

Joslyn L. Mangal

Biological Design PhD Candidate

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Arizona State University
Tempe, AZ
August 2018 – Present

University of Arizona
Tucson, AZ
August 2011 – May 2015

Arizona State University
Tempe, AZ
August 2018 – Present

University of Arizona
Tucson, AZ
August 2011 – May 2015

Arizona State University
Tempe, AZ
May 2019 – Present

University of Arizona

Education

Doctor of Philosophy: Biological Design

Acharya Laboratory: ImmunoEngineering
Grade Point Average: 3.93

Main Graduate Research Projects

1. Generating and delivering metabolite-based microparticles to dendritic cells for a sustained intracellular release of metabolites and for a modulation of dendritic cell energy metabolism.
2. Inhibiting dendritic cell glycolysis while fueling the Krebs cycle, in the presence of an antigen, to generate suppressive antigen-specific responses to restrain autoimmunity in mice.
3. Induction of tolerance against a dietary antigen in mice by modulating immunometabolism in the presence of a dietary antigen.

Graduate Laboratory Experience

Managing cell lines and primary immune cells; transfection; flow cytometry; enzyme-linked immunosorbent assays; fluorescence microscopy; polymer synthesis; microparticle synthesis; release kinetics; high performance liquid chromatography; spectrometry; scanning electron microscopy; dynamic light scatter; western blots; gel electrophoresis; mice handling and injections; isolating mice tissue and serum in rheumatoid arthritis, melanoma, wound healing, and traumatic brain injury studies.

Analytical Software Experience

GraphPad; FlowJo; OpenLab ChemStation; xPONENT; Softmax Pro; Netlogo; R/R studio; ImageJ; Microsoft Excel.

Bachelor of Science: Cognitive and Neuroscience

Emphasis: Learning and Memory

Relevant Coursework (17)

Immunology; Systems Biology of Disease; Molecular Medicine; Biological Design; Bioethics; Grant Writing; Evolutionary Medicine and Global Health; Exercise Biochemistry; Biological Design Seminars.

General Chemistry I, II w/labs; Biology I, II w/Labs; Cellular Neurophysiology; Systems of Neurophysiology; Fundamentals Neuroscience and Cog Science; Physics I, II w/Labs; Molecular and Cellular Biology of Neurons; Methods in Neuroscience & Cognitive science.

Academic Research Experience (4)

Graduate Research Associate

Aside from graduate research projects, other lab responsibilities include ordering lab supplies, generating experimental protocols during the start-up and establishment of the lab, and training/mentoring undergraduate and graduate students.

Biorepository Volunteer

Tucson, AZ
January 2017 – June 2017

University of Arizona

Tucson, AZ
March 2015 – May 2017

University of Arizona

Tucson, AZ
August 2014 – May 2017

Synexus

Tucson, AZ
March 2018 – July 2018

Synexus

Tucson, AZ
March 2016 – March 2018

Synexus

Tucson, AZ
March 2016 – March 2018

Arizona State University

Tempe, AZ
2019 – Present

May 2021

May 2021 – Ongoing

November 2020

September 2020

September 2020

August 2020

Assisting and observing with HIV sample processing, stem cell cultures, tissues, gels and DNA extractions.

Mating Effort and Life History Research Assistant

Attending weekly meetings to discuss data, interpreting articles for term papers, monitoring and maintaining data, communicating with participants, distributing surveys, building surveys, utilizing Qualtrics, and conducting debriefings.

Mating Effort and Life History Research Assistant

Attending weekly meetings to discuss data, monitoring and compiling data, qualitative data analysis, communicating with participants, distributing surveys, calculating fertility, utilizing Qualtrics, and conducting debriefings.

Professional Clinical Research Experience (3)

Clinical Research Coordinator II

- Managing an increased volume of trials and site responsibilities from Clinical Research Coordinator I role, while performing protocol specific procedures on all site trials.
- Completing all previous duties as a Clinical Research Coordinator I and Research Assistant.

Clinical Research Coordinator I

- Managed 7 plus clinical trials, while performing all protocol specific procedures on all current studies at site.
- Attending study initiation meetings, preparing for monitoring visits, and completing all previous duties as a Research Assistant.

Clinical Research Assistant

- Consenting subjects, completing all study specific procedures per protocol, among medical history review, and processing labs.
- Performing EKG's, phlebotomy, injections, vitals, PFT's, A1c tests, glucose tests, aseptic technique and other study specific procedures.
- Recruiting subjects, attending study update meetings, completing general office tasks, charting, adhering to SOPs's, dispensing investigational products, training subjects on study responsibilities, data entry and tracking inventory for all office, medical, shipping, and study supplies.

Analytical Software Experience

Clinical Conductor; Electronic Data Capture (Inform, RAVE, Trident, etc.); Interactive Voice/Web Response Systems (Cenduit, Express, etc.); and Trial Manager.

Patent (1)

US Patent App. M20-015L - Metabolic reprogramming of immune for Autoimmune disorders Prevention/Reversal. Arizona State University. Provisional Patent.

Scholarships, Fellowships, Grants and Awards (9)

- **University Graduate Fellowship**; Arizona State University
- **1R01AR078343 (Abhinav Acharya)**; NIH/NIAID: Assisted with preliminary data study design and experiments, and R01 proposal writing
- **Society for Biomaterials Rapid Fire Presentations Awardee, honorable mention**; Arizona State University
- **Graduate College Online/Remote Travel Award**; Arizona State University
- **Graduate and Professional Student Association Individual Travel Grant**; Arizona State University
- **2020 Career Development Awardee**; Biomedical Engineering Society

August 2019 – May 2020

August 2018 – August 2019

August 2011

Arizona State University
Tempe, AZ

- **2019 Olive Lynn Salembier Memorial Reentry Scholarship**; Society of Women Engineers

- **2018 Doctoral Recruitment Fellowship**; Arizona State University

- **2011 Arizona Excellence of a Provost Scholarship**: University of Arizona

Accepted and Pending Publications (10)

Accepted

- Le T, Aguilar B, **Mangal JL**, Acharya AP, “Oral Drug Delivery for Immunoengineering”, *Bioengineering and Translational Medicine*. 2021.

- **Mangal JL**, Handlos JL, Esrafil A, Inamdar S, Mcmillian S, Wankhede M, Acharya AP, “Engineering metabolism of chimeric antigen receptor (CAR) cells for developing efficient immunotherapies”, *Cancers*. 2021.

- **Mangal JL**, Inamdar S, Yang Y, Dutta S, Wankhede M, Shi X, Gu H, Green M, Rege K, Curtis M, Acharya AP, “Metabolite releasing polymers control dendritic cell function by modulating their energy metabolism”, *Journal of Materials Chemistry B*. 2020.

Pending

- **Mangal JL**, Inamdar S, Le T, Curtis M, Shi X, Gu H, Acharya AP, “Inhibition of glycolysis in the presence of antigen generates suppressive antigen-specific responses and restrains autoimmunity”, *Biomaterials*. 2021. Submitted.

- **Mangal JL**, Basu N, Wu H-J, Acharya AP, “Immunometabolism: An emerging target for immunotherapies to treat rheumatoid arthritis”, *Immunometabolism*. 2021. Submitted.

- Inamdar S, **Mangal JL**, Ng N, Sundem A, Shokrollahzadeh H, Green M, Gu H, Curtis M, Acharya AP, “Succinate Based Biomaterials as Alarmins for Developing Immunometabolism Based Cancer Immunotherapy”, *Nature Communications*. 2021. Submitted.

- Inamdar S, **Mangal JL**, Le T, Ottman K, Ng N, Acharya AP, “Polyamine Spermine Delivering Microparticles Induce Generation of Alternatively Activated M2 Macrophages”, *Bioengineering and Translational Medicine*. 2021. Submitted.

- Colbert BK, **Mangal JL**, Talitckii A, Acharya AP, Peet MM, “Employing Feature Selection Algorithms to Determine the Immune State of Mice with Rheumatoid Arthritis”, *BioMed Central Bioinformatics*. 2021. Submitted.

- Inamdar S, **Mangal JL**, Curtis M, Acharya AP, “Rescue of Dendritic Cell Metabolism from Glycolysis Inhibition For Cancer Immunotherapy”, Manuscript in preparation.

Conference Publications (25)

- Aguilar B, **Mangal JL**, Inamdar S, Acharya AP, Synthesis and Characterization of Immunomodulatory Microparticles for the Induction of Tolerance Against Dietary Antigens, *FURI*, November 2021, Tempe, AZ, USA. Poster presentation.

- Inamdar S, **Mangal JL**, Curtis M, Acharya AP, Rescue of Dendritic Cell Metabolism from Glycolysis Inhibition for Cancer Immunotherapy, *American Institute of Chemical Engineers*, November 2021, Boston, MA, USA. Podium presentation.

- Inamdar S, **Mangal JL**, Ghosh D, Yang Y, Dutta S, Shi X, Gu H, Green M, Curtis M, Rege K, Acharya AP, Metabolite-Based Modulation of Dendritic Cells for Developing Effective Immunotherapy, *American Institute of Chemical Engineers*, November 2021, Boston, MA, USA. Podium presentation.

- Inamdar S, **Mangal JL**, Shi X, Curtis M, Gu H, Acharya AP, Succinate Based Adjuvant-Less Cancer Vaccine Modifies Immunometabolism and Prevent Melanoma Growth in Mice, *American Institute of Chemical Engineers*, November 2021, Boston, MA, USA. Podium presentation.

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Tempe, AZ

- **Mangal JL**, Inamdar S, Shi X, Curtis M, Gu H, Acharya AP, Inhibition of Glycolysis in the Presence of Antigen Generates Antigen-Specific Responses and Restrains Autoimmunity, **Controlled Release Society**, July 2021, virtual. Podium presentation.
- Inamdar S, **Mangal JL**, Shi X, Curtis M, Gu H, Acharya AP, Adjuvant less Immunotherapy Strategy Using Succinate-based Polymeric Microparticles Restricts Tumor Growth in Melanoma, **Controlled Release Society**, July 2021, virtual. Poster presentation.
- Le T, **Mangal JL**, Inamdar S, Aguilar B, Acharya AP, paKG MPs Potentiate Treatment for Autoimmune Diseases, **Masters Applied Project**, April 2021, virtual. Poster presentation.
- **Mangal JL**, Inamdar S, Shi X, Curtis M, Gu H, Acharya AP, Inhibition of Glycolysis in the Presence of Antigen Generates Antigen-Specific Responses and Restrains Autoimmunity, **Society for Biomaterials**, April 2021, virtual. Rapid fire presentation.
- Inamdar S, **Mangal JL**, Shi X, Curtis M, Gu H, Acharya AP, Adjuvant less Immunotherapy Strategy Using Succinate-based Polymeric Microparticles Restricts Tumor Growth in Melanoma, **Society for Biomaterials**, April 2021, virtual. Podium presentation.
- **Mangal JL**, Inamdar S, Ghosh D, Yang Y, Dutta S, Shi X, Gu H, Green M, Curtis M, Rege K, Acharya AP, Metabolite-Based Modulation of Dendritic Cells for Developing Effective Immunotherapy, **World Biomaterials Congress**, December 2020, virtual. Podium presentation.
- **Mangal JL**, Inamdar S, Shi X, Curtis M, Gu H, Acharya AP, Inhibition of Glycolysis in the Presence of Self-Antigen Generates Antigen-Specific Responses and Restrains Autoimmunity, **World Biomaterials Congress**, December 2020, virtual. Podium presentation.
- Acharya AP, Inamdar S, **Mangal JL**, Curtis M, Metabolite-based Modulation of Dendritic Cells for Developing Effective Melanoma Immunotherapy, **World Biomaterials Congress**, December 2020, virtual. Podium presentation.
- **Mangal JL**, Inamdar S, Shi X, Curtis M, Gu H, Acharya AP, Inhibition of Glycolysis in the Presence of Self-Antigen Generates Antigen-Specific Responses and Restrains Autoimmunity, **American Institute of Chemical Engineers**, November 2020, virtual. Podium presentation.
- Inamdar S, **Mangal JL**, Shi X, Curtis M, Gu H, Acharya AP, Adjuvant less Immunotherapy Strategy Using Succinate-based Polymeric Microparticles Restricts Tumor Growth in Melanoma, **American Institute of Chemical Engineers**, November 2020, virtual. Podium presentation.
- Inamdar S, **Mangal JL**, Curtis M, Acharya AP, Rescue of Dendritic Cell Metabolism from Glycolysis Inhibition For Cancer Immunotherapy, **American Institute of Chemical Engineers**, November 2020, virtual. Poster presentation.
- **Mangal JL**, Inamdar S, Shi X, Curtis M, Gu H, Acharya AP, Inhibition of Glycolysis in the Presence of Self-Antigen Generates Antigen-Specific Responses and Restrains Autoimmunity, **ASU Society for Biomaterials Student Chapter: Rapid Fire Presentation Day**, November 2020, virtual. Podium presentation.
- **Mangal JL**, Inamdar S, Shi X, Curtis M, Gu H, Acharya AP, Inhibition of Glycolysis in the Presence of Self-Antigen Generates Antigen-Specific Responses and Restrains Autoimmunity, **Biomedical Engineering Society**, October 2020, virtual. Podium presentation.
- Inamdar S, **Mangal JL**, Shi X, Curtis M, Gu H, Acharya AP, Adjuvant less Immunotherapy Strategy Using Succinate-based Polymeric Microparticles Restricts Tumor Growth in Melanoma, **Biomedical Engineering Society**, October 2020, virtual. Poster presentation.
- **Mangal JL**, Inamdar S, Shi X, Curtis M, Gu H, Acharya AP, Inhibition of Glycolysis in the

Presence of Antigen Generates Antigen-Specific Treg Responses in Rheumatoid Arthritis, **Controlled Release Society**, June 2020, virtual. Poster presentation.

- **Mangal JL**, Inamdar S, Ghosh D, Yang Y, Dutta S, Shi X, Gu H, Green M, Curtis M, Rege K, Acharya AP, Metabolite-Based Modulation of Dendritic Cells for Developing Effective Immunotherapy, **Controlled Release Society**, June 2020, virtual. Podium presentation.

- Inamdar S, **Mangal JL**, Shi X, Curtis M, Gu H, Acharya AP, Adjuvant less Immunotherapy Strategy Using Succinate-based Polymeric Microparticles Restricts Tumor Growth in Melanoma, **Controlled Release Society**, June 2020, virtual. Poster presentation.

- Inamdar S, **Mangal JL**, Curtis M, Acharya AP, Rescue of Dendritic Cell Metabolism from Glycolysis Inhibition For Cancer Immunotherapy, **Controlled Release Society**, June 2020, virtual. Poster presentation.

- Aguilar B, **Mangal JL**, Inamdar S, Acharya AP, Oral Drug Delivery Vehicle for Prevention of Rheumatoid Arthritis, **Fulton Undergraduate Research Initiative (FURI)**, May 2021, virtual. Poster presentation.

- Inamdar S, **Mangal JL**, Ghosh D, Yang Y, Dutta S, Shi X, Gu H, Green M, Curtis M, Rege K, Acharya AP, Metabolite-Based Modulation of Dendritic Cells for Developing Effective Immunotherapy, American Institute of Chemical Engineers, November 2019, Orlando, FL, USA. Podium presentation.

- **Mangal JL**, Inamdar S, Ghosh D, Dutta S, Rege K, Acharya AP, Metabolite-Based Modulation of Dendritic Cells for Developing Effective Immunotherapy, **Statewide Symposium in Regenerative Medicine**, May 2019, Tempe, AZ, USA. Poster Presentation.

Arizona State University
Tempe, AZ

Mentorship and Outreach

Student	Accomplishments Under My Mentorship	Current Position
Brian Aguilar	<ol style="list-style-type: none"> 1. Spring 2020 FURI Awardee 2. Summer 2021 FURI Awardee 3. Published manuscript, "Oral Drug Delivery for Immunoengineering" 	Fourth year in Biomedical Engineering Bachelor of Science program from Arizona State University
Tien Le	<ol style="list-style-type: none"> 1. Passed applied master's project 2. Published manuscript, "Oral Drug Delivery for Immunoengineering" 	Graduated May 2021 with a Master's in Chemical Engineering from Arizona State University
Neha Basu	<ol style="list-style-type: none"> 1. Manuscript Submitted, "Immunometabolism: An emerging target for immunotherapies to treat rheumatoid arthritis" 	Senior at BASIS High School

University Involvement and Volunteer Experience (7)

- Biological Design Graduate Program (BDGP) Representative

Assisting with various task associated with the program such a recruitment, social media, newsletters, social events and meeting with the program director to discuss matters regarding the BDGP.

- Immunology Graduate Student Association Journal Club, Member

Participating and occasionally presenting in biweekly meetings.

- Volunteer

Helping the community build homes.

- Volunteer

Volunteering on the weekends to walk dogs and give them the opportunity to exercise

Arizona State University
Tempe, AZ
January 2020 – Present

Arizona State University
Tempe, AZ
August 2019 – May 2020

Habitat for Humanity
Tucson, AZ
April 2017 – April 2018

Pima Animal Care Center
Tucson, AZ

June 2014 – January 2018

University of Arizona

Tucson, AZ

August 2014 – May 2015

University of Arizona

Tucson, AZ

August 2013 – May 2014

Carondelet St. Mary's

Hospital

Tucson, AZ

May 2014 – December 2014

Arizona State University

Tempe, AZ

and socialize.

- Sigma Alpha Phi-National Society of Leadership and Success, Communications Coordinator

Attending weekly meetings and speaker broadcasts, communicating information to group members, and preparing for meetings.

- Cognitive and Neuroscience Club and F.A.C.E.S Club

Attending biweekly meetings and volunteer opportunities.

- Critical Care and Surgical Support Center desk

- Answering phones and assisting visitors with questions and patient's discharge.

- PACU (Post Anesthetic Care Unit)

- Taking patients temperatures, applying TED hoses and pneumatic stockings, restocking items, transporting patients, running EKG strips and mounting them, and attaching patients to EKG monitors, ivy pumps, and pulse oximeters.

- Hospital Clerk

- Assisting the clerk and building packets for patients.

Certifications

CITI: Basic; CITI: GCP; Hazardous Waste; Fire Safety; Lab Safety; Biosafety and Bloodborne Pathogen; mice handling; mice euthanasia; subcutaneous mice injections; intraperitoneal mice injections; subcutaneous mice tail injections; and oral gavage (mice).

Languages

English – Proficient; Hindi – Intermediate; Spanish – Beginner

Synexus Clinical Research Trials (25)

- 2017** A Multicenter, Randomized, Open-Label Extension Study to Evaluate the Long-Term Safety and Tolerability of Oral XXXXX the Acute Treatment of a Migraines With or Without Aura
- 2017** Getting to an Improved Understanding of Low-Density Lipoprotein Cholesterol and Dyslipidemia Mangement (GOULD) a Registry of High Cardiovascular Risk Subjects in the United States
- 2017** Clinical Performance of the Diassess Influenza A and B Test
- 2017** A Phase 3b, Randomized, Active Comparator, Open-label, Multicenter Study to Compare the Efficacy, Safety, and Tolerability of XXXXX to XXXXX and to XXXXX as Add-on Therapy to XXXXX in Patients with Type 2 Diabetes
- 2017** LIRA-PRIME: Efficacy in Controlling Glycaemia With XXXXX as Add-On to Metformin Vs. OADs as Add-On To XXXXX After Up to 104 Weeks of Treatment in Subjects with Type 2 Diabetes Inadequately Controlled with XXXXX Monotherapy and Treated in a Primary Care Setting
- 2017** Add XXXXX Versus Placebo as Add-On XXXXX
- 2017** Efficacy and Safety of Oral XXXXX Versus Placebo in Subjects with Type 2 Diabetes Mellitus Treated with XXXXX
- 2017** A Randomized, Double-blind, Placebo-controlled, Parallel-group, Multicenter Study to Evaluate the Efficacy and Safety of XXXXX as Monotherapy in Patients with Type 2 Diabetes Mellitus Who Have Inadequate Glycemic Control
- 2017** An Integrated Assessment of the Safety and Effectiveness of XXXXX Tablets, 20 mg, for the Management of Essential Hypertension

- 2016** A Phase 3, 52-week, Randomized, Active–Controlled Parallel Group Study to Evaluate the Safety and Tolerability of Nebulized XXXXX in Subjects with Chronic Obstructive Pulmonary Disease
- 2016** A Phase 3, Randomized, Double-Blind, Placebo-Controlled Study of XXXXX in Patients with Episodic Migraine – the EVOLVE-1 Study
- 2016** A Real-World, Point-of-Care, Randomized, Parallel Group, Open, 6-Month Clinical Study to Evaluate the Effect of a Digital Disease Management Tool in Patients with Type 2 Diabetes Mellitus
- 2016** A phase 3, Multicenter, Randomized, Double-Blind, Placebo-Controlled Single Attack Study to Evaluate the Efficacy, Safety, and Tolerability of Oral XXXXX the Acute Treatment of a Migraines
- 2015** A Randomized, Double Blind, Parallel-Group Study Of Cardiovascular Safety In Osteoarthritis or Rheumatoid Arthritis Patients With or at High Risk for Cardiovascular Disease Comparing XXXXX With XXXXX and XXXXX
- 2015** A Prospective, Observational Study for the Psychometric Evaluation of a Novel Migraine-Related Functional Impact Instrument in Episodic and Chronic Migraine
- 2015** A Multinational, Randomized, Double-Blind, Placebo-Controlled Trial to Evaluate the Effect of XXXXX Twice Daily on the Incidence of Cardiovascular Death, Myocardial Infarction or Stroke in Patients with Type 2 Diabetes Mellitus
- 2015** Double-Blind, Randomized, Placebo-controlled, Parallel-group, Phase IV Study to Evaluate the Effect of XXXXX on Long-Term Cardiovascular Safety and COPD Exacerbations in Patients with Moderate to Very Severe COPD (ASCENT COPD)
- 2015** Outcomes Registry for Better Informed Treatment of Atrial Fibrillation II
- 2015** A Long-Term Outcomes Study to Assess Statin Residual Risk Reduction with XXXXX in High Cardiovascular Risk Patients with Hypertriglyceridemia (STRENGTH)
- 2015** A Long Term, Randomised, Double Blind, Placebo-Controlled Study to Determine the Effect of XXXXX, When Added to Standard Blood Glucose Lowering Therapies, on Major Cardiovascular Events in Patients with Type 2 Diabetes Mellitus
- 2015** A Study of Two Doses of XXXXX Compared to placebo in the Acute Treatment of Migraine: A Randomized, Double-Blind, Placebo-Controlled Parallel Group Study (SAMURAI)
- 2015** A Multicenter, Randomized, Double-Blind, Parallel-Group, Comparative Study of XXXXX vs. XXXXX for the Prevention of Post-Herpetic Neuralgia and Treatment of Acute Herpes Zoster-Associated Pain
- 2015** A Phase 3, Single Arm, Clinical Trial to Study the Contraceptive Efficacy and Safety of the XXXXX (Etonogestrel + 17 β -Estradiol) Vaginal Ring in Healthy Women 18 years of Age and Older, at Risk for Pregnancy.
- 2015** An Open-label, Long-term, Safety Study of XXXXX (100 mg and 200 mg) in the Acute Treatment Of Migraine (GLADIATOR)
- 2015** A Multi-Center, Adaptive Phase 2, Randomized, Double-Blind, Placebo- and Active-Controlled (XXXXX), Parallel Group Study to Evaluate the Safety and Efficacy of XXXXX Following 6 Month Administration in Subjects with Type 2 Diabetes Mellitus on a Stable Dose of XXXXX