

Consent Form

Protocol Title: Personal Genome Project
Principal Investigator: George M. Church, Ph.D.
Site-Responsible Investigator's Institution: Harvard Medical School
Co-Investigators & Study Staff: Joseph Thakuria, MD
Description of Volunteer Population: We are seeking a diverse range of volunteers from as varied a set of genetic, social and environmental backgrounds as possible. Volunteers must be willing to make their genetic and other human trait information publicly available and be knowledgeable about genetics, human subjects research and the benefits and risks of participation in a public genomics research project of this nature.

What is Informed Consent?

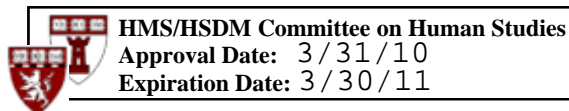
Informed consent means you understand the procedures, risks, possible benefits, and alternatives before you voluntarily agree to participate in a research study. Before you elect to participate, you need to understand if or how this study may affect you and your family. This form, along with other study documents available on the study website (<http://www.personalgenomes.org/>) (the “website”), is intended to help you make an informed decision about your participation in this study. The PGP website will be revised as needed, possibly on a frequent basis, and participants and prospective participants should check the website regularly to obtain the most current information about this study.

Why have you been asked to participate in this research study?

You have been invited to participate because you are an individual 21 years of age or older and your performance on the entrance exam indicates that you are able to give informed consent for this public and open-ended study. This study (the “Personal Genome Project,” the “PGP,” or the “study”) is being conducted by researchers at Harvard Medical School specifically for US Citizens. International activities are coordinated by PersonalGenomes.org, a 501(c)(3) charitable organization that was created to support the PGP and is independent of Harvard Medical School.

About this Informed Consent Document

This document is long, but we want you to read through it so that you understand what it will mean for you to participate in the study. The table of contents that follows is designed to help you more easily understand this consent form.



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	HMS/HSDM Committee on Human Studies
	Approval Date: 3/31/10
	Expiration Date: 3/30/11

I. PURPOSE

The Personal Genome Project is a new form of public genomics research. The main scientific goal of this study is to find ways to connect human genetic information (i.e., human DNA sequence) with human trait information (i.e., medical information, tissue samples and physical traits) in a public way so that such data may be used for research and other scientific, patient care and commercial purposes worldwide. Additional goals include (i) exploring the risks of public genomics research such as the PGP; (ii) developing a public dataset of information from willing participants to aid in the development of analytical tools for scientists, clinicians and individuals; and (iii) educating participants and the general public about the potential benefits, risks, and uncertainties posed by the widespread availability of genetic and related information. The PGP also seeks to develop a model system for experts on health care, molecular biology, genetic counseling, public health, law, education, and research to come together and collaborate. We hope that the PGP's proposed datasets will help to extend such discussions to the creation of case studies and to find out what individuals, clinicians, and researchers might want or not want in such datasets, and why.

II. OVERVIEW

The PGP will collect tissue samples and personal and trait information from each participant. If you choose to participate in the study, your genetic and trait information will be made available through a publicly accessible website and database, according to the procedures described below.

If you decide to participate, you will receive certain research data from the PGP (further described below). Any data or other information that you receive due to your participation in the study, including DNA sequence data, is not intended to replace in any way professional medical advice, diagnosis or treatment. You may not use any information you receive from the PGP for any medical or clinical purpose unless the relevant DNA sequence or other data, including any interpretations or findings presented in your Preliminary Research Report (described below) are first confirmed by a licensed healthcare professional.

We expect to enroll 100,000 participants in this study, although the pace at which we expand the study to large numbers of enrollees is unknown.

Participation in this study is voluntary. You do not have to participate in the PGP. You may withdraw from participating in this study at any time, as more fully described in this consent form.

III. DURATION OF THE PROJECT AND YOUR PARTICIPATION

3.1 Participation vs. Enrollment. You will be considered a participant of the PGP from the time that you sign this consent form and submit it to the PGP. Signing and submitting this consent form *does not* guarantee your full enrollment in the PGP. Although signing the

consent form means that you are a participant in the PGP, your enrollment in the study is contingent upon your completion of certain pre-enrollment and enrollment procedures requested by the PGP (described below), the availability of resources, and any other concerns that the PGP may have and shares with you.

3.2 Length of Your Participation. Your participation in this project will continue indefinitely. However your participation is entirely voluntary, and you may refuse to continue participating and withdraw from this study at any time.

3.3 Length of the Project. The process of analyzing your study data may continue indefinitely, unless you choose to withdraw or are removed from the PGP. Cell lines and the public version of your genetic, trait, and other data may be maintained continually (if Harvard Medical School approves the continuation of the study), unless you request their removal in writing. At that time your data and/or cell lines will be removed in accordance with this consent form.

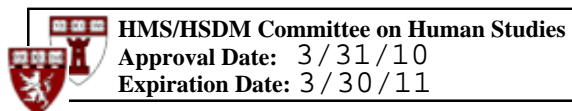
3.4 Naming Your Proxy. Before you enroll in the study you will be asked to name two people (next of kin or other trusted individual) to be your proxy only for purposes of this study (your “Designated Proxy”). In the event that you should die or become mentally incapacitated during the course of your participation in the PGP, your Designated Proxy will have the authority to decide to either 1) remove your cell lines and/or data from the study (subject to the limitations on removal described in this consent form), 2) allow the PGP to maintain your cell lines and/or data for continued research and use in accordance with this consent form, or 3) authorize the PGP to obtain and add additional data, such as cause of death and/or tissue samples obtained during an autopsy, to the study on your behalf. You are strongly encouraged to discuss your wishes with your family and your Designated Proxy as part of your enrollment in the PGP.

IV. PRE-ENROLLMENT PROCEDURES

4.1 Collection of Baseline Trait Data.

(a) *Baseline Trait Data.* To be considered for enrollment in the PGP, you are required to collect and electronically submit baseline trait data about yourself, including: date of birth, medications, allergies, vaccines, personal medical history, race/ethnicity/ancestry, and vital signs (e.g. height, weight, blood pressure) (the “Baseline Trait Data”). The full list of personal information required for enrollment may be found on the study website [<http://www.personalgenomes.org/howitworks.html>]. Your Baseline Trait Data, along with any other information that you voluntarily submit to the PGP, will be made available on the PGP’s public website and database as described in this consent form.

(b) *How Baseline Trait Data is Collected.* You will submit your Baseline Trait Data through an electronic health record platform that the PGP will designate from time to time. Collecting and submitting the Baseline Trait Data will take an estimated 1-3 hours, and that time may be lost if you are not selected for enrollment. You will not be compensated for any lost time.



(c) *Additional Information Constitute Baseline Trait Data.* Additional personal data (e.g. existing DNA sequencing or genotyping data) and trait information may also be requested or required by the PGP, such as a facial photograph, family medical history (e.g. data entered using tools provided by the US Surgeon General [<http://hhs.gov/familyhistory>] that aid in the assessment of heritability of traits), or lifestyle traits in order to be considered for enrollment. Any such information that you submit will also constitute Baseline Trait Data.

4.2 Identity Verification.

(a) *Identity Verification Process.* The PGP will ask you to provide your mailing address (where any pre-enrollment and enrollment materials will be sent, including tissue sample collection kits) and may ask you to respond to up to 20 questions about your identity based on information available in public data records.

(b) *Additional Verification Steps.* If we are unable to verify your identity, we may request that you send additional information to the PGP by mail, fax, and/or online. If we are still unable to verify your identity, you will be notified that (1) you must visit a designated medical center to enroll or (2) your enrollment is rejected.

4.3 Identical (Monozygotic) Twin. If you have any living siblings who are your identical (monozygotic) twin, such sibling(s) will also need to provide consent for your participation in this research study before the PGP will consider you for enrollment.

Do you have a living identical (monozygotic) twin? Yes No Unsure

4.4 Application for Enrollment.

(a) *Completion of Application.* After you send in your trait information, verify your identity, and complete any other necessary pre-enrollment activities, your application for enrollment will be considered by the PGP Executive Committee.

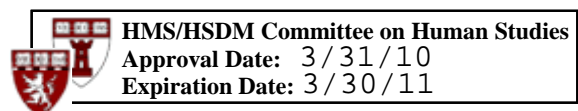
(b) *Notification of Enrollment Decision.* You will then be notified that you are either: (1) enrolled, (2) requested to provide additional information to complete your enrollment application, (3) waitlisted, or (4) rejected.

(c) *If You Are Not Enrolled.* If you are rejected for enrollment, the PGP will permanently delete the Baseline Trait Data that you submitted as part of your enrollment application no later than 6 months from the date PGP tells you that you are not eligible for enrollment.

V. ENROLLMENT PROCEDURES

5.1 Publication of Baseline Trait Data.

(a) *Decision to Publish Baseline Trait Data.* Once you are enrolled in the PGP, you will be given the opportunity to publish your Baseline Trait Data to the PGP's public website and



database. As a participant in the PGP you will not have the option of selecting portions of your Baseline Trait Data to publish or not to publish.

(b) *No Obligation.* As a participant in the PGP you are under no obligation to publish your Baseline Trait Data. However, you may not be able to participate in other aspects of the study, including tissue and DNA analysis, until you publish your Baseline Trait Data.

(c) **If you choose to publish your Baseline Trait Data, they will be made available to the public through the PGP's website and database, and combined with other data and tissues provided by the PGP or by you. There may be risks to you associated with the publication of your Baseline Trait Data. Those risks are described in Section VII of this consent form.**

5.2 Tissue Collection At Home.

(a) *Description of Tissue Collection Steps.* Following the publication of your Baseline Trait Data, you may be sent materials pertaining to at-home tissue sample collection. These may include a saliva collection kit, a hair collection kit, or other tissue collection kits that you may self-administer as directed by the PGP. The PGP will provide sample collection materials, including instructions and mailing packages.

(b) *Description of Tissue Collection Materials.*

(i) The saliva sample collection kit may be self-administered and typically requires you to provide 2-4 milliliters of your saliva. The sample will be used for the production of DNA sequence data and other data.

(ii) The hair sample collection kit may be self-administered and requires 1-5 hairs to be plucked from your body. The skin cells (i.e., keratinocytes) attached to the hair sample will be used to create a living tissue sample known as a cell line. Cell lines provide a renewable supply of your cells and DNA. The PGP may attempt to make cell lines from your hair sample once it is received but cannot make any guarantees about how long this will take, or if it will even be possible to make a cell line.

(c) *No Obligation.* As a participant in the Personal Genome Project you are under no obligation to submit any tissue samples to the study as described above. However, you may not be able to participate in other aspects of the study, including tissue, cell line and DNA analysis, until you have submitted such additional tissue samples.

5.3 Tissue Collection at a Medical Center; Interview.

(a) *Tissue Collection at a Medical Center.* You may be asked to visit a designated medical center approved by the study and an Institutional Review Board for the purpose of tissue sample collection. The PGP will provide instructions about scheduling an appointment.

(b) *Description of Tissues Collected.* The PGP may ask that you provide skin or blood samples during your visit to the medical center. These samples will be collected through

either (i) a skin biopsy procedure, and/or (ii) a blood draw. If you consent, these procedures will be performed at the medical center by trained professionals appointed by the PGP.

(i) A skin punch biopsy (1/16 inch = 1.5 mm diameter and 1/3 inch = 8 mm deep) is collected from the underside of the upper arm or hip and requires local anesthesia. Anesthetic cream is applied and covered with a bandage for 40 minutes then wiped off and alcohol swabbed to sterilize. Then a sterile stainless steel punch will be inserted to a depth of 0.8 mm and the skin sample removed. Then a bandage will be applied.

(ii) A blood sample is collected from your upper arm and requires a minimum of 5ml of blood.

(iii) The skin cells (i.e., fibroblasts) or blood (i.e., lymphoblasts) that you provide will be used to create a living tissue sample known as a cell line. Cell lines provide a renewable supply of your cells and DNA.

(c) *No Obligation.* As a participant in the PGP you are under no obligation to submit any additional tissue samples to the study as part of your visit to a medical center or otherwise. However, you may not be able to participate in other aspects of the study, including tissue, cell line and DNA analysis, until you have submitted such additional tissue samples.

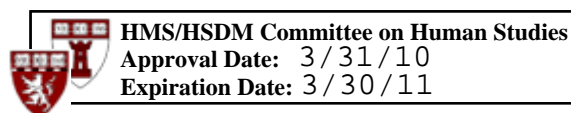
(d) *In Person Interview.* During your visit to the medical center for additional tissue sample collection you may also be asked to meet with a member of the PGP staff to confirm that you are familiar with the study protocols, including this consent form, and to review and confirm your identity and the accuracy of your Baseline Trait Data. The interview will take approximately 1 hour.

(e) *Costs Incurred Are Not Reimbursed.* Please review the locations of participating medical centers because they may be located a long distance from your home. The PGP will not reimburse you for any costs you may incur traveling to or from the medical center. A list of participating medical centers may be found on the PGP website. Costs that you might incur the day of your visit to a medical center include, but are not limited to, transportation costs to and from the medical center (tolls, gas, etc.) and the loss of personal time. You will not be paid or reimbursed for these or for any other costs associated with your visit.

5.4 Generation of DNA Sequence Data.

(a) *How Analysis is Performed.* DNA analysis and other research will be performed by the PGP on the tissue samples you provide and/or the cell lines and/or data created from such samples. PGP will determine kind of research and analysis to be conducted.

(b) *No Guarantees.* The PGP cannot make any guarantees about the accuracy or completeness of any such analysis or research or the processing time for any of these activities.



5.5 Return and Publication of DNA Sequence Data.

(a) *Receipt of Your DNA Sequence Data.* Once the PGP has completed DNA analysis of your sample(s), the PGP will make your DNA sequence data available to you via a password protected area on the PGP website. This information is for research purposes only. You may not use this data for any medical or clinical purpose unless the DNA sequence or other data, including any interpretations or findings presented in your Preliminary Research Report (described below), are first confirmed by a licensed healthcare professional. You can find examples of DNA sequence data similar to what you will receive as an enrollee on the study website.

(b) *Receipt and Review of Your Preliminary Research Report.* In addition to your DNA sequence data, the PGP will provide you with a preliminary research report (the “Preliminary Research Report” or the “Report”) intended to help you make a more informed decision about whether or not to publish your DNA sequence data to the PGP’s public website and database. This Report will contain a non-comprehensive list of genetic variants present in your DNA sequence data, as well as any additional information, resources or interpretation that the PGP may decide to provide to you as part of your Report. In preparing your Report, the PGP may review your DNA sequence data in combination with the trait data and other information that you have submitted to the PGP.

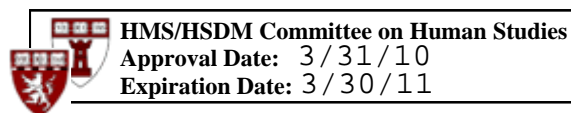
(i) The Preliminary Research Report includes preliminary research findings only. The PGP cannot guarantee that the Report is either accurate or complete. The databases, knowledge and tools used to generate the Report are not comprehensive and may change from time to time. Only one Preliminary Research Report will be provided to you. The PGP will not update or supplement the Report.

(ii) The Preliminary Research Report is not intended to substitute in any way for professional medical advice, diagnosis or treatment. You may not use the Report for any medical or clinical purpose unless the relevant sequence or other data, including any interpretations or findings presented in your Preliminary Research Report, are first confirmed by a licensed healthcare professional.

(iii) Examples of other Reports similar to what you may receive as an enrollee are available on the study website.

(c) *Decision to Publish DNA Sequence Data.* After you receive your DNA sequence data and your Preliminary Research Report, you will be able to choose whether to (i) make your DNA sequence data available on the PGP’s public website and database, or (ii) withdraw from the PGP. If you choose to publish your DNA sequence data, the PGP will make this data available on its public website and database and this data will be associated with your Baseline Trait Data along with any other data supplied by you or the PGP.

(d) *No Obligation.* You are not obligated to publish or to take any other action with respect to your DNA sequence data. However, if you elect not to publish your DNA sequence data you may not be permitted to continue to participate in the study.



(e) *Updating Your DNA Sequence Data.* If you choose to publish your DNA sequence data, the PGP may re-process and supplement your DNA sequence data from time to time as new data, information or techniques become available. If you consented to the publication of your original DNA sequence data, then the PGP may publish your re-processed and/or supplemented DNA sequence data directly to the PGP's public website and database without your further consent. You will not be provided an additional or revised Preliminary Research Report or other analysis of your DNA sequence data, and you will not be given an opportunity to choose whether or not to publish your re-processed and/or supplemented DNA sequence data.

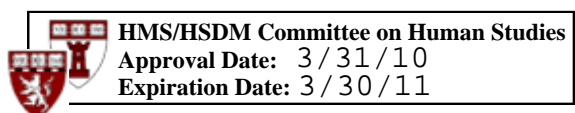
(f) **By signing this consent form, you authorize the PGP to do the following: if after reviewing your Preliminary Research Report you inform the PGP that you will allow the PGP to publish your DNA sequence data and other personal information, the PGP may publish such data and information (including your DNA sequence data, whether or not re-processed and/or supplemented, and your Preliminary Research Report), along with your trait information and any other information you have submitted to the PGP. This means that the PGP may proceed to publish this data and information without your being asked to sign any additional consent. The PGP will publish the data and information on a publicly accessible website and database. It may also publish the data and information in other formats and/or media. Your ability to withdraw your consent once the PGP has published all or some of this data and information is limited, and is described in Section XI of this consent form. There may be risks to you associated with the publication of this data and information. Those risks are described in Section VII of this consent form.**

5.6 Creation, Distribution and Analysis of Cell Lines.

(a) *How Your Tissue Samples Are Used.* Tissue samples submitted to the PGP will be used by the PGP for a range of research purposes, including (i) creation of cell lines, (ii) transformation into somatic cell-derived stem cells (i.e., induced pluripotent stem cells or iPS cells, which are cells with the ability to divide for indefinite periods and to give rise to specialized cells), and (iii) the study of biological characteristics, including DNA, RNA (gene expression), physical traits, and the presence and characteristics of micro-organisms and viruses in the specimen samples.

(b) *Creation of Cell Lines From Your Tissues.* If you consent to participate in this study and are enrolled, the PGP may create or attempt to create cell lines from your tissue samples. Any cells derived from such tissue samples will be stored and maintained by the PGP, Coriell National Institute of General Medical Sciences (NIGMS) biorepository and/or other biorepositories chosen by the PGP and approved by Harvard Medical School, unless you request that the cells be destroyed as part of your withdrawal from this study. A biorepository is a cell culture and storage facility where your cells will be expanded in number using cell culture, stored in liquid nitrogen and shipped to authorized researchers. The PGP will not create or attempt to create new cell lines for any individual who has withdrawn from the study.

(c) *No Guarantees.* The PGP cannot make any guarantees about how long it will take to create a cell line from your tissues, or if it will even be possible to make such a cell line.



(d) *Distribution of Cell Lines.* Cell lines provide a renewable supply of your cells and DNA. Cell lines will be sent to and stored by the Coriell NIGMS repository and/or other biorepositories the PGP chooses consistent with the PGP's research goals. Your cell lines will not be made available for distribution to third parties until after you have agreed to the publication of your DNA sequence data to the PGP's public website and database. The PGP will select biorepositories to store and distribute your cells lines that have agreed to follow applicable and appropriate best practices for donation, procurement, culture, and storage of cells and tissues to ensure, in particular, the traceability of stem cells. The use of these repositories will be approved by Harvard Medical School.

(e) *Use of Cell Lines.* Cell lines may be made available by the PGP to third parties under agreements approved and entered into by the PGP without your additional notification or consent. These agreements may permit your cell lines to be used for research, patient care, commercial or other purposes, including genetic manipulation of the cells or mixing of human and nonhuman cells in animal models. Neither you nor the PGP will be able to restrict or specify the type of research or other purposes for which your cell lines will or will not be used. Other than for purposes of cost recovery, the PGP will not license or otherwise make participant cell lines available to any third party for the financial gain or commercial profit of the PGP.

(f) *Return of Analyses Performed on Cell Lines.*

(i) Generally, the PGP will not provide you with the results of any analysis, development or other work performed by third parties with access to your tissues or cell lines. However, because such results may be made publicly available, and may be identified as deriving from your tissues or cell lines, you may become aware, even without your consent, of the results of such activities.

(ii) The PGP may decide to return to you certain results deriving from your tissues or cell lines. The PGP is not obligated to return any such results to you. The PGP may request that you voluntarily choose whether to make such results available, along with your genetic and trait data, on the PGP's public website and database.

(g) By signing this consent form, you authorize the PGP to distribute to others, in a manner consistent with the conditions described above, the cell lines created from your tissues without further notice to you and without the PGP obtaining any additional consent from you. Your ability to withdraw from the portion of this study that involves the distribution of your cell lines is limited once your cells lines have been created and distributed, and is described in Section XI of this consent form. There may be risks to you associated with the creation and distribution of your cell lines. Those risks are described in Section VII of this consent form.

VI. ONGOING PARTICIPATION FOLLOWING ENROLLMENT

6.1 Recontact. Other than the Safety Questionnaires described below, you are under no obligation to receive study notices or to participate in the study after providing the tissue samples and the information described in SECTION IV and SECTION V of this consent form. If you choose YES to the question below, you may be contacted by the PGP at a future date and

asked if you would like to (i) voluntarily submit additional tissue specimens and/or trait or other information, or (ii) participate in future research studies or other activities coordinated by the PGP. You may change your choice on this option at any time by notifying the PGP in writing.

Willing to be recontacted? Yes No

6.2 Additional Trait Collection. Additional personal and trait data may be requested by the PGP and submitted by you on a voluntary basis. Any additional data disclosed by you may be made publicly available by the PGP via the public website and database without your additional consent and will be associated with your previously published data.

6.3 Additional Tissue Specimen Collection. Additional tissue samples, such as inner cheek swabs, skin swabs, hair samples, saliva samples, urine samples and/or fecal samples, may be requested by the PGP and submitted by you on a voluntary basis. Any additional samples you provide may be analyzed or otherwise incorporated into the study. The results may be made publicly available by the PGP via the public website and database and associated with your previously published data.

6.4 Additional Return and Release of Research Data. The PGP may, but is not required to, return to you certain research results or analysis generated by the PGP or by anyone accessing your public PGP data. The PGP may request that you voluntarily choose whether or not to make such results available, along with your other information already on the PGP's public website and database.

6.5 Safety Questionnaires.

(a) *Contents of the Safety Questionnaire*. Every 3 months the PGP will circulate a questionnaire (the "Safety Questionnaire") to all participants and request that each participant answer the following questions:

(i) What negative and/or positive events have happened to you and/or your relatives or acquaintances due to your participation in the PGP?

(ii) What are the reactions or responses of your relatives and acquaintances to the publication of your genetic, trait and other data?

(iii) Please report incidents of being contacted by acquaintances or by strangers (including researchers, health care providers or members of the media) regarding your data being published online.

(iv) In what ways has this study positively or negatively influenced your interactions with your medical care providers or your receipt of or access to health care services?

(v) Has your involvement in this study triggered the need for any health or medical care that would not otherwise have been done? If you answer "yes," please describe (a) the specific medical intervention or care you received, and (b) the findings or consequences of the medical intervention or care you received with regard to your health.

Health or medical care that would have been performed had you not participated in this study, whether due to symptoms, a personal or family medical history, routine screening or any other reason, should not be included.

(b) *Prompt Return Required.* You are required to return the completed Safety Questionnaire or a “no change” reply be sent to the PGP within 1 week of receipt.

(c) *Reporting of Unexpected Events.* You are requested to immediately report to the PGP any unexpected events that you may experience as a participant in the study

(d) *Periodic Reflection.* At 5 year intervals, and at the end of your participation in the study, you will be requested to write your thoughts about the PGP overall, including whether this consent form adequately described the procedures and risks associated with your participation.

(e) *Changes to the Questionnaire.* The Safety Questionnaire, including the number of questions and the frequency of circulation to enrollees, may be modified by the PGP from time to time.

VII. RISKS AND DISCOMFORTS

The Personal Genome Project is a new form of public genomics research and, as a result, it is impossible to accurately predict all of the possible risks and discomforts that you might experience as a result of your participation in this study. In this section you will read about the risks that we have identified as potentially relevant to your participation in the PGP.

You are strongly encouraged to think carefully about these risks, as well as any other risks or discomforts that you anticipate might arise as a result of your own unique circumstances. These might include your own health or medical conditions, your family and personal relationships or any other factor that is specific to you. In addition to understanding the risks outlined in this Section VII, you should feel confident that you have sufficient knowledge (via the educational and testing materials available on the PGP website) of genetics, human subjects research and the benefits and risks of participation in this study to make an informed decision about whether participation is right for you.

You are strongly encouraged to discuss this study and its potential risks with your immediate family members as well as with your physician and/or other qualified health care providers. You are also encouraged to discuss with the Principal Investigator directly any additional concerns that you may have regarding the risks to you of participating in this study.

Finally, because the science in this area is evolving, and data will be collected on an ongoing basis by the PGP, the risks involved due to your participation in this study, as well as the likelihood and severity of such risks, will change over time. You will not be asked to review and re-sign this consent form every time new information related to the risk of participation becomes available. However, the PGP will try to update this consent form and the study website as frequently as possible to reflect the latest information about the risks of participation. Participants and prospective participants are strongly encouraged to check the website regularly

and to update their contact information with the PGP in order to obtain the most current information regarding the risks and discomforts of participation.

Please remember that you are free not to participate if you have not already enrolled, and to withdraw at any time if you have already enrolled in the study.

7.1 Risks Associated with the Publication of Your Data.

(a) *Risks Associated with Public Disclosure.* The risks of public disclosure of your genetic and trait data, including your Baseline Trait Data, any additional trait data or other information you provide, and your DNA sequence data, could affect your employment, insurance and financial well-being or social interactions for you and your immediate family. The following is a non-comprehensive list of hypothetical scenarios that could pose risks for you and/or your family:

(i) Data that you provide (such as facial images, other trait data or DNA sequence data) may be used to identify you, resulting in higher than normal levels of contacts from the press and other members of the public motivated by positive or negative feelings about the study. This could mean a significant loss of privacy and personal time.

(ii) Data that you provide may cause you to learn – either directly or from a family member or other individual – that you are not related to family members or other individuals in the way that you had previously believed. This could also include inferences or allegations of paternity made by individuals you did not previously know or suspect were related to you.

(iii) Anyone with sufficient knowledge and resources could take your DNA sequence data and/or posted trait information and use that data, with or without changes, to :

(1) infer paternity or other genealogical features of you and/or your family,

(2) claim statistical evidence that could affect the ability of you or your family to obtain or maintain employment, insurance or financial services,

(3) claim relatedness to criminals or incriminate relatives,

(4) make synthetic DNA and plant it at a crime scene, or otherwise use it to falsely identify you, or

(5) reveal to you or a member of your family the possibility of a disease or unknown propensity for a disease.

(iv) Whether or not it is lawful to do so, you could be subject to actual or attempted employment, insurance, financial, or other forms of discrimination or negative treatment due to the public disclosure of your genetic and trait information by the PGP or

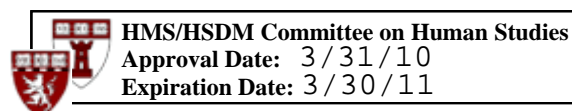
by a third party. Although the United States has a law that bars certain forms of genetic discrimination (the Genetic Information Nondiscrimination Act, also known as GINA), this law does not apply to the use of genetic information in all circumstances and, even where it does apply, it does not guarantee that your genetic information will not be used against you in a way that you feel is discriminatory or otherwise harmful to you and/or your family.

(v) If you have previously made available or intend to make available genetic information in a confidential setting, for example in another research study, the data that you provide as part of the PGP may be used, on its own or in combination with your previously shared data, to identify you as a participant in otherwise confidential genetic research or trials. This means that any data or other information you may have shared pursuant to a promise of confidentiality or privacy may become public despite your intent that they be kept private and confidential. This could result in certain adverse effects for you, including ones not considered by this consent form.

(vi) Your publicly available DNA sequence data, trait data and other information may also include information that applies to your family members. Some people may draw conclusions from your publicly available information, including speculating about what such information might reveal about you and your family members. As a result, the PGP cannot predict all of the risks, or the severity of the risks, that the public availability of this information may pose to you and your relatives. You are strongly encouraged to discuss this study and its potential risks, including the fact that not all of the risks are known, with your immediate family members.

(b) *Possibility of Unintended Public Disclosure.* If you enroll in the PGP research study and, based on your review of your Preliminary Research Report or otherwise, choose not to publish your DNA sequence data, it is still possible that your DNA sequence data will be publicly disclosed due to unintended data breaches, including hacking or other activities outside of the procedures authorized by the PGP. Should this occur you would be subject to the various risks and discomforts described in this section and throughout this consent form even though you did not intend for your DNA sequence data to be published.

(c) *Reproduction or Modification of your Data.* If you choose to make your DNA sequence data and other information available, it will be published on the PGP's publicly accessible website and database and be openly available to third parties. As a result, neither you nor the PGP will be able to control or restrict the access, use, reproduction, modification, or analysis of your data and other public information. Your data and other public information may be made public in other forms in addition to its inclusion in the PGP database. It may also be changed, without either your or the PGP's consent, in a way that might be inaccurate and or upsetting to you. For example, a third party could access your publicly available sequence data or other information, change it and republish it to suggest that you had a propensity for a disease or other detrimental trait. Additional adverse effects are also possible.



7.2 Risks Associated with the Creation of Cell Lines From Your Tissues.

(a) *Undesirable Uses or Research - Possibility of Use for Cloning.* The distribution of your cell lines could result in the creation and further distribution by a third party of additional cell lines, organs or tissues containing your DNA for research, commercial, patient care, or other uses, including certain forms of assisted reproduction. You may not like or be upset by some of these uses. If scientific technology continues to evolve, it may one day be possible for a third party to use, without your or the PGP's authorization, cell lines or biological materials derived from your cell lines for new or unexpected reproductive or other purposes, including cloning. You may be made aware, without your consent, of the results of such research, commercial, clinical, or other uses, whether or not authorized, of your cell lines.

(b) *Inability to Control Access to Cell Lines.* Cell lines deposited in and distributed by the Coriell NIGMS repository and/or other biorepositories designated by the PGP, or by the PGP itself, may be made available to other researchers or groups subject to Coriell's and their own institutional review processes. However, it is impossible to guarantee that all cell line recipients will not share materials with, and will protect such materials from access by, unauthorized individuals. As a result, the PGP cannot provide any guarantees about the people who may receive access to your cell lines, or the research or other uses of your cell lines by such individuals.

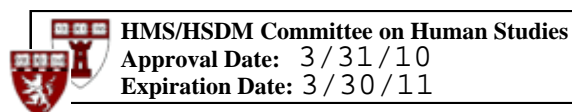
(c) *Pluripotent Stem Cells – Potential Use for Cloning and Other Research Purposes.* The PGP may use the cells taken from the materials you provide to create a type of cell known as a pluripotent cell. This type of cell can be used to create different types of tissues. Your cells might be used in research involving genetic alteration of the cells. Your cells might be mixed with other human cells, mixed with animal cells, or grown in lab animals like mice. Your cells might also be used to reproduce tissue and cells, including for the purpose of human cloning.

7.3 Risks Associated with Your Receipt of Data From the PGP.

(a) *Data Quality Not Guaranteed.* The PGP cannot guarantee that any research data, including your DNA sequence data and your Preliminary Research Report, provided to you by the PGP are true and correct.

(b) *Data Not to be Used for Medical Care.* The data provided to you by the PGP, including your DNA sequence data and your Preliminary Research Report, are not an appropriate substitute for professional medical or clinical advice, diagnosis or treatment, and may not be used by you for any medical or clinical purpose unless the relevant sequence or other data, including any interpretations or findings presented in your Preliminary Research Report, are first confirmed by a licensed healthcare professional.

(i) Doctors do not routinely screen DNA sequence data for genetic variations as part of patient care. The clinical importance of this data is not known with any certainty at this time. In addition, although there is considerable information about possible connections between genetic information, some of these connections, especially when screened for in the general population, remain uncertain.



(ii) Regardless of any specific interpretations or findings included or not included in your Preliminary Research Report, you are likely to be subjected to additional interpretations – both accurate and inaccurate – of your public data by people outside of the project.

(c) *Risks Due to Pursuing Health or Medical Care.* If your Preliminary Research Report contains information about potentially harmful genetic variants, you may experience anxiety or stress. As a result, you may want to seek health or medical care or counseling to verify the accuracy of such interpretations, whether provided by the PGP or by other sources. If you choose to pursue health or medical care or counseling, you could be exposed to additional risks and/or discomforts, several of which are identified below.

(d) *The PGP Does Not Provide and Is Not Responsible For Your Health or Medical Care.* The PGP will not (i) provide you with, (ii) arrange for, (iii) pay for, reimburse you for or otherwise subsidize or (iv) provide you, your physician or any other health care provider with any recommendations, advice or other guidance with respect to, any of your health or medical care, including any current or follow-up medical or clinical advice, diagnosis or treatment, preventative action or other related course of action of any kind.

(i) The PGP is not responsible for any part of your health or medical care, including, accurately predicting disease or disease risk, informing you of genetic variations, or providing you with accurate and valid DNA sequence data or interpretations of your DNA sequence data. No health or medical care will be made available by the PGP and, as described above, no special arrangements, for compensation or otherwise, will be made by the PGP should you require or choose to pursue any health or medical care as a result of your participation in the PGP.

(ii) You should talk to your doctor or other qualified health care provider if you have questions about any information provided to you by the PGP, including your DNA sequence data or Preliminary Research Report. You should not ignore professional medical advice from your doctor or any other qualified health care provider about any information included or not included in your Preliminary Research Report or in other information provided to you by the PGP. You should not interpret your DNA sequence data or your Report as recommending or discouraging any specific treatment plan, product, or course of action with respect to your health or medical care.

(iii) In the event that you, after talking with your doctor or other qualified health care provider, decide that any change in your health or medical care is necessary or advisable as a result of any information you received as a participant in the PGP, you (or your third party payer (i.e. your health care insurance provider), if applicable) will be solely responsible for all resulting payments and costs associated with such health or medical care.

(iv) Any health or medical care that you may determine, after consultation with your doctor or other qualified health care provider, is necessary, whether as a result of your participation in this study or otherwise, may be invasive and have its own associated risks and expenses. Serious risks, including death, may be involved in any

such health or medical care. You should carefully consider these risks, as well as whether you have the financial and other resources necessary to pursue such health or medical care.

(v) If your doctor or other qualified health care provider is directly or indirectly involved with the PGP, as either a researcher or a participant, any health or medical care that you receive from such health care provider, including medical advice or clinical management, represents health or medical care provided by that provider pursuant to your existing doctor-patient relationship, and is not health or medical care provided by the PGP.

7.4 Physical Risks and Discomforts.

(a) There are no known or foreseeable risks or side effects associated with obtaining saliva, hair, inner cheek swab, skin swab, urine, or fecal samples. The blood draw and skin biopsy may involve a small amount of pain, bleeding and/or fainting, and may also cause temporary bruising and/or infection at the site of puncture. Some degree of permanent scarring can be expected from the skin biopsy procedure as described in Section 5.3.

(b) If you are physically injured as a result of your participation in this study, please seek medical care immediately and contact the Principal Investigator. The PGP will not provide any health or medical care to participants.

7.5 Data Safety Monitoring Board. A Data Safety Monitoring Board (DSMB) will monitor the progress of the PGP, including the risks to study participants. Although the PGP will try to tell you about any additional risks identified by the DSMB, including through updates to the study website, the DSMB will not be able to monitor all of the risks of participation in this study, and it may not be able to advise you or the PGP of those risks that it monitors or identifies.

VIII. BENEFITS

8.1 No Benefits to You. You are not likely to benefit in any way as a result of your participation in the PGP.

IX. INTELLECTUAL PROPERTY

9.1 Promoting Open Access. One of the primary goals of the PGP is to develop a public dataset of information from willing participants to aid in the development of analytical tools and interfaces for scientists, doctors, and individuals around the world. In order to accomplish this, the PGP will endeavor to develop data structures and other tools, including legal agreements, to maximize the ability of the study to share its data in the broadest possible fashion.

9.2 Ownership of Your Information and Data. The PGP will not attempt to claim that it owns any information or data that you provide directly to the PGP as part of your participation in the study. However, the PGP will proceed to use such information or data without restriction including, without limitation, copying, distributing, transmitting, publicly displaying, publicly

performing, publishing, reproducing, editing, translating, reformatting, and creating derivative works, subject only to your ability to withdraw from the study, as that ability is described in this consent form. Any tissue samples or specimens that you provide to the PGP as part of your participation in this study, including saliva, hair, blood or other biological tissues, are the property of and are owned by the PGP and not by you. Any information, data or materials created or prepared by the PGP from such tissue samples or specimens, including, without limitation, your DNA sequence data, Preliminary Research Report, cell lines and the results of any research or analysis performed by or in collaboration with the PGP, are the property of and owned by the PGP and not by you. However, consistent with the goals of the PGP and this consent form, the PGP will attempt to make this information, data or materials, including your DNA sequence data, Preliminary Research Report and cell lines, available to you and/or to the public as described in this consent form. It will be the PGP's decision whether to make available to you and/or publish such information, data and materials. The PGP is unable to guarantee if, when or in what form you will receive access to any information, data or materials as part of your participation in this study.

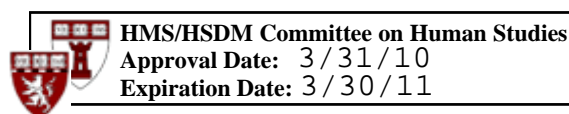
9.3 No Licensing for Profit. Other than for purposes of recovering its costs, neither the PGP nor PersonalGenomes.org will license or otherwise make available your tissue specimens, cell lines, DNA samples, DNA sequence data, and personal information to any person, institution, company or other third party for the financial gain or commercial profit of the PGP or PersonalGenomes.org. However, information and materials that you provide, including DNA sequence data and cell lines derived from your tissue specimens, may be made available to third parties for research, patient care, commercial or other purposes, and these third parties may commercially profit from the data or other information that you contribute to the PGP.

9.4 No Compensation. You will not be paid for your participation in the PGP. The results of studies using materials provided by you, such as your stem cells, may have commercial potential. Neither you nor your heirs will receive financial or any other benefits from any discoveries, whether or not of a commercial nature, made using the information and/or specimens that you provide.

X. CONFIDENTIALITY

10.1 No Confidentiality After Publication. If you are enrolled in the PGP and choose to publish any of your data to the PGP's public website and database, that data will not be kept or made available by the PGP in a confidential or anonymous fashion. The PGP will not require any collaborators or other individuals accessing your information to keep the information in a confidential or anonymous fashion. Unless you withdraw from the study before your data are published, your genetic and trait data will be made available via a publicly accessible website and database.

10.2 Association of Your Name With Your Data. The PGP will not intentionally associate your name with your genomic or trait data or other information that is published to the PGP's public website and database. The PGP will not intentionally publicly identify you by name as a participant in the PGP without your prior consent. However, as described above, because of the identifiable nature of the information you are providing to the study and generated



about you by the study, it is possible that one or more third parties may identify you as a participant in the PGP and associate your published data and information with your name or other information that you have not provided to the PGP and may not have wished to be publicly disclosed.

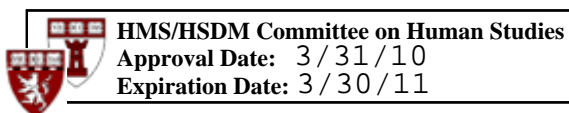
10.3 Efforts to Preserve Confidentiality Prior to Publication. During the enrollment process, and before your publication of your Baseline Trait Data or DNA sequence data, as applicable, the PGP will use reasonable efforts to preserve the privacy and confidentiality of such data, as well as other information you provide to the PGP (your Preliminary Research Report, for example). However, you should be aware that public disclosure of such information, even if you have not yet completed enrollment, ultimately determine not to publish such data, or decide to withdraw from the study, may still happen due to unintended data breaches, including hacking or other activities outside of the procedures described in this consent form. For this reason the PGP cannot guarantee that information you provide to the study, or that is generated about you by the study, will be maintained in a confidential manner.

10.4 No Direct Disclosure to Your Health Care Provider. Your genetic and trait data will not be sent to your health care provider directly by the PGP and will not become part of your medical record due to any activities of the PGP. However, because this information will be publicly available, and may be identified as yours, it could become part of your medical record or be shared with your doctor or other health care provider or your health care insurance provider, or provided to others due to the activities of one or more third parties.

10.5 Replies to Safety Questionnaires. Your replies to the Safety Questionnaires will be confidential. However, the DSMB or governmental agencies may request or require this information in order to judge the risks to you and any other study participants. The PGP will share your replies to the Safety Questionnaire with them to the extent required or reasonably requested.

(a) *Publication of Responses.* Responses to the Safety Questionnaires that may impact other PGP participants, or the public generally, will be paraphrased or will have all information reasonably likely to identify you removed prior to making this information available on the public website or elsewhere for purposes of public education or risk management. If you would like your answers to be identified as yours, you may indicate that preference as part of your response to the Safety Questionnaires. Although the PGP will take reasonable steps to ensure that your responses to Safety Questionnaires, if published, are not identified as yours without your consent, the PGP is unable to guarantee the anonymity of your responses.

(b) *Publication of Results.* The results of this study may be published in a medical book, journal, website or webpage, or used for teaching purposes. Identifying information that is associated with your data and/or the results of this study (such as your photograph, DNA sequence data, and medical or trait information, as well as your name if that has become associated with your study data by a third party during the course of your participation in the PGP), may be used in such publications or teaching materials. The PGP will not notify you prior to such uses.



XI. REFUSAL OR WITHDRAWAL OF PARTICIPATION

11.1 Voluntary Participation. Participation in this study is voluntary. You do not have to participate in the PGP. You may withdraw from participating and/or withdraw your data from this study at any time. You will never have to provide a reason for your withdrawal.

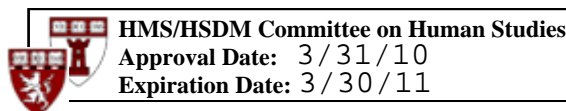
11.2 Limitations on Withdrawal. You are free to decide at any time that you no longer want your tissue samples, DNA sequence data, cell lines or other information to be used as part of this study, but it may not be possible to prevent the future use of your data and/or information in certain circumstances:

(a) *Deletion of Trait and Sequence Data.* If you choose to withdraw from the study and request that your genetic and trait data to be removed, within 6 months the PGP will delete all DNA sequence and trait data about you and held by the PGP. The PGP will also request any organizations or researchers with whom the PGP has any formal data sharing agreements to likewise delete your data and information within a reasonable time frame. However, once any data or information you provide to the PGP during the course of your participation in the study is posted to the PGP's public website and/or database, other organizations and individuals who have no formal data sharing agreement with the PGP may acquire copies of it. There will be no way to ensure that they will delete their copies of your data or information, or for the PGP to even know what copies of your data or information may exist. Also, your data may be combined by the PGP and/or its collaborators or third parties in ways that will make it impossible to delete them from such datasets.

(b) *Destruction of Tissue Samples and Cell Lines.* If you decide to withdraw from participation and request that the PGP remove cell lines created from your tissues, the PGP will destroy all tissue samples and cell lines held by the PGP and send a notice to all biorepositories with which the PGP has formal agreements requesting that such biorepositories destroy your cell lines. However, once tissue samples and/or cell lines have been distributed, the ability to control their use by you, the PGP or the biorepository to which they were distributed will be limited. Because your cell lines and/or tissue samples may have been widely distributed, it may not be possible to retrieve and/or destroy all copies of your cell lines and/or tissue samples.

11.3 Removal from the Study. The PGP may decide to end your participation in this study at any time. If the PGP terminates your participation, it will provide you with an explanation for its doing so. If you are refused enrollment in the PGP, or your participation in the PGP is terminated by the PGP, you may ask that the PGP destroy any of your tissue samples and/or cell lines, and delete any of your data in accordance with the provisions set forth above. If neither you nor your Designated Proxy request that your tissue samples and/or cell lines be destroyed and your data be deleted upon your removal from the study, the PGP may elect, in its discretion, to maintain your tissues, cell lines and/or data for use by the study consistent with this consent form.

11.4 Failure to Complete Safety Questionnaires. Your participation in the PGP may be ended if you do not comply with the instructions related to Safety Questionnaires, as described above.



11.5 Maintenance of Certain Information. If you decide to withdraw, or if the PGP ends your participation, the PGP may continue to keep certain limited information about you following the conclusion of your participation in the PGP, including your name, date of first participation, date of enrollment and date of termination or withdrawal.

XII. ALTERNATIVES

12.1 Alternative. The alternative is not to participate in the PGP.

12.2 No Effect. If you choose not to participate, your medical treatment by your doctor or other health care providers, or at your hospital, will not be affected.

XIII. DONATIONS

13.1 Opportunity for Financial Donation.

(a) *The Possible Donation.* You may be invited to make a financial donation to the PGP (a “Donation”) in the event that you are invited to enroll in this study.

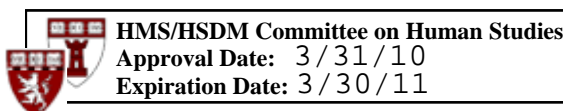
(b) *No Obligation.* Participants will be enrolled whether or not a Donation is made and without regard to the amount of any Donation. However, financial contributions are encouraged and are important to the sustained success of the study. If you choose to make a Donation it will be used to subsidize the cost of the PGP’s research and related activities.

XIV. RESEARCH-RELATED CONTACT INFORMATION:

14.1 Principal Investigator. If you have any questions or concerns about the study, or if you suffer a research related injury, you may contact the Principal Investigator: George Church, PhD, at (617) 432-7562 or consent@personalgenomes.org

14.2 Additional Contact Information. If you wish to discuss your rights as a participant in a research study, or if you feel under any pressure to enroll in this study you may contact: Carolyn Connelly, PhD, the Director of the Office for Research Subject Protection at Harvard Medical School (617) 432-0651 or carolyn_connelly@hms.harvard.edu

[To Complete This Informed Consent Form, Your Signature Is Required on the Following Page]



SIGNATURE

I have read this entire informed consent form and I understand it completely. I confirm that I understand the purpose of this study, the study procedures, the possible risks and discomforts of participating in this study, the potential benefits that I may experience, and the alternatives to my participation in this study. All of my questions have been answered to my complete satisfaction.

I understand that by signing this informed consent form, I am acknowledging and agreeing to all of the terms and conditions of my participation set forth above, and I am providing my informed consent to participate in the Personal Genome Project.

Date _____

Name of Participant (printed) _____

Signature of Participant _____

(Also initial all previous pages of the consent form.)

Please Note:

This consent form is for review purposes only.

Consent forms will be signed online during the eligibility screening and enrollment process.

