Y, Zhang Y, Zhou J, Oyer JL, Moya B, Elsayed A, Sutaria DS, Shah NR, Werkman C, Jimenez-Nieves RH, Cadet KC, Tao X, Jiao Y, Copik AJ, Bonomo RA, Schweizer HP, Lee RE, Boyce JD, Louie A, Tsuji BT, Barth AL, Zavascki AP, Drusano GL, Bulitta JB. Synergistic penicillin-binding protein (PBP) occupancy patterns in Klebsiella pneumoniae (KP) prospectively validated in a dynamic in vitro hollow fiber infection model. 33rd European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Copenhagen, Denmark; April 15-18, 2023.
10. Werkman C, Shah NR, Megroz M, Oyer JL, Deveson Lucas D, Moya B, **Sayed ARM**, Elsayed A, Wright A, Sutaria DS, Tao, X, Lang Y, Zhang Y, Zhou J, Shin E, Landersdorfer C, Jimenez-Nieves RH, Cadet K, Jiao Y, Copik AJ, Bonomo RA, Louie A, Drusano GL, Boyce JD, Bulitta JB. Synergistic killing of Acinetobacter baumannii (AB) elicited by simultaneous inactivation of three or all four Penicillin-Binding Proteins (PBPs) among PBP1a, 1b, 2 and 3. 33rd European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Copenhagen, Denmark; April 15-18, 2023.
11. Zhang Y, Lang Y, Zhou J, Tao X, **Sayed ARM**, Shin E, Werkman C, Smith NM, Tsuji BT, Bulitta JB. Periplasmic target site penetration rates of four β-lactamase inhibitors in Klebsiella pneumoniae carbapenemase-2 (KPC-2) producing Klebsiella pneumoniae. 33rd European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Copenhagen, Denmark; April 15-18, 2023.
12. **Sayed ARM**, Elsayed AAS, Moya B, Cadet KC, Jimenez-Nieves RH, Shin E, Lang Y, Zhang Y, Werkmena C, Tsuji BT, Drusano GL, Bulitta JB. Whole-cell Penicillin-Binding Protein (PBP) binding of ceftazidime, avibactam and aztreonam and elicited morphological changes in Klebsiella pneumoniae (KP). 33rd European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Copenhagen, Denmark; April 15-18, 2023.
13. Cadet KC, Megroz M, Jimenez-Nieves RH, Deveson Lucas D, Wright A, Zhang Y, Moya B, **Sayed ARM**, Boyce JD, Bulitta JB. The AdeIJK efflux pump and AmpC β-lactamase predominantly contribute to the MICs of 42 β-lactams and β-lactamase inhibitors in wild-type Acinetobacter baumannii (AB) whereas the OXA-51-like β-lactamase and AdeABC pump do not. 33rd European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Copenhagen, Denmark; April 15-18, 2023.
14. **Sayed ARM**. Whole-cell PBP receptor binding profiles of avibactam, aztreonam, ceftazidime and mecillinam in *Klebsiella pneumoniae*. The 36th Annual Research Showcase, Oral competition, College of Pharmacy, University of Florida, February 7, 2023. ORAL presentation
15. **Sayed ARM**, Elsayed AAS, Shah NR, Sutaria DS, Moya B, Cadet KC, Jimenez-Nieves RH, Shin E, Lang Y, Zhou J, Zhang Y, Werkman C, Tsuji BT, Louie A, Drusano GL, Bulitta JB. *Whole-cell Penicillin-Binding Protein (PBP) binding profiles of*

avibactam, aztreonam, ceftazidime and elicited morphological changes in Klebsiella pneumoniae (KP). AAPS PharmSci 360, Boston; October 16-19, 2022.

16. Zhou J, Lang Y, Zhang Y, **Sayed ARM**, Shin E, Werkman C, Louie A, Tsuji BT, Bulman ZP, Drusano GL, Bulitta JB. *Intracellular accumulation and washout kinetics of aminoglycosides (AGS) in multidrug-resistant (MDR) Klebsiella pneumoniae.* AAPS PharmSci 360, Boston; October 16-19, 2022.
17. Werkman C, Shah NR, Lucas DD, Oyer JL, Megroz M, Moya B, **Sayed ARM**, Elsayed A, Wright A, Sutaria DS, Tao X, Lang Y, Zhou J, Shin E, Landersdorfer CB, Jimenez-Nieves RH, Cadet KC, Jiao Y, Copik AJ, Bonomo RA, Louie A, Drusano GL, Boyce JD, Bulitta JB. *Simultaneously inactivating three or all four Penicillin-Binding Proteins (PBPs) among PBP1a, 1b, 2 and 3 synergistically kills Acinetobacter baumannii (AB).* AAPS PharmSci 360, Boston; October 16-19, 2022.
18. **Sayed ARM**, Elsayed AAS, Shah NR, Sutaria DS, Moya B, Lang Y, Shin E, Zhou J, Werkman C, Cadet K, Jimenez-Nieves RH, Tsuji BT, Louie A, Drusano GL, Bulitta JB. *Penicillin-Binding Protein (PBP) binding profiles in intact Klebsiella pneumoniae (KP) – characterizing the mass balance of penetration and binding in periplasm.* ASM Microbe, Hybrid: online and Washington, DC; June 9-13, 2022.
19. Shin E, **Sayed ARM**, Lang Y, Zhou J, Oyer JL, Moya B, Elsayed AAS, Sutaria DS, Shah NR, Werkman C, Jimenez-Nieves RH, Cadet K, Tao X, Jiao Y, Copik AJ, Bonomo RA, Schweizer HP, Lee RE, Boyce JD, Louie A, Tsuji BT, Drusano GL, Bulitta JB. *Mechanistic insights on synergistic killing of Klebsiella pneumoniae by double β-lactam combinations assessed via Flow Cytometry and Quantitative Systems Pharmacology (QSP).* ASM Microbe, Hybrid: online and Washington, DC; June 9-13, 2022.
20. Zhang Y, Lang Y, Zhou J, Tao X, **Sayed ARM**, Shin E, Werkman C, Smith NM, Tsuji BT, Bulitta JB. *Periplasmic target site penetration rates of two β-lactamase inhibitors in Klebsiella pneumoniae carbapenemase-2 (KPC-2) producing Klebsiella pneumoniae (KP) characterized by a novel assay.* ASM Microbe, Hybrid: online and Washington, DC; June 9-13, 2022.
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