Table of Contents

Introduction

Welcome!

We're thrilled to have you join Ardeshir Lab at the Tulane National Primate Research Center, part of the Tulane University School of Medicine. Welcome aboard! We're excited to work alongside you and support you in making groundbreaking contributions to the fields of microbiology, immunology, and infectious diseases.

As a new member of our lab, you'll have the opportunity to collaborate with brilliant minds, utilize cutting-edge technologies, and contribute to research projects that aim to make a lasting impact on global health. We're committed to fostering a supportive, inclusive, and engaging environment where every team member's ideas and efforts are valued. Our goal is to help you grow both professionally and personally while having a great deal of fun throughout the process.

This lab manual is your comprehensive guide to our lab's policies, procedures, and expectations. It's designed to help you navigate your role within the lab and ensure that we maintain a safe, productive, and enjoyable work environment. We encourage you to familiarize yourself with the contents of this manual and refer to it whenever necessary.

We've taken inspiration from lab manual of Aly Lab at Columbia University and tailored it to fit the unique needs and goals of the Ardeshir Lab. Keep in mind that this is a living document, and we welcome your ideas and suggestions for additions or clarifications. If you have any thoughts or concerns, feel free to reach out to me (Dr. Ardeshir, the PI) or the lab manager.

When you join the lab, you're expected to read this manual. We also highly recommend reading it while deciding if you want to join the lab in the first place. Always feel free to talk to me to clarify anything in the lab manual, and let me know if I'm not following through on any of my promises! This lab manual is intended to be a starting point for a positive mentor-mentee and lab experience — but, ultimately, positive experiences will also require active investment in, and refinement of, our one-on-one interactions over time.

Once again, welcome to the Ardeshir Lab! We look forward to working with you, celebrating your successes, and supporting you throughout your scientific journey. Let's make some amazing discoveries together!

Lab Research Focus and Goals

The Ardeshir Lab investigates the complex interplay between the early life microbiome, immune system development, and host responses to pathogens and vaccines. Our research aims to unravel the intricate mechanisms that shape these interactions, with the goal of contributing to the development of innovative strategies for preventing and treating infectious diseases.

Our research areas include:

- Early life microbiome and immune system development: We use a systems biology approach, integrating data from spatial transcriptomics, immune cell profiling, metagenomics, and metabolomics to understand how the microbiome influences immune system development and function.
- Microbiome and chronic inflammatory diseases: We investigate the microbiome's role in the development and progression of chronic inflammatory diseases, such as inflammatory bowel disease (IBD) and allergic disorders and seek to identify potential microbiome-based interventions for prevention and treatment. Novel gene delivery strategies: We explore the potential of broadly neutralizing antibodies (bNAbs) and HIV entry inhibitor antibody-like molecules as tools for preventing and treating infectious diseases, particularly HIV.
- Maternal-infant microbiome transmission: We investigate the role of the maternal microbiome in shaping the infant's microbiome and immune system development, focusing on factors such as mode of delivery, breastfeeding, and early life exposures.
- Computational tools and machine learning: We develop computational tools and machine learning algorithms to analyze and integrate multi-omics data, aiming to identify key biomarkers and predict disease risk.
- Gut-brain axis and neurodevelopment: We explore the influence of the early life microbiome on neurodevelopment and behavior.

TNPRC Mission

The Ardeshir Lab operates within the Tulane National Primate Research Center, which plays a crucial role in advancing biomedical research and improving human health. The mission of the Tulane National Primate Research Center (TNPRC) is to conduct basic and

applied biomedical research on human health problems using nonhuman primate models.

To accomplish this mission, the TNPRC:

- Investigates nonhuman primate biology and diseases with particular regard to the study of human health problems.
- Promotes animal welfare through the use of clinical and basic science research to characterize and improve the health of nonhuman primates.
- Serves as a regional and national resource and center of excellence for biomedical research using nonhuman primates.
- Provides training for graduate students, postdoctoral fellows, veterinarians, undergraduates, veterinary students, and visiting scientists.
- Educates the general public about the critical link between basic research with animal models and improvements in human health.

The Ardeshir Lab's research goals align with the TNPRC's mission, as we utilize nonhuman primate models to study the early life microbiome, immune system development, and host responses to pathogens and vaccines. Our work contributes to the broader efforts of the TNPRC in advancing biomedical research and improving human health.

Expectations and Responsibilities

Everyone

Prioritizing Well-being in the Lab

At the Ardeshir Lab, we firmly believe that the well-being and happiness of our team members are just as important as our scientific achievements. We are committed to creating an environment where everyone feels valued, supported, and empowered to express their thoughts and ideas. Open communication is encouraged, and we welcome any suggestions or concerns regarding the improvement of our lab culture. As the Principal Investigator, I want to emphasize that your happiness is of utmost importance to me, and my door is always open to discuss any issues or concerns you may have. Together, we will strive to maintain a positive, supportive, and enjoyable workspace for every member of our lab family.

Big picture

- Embrace the challenges and excitement of research. Our lab is dedicated to fostering a supportive, stimulating, and inclusive environment for all members. To maintain this atmosphere, we must all adhere to certain standards and expectations.
- Follow your passions, work diligently, and take pride in your achievements. Share your successes with others while maintaining a balance between humility and self-recognition.
- As scientists, we must be meticulous and thoughtful in our work. Be thorough and precise in your research, double-check your results, and seek input from others when needed. While mistakes are inevitable, they should not stem from carelessness or haste.
- If you make a mistake, inform your collaborators, especially if the error impacts ongoing projects or publications. Acknowledging and correcting mistakes is an essential part of the scientific process.
- Strive for excellence and integrity in your work. Never engage in plagiarism, data manipulation, or any form of academic misconduct. Science is about uncovering the truth, and all results, whether expected or unexpected, are valuable.
- Support your lab mates by offering assistance, encouragement, and a listening ear. Promote collaboration over competition, knowing that others will be there for you when you need help.

- Treat your fellow lab members with respect, valuing their diverse backgrounds, perspectives, and needs. Be considerate of their work styles, preferences, and personal circumstances.
- If you're struggling, don't hesitate to reach out for help. Your well-being is our top priority, and we are here to support you through challenging times.
- Address any tension or hostility in the lab immediately. A healthy work environment is essential for success, and disrespectful behavior will not be tolerated. If you feel uncomfortable addressing the issue directly, inform Amir or the lab manager.
- Stay informed about the latest research by subscribing to RSS feeds, journal updates, or following relevant researchers on social media platforms like Twitter.
- Embrace the lab's philosophy: "We strive for excellence in science and enjoyment in life." Maintain a healthy work-life balance, prioritize your mental and physical well-being, and never feel guilty for taking time off.

Small Picture

- Keeping the lab running smoothly requires attention to everyday details.
- If you're sick, stay home to rest and recover. Reschedule meetings and participant sessions as needed to prevent the spread of illness.
- While there are no strict requirements for weekend or late-night work, ensure that you complete your tasks and meet your commitments.
- Attend meetings, classes, and lab sessions as scheduled. Be punctual and respect others' time.
- Keep the lab secure by locking the door when no one is present and turning off lights at the end of the day.
- Maintain a clean and organized lab space. Dispose of food waste, clean up spills, and return equipment to its proper place.
- Dress appropriately for the lab setting. Casual attire is acceptable, but opt for more professional clothing when interacting with participants or presenting your work.
- Be punctual for all commitments, especially when working with participants. Arrive 5-10 minutes early to set up and ensure a smooth session.
- By following these expectations and responsibilities, we can work together to create a positive, productive, and enjoyable lab experience for everyone.

Principal Investigator

All of the above, and I promise to also…

- Supporting you scientifically, emotionally, and financially.

- Providing timely feedback on project ideas, conference posters, talks, manuscripts, figures, and grants.
- Being available for regular in-person and virtual meetings to discuss your research and any other topics you wish to address.
- Offering guidance on the direction of the lab, the field, and strategies for navigating and thriving in academia.
- Promoting your career development by introducing you to other researchers in the field, showcasing your work at conferences, writing recommendation letters, and facilitating conference attendance as funding allows.
- Assisting you in preparing for the next stage of your career, whether it be a post-doc position, a faculty role, or a job outside of academia.
- Prioritizing your emotional and physical well-being above all else.

Visiting Scholars

All of the above, and you will also be expected to…

- Engage in collaborative research projects that align with the lab's focus and your own research interests, contributing your unique expertise to the team.
- Present your work and research progress at lab meetings, fostering knowledge exchange and encouraging constructive feedback from fellow lab members.
- Participate in Division events, seminars, and workshops to expand your professional network and enhance interdisciplinary collaboration.
- Share your research experiences, methods, and techniques with lab members, contributing to the lab's collective knowledge and skillset.
- Seek opportunities to collaborate with lab members on publications, conference presentations, or grant applications, further strengthening ties between your home institution and our lab.
- Attend and actively contribute to lab meetings and discussions, offering your insights and perspectives based on your own research background.
- Respect the lab's guidelines, policies, and code of conduct, ensuring a positive and inclusive work environment for all lab members.
- Regularly communicate with Amir and other lab members to discuss research progress, challenges, and potential areas for collaboration.
- If applicable, seek opportunities to mentor or advise graduate or undergraduate students, providing guidance and support based on your own research experience.
- Reflect on your time as a visiting scholar and share any suggestions or ideas for improving the lab environment, research methods, or collaborative initiatives.

Post-Docs

All of the above, and you will also be expected to…

- Develop your own independent line of research that aligns with the lab's focus and complements ongoing projects.
- Assist in training and mentoring graduate and undergraduate students in the lab, either at their request or when asked by Amir.
- Present your work at the TNPRC or SOM Departmental events, other labs (if invited), and conferences to showcase your research and represent the Ardeshir Lab.
- Apply for grants (e.g., NRSA, K99) to gain experience in grant writing and secure additional funding for your research. While Amir will provide support for at least one year, obtaining your own funding will benefit both you and the lab.
- Apply for jobs (academic or non-academic) when you feel ready, but no later than the beginning of your 4th year as a post-doc. If you are considering a career outside of academia, discuss your plans with Amir to ensure you receive the appropriate training and guidance.
- Engage in constructive discussions with Amir, offering your unique perspective and expertise to help shape the direction of the lab.
- Adhere to all safety regulations and animal welfare guidelines related to non-human primate research.

Graduate Students

All of the above, and you will also be expected to…

- Design and conduct your dissertation research, which should consist of at least three significant experiments that address a broader question in your field. While much of your work will be completed independently, remember that Amir and other lab members are available to provide support and guidance when needed.
- Mentor undergraduate students in the lab as needed, whether they ask for help directly or if Amir requests your assistance. Keep in mind that undergraduates can also aid in data collection for your projects.
- Showcase your research at the TNPRC or Departmental events, external lab presentations (if invited), and academic conferences.
- Apply for grants, such as NRSA or NSF grants, as these experiences are valuable and beneficial to pursue early in your academic career.

- Consider your long-term career goals (e.g., academia, research, teaching, industry, science writing, or other paths) and discuss them with Amir to ensure you receive the appropriate training and preparation.
- Stay informed about departmental deadlines (e.g., for exams and thesis submissions) and ensure Amir is aware of these timelines.
- Prioritize research as a core component of your graduate studies. While coursework and TA responsibilities are important, your research ultimately earns you your PhD and prepares you for future career opportunities.

Graduate Students (Rotation)

All of the above, and you will also be expected to…

- Actively participate in lab meetings, journal clubs, and other lab activities during your rotation to gain a comprehensive understanding of the research projects and methodologies employed in the Ardeshir Lab.
- Collaborate with your rotation advisor to develop a focused research project that aligns with your interests and the lab's overall research goals. This project should be feasible to complete within the rotation period (for example 8-week for BMS students).
- Communicate regularly with your rotation advisor to discuss your progress, challenges, and any support you may need to successfully complete your rotation project.
- Engage with other lab members, including graduate students, postdocs, and research staff, to learn from their experiences and expertise. Seek opportunities to assist them in their ongoing projects to gain a broader understanding of the lab's research activities.
- Familiarize yourself with the lab's policies, procedures, and safety guidelines as outlined in this manual. Adhere to these guidelines to maintain a safe and productive work environment for all lab members.
- Maintain a well-organized lab notebook documenting your research activities, experimental designs, data, and analyses. Regularly review your notebook with your rotation advisor to ensure proper record-keeping and to facilitate discussions on your progress.
- Present your rotation project findings to the lab during a dedicated lab meeting at the end of your rotation. Prepare a clear and concise presentation highlighting your research question, methodologies, results, and potential future directions.
- Actively seek feedback from your rotation advisor, other lab members, and BMS faculty to help inform your decision-making process when selecting a permanent dissertation lab.

- If you encounter any challenges or concerns during your rotation, promptly address them with your rotation advisor or the BMS program administration to ensure a positive and productive learning experience.
- Upon completion of your rotations, if you are interested in joining the Ardeshir Lab for your dissertation research, schedule a meeting with Dr. Ardeshir to discuss your research interests, career goals, and potential projects. Work together to develop a plan for your successful integration into the lab as a full-time graduate student.

Medical Research Specialist (MRS)

All of the above, and you will also be expected to…

- Actively participate in lab meetings, journal clubs, and other scientific discussions, providing insights and feedback based on your expertise and research experiences.
- Manage lab protocols related to non-human primate tissue samples and specimens, ensuring proper documentation, storage, and organization.
- Lead and manage research projects, including the development of customized computational tools (e.g., spatial transcriptomics analysis pipelines), or writing of IACUC protocols, under the guidance of Amir and assist with data analysis tasks assigned to you (this includes the selection of appropriate statistical methods, the interpretation of results, and the preparation of clear and concise reports).
- Collaborate with other lab members on ongoing research projects, providing expertise and support in areas such as experimental design, data collection, and troubleshooting.
- Maintain accurate and detailed documentation of all research activities, including experimental protocols, data analysis scripts, and results, to ensure reproducibility and facilitate knowledge sharing within the lab.
- Assist in the preparation of manuscripts, grant proposals, and presentations related to your research projects, working closely with Amir and other co-authors.
- Oversee the maintenance and updates of the lab website, internal knowledge base, lab manual, and other digital resources, ensuring accurate and up-to-date information is available to all lab members.
- Coordinate the hiring, scheduling, and training of undergraduate research assistants, fostering a supportive and collaborative work environment.
- Facilitate onboarding for new lab members by granting access to lab resources, including collaboration platforms, calendars, and data repositories.
- Support lab members in coordinating and scheduling the use of lab equipment and resources for their experiments, ensuring efficient and optimal utilization.

- Continuously expand your knowledge and skills in relevant areas through attending workshops, conferences, and training sessions, and share your learnings with other lab members.
- Be present in the lab on a regular basis, as your presence is essential when other lab members are around. Maintain a consistent schedule (e.g., 8 AM to 4 PM or 9 AM to 5 PM; 37 hours per week), with some flexibility for personal appointments or commitments. Communicate any deviations from your regular schedule to Amir and other lab members in a timely manner.

Medical Research Technician (MRT)

All of the above, and you will also be expected to…

- Assist other lab members with data collection and analysis, unless you are working on your own independent project under the mentorship of another lab member.
- Coordinate with your graduate student or post-doc mentor to develop a consistent weekly schedule, ensuring that you allocate sufficient time to complete your assigned tasks and contribute effectively to the lab.
- Assist your supervisor to manage lab protocols related to non-human primate tissue samples and specimens, ensuring proper documentation, storage, and organization in compliance with relevant regulations and guidelines.
- Attend lab meetings and present your work when asked, actively participating in discussions and providing feedback to other lab members.
- Maintain a strong work ethic, completing tasks efficiently and accurately while adhering to all lab policies and guidelines.
- Communicate regularly with your mentor and Amir about your progress, any challenges you face, and your professional development goals.
- Seek opportunities to learn new skills and techniques, and apply them to your work in the lab.

Undergraduate Students (including Summer Student Program)

All of the above, and you will also be expected to…

- Support other lab members with data collection and analysis, unless you are working on your own independent project under the mentorship of another lab member.
- Coordinate with your immediate supervisor to develop a consistent weekly schedule, ensuring that you allocate sufficient time to complete your assigned tasks and contribute effectively to the lab.

- If you are earning course credit for research, actively participate in lab meetings when your schedule allows, present your work at least once during the semester, and submit a summary of your research findings by the end of the semester for evaluation.
- Maintain a strong academic record and manage your time effectively to balance your coursework and research responsibilities.
- Communicate regularly with your mentor about your progress, any challenges you face, and your professional development goals.
- Seek opportunities to learn new skills and techniques, and apply them to your work in the lab.
- Consider pursuing additional research opportunities, such as summer internships or independent study projects, to further develop your skills and experience.

In addition, Summer Student Program:

- Summer students are expected to work 37.5 hours per week to receive their full stipend.
- In the event of holidays or other absences, summer students should coordinate with their supervisor to adjust their schedule and ensure they meet the required weekly hours.
- If a summer student needs to make up for missed hours due to a holiday, they should discuss with their supervisor the option to increase their hours the week before or after the holiday to maintain their average weekly hours and receive their full stipend.
- At the end of the summer program, students will be required to present their research findings to the lab as well as the center, and submit a written report summarizing their project, results, and learning outcomes.

Code of Conduct

Essential Policies

- The Ardeshir Lab and Tulane University are committed to fostering an environment free from harassment and discrimination. All lab members are expected to adhere to the university's policies on discrimination and harassment, which can be found here. It is essential that you read and abide by these policies.
- We are dedicated to maintaining a safe, friendly, and inclusive environment for everyone. We will not tolerate any form of verbal or physical harassment or discrimination based on gender, gender identity, sexual orientation, disability, physical appearance, body size, race, age, or religion. This includes but is not limited to: inappropriate physical contact, unwelcome sexual attention, offensive comments or jokes, deliberate intimidation, stalking, and the display of inappropriate images or videos.
- The use of alcohol or illegal drugs in the lab is strictly prohibited. Lab members are expected to maintain a professional and safe environment at all times.
- Confidentiality is of utmost importance. Do not share sensitive information about lab members, research participants, or unpublished research data with anyone outside the lab without explicit permission from Amir.
- Respect the intellectual property rights of others. Do not use copyrighted material, including images, text, or code, without proper permission and attribution.
- If you witness someone being harassed or experience harassment yourself, inform Amir immediately. If Amir is the cause of your concern, reach out to the Division chair or another trusted faculty member in the Division or TNPRC.

Non-Human Primate Research

In our lab, we conduct research involving non-human primates (NHPs) in a manner that respects the ethical treatment of these animals, adheres to all relevant guidelines, laws, and regulations, and ensures the safety of our lab members. We primarily work with tissue samples from these animals and have outlined our guidelines as follows:

- Regulations and Guidelines: All research involving NHPs, including the use of their tissue samples, must adhere to the guidelines established by the Institutional Animal Care and Use Committee (IACUC), the National Institutes of Health (NIH), and any other relevant local, state, and federal laws. This includes completing all necessary training and receiving all necessary permissions before conducting research with NHPs.

- Ethics: Lab members must remember that the tissue samples we work with come from living animals. We should treat these samples with respect and remember our goal when designing experiments should always be to minimize harm and discomfort to the animals by using the fewest animals and the least invasive procedures possible in our research.

Using AI tools in research

- Lab members are encouraged to explore the use of artificial intelligence (AI) tools to enhance their coding style and streamline their workflows. By joining the lab, you may be provided with access to GitHub Copilot (an AI-powered coding assistant) or similar services, to help with your programming tasks.
- To use GitHub Copilot or any other AI tool provided by the lab, you must sign a usage agreement that outlines the terms and conditions of the tool's use. This agreement ensures that you understand and comply with the lab's policies on the appropriate use of AI in research.
- Before using any AI tool, familiarize yourself with its capabilities, limitations, and potential biases. Be transparent about the use of AI in your research and acknowledge its role in your methods and results.
- Do not use AI tools to generate or manipulate data in a way that misrepresents or falsifies your research findings. The use of AI should support, not replace, rigorous scientific methods and integrity.
- When using AI tools to analyze sensitive or confidential data, ensure that the tools comply with data protection regulations and do not compromise the privacy of research participants or lab members.
- If you are unsure about the appropriate use of an AI tool in your research, consult with Amir or other experienced lab members before proceeding.
- Remember that while AI tools can be powerful aids in research, they are not a substitute for critical thinking, domain expertise, and ethical decision-making. Always exercise judgment and discretion when incorporating AI into your research workflow.

Taking Photos & Videos

- Respect the privacy and comfort of your fellow lab members. Always ask for permission before taking photos or videos of others in the lab.
- Do not take or share photos or videos that could compromise the confidentiality of research participants, sensitive data, or unpublished research findings.
- When taking photos or videos for professional purposes (e.g., presentations, publications, or outreach), ensure that they are appropriate, respectful, and align with

the lab's values and mission, and they must be approved prior to use, check with your supervisor.
- Be mindful of the background and surroundings when taking photos or videos in the lab. Avoid capturing sensitive information, such as computer screens or confidential documents.
- If you plan to share photos or videos of lab members or research activities on social media or other public platforms, obtain explicit permission from all individuals involved and ensure that the content aligns with the lab's social media guidelines.

Consequences of Violating the Code of Conduct

- Violations of the Code of Conduct will not be tolerated and may result in disciplinary action, up to and including termination of employment or expulsion from the lab.
- The specific consequences will depend on the nature and severity of the violation, as well as any previous violations by the individual.
- In cases of harassment, discrimination, or other serious misconduct, the lab will follow the reporting and investigation procedures outlined by Tulane University's Office of Institutional Equity.
- Lab members who witness or experience any violations of the Code of Conduct are encouraged to report the incident promptly, as described in the following section.

Reporting Incidents

- If you witness or experience any behavior that violates the Code of Conduct, you should report it immediately to Amir or the lab manager. If you are not comfortable reporting to either of them, you may contact the TNPRC HR.
- All reports will be treated with the utmost confidentiality and will be promptly investigated. Retaliation against individuals who report incidents in good faith will not be tolerated.
- If you are unsure whether an incident constitutes a violation of the Code of Conduct, err on the side of caution and report it. It is better to address potential issues early on than to allow them to escalate.
- In case of an emergency or immediate threat to safety, contact Tulane University Police Department (985) 871-6444 or dial 911.
- In case of a non-emergency matter at the TNPRC please contact Tulane University Police Department at (985) 871-6411.

By adhering to this Code of Conduct, we can create a safe, respectful, and productive environment that enables us to conduct groundbreaking research while fostering a

supportive and inclusive lab community.

Lab Safety

Due to the critical importance of lab safety, please refer to the Tulane University Biological Safety Policies and Manuals for comprehensive information on safety protocols, guidelines, and best practices.

General Lab Safety

The Ardeshir Lab is committed to maintaining a safe working environment for all lab members. It is essential that everyone follows the general lab safety guidelines, which include:

- Familiarize yourself with the location and proper use of safety equipment, such as fire extinguishers, eye wash stations, and first aid kits.
- Always wear appropriate personal protective equipment (PPE) when working in the lab, such as lab coats, gloves, and safety glasses.
- Maintain a clean and organized work area, and properly dispose of hazardous materials according to the lab's waste disposal guidelines.

Report any accidents, injuries, or unsafe conditions to your supervisor or the lab manager immediately.

Training

All lab members working with NHP tissue samples must complete the required safety training provided by Tulane University and TNPRC. This training covers appropriate handling procedures, potential zoonotic risks, and emergency protocols. Lab members should refer to the Tulane University and TNPRC safety training resources for more information and to ensure compliance with all safety regulations.

Health and Safety

Lab members must adhere to all safety protocols outlined in the Tulane University and TNPRC safety guidelines to protect both themselves and the integrity of the samples. This includes using appropriate personal protective equipment, following proper hygiene practices, and adhering to protocols for the prevention of zoonotic diseases. Please refer to the Tulane University and TNPRC safety guidelines for detailed information on health and safety procedures.

Zoonotic Diseases and Sickness

It is important to remember that NHPs can carry diseases that can be transmitted to humans, such as the herpes B virus that can be fatal. Conversely, humans can also

transmit diseases to NHPs. Even when working with tissue samples, it is crucial to follow all safety protocols to prevent potential exposure to these diseases. If you are feeling unwell, please stay home. Not only will this help maintain the health and safety of your colleagues, it will also help ensure the well-being of our NHP colony. Please follow the Time Off Policy.

Lab Resources

MS Teams

Microsoft Teams is the primary communication and collaboration platform for the Ardeshir Lab. Each lab member will be provided with an MS Teams account and will be added to relevant channels and teams. Use MS Teams for instant messaging, video calls, file sharing, and collaboration on documents. Be sure to check your MS Teams regularly and respond to messages in a timely manner.

Box (see Appendix 1 for structure)

Box is a cloud storage and file-sharing platform used by the lab to store and share large files, such as raw data, analysis scripts, and manuscripts. Each lab member will be granted access to the necessary folders within the lab's Box account. When uploading files to Box, ensure that they are properly named and organized within the appropriate folders. Adhere to the established naming conventions and folder structure to maintain consistency across projects.

It is of utmost importance to keep the files in the data/raw folder untouched and unmodified. These files represent the original, unprocessed data obtained from experiments or external sources. Preserving the integrity of the raw data is essential for several reasons:

Reproducibility: Maintaining the original, untouched raw data allows for the reproducibility of the analysis and results. It enables other researchers to verify the findings and ensures transparency in the research process.

Traceability: By keeping the raw data intact, it is possible to trace the origin of the processed data and any subsequent analyses. This is crucial for auditing purposes and for understanding the provenance of the data.

Future reanalysis: As new methods, tools, or hypotheses emerge, having access to the original raw data allows for reanalysis and exploration of the data from different perspectives. This can lead to new insights and discoveries that may not have been apparent initially.

Quality control: Preserving the raw data enables quality control checks and validation of the processed data. It allows for the identification and correction of any errors or anomalies that may have been introduced during data processing.

Any data processing, cleaning, or transformation should be performed on copies of the raw data and stored in the appropriate data/processed folders. This approach ensures that the original raw data remains intact and can always be referred back to if needed.

When working with data files, lab members should use the processed data for their analyses and scripts. If any changes or updates are made to the processed data, they should be saved as new versions to maintain a record of the modifications.

Please note that the Ardeshir Lab is planning to transition from Box to a new platform, *Lab Archives*, by the end of the year. *Lab Archives* is a specialized electronic lab notebook and data management platform designed for research labs. It provides features such as secure data storage, version control, and collaboration tools. The transition to *Lab Archives* will be gradual, and lab members will receive training and support to ensure a smooth migration of data and workflows. During the transition period, it is essential to maintain the established folder structure and data management practices to ensure data integrity and continuity.

By adhering to this folder structure, the principle of preserving raw data, and embracing the upcoming transition to *Lab Archives*, the Ardeshir Lab ensures the integrity, reproducibility, and traceability of its research data while staying at the forefront of modern data management practices.

GitHub

GitHub is used for version control and collaboration on code and scripts. All lab members are expected to have a GitHub account and to be familiar with basic Git commands. When working on a coding project, create a new repository or branch within the lab's GitHub organization (github.com/ArdeshirLab) and regularly push your changes. Be sure to provide clear commit messages and documentation to make your code understandable to others.

E-mail

Each lab member will be provided with a Tulane University e-mail address (exception would be very short term student from other institution). This e-mail should be used for all professional communication related to your work in the lab. Please check your e-mail regularly and respond to messages in a timely and professional manner. If you will be away from your e-mail for an extended period (e.g., during vacation), please set up an out-of-office auto-reply.

Data Storage, Backup, and Security

Proper data storage, backup, and security are critical to the integrity of our research. The lab follows these guidelines to ensure that data is properly managed:

- Raw data should be stored on the lab's secure server or on Box, depending on the size and type of data. Avoid storing raw data on personal computers or external hard drives.
- Analysis scripts and processed data should be stored on GitHub or Box, as appropriate. Ensure that your scripts are well-documented and that your processed data files are clearly named and organized.
- Sensitive data, such as personally identifiable information or protected health information, must be stored and handled in accordance with Tulane University's data security policies and relevant regulations (e.g., HIPAA). Consult with Amir or the lab manager if you are unsure about the appropriate handling of sensitive data.
- All data should be backed up regularly to prevent loss due to hardware failure or other issues. This is typically done by the TNPRC IT set up of your computer when you login with your Tulane Credentials. The lab's server and cloud storage platforms are automatically backed up, but it is good practice to create additional backups of critical data.

  NOTE: Access to data should be limited to only those lab members who need it for their work. Do not share data with individuals outside the lab without prior approval from Amir.

General Policies

Communications

Effective communication is essential for the success of our lab. We encourage open, honest, and respectful communication among all lab members. When communicating with your colleagues, whether in person, via e-mail, or through other platforms, always maintain a professional and courteous tone. Be clear and concise in your messages, and provide context when necessary to avoid misunderstandings. If a discussion becomes heated or unproductive, consider taking a break and resuming the conversation later when everyone has had a chance to cool down.

Communicating Concerns to Your Supervisor

If you have any concerns about your work, your colleagues, or the lab environment, please don't hesitate to bring them to the attention of your supervisor or Amir. We value your input and want to ensure that any issues are addressed promptly and effectively. When communicating concerns, be specific and provide examples when possible. If you are not comfortable discussing your concerns directly with your supervisor or Amir, you may also reach out to the department chair or the Office of Institutional Equity.

Quarterly Evaluation (Mini 360-Degree Format)

- To foster a culture of continuous improvement and growth, we conduct quarterly evaluations for all lab members. These evaluations follow a mini 360-degree format, which means that you will receive feedback from your supervisor, your colleagues, and yourself. The evaluations will cover the following areas:
- Progress towards research goals and objectives
- Strengths and areas for improvement
- Collaboration and teamwork
- Communication skills
- Professional development and career goals

You will be asked to complete a self-evaluation and to provide feedback for your colleagues. This feedback should be constructive, specific, and focused on behaviors and outcomes rather than personal attributes. Your supervisor will then compile the feedback and discuss the results with you in a one-on-one meeting. The goal of these evaluations is to help you identify your strengths, areas for growth, and opportunities for professional development.

Hours

The Ardeshir Lab values work-life balance and flexibility, but we also prioritize collaboration and productivity. In accordance with the staff handbook, all lab members are expected to work 37.5 hours per week, with core hours from 9 AM to 4 PM for meetings and communication.

If you need to work outside these hours or remotely, please discuss this with your supervisor in advance to ensure clear expectations and deliverables. We encourage lab members to be present in the lab as much as possible to foster community and facilitate collaboration.

Noise Policy

The lab is a shared workspace, and it is important to be mindful of noise levels to ensure that everyone can work effectively. When having conversations or meetings, please use a quiet voice or consider moving to a separate room to avoid disturbing others. If you need to make a phone call, step outside the lab or use a designated phone room. When listening to music or other audio, use headphones and keep the volume at a reasonable level. If you find that the noise level in the lab is consistently disruptive, please bring this to the attention of your supervisor or Amir.

PI Office Hours

Amir maintains an open-door policy and encourages lab members to drop by his office to discuss their research, ask questions, or seek advice. However, to ensure that he is available and can give you his full attention, it is best to schedule a meeting in advance. You can do this by sending him an e-mail or MS Teams message to confirm the meeting time. If you have an urgent matter that cannot wait for a scheduled meeting, please let Amir know, and he will do his best to accommodate you.

Flexible Work Location Policy

We understand that there may be situations when working remotely is necessary or beneficial. If you need to work remotely, please discuss this with your supervisor beforehand to ensure you have the necessary resources and to establish clear expectations. During remote work, maintain regular communication with your supervisor and colleagues, be available during agreed-upon hours, and attend virtual meetings as scheduled. Please note that some research activities, such as wet lab experiments or work with sensitive data, may require your presence in the lab and may not be suitable for remote work.

Meetings and Presentations

Weekly Lab Meetings/Journal Clubs (Tuesdays 11-12:30pm)

The Ardeshir Lab holds weekly lab meetings and journal clubs to foster scientific discussion, collaboration, and learning. These meetings, lasting approximately 1.5 hours each, provide a forum for trainees to present project ideas and/or data and receive feedback from the rest of the group. Projects at any level of completion (or even those not yet started) can benefit from being presented. Lab meetings can also be used to discuss methods, statistical analyses, new papers, and career development.

For paper discussions, everyone must come to the lab meeting having read the paper and prepared with comments and questions to contribute. Some weeks, we may explore a particular issue and have people read different papers. In such cases, come to the lab meeting having read your assigned paper and be prepared to summarize it for the group.

Journal club articles can be found in the journal club folder in the shared Box folder. The folder is organized as follows:

journal club

│

├── future

│

└── previous

If you come across an interesting article that you'd like to present or have presented by others, please upload the PDF to the "journal club > future" folder. When presenting an article:

- Move the PDF to the "journal club" root folder
- Rename the PDF file using the format: YYYY-FirstAuthorLastName-PresentationDate (MMDDYYYY)_YourLastName. For instance, a 2020 article by John Doe et al. scheduled for presentation by Amir on May 16th, 2023, would be renamed as: 2020-Doe-05162023-Ardeshir.
- Additionally, you must transfer the previously presented article to the "journal club > previous" folder.

In the Ardeshir Lab, each trainee (including visiting scholars, research assistants, students, and post-docs) is expected to present at least once per semester during our dynamic and interactive lab meetings. These meetings provide an informal setting where you can engage with your peers and contribute your ideas, research findings, or questions.

While attendance is expected for all lab members, we understand that unforeseen circumstances such as illnesses, appointments, or family emergencies may occasionally arise. Undergraduate students are strongly encouraged to participate as often as their schedules permit.

From time to time, we may also join with other faculty members in the department for collaborative lab meetings, which may either be integrated into our regular schedule or serve as additional gatherings. These joint sessions provide a valuable opportunity to exchange ideas and insights across disciplines.

Lab meetings also serve as an essential platform for preparing for conferences and refining presentations, whether it be through practice runs or constructive feedback on job talks and other external engagements. To keep track of lab meeting agendas and notes, visit the designated #lab-meetings channel on MS Teams.

This revised section now includes the detailed information you provided about the format and expectations for weekly lab meetings and journal clubs, as well as the specific instructions for organizing and presenting journal club articles using the shared Box folder.

Individual Meetings

In addition to weekly lab meetings, all lab members will have regular individual meetings with their supervisor and/or Amir. These meetings are an opportunity to discuss your research progress, set goals, and address any concerns or challenges you may be facing. The frequency of these meetings will depend on your role and the nature of your work, but will typically be weekly or bi-weekly. It is your responsibility to come prepared to these meetings with an agenda, questions, and any relevant materials (e.g., data, figures, drafts).

Deadlines

Meeting deadlines is critical for the success of our research and the timely dissemination of our findings. When working on a project, be sure to communicate with your supervisor and collaborators to establish clear deadlines for each stage of the work (e.g., data collection, analysis, manuscript preparation). If you anticipate that you will be

unable to meet a deadline, inform your supervisor as soon as possible so that adjustments can be made. When collaborating with others, be respectful of their time and commitments, and strive to meet agreed-upon deadlines.

Presentations

Presenting your research is an important part of your professional development and is essential for communicating our findings to the scientific community and the public. Lab members are encouraged to seek out opportunities to present their work at departmental seminars, conferences, and other events. When preparing a presentation, consider the following:

- Tailor your content and delivery to your audience, whether it is a scientific or lay audience
- Use clear, concise language and avoid jargon when possible
- Use high-quality visuals (e.g., figures, images) to support your message
- Practice your presentation in advance and seek feedback from your colleagues
- Anticipate questions and prepare thoughtful responses
- Respect time limits and guidelines provided by the event organizers

Recommendation Letters

Amir is committed to supporting the professional development and success of all lab members. If you need a recommendation letter for a grant, fellowship, or job application, please provide Amir with the following:

- A copy of your CV or resume
- A draft of your research or personal statement
- Details about the opportunity and the specific requirements for the letter
- The deadline for submitting the letter

Please make your request at least 4 weeks in advance of the deadline to allow sufficient time for preparation. If you are asking for a letter from a supervisor or colleague, follow the same guidelines and provide them with adequate time to prepare a strong letter.

Communicating Research Findings to Different Audiences

Effective communication of our research findings is essential for advancing scientific knowledge, informing policy and practice, and engaging the public. When communicating your research, consider the following strategies:

- Know your audience: Tailor your language, content, and delivery to the needs and interests of your audience, whether it is a scientific journal, a funding agency, or the general public.
- Use plain language: Avoid jargon and technical terms when communicating with non-expert audiences. Use analogies, examples, and stories to make your research accessible and engaging.
- Highlight the significance: Emphasize the importance and potential impact of your research, and explain how it advances scientific understanding or addresses societal challenges.
- Use visuals: Incorporate high-quality figures, images, and infographics to support your message and make your research more engaging and memorable.
- Engage with the media: Work with the university's communications office to promote your research through press releases, interviews, and other media opportunities.
- Seek feedback: Ask for feedback from your colleagues, mentors, and communication experts to improve the clarity and effectiveness of your messages.

By following these guidelines and actively participating in meetings and presentations, you will enhance your skills as a scientist and communicator, and contribute to the success and impact of our research.

Data Management and Open Science

Data Organization and Storage

Proper data organization and storage are essential for ensuring the integrity, security, and accessibility of our research data. All lab members are expected to follow these guidelines:

- Use a consistent naming convention for files and folders that includes the date, project name, and your initials (e.g., YYYYMMDD_ProjectName_Initials)
- Store raw data on the lab's secure server or Box, and use version control (e.g., Git) for scripts and code
- Maintain a README file for each project that describes the data, methods, and analyses
- Regularly back up your data to prevent loss due to hardware failure or other issues

Ensure that sensitive data (e.g., personally identifiable information) is stored and handled in accordance with IRB and HIPAA regulations

Open Science Practices

The Ardeshir Lab is committed to open science practices that promote transparency, reproducibility, and collaboration. We encourage lab members to:

- Share code and data on GitHub or other open platforms, when appropriate
- Use open-source software and tools whenever possible
- Publish preprints of manuscripts on bioRxiv or other preprint servers
- Deposit data and materials in public repositories (e.g., OSF, GEO, SRA) upon publication
- Use open licenses (Creative Commons) for publications and materials

Data Sharing

Sharing data and materials is important for advancing scientific knowledge and enabling others to build upon our work. When sharing data, consider the following:

- Provide sufficient metadata and documentation to enable others to understand and use the data
- Use standard file formats and data structures to facilitate reuse and integration with other datasets
- Obtain necessary permissions and licenses for sharing proprietary or copyrighted materials
- Discuss data sharing plans with your supervisor and collaborators early in the research process

- We rarely work with human data. If in your project you have data from human patients, ensure that data is properly de-identified and that sharing complies with IRB and other regulations

Funding and Grants

Lab Funding Sources

The Ardeshir Lab is currently funded by the following sources:

- Dr. Ardeshir's startup package from Tulane University
- NIH – TNPRC (current #: P51OD011104-62; please check with Division for accuracy)
- NIH – R44 subcontract
- NIH – U42 subcontract

Lab members should acknowledge these funding sources in publications, presentations, and other research products. Please check with Amir for the appropriate acknowledgement.

Purchasing Procedures

To purchase supplies, equipment, or services using lab funds, follow these procedures:

- Obtain approval from your supervisor or Amir before making any purchases
- Use preferred vendors and contracts whenever possible to obtain discounts and ensure compliance with university policies
- TNPRC EDI Committee keeps a list of underrepresented vendors. We encourage you consider the list prior to purchasing items
- Obtain quotes or bids for purchases over $5,000, and work with the university's procurement office for large purchases
- Submit itemized receipts and documentation to the lab manager or administrative assistant for reimbursement or payment
- Ensure that all purchases are allowable, allocable, and reasonable under the terms of the funding source

Contributing to Grant Writing

All lab members are encouraged to contribute to grant writing and proposal development. This may include:

- Conducting literature reviews and background research
- Providing preliminary data or proof-of-concept studies
- Assisting with budget development and justification
- Reviewing and editing proposal drafts
- Participating in mock review panels or study sections

Contributing to grant writing is an important skill for career development and can help secure funding for your own research projects.

Individual Grants and Fellowships

Lab members are encouraged to apply for individual grants and fellowships to support their research and professional development. Some opportunities include:

- NIH F31 or F32 fellowships for graduate students and postdocs
- NSF Graduate Research Fellowship Program (GRFP) for graduate students
- American Heart Association (AHA) predoctoral and postdoctoral fellowships
- Foundation and society-specific grants and awards

Discuss your plans to apply for individual funding with your supervisor and Amir, and seek guidance and support throughout the application process.

Time Off Policy

The Ardeshir Lab recognizes the importance of time off for rest, relaxation, and personal well-being. We encourage all lab members to take the time they need to maintain a healthy work-life balance. The lab follows Tulane University's policies for vacation time and sick leave.

Vacation Time

Vacation time for lab members is governed by Tulane University's policies. Please refer to the Tulane University Employee Handbook for detailed information on vacation accrual, eligibility, and scheduling. It is important to plan your vacation time in advance and coordinate with your supervisor and colleagues to ensure adequate coverage and minimize disruptions to ongoing projects.

Sick Leave

If you are feeling unwell and unable to work, please inform your supervisor as soon as possible. The Ardeshir Lab follows Tulane University's sick leave policy. Consult the Tulane University Employee Handbook for information on sick leave accrual, usage, and reporting requirements.

In case of an extended illness or injury that requires a prolonged absence, please work with your supervisor and Tulane University's Human Resources department to explore options for medical leave and accommodations.

Holidays

The Ardeshir Lab observes all official Tulane University holidays. If you need to work on a holiday due to the nature of your research (e.g., time-sensitive experiments), coordinate with your supervisor to ensure adequate coverage and compensatory time off.

Parental Leave

The Ardeshir Lab is committed to supporting lab members during significant life events, such as the birth or adoption of a child. Tulane University provides parental leave benefits to eligible employees. Please refer to the Tulane University Employee Handbook and work with your supervisor and Human Resources to understand your eligibility and to plan for your parental leave.

Requesting Time Off

To request time off, follow these general guidelines:

1. Notify your supervisor as early as possible, preferably at least 2-4 weeks in advance for planned absences.
2. For unexpected absences (e.g., sick leave), inform your supervisor as soon as you are aware of the need for time off.
3. Submit your time off request through the administration of the TNPRC Division of Microbiology.
4. Ensure that your responsibilities and any ongoing experiments are properly covered or handed over to a colleague during your absence.
5. Update your calendar and set an out-of-office response for your email, providing contact information for urgent matters.

Remember, while time off is important for your well-being, it is also essential to consider the impact of your absence on the lab's operations and your colleagues. By planning ahead, communicating effectively, and following Tulane University's policies, we can ensure a fair and supportive environment that promotes both personal well-being and research productivity.

Appendix 1: Box Folder Structure

The Ardeshir Lab uses Box, a cloud storage and file-sharing platform, to store and share large files, such as raw data, processed data, analysis scripts, and manuscripts. Each lab member will be granted access to the necessary folders within the lab's Box account. It is crucial to maintain a consistent and organized folder structure to ensure efficient collaboration and data integrity.

The Box folder structure is as follows:

```
project_name/
│
├── data/
│   ├── raw/
│   │   ├── microbiota/
│   │   ├── metabolomics/
│   │   ├── flowcytometry/
│   │   └── viral_assays/
│   └── processed/
│       ├── microbiota/
│       ├── metabolomics/
│       ├── flowcytometry/
│       └── viral_assays/
│
├── metadata/
│   ├── sample_info/
│   ├── experimental_design/
│   └── protocols/
│
├── analysis/
│   ├── microbiota/
│   ├── metabolomics/
│   ├── flowcytometry/
│   └── viral_assays/
│
├── scripts/
│   ├── data_processing/
│   ├── statistical_analysis/
│   └── visualization/
│
├── results/
│   ├── figures/
│   └── tables/
│
├── manuscript/
│   ├── original_submission/
│   │   ├── text/
│   │   ├── figures/
│   │   └── tables/
│   └── resubmission/
│       ├── text/
│       ├── figures/
│       └── tables/
│
├── reports/
│   ├── presentations/
│   └── summaries/
│
├── references/
│   ├── genomes/
│   ├── databases/
│   └── literature/
│
├── logs/
│   ├── analysis_logs/
│   ├── computational_environments/
│   └── software_versions/
│
├── documentation/
│   ├── sops/
│   ├── codebooks/
│   └── workflows/
│
├── .gitignore
│
└── README.md
```