UNIVERSITY OF PENNSYLVANIA RESEARCH SUBJECT

INFORMED CONSENT AND HIPAA AUTHORIZATION FORM

Protocol Title:	Exploratory phase I study in healthy volunteers to define circadian relationships between social behavior, blood pressure and metabolomics signatures.
Short Title:	Human Circadian Rhythmicity
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Why am I being asked to volunteer?

You are being invited to participate in a research study. Your participation is voluntary which means you can choose whether or not you want to participate. If you choose not to participate, there will be no loss of benefits to which you are otherwise entitled. Before you can make your decision, you will need to know what the study is about, the possible risks and benefits of being in this study, and what you will have to do in this study. The research team is going to talk to you about the research study, and they will give you this consent form to read. You may also decide to discuss it with your family, friends, or family doctor. You may find some of the medical language difficult to understand. Please ask the study doctor and/or the research team about this form. If you decide to participate, you will be asked to sign this form.

What is the purpose of this research study?

As citizens of the information age, we leave digital traces of behavior in our communication and movement patterns through our smartphones. The Global

Positioning System (GPS) technology tracks the way you commute to school or work or when you visit family and friends. Each time you place a call, send a text message, or use an app, a data trace is being produced which overall reflects your social activity and behavior. This data is called 'social sensing data'. Researchers connected this type of data to the health status of the person operating the smartphone. An example is that an outbreak of seasonal flu may lead to fewer calls and text messages among smartphone users. Thus, the social sensing data may show for example how severe an outbreak is and how fast it is spreading.

"Circadian rhythmicity" describes the concept that many of our bodily functions follow a roughly 24-hour rhythm. Usually, our ability to do concentrated and focused work is best during daytime while we rest and sleep during nighttime. A disturbance of this pattern, for example by regular nightshift work, may lead to an increased disease risk, such as for the cardiovascular system, the heart and blood vessels. Natural factors within a body produce our 24-hour rhythm. This rhythm is affected by outside cues such as sunlight. Jet lag is a short-term form of a disturbed 24-hour rhythm. When you travel fast through several time zones, by plane for example from the East to the West Coast of the US, you arrive with a time difference of 3 hours. Upon arrival, your body runs still at East Coast time, but is exposed to the environmental cues following the West Coast time, which may make you feel groggy and disoriented at first. Within a couple of days your body time usually adjusts and the complaints discontinue.

The current study wishes to look for a relationship between patterns in your smartphone use (Android only at this point) and several of your bodily functions. As bodily functions we will measure your blood pressure and breakdown products (metabolites) in urine, blood and saliva samples. Blood will also be collected to look which proteins are formed; proteins are large molecules essential for the structure and function of our body. We will collect stool samples and use swabs to collect the microbes inhabiting the mouth as well as the rectum. We will also measure mRNA, messenger products of your heritable information, in your blood and in cells we will collect from your nose. A smartphone application called "Ginger.io" will collect your smartphone usage information. This application will also ask you several questions during the installation, while you are participating as well as at the end. Furthermore, we will ask you about your dietary intake and habits; here we will rely on pictures you will take of everything you eat and drink. For this you will use the smartphone app called "SmartIntake" which you will download to your smartphone for the purpose of this study. This is called "Remote Food Photography Method (RFPM)" and involves taking pictures of food selection and plate waste and sending these pictures to a secure computer server by a wireless network. You will receive emails as a reminder.

The aim is to learn how the 24-hour rhythm is connected to the social activity and behavior as well as blood pressure and metabolites as markers for the health status. Future research might then look at how changes in the 24-hour rhythm influence social activity and behavior and bodily functions.

Samples collected throughout this study will be handled de-identified, which means that samples sent to collaborating investigators and external laboratories will NOT contain any Protected Health Information (PHI).How long will I be in the study? How many other people will be in the study?

Your participation in this study will take up to approximately 17 weeks to complete. You will be one of 6 healthy, non-smoking, non-pregnant volunteers between 25 and 35 years of age who will be asked to participate in this study.

What am I being asked to do?

Screening Visit: If you agree to participate in the study, you will be asked to come to the Clinical Translational Research Center or CTRC, for a screening visit. The screening procedures consist of a complete medical history and physical exam, assessment of vital signs (that is, blood pressure, heart rate, breathing rate and temperature). We will measure your blood pressure eight times during the two hour screening using a portable monitor called the "ambulatory blood pressure monitor" or "ABPM". Women will be asked duration, length, associated symptoms, intensity and frequency of their menstrual cycle. A urine pregnancy test (if you are female), and laboratory testing of blood and urine will be done to make sure that you are allowed ("eligible") to participate in the research. Approximately 19 cc or 1.3 tablespoons of blood will be drawn from a vein in your arm for these tests. Your urine will be tested for nicotine and drugs. You will be asked if you have HIV and/or Hepatitis B/C.

Also during the screening visit, a nutritionist will ask you questions about your usual eating habits and ask you to complete a questionnaire. She will also tell you what foods not to eat during the study. In addition you will need to complete a questionnaire about your usual physical activity and energy levels to help us find out how much energy your body uses. You will be given instructions of how and when to fast (do not eat or drink anything except water the night before from 9 pm) before each visit, how to record food intake for three days, how to follow 24 hours of dietary restrictions (no fatty foods, alcohol, or caffeine) and how to record all of this. Instructions and containers for urine and stool collections will also be given to you at the screening visit.

Two weeks before the start of the study you will be asked to stop taking high dose vitamins (Vitamin A, Vitamin C, Vitamin E, Beta Carotene, Folic Acid and Selenium), aspirin, aspirin-containing products and any pain reliever such as Tylenol®, Motrin®, Advil®, Celebrex®, Aleve®, or any other over-the counter or prescription medication, except birth control pills. The day before the start of the study, do not take any alcohol, caffeine, (coffee, tea, chocolate, caffeinated soda, etc.), and high fat foods, (food that is fried, junk food, etc.

Visit 1: If the doctor determines that you are allowed to participate in the study, you will arrive at 9 am in the morning at the CTRC. We will measure your blood pressure, heart rate, breathing frequency and temperature. Then we ask you to install the Ginger.io application on your smartphone. This includes that you provide demographic data, meaning your gender, age range, ethnicity, race, highest degree or level of school you completed and marital status. From this visit you will be asked every day the question: "How many hours did you sleep last night?" which will be send to you through the Ginger.io app on your phone; or we might ask you to send start and end times of your

night's sleep. You will also receive information how to take a picture of everything you consume including any food, beverages, even water, and snacks. For these pictures we will ask you that the smartphone settings are enables to record time and location for each picture taken. We kindly ask you to download and install the smartphone app "SmartIntake". We will address all your questions and plan the dates and times for the following study visits. To find out more about your sleep preferences or "chronotype", whether you are a 'night owl' or a 'morning lark', we will ask you to fill out a questionnaire. Your activity will be measured by a small electronic wrist activity recorder (about the size of a wrist watch) from now on until the end of the study. This recorder, similar to the old fashioned mechanical pedometer, records all activity in your arm including when you go to sleep. In addition, you will be asked to keep an activity diary during study enrollment to record major changes in your daily activities, e.g. you start to train for a marathon, or you change your job which changes how long you are sitting in front of a computer screen. Below you will find a flow-chart of all study visits to give you an overview of the entire study.

Visit 2 and 3: You will come to the CTRC at a time in the morning convenient for you. We will change the actigraph for a newly charged one, take your vital signs and ask you for any adverse events.

Visit 4 and 8: You will arrive at 9 am in the morning at the CTRC to have your blood pressure, heart rate, breathing frequency and temperature taken. We will explain and hand out urine collection container for the upcoming visit. We also will rehearse how to take pictures of everything you consume with the app "SmartIntake" starting at the next visit.

Visit 5 and 9: You will arrive at 8 am in the morning at the CTRC to start blood pressure measurements, timed urine, saliva and blood samples as well as collecting cell material from your nose ("nasal brush") over a period of 48 hours. The ambulatory blood pressure monitor, to which you will have been introduced during the screening visit, will be fitted to your non-dominant arm. It will inflate automatically every 15 minutes during waking hours and every 30 minutes during sleeping hours to take your blood pressure and heart rate. For a successful blood pressure reading it is essential to hold your arm still by your side while the monitor is working. Please be aware that you will wear the ambulatory blood pressure monitor continuously for a full 48 hours on two occasions two weeks apart. For the duration of the ambulatory blood pressure monitor, we will ask you to keep a diary of your daily activities; most importantly, we need you to record the dates and times when you go to sleep and when you wake up. Furthermore, we will ask you to start taking pictures of everything you eat and drink by using the app "SmartIntake". Email reminders will help you to take photos before and after you finished your meals. Importantly, pictures of all your left-overs will help to measure what you are eating and drinking.

The table below will show you when we take the saliva and blood samples, mouth and rectal swabs including nasal brushes and when you will be collecting the urine samples in 3 hour intervals. For the success of this study it is essential to follow these collection times as close as possible. You will arrive again 12 hours later in the evening, approximately at 8 pm, at the CTRC to drop off your urine collections and to have blood and saliva samples taken including the nasal brush (cell material from your nose). You will continue to collect urine throughout the night; please note that the collection throughout the night occurs in a 6 hour interval from midnight until 6 am in the morning.

Visit 6 and 10: You will arrive at 8 am in the morning at the CTRC to drop-off your urine samples and to have saliva and blood samples as well as mouth and rectal swabs

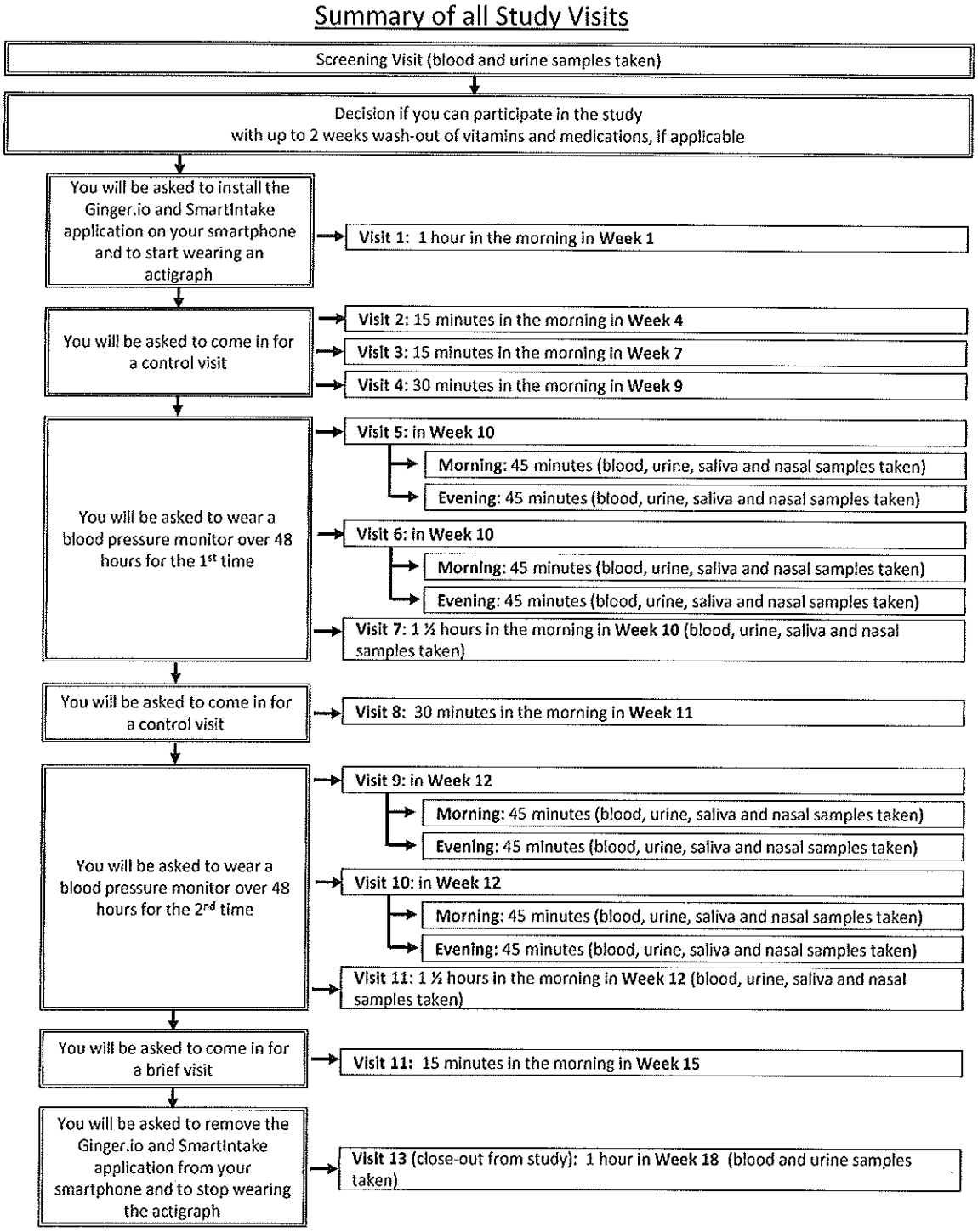
taken. We will control that the ambulatory blood pressure monitor is recording your blood pressure and heart rate. The ambulatory blood pressure monitor will continue its readings until the morning of the following day. You will arrive again 12 hours later in the evening, approximately at 8 pm, at the CTRC to drop off your urine collections and to have blood and saliva samples as well as mouth and rectal swabs taken including the nasal brush. You will continue to keep your diary of daily activities and record dates and times of being awake or asleep. Furthermore, you will continue to use the app "SmartIntake" to record food and beverages.

Visit 7 and 11: You will arrive at 8 am in the morning at the CTRC to drop-off your urine samples and to have saliva and blood samples as well as mouth and rectal swabs taken including the nasal brush. We will remove the ambulatory blood pressure monitor from your arm. You will continue to take pictures of everything you eat and drink for your breakfast, then we ask you to stop using "SmartIntake"..

Visit	Collection (Military) Times for			
	Urine	**Blood**	**Saliva**	**Mouth Swab Rectal Swab Nasal Brush**
5 and 9	06:00-09:00			
Morning	09:00-12:00	9:00	9:00	9:00
	12:00-15:00			
	15:00-18:00			
	18:00-21:00			
Evening	21:00-24:00	21:00	21:00	21:00
	24:00-06:00			
6 and 10	06:00-09:00			
Morning	09:00-12:00	9:00	9:00	9:00
	12:00-15:00			
	15:00-18:00			
	18:00-21:00			
Evening	21:00-24:00	21:00	21:00	21:00
	24:00-06:00			
7 and 11	06:00-09:00			
Morning		9:00	9:00	9:00

Visit 13: On the last visit you will come to the CTRC fasting (from 9 pm the night before). You will have your vital signs checked and blood will be drawn to check your blood chemistry and blood count. You will need to give a urine sample, and a physical exam will be performed. You will be asked to complete a satisfaction survey regarding your experience with the Ginger.io app, then we will ask you to remove the Ginger.io application from your smartphone. We will also ask you to remove the "SmartIntake" app from your smartphone.

During all visits a total of 479.5 milliliter or approximately 32 tablespoons of blood will be drawn. This is approximately 2 cups of blood.



What are the possible risks or discomforts?

The primary risk to you is loss of privacy. The following measures have been put in place to lower such risk:

(a) The mobile data is exclusively linked to you by unique information (coded identifiers) during the collection and transmission process.

(b) All server transactions are transferred with several security measures (over a public-private key encrypted channel, based on the HTTPS/TLS web protocol).

(c) Nothing of what you say during a phone calls nor what you write in a SMS message is captured. Unprocessed (raw) audio data is never captured.

(d) The behavior data you produce by using your smartphone is only stored on your smartphone until the data is uploaded to the secure server at regular intervals throughout the day. If you lose or misplace your phone, only data that was never uploaded is available on the phone.

(e) Your data, which is coded for security and stored on the secure server, is only accessible to trained researchers, and secured with a firewall and other security measures.

(f) You have the right to withdraw from the study at any time by uninstalling the application and informing the researchers. You can also request that Ginger.io have your personal data permanently deleted from any databases used to store such information. However, this task may take 2-3 months to ensure that all traces of their behavior data are removed from backups. Further, it will not be possible to identify particular users or user data from analyzing a particular population or study.

Inconvenience may come from wearing the ambulatory blood pressure monitor for 48 hours continuously, in particular at night when your sleep might get disrupted. Usually, these incidences are brief and we will give you advice on how to get a good night's rest with the blood pressure monitor on your arm. To help reduce the inconvenience at night, blood pressure will be measured every 30 minutes. This is less often than during waking hours where measurements take place every 15 minutes.

Other study risks include the possibility of pain, infection, bruising or bleeding at the site of the insertion of the needle and/or catheter used for blood draws and possibly fainting or lightheadedness. There are no known risks associated with urine collections.

In the case of injury, please inform the treating physician that you are a participant in this research study.

Lastly, this research may involve risks that are currently unforeseeable.

What if new information becomes available about the study?

During the course of this study, we may find more information that could be important to you. This includes information that, once learned, might cause you to change your mind about being in the study. We will notify you as soon as possible if such information becomes available.

What are the possible benefits of the study?

You are not expected to get any benefit from being in this research study.

What other choices do I have if I do not participate?

You may choose not to participate in this study.

Will I be paid for being in this study?

You will receive a total of $840 for your time and travel upon completion of this study. This payment will be prorated as follows: $50 for completing the screening visit; $300 for completion of each of the two 48-hour sessions of combined ambulatory blood pressure monitoring and urine, blood and saliva collection, mouth and fecal swabs, nasal

brushings, as well as food photography; $25 for completion of each of the four brief study visits to the CTRC; $30 for completion of each of the three months of daily sleep surveys and incidental entries into the activity diary. In addition, up to $40 may be compensated for costs related to the increased data transfer when using the apps Ginger.io and SmartIntake; please provide an invoice showing the additional costs.

Please note: In order to be compensated for your participation in this study, you must provide your Social Security Number. Additionally, please note that the University of Pennsylvania is required to report to the IRS any cumulative payments for participation in research studies that exceed a total of $600 in a calendar year.

Will I have to pay for anything?

You do not need to pay for anything. However, please note that depending on your smartphone contract, you may incur data charges from using Ginger.io, which can require up to 3-4 MB of data per month. The use of the SmartIntake app is estimated to require up to 300 MB of data during this study.

What happens if I am injured from being in the study?

If you have a medical emergency during the study you should go to the nearest emergency room. You may contact the Principal Investigator or Emergency contact listed on page one of this form. You may also contact your own doctor, or seek treatment outside of the University of Pennsylvania. Be sure to tell the doctor or his/her staff that you are in a research study being conducted at the University of Pennsylvania. Ask them to call the telephone numbers on the first page of this consent form for further instructions or information about your care.

In the event that you are hurt or injured as a result of participation in this research study, please contact the investigator listed on page one of this form.

We will offer you the care needed to treat injuries directly resulting from taking part in this research. We may bill your insurance company or other third parties, if appropriate, for the costs of the care you get for the injury, but you may also be responsible for some of them.

There are no plans for the University of Pennsylvania to pay you or give you other compensation for the injury. You do not give up your legal rights by signing this form.

If you think you have been injured as a result of taking part in this research study, tell the person in charge of the research study as soon as possible. The researcher's name and phone number are listed in the consent form.

When is the Study over? Can I leave the Study before it ends?

This study is expected to end after all participants have completed all visits, and all information has been collected. This study may also be stopped at any time by your physician, the study Sponsor, or the Food and Drug Administration (FDA) without your consent because:

- The Primary Investigator feels it is necessary for your health or safety. Such an action would not require your consent, but you will be informed if such a decision is made and the reason for this decision.

- You have not followed study instructions.
- The Sponsor, the study Principal Investigator, or the Food and Drug Administration (FDA) has decided to stop the study.

If you decide to participate, you are free to leave the study at anytime. Withdrawal will not interfere with your future care.

Who can see or use my information? How will my personal information be protected?

Results of laboratory tests and clinical procedures will be placed in your medical record and may be accessible to employees of the health system that are not part of the research team. This information may also be viewed by your insurance company during routine audits.

We will do our best to make sure that the personal information in your medical record will be kept private. However, we cannot guarantee total privacy. Your personal information may be given out if required by law. If information from this study is published or presented at scientific meetings, your name and other personal information will not be used. If this study is being overseen by the Food and Drug Administration (FDA), they may review your research records.

The smartphone application "Ginger.io" applies the following protection of your information:
Security: Ginger.io uses reasonable security precautions to protect the security and integrity of your Personal Information in accordance with this Informed Consent/HIPAA and applicable law. However, no Internet transmission is completely secure, and Ginger.io cannot guarantee that security breaches will not occur. Ginger.io is not responsible for the actions of hackers and other unauthorized third parties that breach Ginger.io's reasonable security procedures. Nor is Ginger.io responsible for other breaches to your Personal Information outside Ginger.io's control, such as when you lose your phone, it gets stolen or someone else uses your phone without your permission.
Safeguards: Ginger.io has implemented the following technical safeguards to protect your privacy:
- During analysis, your data is linked only to coded identifiers, which are strings of numbers and characters, , and not to any personal identifiers.
- Nothing of what you write in any of your SMS messages nor what you say during any of your phone calls is recorded. Only the event that you sent a SMS and that you placed a phone call is logged.
- Incoming and outgoing phone numbers are stored as one-way hashes of random numbers and cannot be used to reconstruct real phone numbers.
- Raw audio is not captured or stored.
- Email addresses used when you install the Mobile Application and which may be used to send notifications won't be part of any of the analyses. Rather, it is safely stored (in encrypted form)in a separate place from your other data.

Links: The Ginger.io Service may contain links to other websites, so-called "third parties". Ginger.io is not responsible for the privacy practices or the content of those websites. Users should be aware of this when they leave Ginger.io's Service and are asked to review the privacy statements of each third party website.

Amendments: Ginger.io may modify or amend its Privacy Policy from time to time. Ginger.io may decide to make changes to its Privacy Policy. If Ginger.io believes it is making a major change for example to how Personal Information is collected, used or transferred, Ginger.io will notify you of this change. You can view a revised version of the Privacy Policythrough the Ginger.io mobile application. Notwithstanding any modifications Ginger.io may make, the Privacy Policy you signed will determine how your Personal Information collected by Ginger.io will be treated. Ginger.io has to obtain your permission to use your personal information otherwise.

Service Visitors from Outside the United States: Ginger.io and its servers are located in the United States and are subject to the applicable state and federal laws of the United States. If you choose to access or use the Service, you consent to the use and disclosure of information in accordance with this Privacy Policy and subject to such laws.

Installing the SmartIntake application on your smartphone does not require any personal information about your phone. The application is installed from a password protected website. You will use your email to send food photos to researchers at the Pennington Biomedical Research Center.

Electronic Medical Records and Research Results

What is an Electronic Medical Record?

An Electronic Medical Record (EMR) is an electronic version of the record of your care within a health system. An EMR is simply a computerized version of a paper medical record.

If you are receiving care or have received care within the University of Pennsylvania Health System (UPHS) (outpatient or inpatient) and are participating in a University of Pennsylvania research study, results of research-related procedures (i.e. laboratory tests, imaging studies and clinical procedures) may be placed in your existing EMR maintained by UPHS.

If you have never received care within UPHS and are participating in a University of Pennsylvania research study that uses UPHS services, an EMR will be created for you for the purpose of maintaining any results of procedures performed as part of this research study. The creation of this EMR is required for your participation in this study. In order to create your EMR, the study team will need to obtain basic information about you that would be similar to the information you would provide the first time you visit a hospital or medical facility (i.e. your name, the name of your primary doctor, the type of insurance you have). Results of research procedures performed as part of your participation in the study (i.e. laboratory tests, imaging studies and clinical procedures) may be placed in this EMR.

Once placed in your EMR, these results are accessible to appropriate UPHS workforce members that are not part of the research team. Information within your EMR may also be shared with others who are determined by UPHS to be appropriate to have access to your EMR (e.g. health insurance company, disability provider, etc).

Research Subject HIPAA Authorization

Should you agree to participate in the study procedures as described above, and understand both the risks and benefits of participation, you will be asked to sign this form after reviewing the following pages for more detailed information about how your personal health information may be used and disclosed by the School of Medicine and the individual Principal Investigator (Subject to University of Pennsylvania procedures).

What information about me may be collected, used, or shared with others?

The following personal health information will be collected, used for research, and may be disclosed during your involvement with this research study:

- Name, address, telephone number,
  Date of birth
- Social Security Number
- Personal and family medical history
- Medical Record Number
- Results of tests and procedures you will undergo during this research study as described in the Informed Consent portion of this Form.
- Current and past medications or therapies

Who can I call with questions, complaints or if I'm concerned about my rights as a research subject?

If you have questions, concerns or complaints regarding your participation in this research study or if you have any questions about your rights as a research subject, you should speak with the Principal Investigator listed on page one of this form. If a member of the research team cannot be reached or you want to talk to someone other than those working on the study, you may contact the Office of Regulatory Affairs with any question, concerns or complaints at the University of Pennsylvania by calling (215) 898-2614.

What information about me may be collected, used or shared with others?

Information to be used or disclosed for this research project includes information in the medical record, for which you will be given / already have a medical record number; results of physical examinations, medical history, dietary habits, laboratory and research tests in the urine, saliva and blood samples you provide, ambulatory blood pressure readings as well as protected health information such as name, address, phone number, e-mail address and social security number.

The smartphone application "Ginger.io" will collect and process the following information from you:

User Interaction Data: Ginger.io may use mobile tracking technologies such as cookies, web beacons, pixel tags and clear GIFs, as well as embedded code in the Services itself, in order to operate the Service efficiently, and to collect data related to your usage of and interaction with the Service, the web and general use and interaction with your mobile device. All such collected data (collectively, "User Interaction Data ") may include the

address of the websites you visit, the date and time of your visit, the type of browser you are using, your Internet Protocol (IP) address, log files, and what links you clicked on, and whether you access email and other web communications on your mobile device, how and when you use your mobile device for communications with others, including mobile phone and text use, and your location and speed of movement while you use your mobile device. Such User Interaction Data also includes, but is not limited to, call samples, SMS samples, location samples, accelerometer samples, smartphone actions, and smartphone screen-time related to, or resulting from, your use of the Services. Ginger.io **does not access or collect the content of your mobile phone or text use, such as conversations or messages.**

User Survey Data; Personal Information: Ginger.io collects the following personal information in connection with the Service:
(a) when you register to use the Service, whether on your own or as a research volunteer of the University of Pennsylvania, we may collect the personal information that is provided on Ginger.io's online registration form, such as your name, email address and other information detailed therein (the "Account Data");
(b) if you communicate with Ginger.io by email, Ginger.io will collect your email address; and
(c) if you use the Services to respond to surveys and questions from the University of Pennsylvania, Ginger.io may collect the information you provide in your responses, such as information related to your health, diet or activity (the "User Survey Data"). Such User Survey Data includes, but is not limited to, your submissions from Study surveys and health questionnaires, distributions and variations in communication, mobility, interactions with others, phone usage, inferred health status, and alerts. The User Survey Data, together with the User Interaction Data, is referred to as "Unprocessed User Data." Ginger.io may also collect certain demographic information, such as age and gender, that may be provided by you. All of the Account Data, e-mail addresses, demographic information, and Unprocessed User Data is referred to as "Personal Information". Any health-related information that you provide is not directly linked to your Personal Information, and is safeguarded in accordance with applicable U.S. laws.
User Testimonials: If you send Ginger.io any feedback or testimonials, they will remain the property of Ginger.io. Your feedback or testimonials are not confidential and Ginger.io has the right to do what it wants with such information. However, Ginger.io will obtain prior written approval of any usage of your identity or contact information, if Ginger.io wishes to reference you in connection with that feedback or testimonial.

Whenever you use Ginger.io's Services, Ginger.io aims to provide you with access to your Personal Information. If that information is wrong, Ginger.io strives to give you ways to update it quickly, or to delete it – unless Ginger.io has to keep that information for business or legal purposes. You may send Ginger.io an email to help@Ginger.io requesting that Ginger.io removes your account and delete all of your Personal Information, that Ginger.io stops collecting data from your mobile phone, or to otherwise provide Ginger.io with the necessary changes to update your Personal Information. Ginger.io aims to maintain its Services in a manner that protects information from accidental or malicious destruction. Your Personal Information will be deleted from Ginger.io's records within 90 days of your request or if you cancel the End User License Agreement you entered with Ginger.io. Notwithstanding, Ginger.io has the right to continued use of any Aggregate Information even if Ginger.io has deleted the underlying Personal Information. Furthermore, even when your Personal Information is deleted from

Ginger.io's system, you acknowledge there is no way to remove any data from existing 'Ginger.io Behavior Feature(s)' or GBF (see next paragraph for an explanation), the Processed User Data or Reports that were built off of that data and have been previously provided to the University of Pennsylvania.

Why is my information being used?

Your information is used by the research team to contact you during the study. Your information and results of tests and procedures are used to:

- do the research
- oversee the research
- to see if the research was done right.

Your information with regard to the smartphone application "Ginger.io" is used in the following ways:

Creation of Processed Data. Ginger.io will use its proprietary technology and the Unprocessed User Data to compile personalized behavioral features known as Ginger.io Behavior Feature(s) ("GBF") for each user. In connection with processing the data and creating such GBF analysis, Ginger.io may prepare (i) a data set containing the processed User data that is summarized within the applicable GBF (the "Processed User Data"), and/or (ii) one or more written report(s) summarizing the Processed User Data (the "Reports"). Such Processed User Data and Reports will be delivered to the University of Pennsylvania.

Use of Personal Information: Ginger.io will use and store Personal Information to deliver the Service to you and the University of Pennsylvania, and to analyze and enhance the operation of the Service. Ginger.io stores Personal Information, and where applicable, any information obtained from the University of Pennsylvania for proprietary analysis and development of personalized GBF for each user. This GBF will be provided to the investigators of the University of Pennsylvania. Personal Information may also be used for the internal operational and administrative purposes of the Service.

Aggregate Information: Ginger.io will create statistical, aggregated data relating to Ginger.io's users and the Service for analytical purposes. Aggregated data includes statistical data developed by Ginger.io from Personal Information and other sources; but in its aggregated form, it does not relate to or identify any individual (such data "Aggregate Information"). Ginger.io uses Aggregate Information to understand our customer base and to develop, improve and market our Services.

Legal Exception: Under certain circumstances, Personal Information may be subject to disclosure pursuant to judicial or other government subpoenas, warrants, or orders. Ginger.io may use your Personal Information, Aggregate Information and any other information collected and created through the Service to resolve disputes, to enforce Ginger.io's agreements with you, or if in Ginger.io's reasonable discretion use is necessary to comply with certain laws or to protect Ginger.io's legal rights or to protect third parties. The law or legal process may determine how much of this information will be accessed or disclosed. While all the necessary privacy protections are in place, once information is released to Ginger.io confidentiality cannot be guaranteed in order to comply with the law and legal process.

Email Communications: If you register and provide your email address, we may send you administrative emails. If you wish to opt out of these emails, you may do so by following the "unsubscribe" instructions in the email.

Who may use and share information about me?

The following groups of individuals may use or share your information for this research study:

- The investigators for the study and the study team;
- Collaborating investigators of mainly, but not limited to, the Departments of Pharmacology and Medicine,
- Other authorized personnel at Penn, such as the clinical laboratory "Pepper lab" in the Laboratory Medicine Division.

Who, outside of the School of Medicine, might receive my information?

The following groups of individuals may use or share your information for this research study:

- Personnel at Ginger.io., San Francisco, CA 94103, for the app "Ginger.io";
- University staff and researchers at the Pennington Biomedical Research Center (PBRC), Baton Rouge, LA 70808

Oversight organizations

- The Food and Drug Administration
- The Office of Human Research Protections

Once your personal health information is disclosed to others outside the School of Medicine, it may no longer be covered by federal privacy protection regulations.
The Principal Investigator or study staff will inform you if there are any additions to the list above during your active participation in the trial. Any additions will be subject to University of Pennsylvania procedures developed to protect your privacy.

Ginger.io. will adhere to the following policies:
Ginger.io. will not use Personal Information to direct marketing or advertising to target users, through their use of the Service.

Personal Information: Ginger.io. will not disclose your Personal Information to any third party except as follows:
(i) Ginger.io may disclose your Personal Information to the investigators of the University of Pennsylvania on whose behalf the information was collected.
(ii) Ginger.io may disclose your Personal Information to third party contractors who are providing services on Ginger.io behalf ("Contractors"), such as performing marketing, analyzing data and usage of the Service, operating the Service or providing support and maintenance services for the Service, or providing customer service. All Contractors have to agree in writing that they use the Personal Information they receive only to perform services for Ginger.io.
(iii) Ginger.io may disclose your Personal Information when Ginger.io has your permission to share the information. In such cases, Ginger.io will obtain written contracts with the third parties. These contracts require the third parties to comply with the terms of

this Privacy Policy and all applicable statutes, regulations and laws regarding the protection of personal information.

Aggregate Information: Ginger.io may provide Aggregate Information, that is information not carrying any personal identifiers, to third parties, such as the Institutional Client, potential customers, business partners, advertisers, and funding sources, in order to describe our business and operations. Ginger.io may also license and sell Aggregate Information.

Network Operators: Use of the Service may involve use of the services of third party telecommunications carriers. Such carriers are not Ginger.io's contractors, and any information that a carrier collects in connection with your use of the Service is not "Personal Information" and is not therefore not handled by this Privacy Policy. We are not responsible for the acts or omissions of telecommunications carriers.

Additional Disclosures: Ginger.io reserves the right to disclose any information Ginger.io collects in connection with the Service, including Personal Information, (a) to any successor to our business as a result of any merger, acquisition, asset sale or similar transaction; and (b) to any law enforcement, judicial authority, or governmental or regulatory authority, to comply with the law, or if Ginger.io believes it is necessary to enforce or protect Ginger.io's legal rights or to protect third parties.

Regulatory and safety oversight organizations

- Government agencies and their representatives - the FDA (Food and Drug administration), NIH (National Institute of Health), who require reporting of certain information by law, or require certain information to confirm accuracy of results submitted, or the use of government funds.
- The Office of Human Research Protections

Once your personal health information is disclosed to others outside of UPHS or the School of Medicine, it may no longer be covered by federal privacy protection regulations.

- In all disclosures outside the University of Pennsylvania Health System and Perleman School of Medicine. You will not be identified by name, Social Security Number, address, telephone number, or any other direct personal identifier unless disclosure of direct identifier is required by law.

The Principal Investigator or study staff will inform you if there are any additions to the list above during your active participation in the trial. Any additions will be subject to University of Pennsylvania procedures developed to protect your privacy.

Once your personal health information is disclosed to others outside the School of Medicine, it may no longer be covered by federal privacy protection regulations

How long may the School of Medicine use or disclose my personal health information?

Your authorization for use of your personal health information for this specific study does not expire.

Your information may be held in a research database. However, the School of Medicine may not re-use or re-disclose information collected in this study for a purpose other than this study unless:

- You have given written authorization;

- The University of Pennsylvania's Institutional Review Board grants permission;
- As permitted by law.

Can I change my mind about giving permission for use of my information?

Yes. You may withdraw or take away your permission to use and disclose your health information at any time. You do this by sending written notice to the investigator for the study. If you withdraw your permission, you will not be able to stay in this study.

Ginger.io grants you the ability to review or amend your email address or account information held in Ginger.io database, at any time. Please contact Ginger.io by sending an email to: help@Ginger.io. If you would like your account permanently removed from Ginger.io's database, please contact Ginger.io at help@Ginger.io. Ginger.io will promptly terminate your account, and you will no longer receive emails from Ginger.io. Termination of your account will not result in the deletion of any Aggregate Information that Ginger.io holds relating to you, and Ginger.io will retain this information and may use and disclose it in accordance with this Privacy Policy. Ginger.io may still contact users who have deleted their information for administrative purposes in connection with the Services.

What if I decide not to give permission to use and give out my health information?

Then you will not be able to be in this research study.

By signing this document you are permitting the School of Medicine to use and disclose personal health information collected about you for research purposes as described above. You will be given a copy of this Research Subject Consent/HIPAA Authorization describing your confidentiality and privacy rights for this study.

When you sign this form, you are agreeing to take part in this research study. This means that you have read the Consent/HIPAA form, your questions have been answered, and you have decided to volunteer. Your signature also means that you are permitting the University of Pennsylvania to use your personal health information collected about you for research purposes within our institution. You are also allowing the University of Pennsylvania to disclose that personal health information to outside organizations or people involved with the operations of this study.

In order to use the smartphone application provided under this research study, you will be required to agree to Ginger.io's terms of use and be under Ginger.io's privacy policy. A copy of this End User License Agreement will be given to you.

A copy of this Consent/HIPAA form will be given to you.

Name of Subject (Please Print)	Signature of Subject	Date
Name of Person Obtaining Consent (Please Print)	Signature	Date