



## JANUARY 2022 Uromicrobiota Research Interest Group

### I. Highlights from the November 2021 group meeting were reviewed:

**RECAP FROM NOVEMBER 2021.** 20 participants. List of interested people to whom invites are sent now numbers about 100. Participants at today's meeting included a very **broad cross-section of disciplines:**

- Pediatric hospitalist
- Transplant nephrologist
- Veterinarian
- Microbiologists
- Microbial ecologist
- NIDDK Program Officer
- Urologists
- Scientists
- Postdoctoral researchers and graduate students
- MD/PhD and other medical school students

Various **research interests, techniques, and tools** were reported:

- Gut microbiome
- Urinary tract microbiota
- Spatial and temporal dynamics
- Bioenergetics
- Imaging (PET, MRI)
- Microbial genomics
- Metabolomics
- Microbial physiology
- Artificial urine
- Fungi
- Phages, plasmids
- Microbe-microbe interactions
- Antimicrobial resistance
- Urinary tract infection

**WHERE ARE THE RESOURCES?** We talked about the enormous sets of appendices that are published with manuscripts. Many contain things that could be useful resources. But do people know what's there? Do they know where things are archived? The field needs a list of the available resources, whether it is sequencing data, coding, validated protocols, bioinformatics workflows, or list of microbes. Need a "one stop shop" for such information; plans are underway for this – awaiting funding decision... But in the meantime, **could begin the process of identifying what investigators need and where we want it to be available.** See below for further discussion on this...

**SCIENCE COMMUNICATION TO PATIENTS, CLINICIANS, AND THE PUBLIC.** Clinicians need readily-accessible information and scientific updates, easily-digested information to use when talking with patients. Clinicians themselves are another target audience for this communication effort. We discussed how this could be a good project for trainees, helping them to develop their science communication skills. These papers could be stored in multiple places for easy access and could be a way to build cross-disciplinary collaborations. Ideas to accomplish this include podcasts (could create and archive on the CAIRIBU YouTube channel) and partnering with the AUA. See next page for further discussion on this...

### II. Summary of January 2022 meeting

- A. **ASSEMBLE LISTS OF PUBLISHED DATASETS.** There was discussion about the challenges in knowing where to look for data and other materials published with manuscripts. Simply getting access to the data and knowing how to do that is an issue for a lot of individuals. Another challenge is know how to read and utilize the data (e.g., sequencing data). The group talked about potentially creating tutorials for urobiome investigators that could be posted in various places. **L Karstens** – both in the meeting and in a subsequent email to KP – volunteered to share her file on available urobiome data. This could serve as a starting point. Lisa is currently reviewing it and plans to publish a summary that highlights the gap in resource accessibility that investigators face. Lisa also notes that she works with the Genomics Standard Consortium on the urobiome MlxS-package and will be organizing a metadata workshop geared at increasing investigators' familiarity with metadata and MlxS. **The CAIRIBU Interactions Core will assist with these and other efforts to acquire, assemble, and curate datasets and other published material and make them available to the urobiome research community.**
- B. **ASSEMBLE BIOINFORMATICS WORK FLOWS AND SUGGESTED EXPERIMENTAL PROTOCOLS.** The group discussed the need for standardized general/generic workflows that are customized as needed by individual investigators and their laboratories. Investigators talked about how they could perhaps make their own workflows, protocols, methods, etc. "open access." Could create space on the public-facing CAIRIBU website for this. K Penniston noted that we can simply link to investigators' labs and to Github if these are things they archive on their own websites. Could also use CAIRIBU YouTube channel for visual tutorials. The CAIRIBU Interactions Core will work with those interested to create a space on the public CAIRIBU website where materials and links to investigators' sites may be available. Those wanting to participate are below:

- **BIOINFORMATICS workflows:** *Nicole DeNisco, Aaron Miller, Michael Neugent, Miguel Verbitsky, Lisa Karstens*
- **TECHNICAL AND EXPERIMENTAL workflows:** *Alan Wolfe, Aaron Miller, Lenore Ackerman, Katie Forster, Michael Neugent*

C. **SUB-GROUP FORMATION.** The purpose is to develop projects or grants and to engage in collaborative writing. **The group discussed using Slack as a forum for facilitating discussions within subgroups** and decided that each subgroup should identify what works best for them. If Slack is an option, perhaps there could be a tutorial of sorts for those of us less familiar with it. Toward that end, **N DeNisco** offered to help others learn how to download the app to their phone or computer and to provide a 10-15 min Zoom orientation to it. Nicole will set up the Slack group and invite people to connect; she is willing to provide a brief tutorial for anyone interested. Three main areas for sub-group formation were discussed: (1) fostering research collaborations on the urobiome; (2) collaboratively writing review papers; and (3) collaboratively creating educational materials on the urobiome for patients, clinicians, and the general public. Details below:

1. **Collaborative review papers.** **A Wolfe** noted that his group is close to completing a large review manuscript that may serve as a logical precursor for more expanded discussions about discrete topics that, for example, review work-to-date on specific microbes or microbial interactions. **Suggestion was made for writing groups to form around the topics below, using the review manuscript as a starting point:** (a) History of the urobiome; and (b) history of the work-to-date on urinary tract microbes
2. **Science communication papers.** Patients and clinicians are envisioned as initial target populations. Those interested in working on these include: *Michael Neugent, Katie Forster, Lenore Ackerman, Tanya Sysoeva (also has students who may be interested), John Lee.*
  - a. Is there a urobiome?
  - b. Brief history (in layperson's terms) of urinary microbiome research and knowledge
  - c. Description of the evidence that supports existence of a urinary microbiome
  - d. How do we study the urobiome (e.g., technical aspects, tools, equipment, processes)?
  - e. What is the terminology associated the urobiome and urobiome research?
  - f. Is there an infection if a UTI is asymptomatic?
  - g. How should we use (or not use) antibiotics?
  - h. What are probiotics? What are prebiotics?
  - i. What are the technical aspects of how we study the urobiome?
  - j. What urobiome-related clinical trials are currently underway?