

# Gut Microbiome Collection in Add Health

**Kathleen Mullan Harris**, PI Add Health Wave V

**Robert A. Hummer**, PI Add Health Wave VI

The University of North Carolina at Chapel Hill

Biomarker Network Annual Meeting

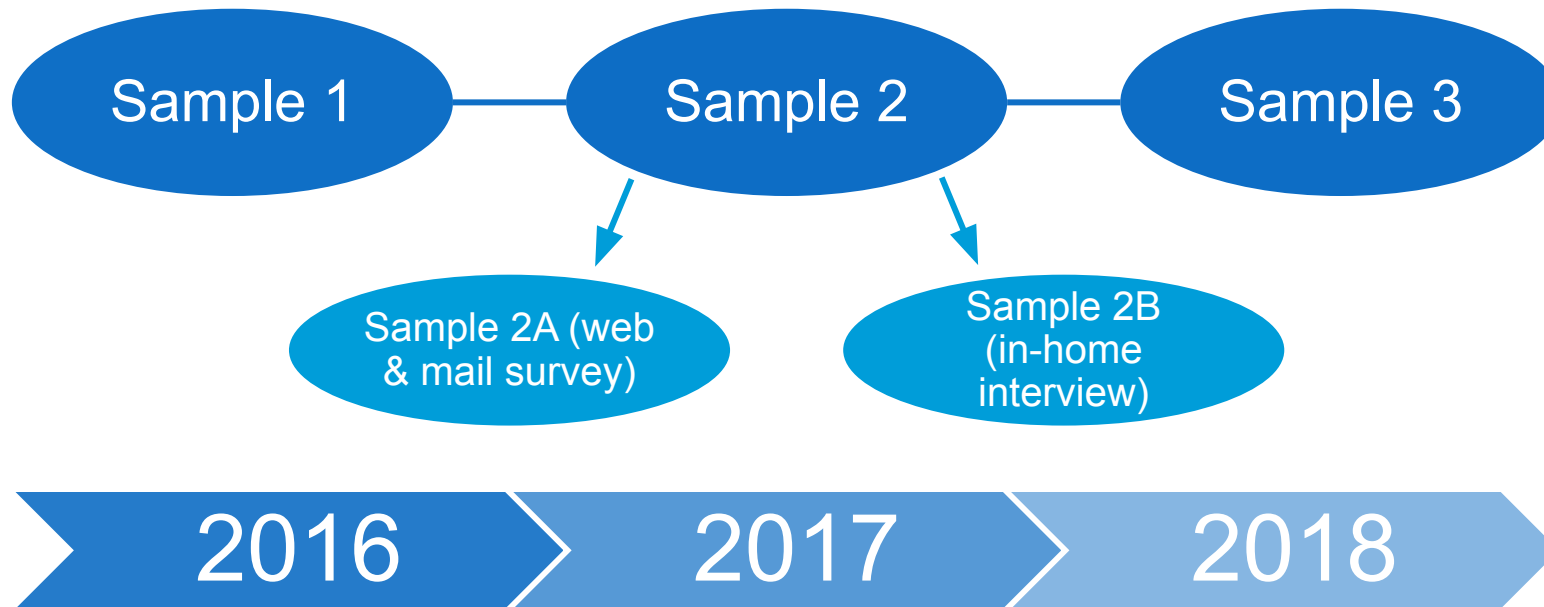
April 12, 2023

# Add Health Microbiome Data Collections

- Pilot study at Wave V
- Life Course Microbiome Study (LCMB Study)
- Wave VI microbiome collection

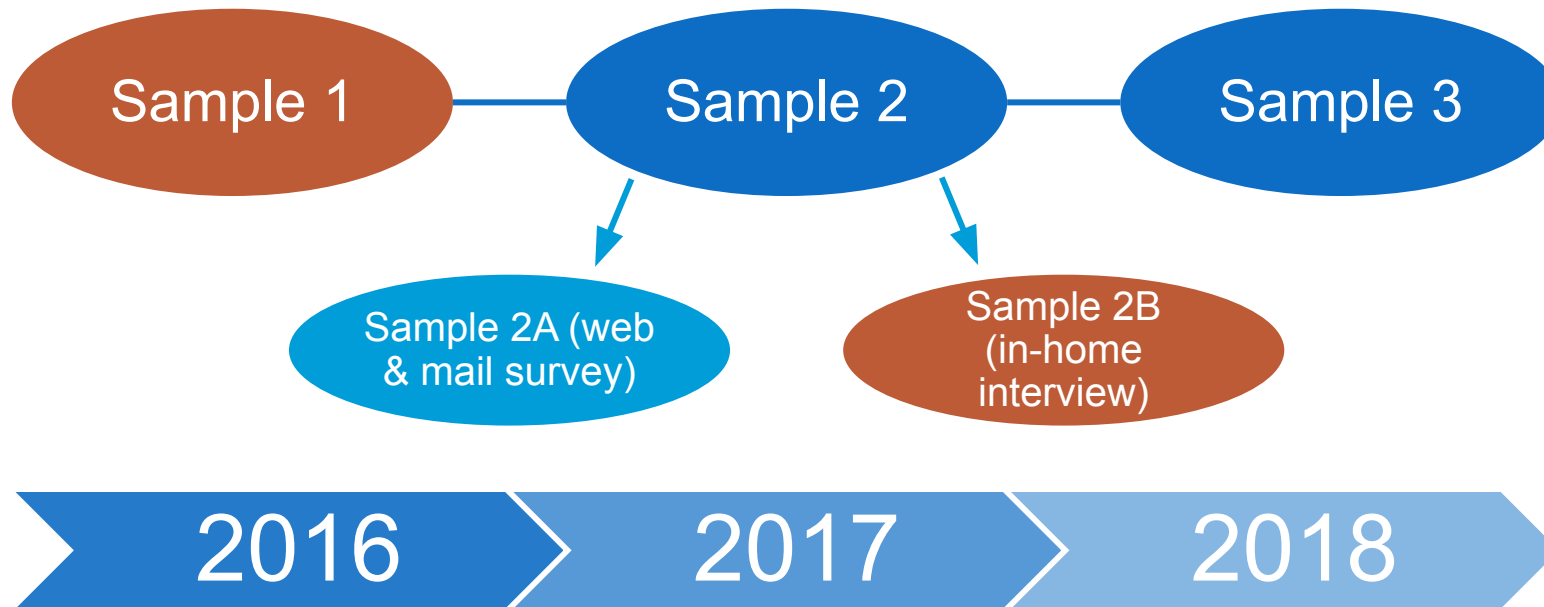
# Wave V Microbiome Pilot

Administered in two nationally-representative subsamples (1, 2B) of Wave V



# Wave V Microbiome Pilot

Administered in two nationally-representative subsamples (1, 2B) of Wave V



# Wave V Microbiome Pilot

- Explore the feasibility of respondents self-collecting both oral and gut specimens
- In both subsamples, an interviewer/examiner handed the respondent a kit with information, materials, and instructions for self-collection



## 1

## Stool Swab Instructions

**Step 1. Wash Hands.** Put on the provided gloves (optional).

**Step 2. Prepare Sample.** After a bowel movement, use a large piece of toilet paper to wipe and then rest the clean side on a counter or other location while you prepare the tube.

**Step 3. Open Tube.** Hold tube labeled STOOL by the top, twist the red top and pull it straight out.

**Step 4. Collect Sample.** Rub both cotton tips on the toilet paper, collecting a sample on the tips of the cotton swabs. Only a small amount of stool sample is needed (see note below).

### Special Instruction

It is important to collect only a small portion of stool sample, covering 1/2 the tips of the cotton swabs at most. MORE IS NOT BETTER. Too much sample can alter the results of the test. See the pictures below for the amount of sample you should collect.



Just Right!



Too Much!

**Step 4. Close Tube.** Carefully reinsert the swab back into the plastic tube. Try to keep all the tiny dry pellets in the tube. If they fall out, do not put them back in the tube, throw them away. Press down firmly on the red cap to shut the tube.

**Step 5. Wash Hands, Again.**

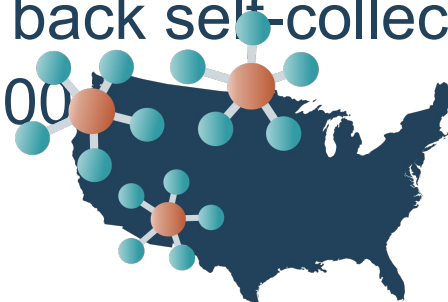
# Wave V Microbiome Pilot

- Successful feasibility study:
  - specimens were high quality
  - collected correctly
  - shipped without damage
  - data quality high
- N=732

# Life Course Microbiome (LCMB) Study



- Funded by NIA: R01 AG066498
- MPIs: Kathleen Mullan Harris, Allison Aiello (UNC-CH); Kenneth Krauter, Matthew McQueen (UC-B)
- Purpose: largely data collection and dissemination; relationships between early life course exposures and microbiome species related to biomarkers of aging.
- Eligible sample: Add Health resps who participated in Waves IV or V
- Mail out, mail back self-collection
- Expect N~2,000



**Add Health  
Life Course  
Microbiome Study**

# Wave V Pilot Feedback Survey

---

- Sample: those who participated in Wave V Pilot (732) and those who declined to participate (1543)
- 10-minute web survey about their experiences with microbiome specimen collection and preferred incentive(s)
- **Findings:**
  - *Monetary incentive matters, but not the most important reason (convenience, contribution, dedication to study remain big motivators)*
  - *Favored microbiome results over monetary incentive (especially non-respondents)*
  - *Participants prefer to be contacted by text messaging*
  - *Reasons for not participating mainly due to sample collection being too gross or personal*



# Life Course Microbiome Study

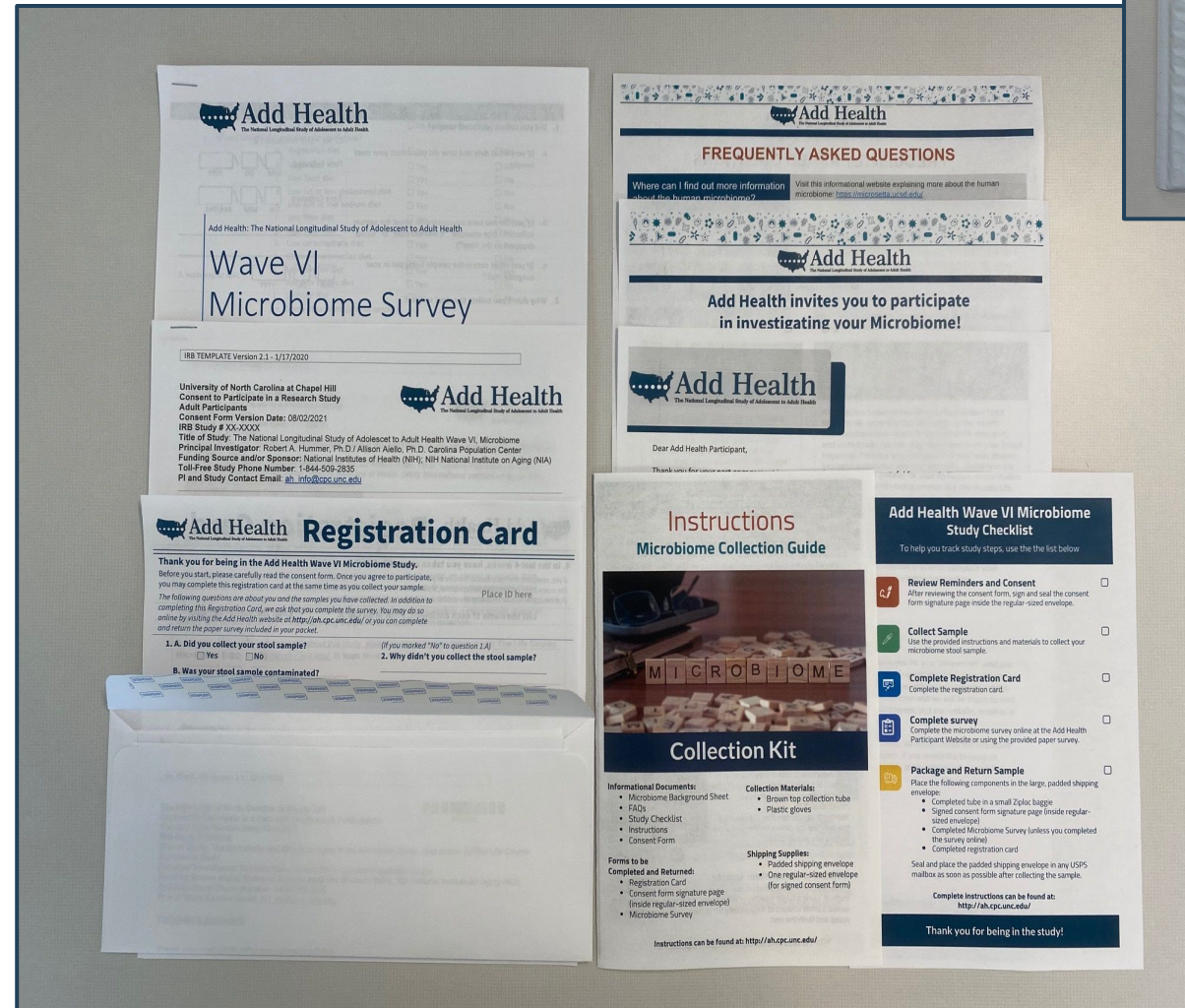
## Procedures

---

- Send prenotice email that briefly explains the study and invites resps to update their contact information to receive a study packet to learn more about the study
- LCMB Secure website has all study information and resources, including two videos—one that explains what's in the study packet and another for how to collect sample at home. Once the participant updates contact information the study packet is shipped to their preferred address
- Each packet is bar-coded, as are the collection tubes and consents and return mailer
- Participant provides a sample and fills out a paper or web-based survey (info on use of antibiotics, overseas travel, diet, exercise, Covid, etc.) and returns along with consent form
- Send numerous notifications to keep participants engaged and friendly reminders, email, mail and phone calls to encourage returning their samples
- Let participants know they can securely access their results on the LCMB website

# Packet and Materials

1. Cover Letter
2. Intro to Microbiome
3. FAQs Sheet
4. Study Checklist
5. Instructions
6. Consent Form
7. Registration Card
8. Microbiome Survey
9. Brown top collection tube with scooper inside
10. LCMB pen
11. Plastic gloves
12. Pre-paid padded shipping envelope



# Life Course Microbiome Study - Videos

---



LCMB Sample Collection Video

## Special instructions

It is important to collect only a small portion of a stool sample, covering  $\frac{1}{2}$  the tip of the plastic scooper at most.

**More is not better.**

Too much sample can alter the results of the test.

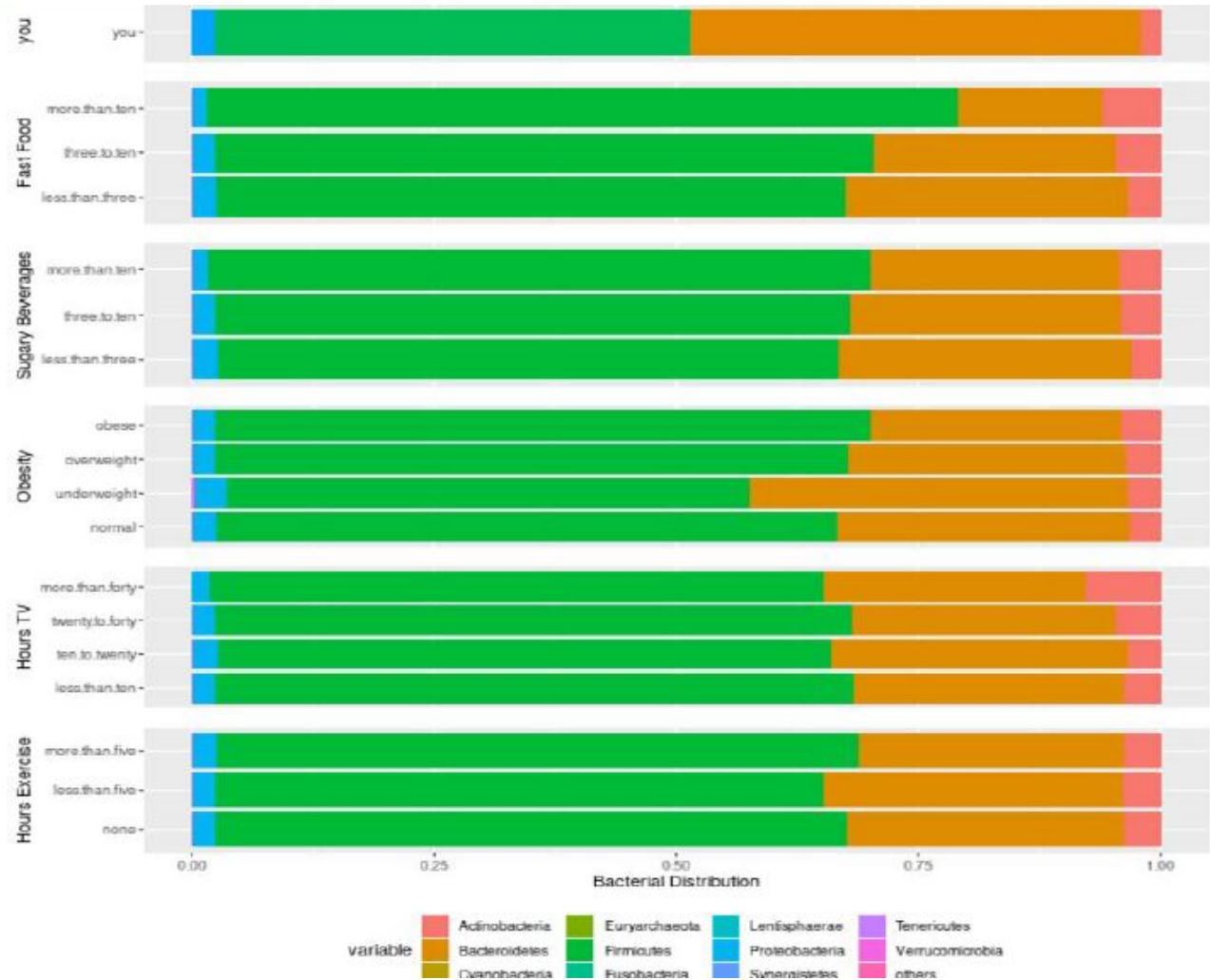


# Percentage of Each Type of Microbe in AHSM Compared to Others

Each multicolored bar shows the percentage of all the bacteria in the gut corresponding the particular phylum listed by color.

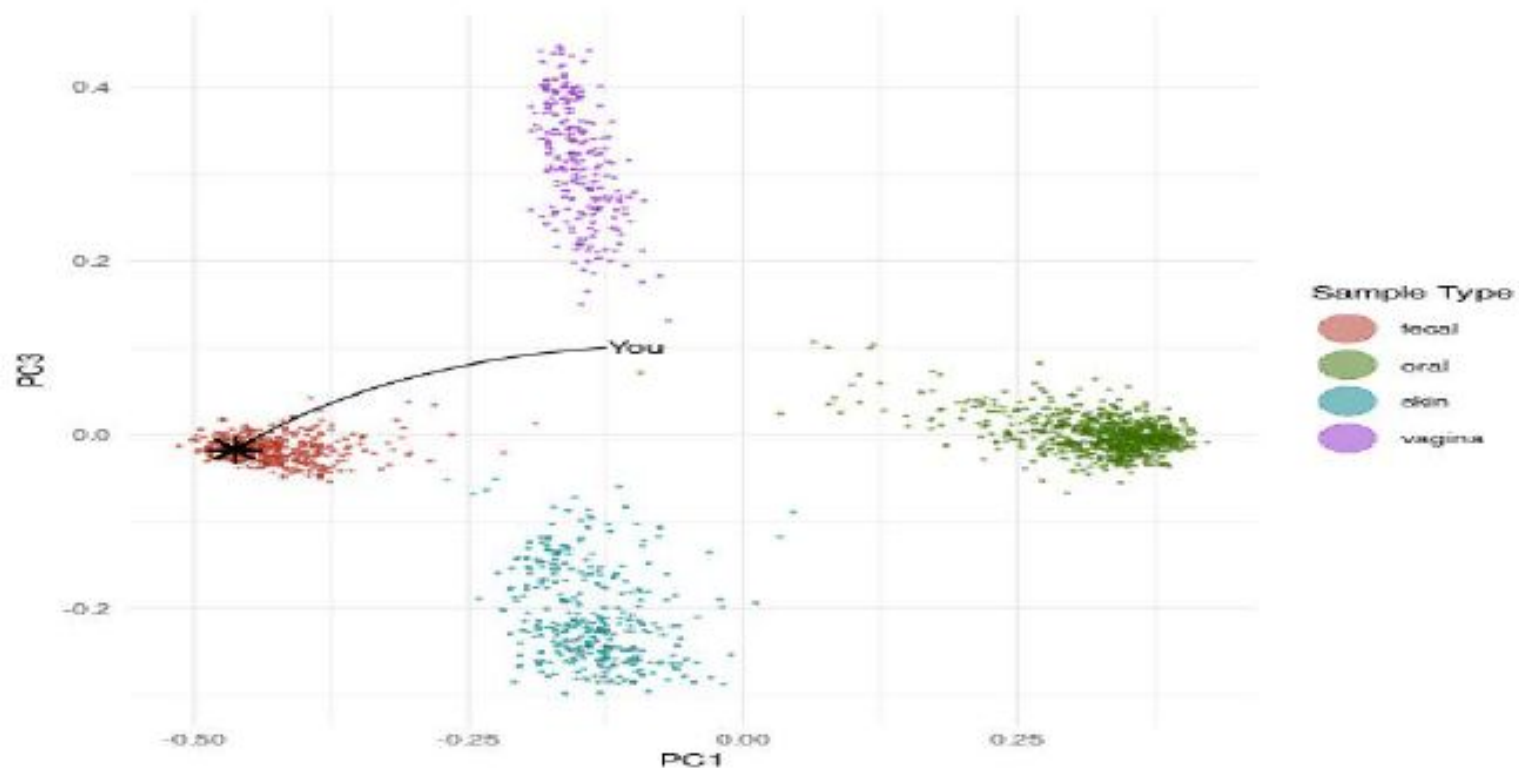
“You” is your guts microbiome compared to the “average” microbiome of others who are grouped by “Hours Exercise”, “Hours TV”, “Obesity”, “Sugary Drinks”, and “Fast Foods”.

**Note:** the high level of variation – this is expected and normal.



# Comparison of AHMS to Others

Your gut contains hundreds of different types of bacteria. When these bacteria are compared, it is obvious that all microbes in your gut are more similar to everyone else's gut than they are to the microbes on skin, mouth, or other sites. In this plot, each dot is a compilation of all of the microbes in each person. The distance between any two dots measures how different they are - closer is similar, further apart is more different. You are the large asterisk that is similar to everyone else's gut microbiome.



# Add Health Co-Funders

National Institute of Child Health and Human Development

National Cancer Institute

National Center for Health Statistics, Centers for Disease Control and Prevention, DHHS

National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, DHHS

National Center for Minority Health and Health Disparities

National Institute of Allergy and Infectious Diseases

National Institute of Deafness and Other Communication Disorders\*

National Institute of General Medical Sciences

National Institute of Mental Health

National Institute of Nursing Research

National Institute on Aging\*

National Institute on Alcohol Abuse and Alcoholism

National Institute on Drug Abuse\*

National Science Foundation\*

Office of AIDS Research, NIH

Office of the Assistant Secretary for Planning and Evaluation, DHHS

Office of Behavioral and Social Sciences Research, NIH\*

Office of the Director, NIH

Office of Minority Health, Centers for Disease Control and Prevention, DHHS

Office of Minority Health, Office of Public Health and Science, DHHS

Office of Population Affairs, DHHS

Office of Research on Women's Health, NIH

\*Wave V  
co-funders

# Acknowledgments

---

The Add Health Life Course Microbiome study is supported by a grant from the National Institute on Aging (R01AG066498, principal investigators Kathleen Mullan Harris, Kenneth S. Krauter, and Allison A. Aiello) to the University of North Carolina at Chapel Hill and the University of Colorado at Boulder.

Add Health Wave V was supported by a program project to Add Health, directed by Kathleen Mullan Harris and designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill, and funded by grant P01-HD31921 from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations.

Information on obtaining Add Health data is available on the project website:

<http://www.cpc.unc.edu/addhealth>

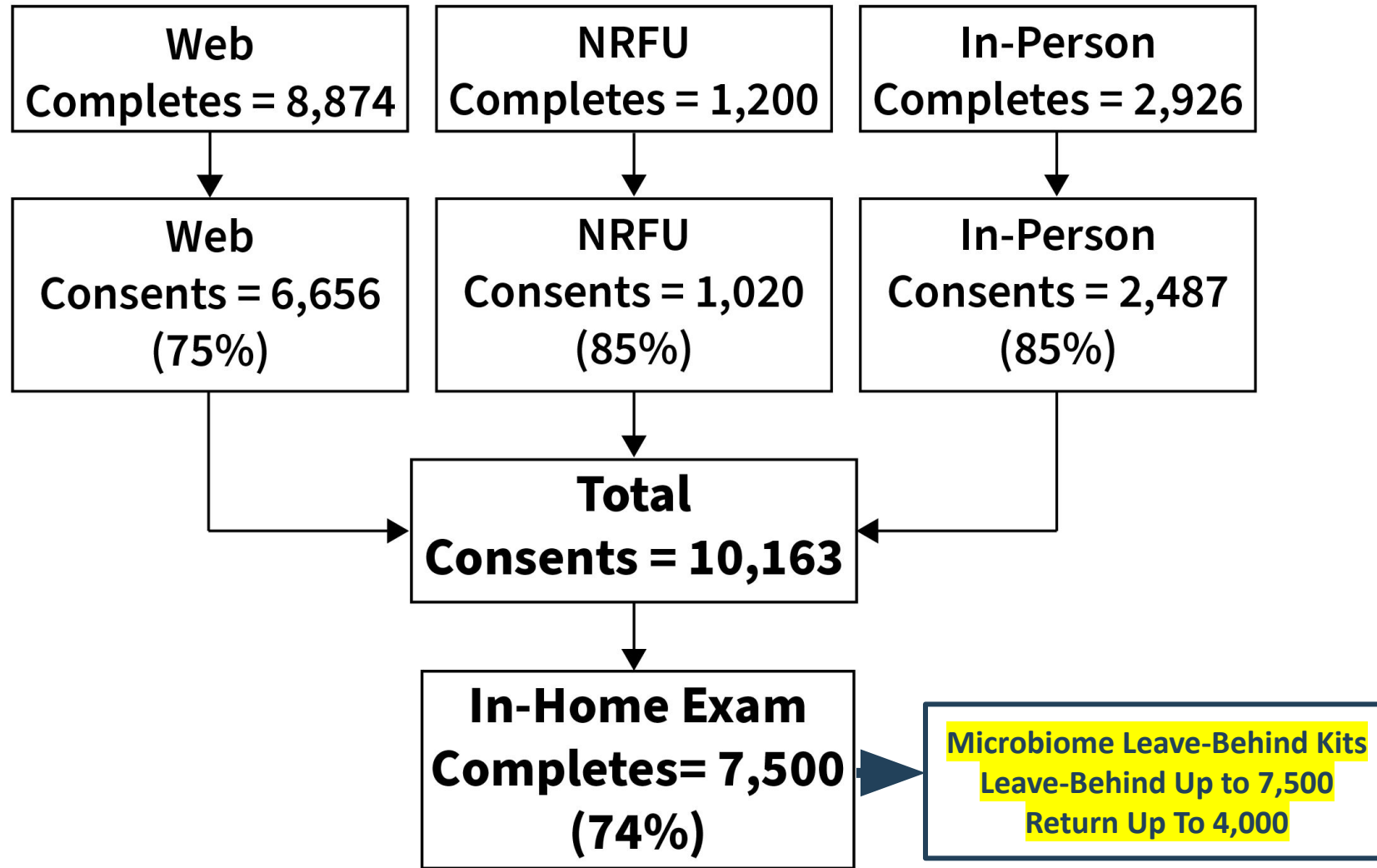
# Wave VI Microbiome Collection

---

Robert A. Hummer, Director  
Allison E. Aiello, Deputy Director



# Figure 3: Wave VI In-Home Exam Consents and Completes



# Add Health Wave VI Microbiome Study Packet

## Packet Contents:

Study cover letter, instructions, & FAQ

Collection card

Bubble mailer

Large conical storage tube

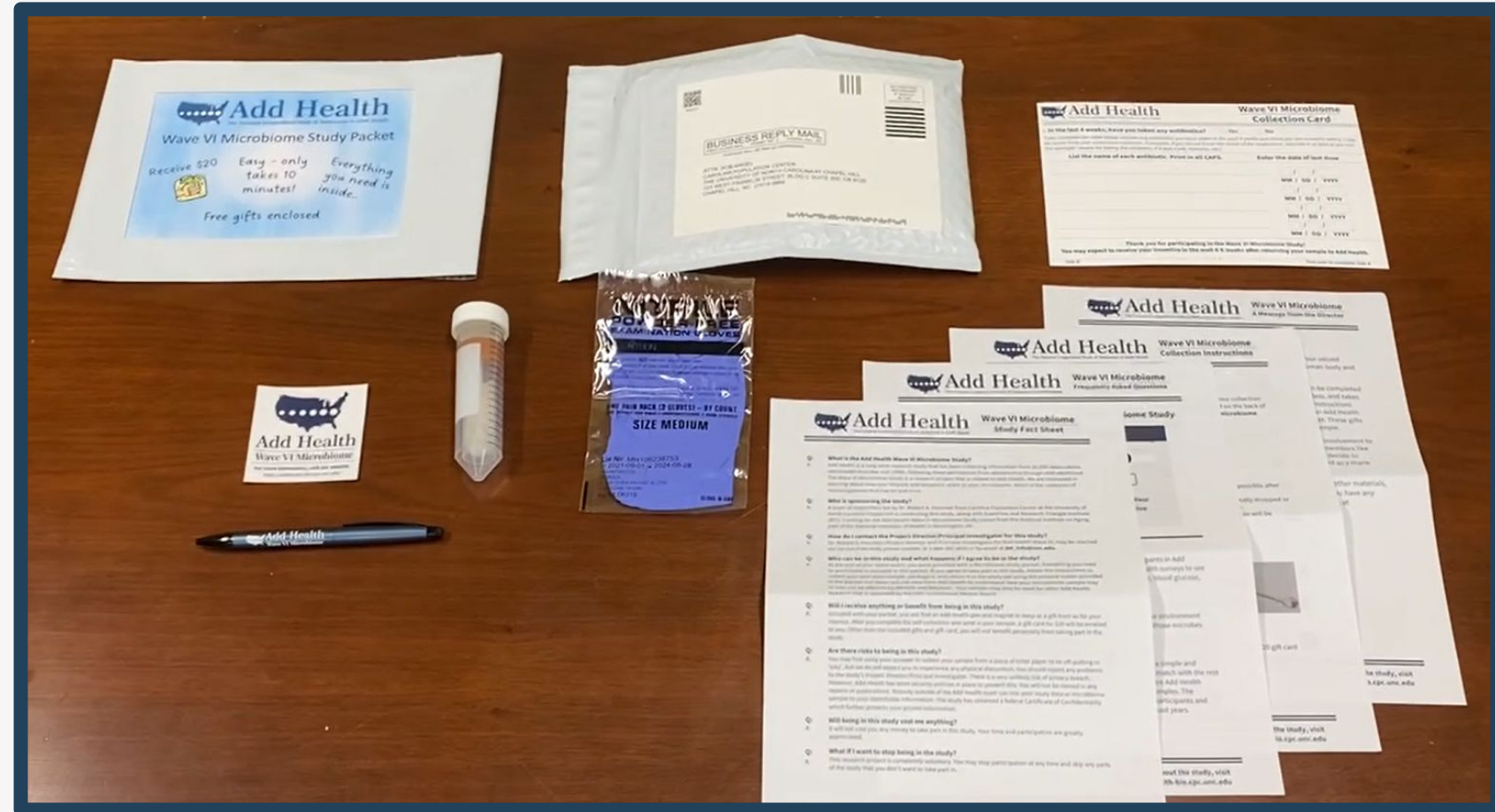
Collection tube with attached scoop

Pack of nitrile gloves

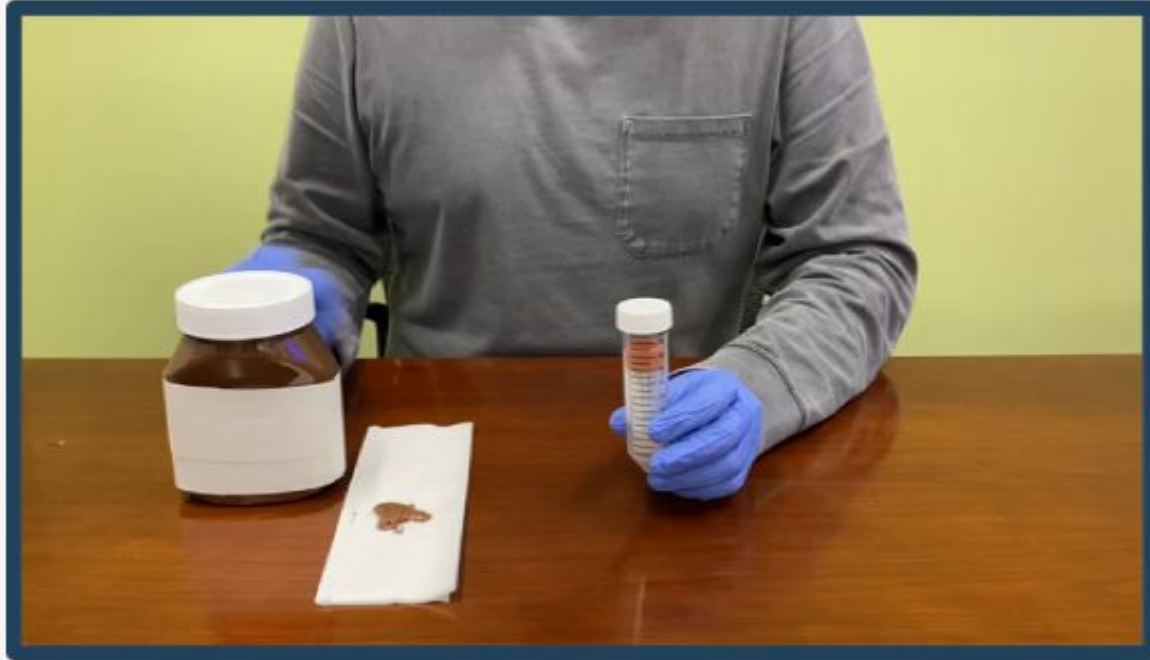
Add Health Wave VI MB pen and magnet

Return labels for mailing envelope

Plastic outer packaging



# Add Health Wave VI Microbiome Sample Collection

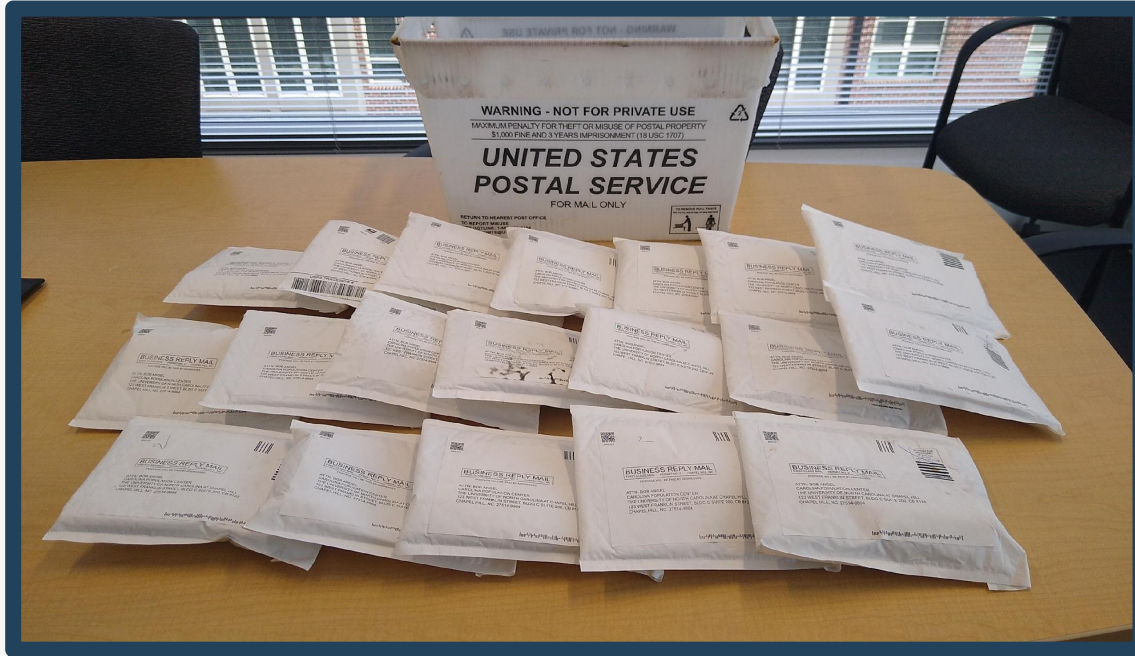


Collecting the sample



Packing and sending the sample

# Add Health Wave VI Microbiome Completed Samples



Samples shipped via USPS to CPC



Samples inventoried and stored in -80°C Freezer

# Current Add Health Funders

National Institute on Aging (NIA)

- Program Official: Dr. Amelia Karraker

- Project Scientist: Dr. Janine Simmons

Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)

National Institute on Minority Health and Health Disparities (NIMHD)

National Institute on Drug Abuse (NIDA)

NIH Office of Behavioral and Social Sciences Research (OBSSR)

NIH Office of Disease Prevention (ODP)

# Acknowledgements

Wave VI of Add Health is supported by two grants from the National Institute on Aging (1U01AG071448, principal investigator Robert A. Hummer, and 1U01AG071450, principal investigators Allison E. Aiello and Robert A. Hummer) to the University of North Carolina at Chapel Hill. Co-funding for Wave VI is being provided by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, the National Institute on Minority Health and Health Disparities, the National Institute on Drug Abuse, the NIH Office of Behavioral and Social Science Research, and the NIH Office of Disease Prevention. Waves I-V data are from the Add Health Program Project, grant P01 HD31921 (Kathleen Mullan Harris) from the Eunice Kennedy Shriver National Institute of Child Health and Human Development, with cooperative funding from 23 other federal agencies and foundations. The content of this presentation is solely the responsibility of the author and does not necessarily represent the official views of the National Institutes of Health or the University of North Carolina at Chapel Hill.

Add Health was originally designed by J. Richard Udry, Peter S. Bearman, and Kathleen Mullan Harris at the University of North Carolina at Chapel Hill. Add Health is currently directed by Robert A. Hummer; it was previously directed by Kathleen Mullan Harris (2004-2021) and J. Richard Udry (1994-2004).

Information on obtaining Add Health data is available on the project website (<https://addhealth.cpc.unc.edu>).