

University of Maryland College Park

Project Title	Contagious Phenotypes of Acute Respiratory Infection: Identification, Characterization, and Biomarkers {Characterizing and Tracking College Health (CATCH) – the Virus Study}
Purpose of the Study	This research is being conducted by Donald Milton, MD, DrPH and a team of researchers at the University of Maryland School with funding from the U.S. Defense Advanced Research Projects Agency. We are inviting you to participate in this research project because you are a college student living in certain residence halls or enrolled in a particular Living Learning Community. The purpose of this research project is to identify biomarkers (measurable substances within a person) that can indicate which individuals, when exposed to viruses and bacteria that cause Acute Respiratory Infections (ARI), are likely to become contagious and spread the ARI to others, and to improve our understanding of how ARI are transmitted so that we may better prepare to mitigate or prevent future epidemics and pandemics of influenza and other ARIs.
Procedures	<p>BASELINE QUESTIONNAIRE</p> <p>If you are age 18 or older and you agree to participate in this study you will be asked to complete an online survey or answer an identical questionnaire in person. All of your answers will be recorded directly into a secure electronic study database. We will ask you to provide your name, email address, phone number, social media information, and your preferred method of contact, so that we can contact you during the study. We will ask you to provide basic information about yourself such as your date of birth, sex, race and ethnicity. We will ask you some questions about your medical history, influenza vaccinations, respiratory symptoms and medications, stress, and your habits regarding sleep, exercise, smoking, and alcohol use. We will ask you to provide your dorm room number, class schedule, and time spent in certain locations on campus (particularly dorm rooms where sensors have been placed to measure CO₂, temperature, relative humidity, and particle matter), so that we can assess your exposure to indoor air and exhaled breath from other building occupants in these locations. We estimate it will take you approximately 15-20 minutes to enter your data and answer the questions in the database.</p> <p>OPPORTUNITIES FOR ADDITIONAL PARTICIPATION</p> <p>During the academic year we will send you short periodic emails to keep</p>

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you informed about what is going on with the study and remind you about opportunities to participate in additional parts of the study, as specified below.

SMARTPHONE APP

We will ask you to download and activate an app on your cell phone that tracks your location and the amount of time that 2 or more users spend together. This app, together with indoor air quality from CO₂ monitors, will help to assess and measure the exposure between persons who become sick and their contacts.

CO₂ MONITOR

You may also be randomly selected and asked to temporarily attach a small portable CO₂ monitor to your backpack and to take it with you wherever you go for up to a week to help us measure and understand your environmental exposures when not in rooms with stationary monitors. If you want to stop carrying the monitor before a week is over, you can return it early; we will retain the data collected unless you specifically request it to be deleted. In the event that you think you have lost the monitor, please notify us; you will not be charged, but can earn compensation if the monitor turns up and you return it.

CASE TESTING

IF you become sick with a new respiratory illness, we want you to quickly report to us either via the study email, text or call the study phone number, or visit our clinic in SPH whenever you develop cold or flu symptoms. When you talk with us, we will ask you to describe your symptoms and time of onset, or we will ask you similar questions by email to determine if you are eligible for case testing; we may then invite you (as a “case”) to make an appointment for a brief case visit at our study clinic in the School of Public Health.

If it is your first study visit, study personnel will review study procedures with you and give you an opportunity to ask questions before asking you to sign an in-person version of this consent form and proceeding with the study visit. We will then measure your height and weight, and will assist you in using a sterilized nail clipper to provide a clipping from each of your fingernails. The nail sample will be stored for later use to measure cortisol, a biomarker of chronic stress, and other biomarkers relevant to risk of ARI, should such biomarkers become available. Please note: the study entry procedures just described will be performed at your first study visit but will not be repeated each time you return for case testing.

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	<p>IF you are eligible for a brief case visit based on your symptoms and time of onset, you will be asked to complete a set of standard respiratory infection symptom questions (unless you just did so as part of a screening process before coming to your appointment), and a brief online questionnaire that contains questions about use of cold and flu medications, healthcare visits related to your illness, and recent use of the cell phone app. You will also be asked to name your 4 closest contacts over the previous 24 hours. Trained study personnel (a physician, nurse, other professional staff member, or an undergraduate research assistant under staff supervision) will measure your oral temperature using a standard thermometer and will assist you in providing 2 self-collected nasal swabs and a finger-stick blood sample to test for signs of infection.</p> <p>You will be instructed and assisted by study personnel to obtain a nasal swab from inside each nostril: you will be guided to carefully insert a small, soft, contoured swab made specifically for this procedure into your nostril until the stopper along the shaft is just outside the opening of the nostril, to rotate the swab several times, and to place the swab into a collection tube. After repeating this process for the other nostril, you will be asked to wipe one of your fingers with an alcohol pad and to use a sterile, push-button safety lancet to prick your fingertip. Trained study personnel will help massage your finger to form drops of blood and will assist in collecting several drops (0.3 ml) into a capillary blood collection tube. The swabs and blood will be used to test for infectious agents, your microbiome (microbes that typically live at the entrances to your respiratory tract), and biomarkers of infection, susceptibility, and contagiousness. We estimate it will take approximately 20-30 minutes (plus an additional 15 minutes if it is your first study visit) to complete the brief case visit.</p> <p>We will email you a survey 1 week after your brief visit, unless you are selected for further in-depth evaluation, to ask about your symptoms, use of medications or other treatments, and healthcare visits related to your illness.</p> <p>During the brief case visit, you may be selected for further in-depth case testing where you will be asked to answer another questionnaire and to provide additional nose, throat, and exhaled breath samples. A separate consent is required for the in-depth case procedures; if you are selected you would be asked to read another consent form, which explains in detail what you would be asked to do and the additional time</p>
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involvement and compensation.

If you are not selected or do not complete an in-depth case visit, we will email you an online follow-up case survey 1 week after your brief case visit to ask about your symptoms, use of medications or other treatments, and healthcare visits related to your illness.

CONTACT TESTING

If you are identified as a close contact of a sick person, we will immediately notify you (via email, text, phone, and/or social media) and invite you (as a “contact”) to come to our study clinic in the School of Public Health for a series of up to 7 daily visits and to provide nose, throat, and blood samples for testing. A separate consent is required to participate in this part of the study; if you are eligible we will ask you to read the contact consent form, which explains in detail what you would be asked to do, as well as the time involvement and compensation.

PLEASE NOTE: Not everyone who joins the study and completes the baseline survey will be able to participate in the case and contact testing aspects, but some participants may have an opportunity to do so more than once. As described earlier, you will be asked to review this consent form, have your questions answered, and sign it in-person at your first study visit before any samples are collected. Before participating in the in-depth case or contact parts of the study, you will be asked to read and sign those additional specific consent forms, which fully explain in more detail what you would be asked to do, if you are eligible. We encourage you to check the study website, where we plan to post general information about the study such as the number of enrolled participants and the number and types of infectious agents detected within the study group. Any information posted on the website will be anonymous, with no personally identifiable information about you.

STUDY COMPLETION VISIT (after Spring Break)

Whether or not you participate in the additional parts of the study to test persons who become sick and their contacts, we will ask everyone in the study to complete an end-of-study visit during the second half of the spring semester after spring break. You will be asked to complete a follow-up survey (or complete an identical questionnaire in person) to update some of the information you provided when entering the study, including time spent in various campus locations, recent respiratory

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	<p>symptoms and illness, and your sleep, exercise, smoking, and alcohol habits. We will ask you to schedule an appointment in the School of Public Health to measure your height and weight and to provide the following samples: a nail sample, 2 self-collected nose swabs, and a finger-stick capillary blood sample. These samples will be collected and tested in the same manner as described above in the case testing section. If you did not participate in the case or contact portions of the study and this is your first study visit, we will review the study procedures with you and give you an opportunity to ask questions before asking you to sign the in-person version of this consent form and collecting your samples. We estimate this entire visit, including updating questions in the database plus sample collection, should take approximately 30-45 minutes.</p>
Potential Risks and Discomforts	<p>Your participation in this study may take time away from other activities or time you may have spent resting and recuperating, if you develop an ARI and participate in case testing; we will try to keep each visit as short as possible and to minimize wait times through efficient scheduling of appointments. You may not feel well while participating in the case testing part of the study due to symptoms of your illness, but participation should not exacerbate your symptoms any more than a visit to a health care provider. You may feel some embarrassment when providing information about your medical history or habits, but this will be minimized by answering the questions in a private setting on a computer or tablet. There is a small risk to your privacy and confidentiality, as we will be collecting a variety of personal data from you; we will do our best to keep your personal information confidential and limit access to only essential study personnel. All data will be transmitted between the tablet or computer used to enter the data and the server via encrypted connections and the server will be housed in a high security data center as described below under confidentiality.</p> <p>During nail sampling there is a small chance the skin on your fingers could be nicked, but we will minimize this risk by asking you to clip your own nails with caution and to avoid clipping your nails too short. You may experience some mild pressure or discomfort, a tickling sensation, or occasional eye watering or sneezing when collecting the nose swabs. In rare instances, swabbing inside the nose may cause very minor bleeding. When providing your capillary blood sample you will feel a small amount of very brief pain at the site where the lancet needle pricks the skin on your fingertip. There is also a very small risk of bruising or infection at the site, and some people become lightheaded or feel faint at the sight of blood. The study personnel who will assist in</p>

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	<p>collecting your capillary blood sample are trained to minimize these risks. If you are selected and agree to carry the portable CO₂ monitor, this will add a very small amount of extra weight (approximately 10 ounces) and may be slightly inconvenient, but poses no other risk.</p>
Potential Benefits	<p>There are no direct benefits of participating in the baseline assessment parts of this study (answering the baseline and follow-up questionnaires and providing samples for the study completion visit). However, joining the study may increase the likelihood that you will also participate in the case and contact components of this study, and possible benefits of that participation would occur if we detected that you were infected with pathogens that can and should be treated or for which early treatment may be advantageous. Although most of the pathogens that cause ARI do not require specific treatment (such as the viruses that cause common colds), we may occasionally identify pathogens that can and should be treated or for which early treatment may be advantageous. Hence, there is a small chance that, through your participation as a case or contact, you might benefit from the early detection of a treatable respiratory infection.</p> <p>We hope that, in the future, other people might benefit from this study through improved understanding of how acute respiratory infections spread and identification of biomarkers that can predict contagiousness, in order to limit the spread of respiratory infections like influenza.</p>
Confidentiality	<p>Any potential loss of confidentiality will be minimized by storing all data in an encrypted database maintained on a secure server housed in a high security data center. Only essential study personnel will have access to this data. Access to data elements will also be controlled so that only study personnel with an operational need for particular information will have access to sensitive information (for example social security numbers), and undergraduate research assistants¹ will only have access to the clinical research database while working in the clinic under senior staff supervision.</p> <p>If you decide to participate in the study, you will be assigned a subject ID number which will be used to access your records in the database. All biologic samples will be labeled with a unique sample ID that can only be linked to your subject ID number by Dr. Milton and his designated research study personnel.</p> <p>Collaborators within and outside the University of Maryland may</p>

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	<p>conduct analyses on samples or data for research purposes, but all such samples or data will always be de-identified. If we write a report or article about this research project or post information on the study website, your identity will be protected to the maximum extent possible. Your information may be shared with representatives of the University of Maryland, College Park or governmental authorities if you or someone else is in danger or if we are required to do so by law.</p> <p>The Code of Maryland Regulations (COMAR) 10.06.01.03 C, requires reporting to the Maryland Department of Health and Mental Hygiene of certain illness including personally identifiable information in the event of “any grouping or clustering of patients having similar disease, symptoms, or syndromes that may indicate the presence of a disease outbreak,” that poses a danger to public health. It also requires reporting of cases of Measles, Mumps, Pertussis and Legionellosis, which will be tested for in samples that we collect. Measles is a highly contagious virus that causes respiratory infection and rash, and Mumps is a somewhat less contagious viral illness that typically causes swollen tender salivary glands. Pertussis, also known as whooping cough, is a highly contagious bacterial respiratory infection, and Legionellosis is a bacterial infection that can cause pneumonia or flu-like illness. Measles, Mumps, and Pertussis can all be prevented through proper vaccination.</p> <p>Any unanticipated problems involving risks to participants or others such as unexpected or serious adverse events, non-compliance, audits, and investigation reports will be promptly reported to the University of Maryland Institutional Review Board, as well as both the U.S. Department of the Navy and Space and Naval Warfare Systems Center Pacific Human Research Protection Programs.</p>
Medical Treatment	<p><i>The University of Maryland does not provide any medical, hospitalization or other insurance for participants in this research study, nor will the University of Maryland provide any medical treatment or compensation for any injury sustained as a result of participation in this research study, except as required by law.</i></p>
Compensation	<p>BASELINE/ENROLLMENT QUESTIONNAIRE</p> <p>You will receive \$10 in your Terrapin Express account if you join the study and complete the baseline survey or questionnaire .</p> <p>BRIEF CASE VISIT(S)</p>

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You have the potential to earn at least **\$40** (or more if selected for in-depth case testing) each time you are evaluated as a case, if eligible (see details below):

- You will receive **\$30** for each brief case visit that you are eligible for and complete (this includes a \$10 bonus for being on-time for your appointment).
- You will receive **\$10** if you complete the 1-week case follow-up survey within 24 hours of it being sent to you.

STUDY COMPLETION VISIT

You will receive **\$40** (including a **\$10** bonus if you are on-time for your appointment), if you complete the baseline follow-up survey or questionnaire and provide your biologic samples at a study completion visit after spring break.

PLEASE NOTE: You must complete the questionnaire and provide your samples before the end of the spring semester to receive the compensation. If you complete the follow-up questionnaire but do not provide samples, you will not receive compensation.

POSSIBLE ADDITIONAL COMPENSATION

You may also qualify for further compensation (see details below):

- IF you are selected and agree to carry a portable CO2 monitor, you will receive an additional **\$10** when you return the monitor in person.
- You may also earn added compensation if you download the smartphone app, or if you are eligible for and complete in-depth case or contact testing (separate consents required).

Because you have the potential to earn more than \$100 as a research participant in this study, you must provide your name, address, and SSN to receive compensation. If you decline to provide this information you can still participate in the study, but you will not be able to receive compensation.

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	<p><i>You will be responsible for any taxes assessed on the compensation you receive during this study.</i></p> <p>You may choose to receive compensation payments for your study visits via one of two payment vehicles a) the Terrapin Express account linked to your University identification number (UID), which allows purchase at over 50 locations on campus and for which the Bursar's Office will mail a check to your permanent address on cancellation of the account or b) a University issued debit card onto which funds will be electronically transferred. We will not make any cash payments other than by electronic means.</p>
Right to Withdraw and Questions	<p><i>Your participation in this research is completely voluntary. You may choose not to take part at all. If you decide to participate in this research, you may stop participating at any time. If you decide not to participate in this study or if you stop participating at any time, you will not be penalized or lose any benefits to which you otherwise qualify. Your academic standing as a student or employability at UMD will not be affected by your participation or non-participation in this study.</i></p> <p>Special notice for research assistants: If you are a student working on the study and are earning course credit for your work, your grade will not be affected by your decision to participate (or not participate) as part of the study cohort.</p> <p><i>If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator:</i></p> <p style="text-align: center;">Dr. Donald Milton Room 2234V SPH Building 255 University of Maryland College Park, MD 20742 Telephone: 301-4405-0389 Email: dmilton@umd.edu</p>
Participant Rights	<p><i>If you have questions about your rights as a research participant or wish to report a research-related injury, please contact:</i></p> <p style="text-align: center;">University of Maryland College Park Institutional Review Board Office 1204 Marie Mount Hall College Park, Maryland, 20742 E-mail: irb@umd.edu Telephone: 301-405-0678</p> <p><i>This research has been reviewed according to the University of</i></p>

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	<i>Maryland, College Park IRB procedures for research involving human subjects.</i>	
Statement of Consent	<p>Your signature indicates that you are at least 18 years of age, you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to participate in this research study. You will be sent a copy of this signed consent form via email, which you may print.</p> <p>If you agree to participate, please type your name and, if completing in person, sign below.</p>	
Signature and Date	NAME OF PARTICIPANT [Please Print]	
	SIGNATURE OF PARTICIPANT	
	DATE	
Witness/Staff Member	Name [Please Print]	
	Date	