Title of the Study: **Genomic Approaches for Rare Genetic Disease Diagnosis (MLP1801)**

Institute Address: CSIR-Institute of Genomics and Integrative Biology, Council of Scientific and Industrial Research, New Delhi, India.

Reference Code:

I, ……

Son/daughter/wife of……aged…….....

Residing at……...

……

Hereby consent to voluntarily participate in the genetic study aimed at understanding the human genome and disease. I have been informed about the implications of my personal genome and health data being made publicly available through public databases as well as scientific communications and may be subjected to scientific analysis. I have been advised to discuss my participation in this study with my family members. I have been provided written information that may be circulated to them, if necessary.

☐ I have been explained the contents in the "Information for the volunteers" form.

☐ My participation in this study is entirely voluntary and any sample taken and left after the study may be utilized for further investigation/ analysis in other scientific study without my further consent.

☐ I am free to withdraw from this study as and when I feel so inclined.

1. I choose to **disclose / not to** disclose my identity.
2. I choose **to be / not to** be informed of the results of the analysis that may impact my health (Applicable only to those who have chosen to disclose their identity)
3. I choose to exclude the information attached on the "Exclusion Form" from analysis / public disclosure (Applicable only to those who have chosen to disclose their identity).

(Signature/ Thumb impression of volunteer) Date:

Certified that the above consent has been signed in my presence. The purpose for which the sample will be used has been explained to the above volunteer. The individual is free to withdraw from the study as and when he/she feels so inclined.

(Signature of the investigator) Date:

Encl: 1. Information for the volunteers form
2. Questionnaire form

Exclusion Form

I choose to exclude the following information from the questionnaire with respect to analysis or public disclosure (please indicate the relevant question numbers from the attached questionnaire)

1. Analysis:

2. Public disclosure:

INFORMATION FOR THE VOLUNTEERS

1. Purpose of Study

The principle scientific goal of this study is to explore avenue to study genetic variability between individuals and to correlate the variability to the phenotypes. The data generated (i.e., human DNA sequence, microbial DNA sequence, medical information and physical traits) may be used for scientific and clinical research such as development of computational tools, databases and interfaces for scientist, clinicians and individuals in addition to developing general public awareness on potential benefits and risks of having whole genome level information available to public. The identity stripped human genome sequence and other information from this study will be contributed to a building data repository for biomedical research so that researchers not associated with this study can also have access to these data.

2. Expected Duration of Participation

The volunteer is expected to participate for 30 mins.

3. **Enrolment Procedure**

A. **Collection of baseline trait data:** You are required to provide baseline trait data about yourself, including: data of birth, medications, allergies, vaccines, personal and family medical history, race/ethnicity/ancestry and vital signs (e.g. height, weight, blood pressure etc.) in the attached questionnaire.

B. **Monozygotic twin:** If you have any identical twin(s), such as sibling(s) will need to provide consent for your participation in this research.

C. **Tissue Samples:** You should be willing to donate a small amount of blood/ saliva and /or other body fluids as applicable to the study.

D. **Consent for participation:** You are required to sign a consent form indicating that you voluntarily agree to participate in this research study.

4. Sample Collection

A. **Blood:** Peripheral venous blood sample will be collected. Blood sample will be collected from the upper arm by venipuncture. Five to Ten ml of blood sample will drawn by an authorized medical doctor or an authorized technician under the supervision of an authorized medical doctor, in the presence of the principal investigator. Fresh blood sample will be collected in the designated containers (which will be provided by CSIR/IGIB). Serum would be isolated from the collected blood sample for biochemical analysis.

B. **Saliva:** Samples will be collected by spitting. Two to four ml of saliva will be collected in designated containers (which will be provided by CSIR/IGIB).

C. **Other tissue/ body fluids** such as oral washings/swab, saliva, urine, semen, body fluids, skin swabs and fecal samples may also be collected for additional investigations if required. Samples will be collected in designated containers (which will be provided by CSIR/IGIB).

D. **Tissue biopsy**: Tissue biopsy obtained during the course of regular medical investigations may also be used for genetic investigations. This will be collected in consultation with your clinical service provider.

5. Genomic Analysis

Analysis of DNA, RNA, Cell lines including but not limited to whole genome sequencing and other biochemical analysis will be performed on tissue samples collected from the individual across multiple studies/ projects. The nature and extent of analysis will be determined by CSIR/IGIB at its sole discretion.

6. Genetic Information

Your biological sample, including your DNA and/or cell line will be used to learn about genes (and parts of the genome) related to human disease. Because years of study of large diverse populations are needed to understand the risk or benefit of specific genes and their variations, the researchers will not be able to tell you how your specific results might impact upon you or your family members' future health or other information relating to your blood/tissue samples. In the event genes are discovered that provide information about people's future health, lengthy studies must be performed to understand what benefit or risk they pose for an individual.

7. Future Investigations with this Study or Conducting Other Studies

Any sample taken and left after the study may be utilized for future investigation/ analysis in other scientific projects without your further consent. We will store and use your samples (Blood, DNA, RNA, Tissue) and data for future research investigations. We may generate and distribute cell line(s) from the tissue samples provided by you through a bio-repository for future investigations without your further consent. We may provide your sample and limited medical information about you to other researchers without your further consent. Any sample that is shared with future investigators will be identity stripped and ONLY be identified with a code.

8. Public Release Of Research Data

Upon completion of analysis, your genomic sequence (i.e., human DNA/RNA sequence, epigenome, microbial DNA sequence, cell line, medical information and physical traits) and related information will be made available through the CSIR/IGIB website and other scientific communications (including but not limited to publication in the scientific journals). The data generated may be shared for scientific and clinical research such as controls for other studies, development of computational tools, databases and interfaces for scientist, clinicians and individuals in addition to developing general public awareness on potential benefits and risks of having whole genome level information available to public.

Any information shared with you is for research purpose only and may not be used by you for any medical or clinical purpose unless the relevant data is first confirmed and discussed in consultation with a qualified health care professional.

By signing this consent form, you hereby agree and authorize CSIR/IGIB to proceed with the full public release of your genomic data (DNA/RNA sequence) and other information (pedigree, clinical investigation images, photograph, data of birth, medications, allergies, vaccines, personal and family medical history, race/ ethnicity/ ancestry and vital signs) voluntarily made available by you, without any legal restriction and without your further consent through CSIR/IGIB website and database or other formats of standard scientific communications (including but not limited to publication in the scientific journals), and you hereby acknowledge the risk associated with the public release of such data and information. Your identity will be held confidential if you choose, even though the identity stripped information would be publicly available. Any sample/ data that released will be identity stripped and ONLY be identified with a code.

9. Privacy of Health and Genetic Information

Given the presence of your health and genetic information on a database accessible by other researchers, there is a small risk of this information being linked to your identity. Because your genetic blueprint (“whole genome sequence”) is unique to you, it could potentially be used to help identify you and the other data that we gather about you. Therefore, specific precautions are in place to protect the confidentiality of your information that is described in the “Confidentiality” Section below. You are encouraged to discuss your participation in this study with your blood relatives who may share some of the same genetic predispositions as you and therefore share some of the confidentiality related risks that are discussed here.

10. Risks and discomforts

A. Venipuncture: This procedure is associated with minimal discomfort and is free of significant adverse effects.

B. Data analysis: You are strongly advised to discuss this study and the potential risks, as outlined below with your Parents, Siblings and Descendants, hereinafter 'family members', as well as your care provider(s). You are also advised to directly discuss any additional concerns with principal investigator. The following non-comprehensive list of hypothetical scenarios that could pose risk for you and your family members:

(i) The data provided by you (such as trait vital signs or DNA sequence data) may be used to identify you, resulting in higher than normal levels of contacts from the press/media and other members of the public. This could result in a loss of privacy and personal time.

(ii) Anyone with sufficient knowledge and resources could take your DNA sequence data and or your personal trait information and utilize the data, with or without the modification, to (1) infer paternity or other features of your genealogy, (2) reveals the possibility of a disease or a risk for disease. Such information could lead to social and financial consequences including but not limited to employment and insurance.

(iii) Your family members could also be subjected to discrimination for employment, insurance or financial service on the basis of the public disclosure of your genetic and trait information.

(iv) If you have previously made or plan to make available genetic information in a confidential setting, the data provided by you as a part of this study may reveal your identity.

(v) Any conclusions derived from the publicly available information may be speculative with respect to you and even less predictive with respect to your family members. The complete set of risk posed to you and your family members due to the public release of the DNA sequence and trait data is not known at this time. We encourage you to discuss this aspect with your family members.

11. Potential Benefits

A. At the present there are no proven direct benefits to you for your participation in this study.

B. This study may benefit the medical and research community in particular, and humanity in general and may help in establishing genetic causes and predisposition for rare and common diseases.

C. You may experience satisfaction from participating in research that may benefit medical science.

12. Subject Costs and Payments

There are no costs to you for participating in this research study. You will not be paid to participate in this research study.

13. Intellectual property rights and benefit sharing

You will not be financially compensated for your participation in this study. Neither shall you not your heirs claim from CSIR/IGIB any financial benefits or rights, for any information, data, discoveries, whether or not of commercial nature, made using the information generated in this study. Samples (Blood, DNA, Cell line) obtained from you in this study may be used in the development of one or more diagnostic or therapeutic products, which could be patented and/or licensed by those involved in the research or development of such products. There are no plans to provide financial compensation to you should this occur. However as per international (HUGO, UNESCO) and National Guidelines (National Ethical Guidelines for Biomedical and Health Research Involving Human Participants, ICMR 2017) it is necessary for national/ international

entities deriving economic benefit out of the knowledge resulting by the use of the human genetic material, to dedicate a percentage (e.g. 1%-3%) of their annual profit for the benefit of the community/ public health in kind.

14. Confidentiality

You have a right to privacy and we will employ all reasonable measures to protect the confidentiality of your records and the information learned about you and your family members. The precautions for protecting this information include a system where only a code number is associated with your data, blood, DNA and cell line. To facilitate future investigation by researchers not associated with this study, we will ensure that only qualified academic researchers will have access to your blood and DNA (without your name or address). All future study involving your DNA has to be approved by an Institutional Review Board (IRB). To have access to your cell line, an Institutional Review Board (IRB) must approve the study. The results of this study may be publish in a medical book, journal, databases, website or webpage or used for teaching purpose. Your name and other identifiers will be disclosed only if you have consented to disclosure of your identity. You may not be notified by CSIR/IGIB prior to such use. Participants in India will be covered by the general guidelines provided by Indian Council of Medical Research on National Ethical Guidelines for Biomedical and Health Research Involving Human Participants (ICMR 2017).

11. Withdrawal of Participation

Participation in this study is voluntary. You may withdraw your participation and /or your data from this study at any time as described in the consent form. However once the DNA sequence, cell line and associated information are in public domain, it is likely to get disseminated widely and rapidly. Therefore, it may not be possible to retract the data in response to a withdrawal request.

12. Alternatives

Your alternative is to not participate in the study.

Filling Instructions

Hand print individual characters in Capital letter in the center of the space provided. Take care that the characters do not touch the boundary.

Correctly Filled

R	A	V	1

0	0	6	7	1	2

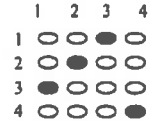
Wrongly Filled

R		V	
	A		1

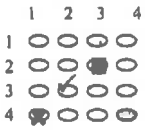
6	7	1	2		

Fill complete oval with pencil or pen.

Correctly Filled



Wrongly Filled



- **Please Ensure that there are no stray marks on form.**
- **Please don't write anything near the Registration Marks, i.e. , the dotted lines at the two sides of the form.**
- **Fill in the form as neatly as possible.**
- **Do not fold or bend the pages of the form.**
- **All alphabets must be written in UPPER CASE.**

Questionnaire for Individuals

1. Name :

2. Permanent Address :

3. Telephone No.s

4. Year of Birth

5. Father's Name :

6. Mother's Name :

7. Gotra/Surname :

(A) Father

(B) Mother

(C) Spouse

Code No.

Signature.

8. Gender
Male ○
Female ○

9. Weight (Kg) ☐☐☐

10. Height (cm) ☐☐☐

11. Age ☐☐☐

12. Ear Lobes
Attached ○
Free ○

13. Type of Diet
Vegetarian ○
Non-veg ○

14. Colour of Hair
Black ○
Brown ○
Gray ○
If gray, at what age hair started graying? ☐☐

15. Eye Colour
Black ○
Brown ○
Gray ○

16. Setting, where you live
Rural ○ Urban ○ Slums ○ Not Sure ○

17. Setting where you grew up
Rural ○ Urban ○ Slums ○ Not Sure ○

18. Do you drink alcohol?
Occasionally ○
Regular ○
Donot Drink ○

19. Do you or did you in the past smoke/chew tobacco?
Yes ○ No ○
If yes, Age of starting ☐☐
Age of quitting ☐☐
Average no. Of cigarettes per day ☐☐

20. State in which you live

○ Assam	○ Himachal Pradesh	○ Nagaland
○ Andaman & Nicobar	○ Jammu & Kashmir	○ Orissa
○ Andhra Pradesh	○ Jharkhand	○ Punjab
○ Arunachal Pradesh	○ Kerala	○ Rajasthan
○ Bihar	○ Karnataka	○ Sikkim
○ Chhattisgrarh	○ Maharashtra	○ Tripura
○ Delhi	○ Madhya Pradesh	○ Tamil Nadu
○ Gujarat	○ Meghalaya	○ Uttar Pradesh
○ Goa	○ Manipur	○ Uttaranchal
○ Haryana	○ Mizoram	○ West Bengal

21. State where your family comes from

○ Assam	○ Himachal Pradesh	○ Nagaland
○ Andaman & Nicobar	○ Jammu & Kashmir	○ Orissa
○ Andhra Pradesh	○ Jharkhand	○ Punjab
○ Arunachal Pradesh	○ Kerala	○ Rajasthan
○ Bihar	○ Karnataka	○ Sikkim
○ Chhattisgrarh	○ Maharashtra	○ Tripura
○ Delhi	○ Madhya Pradesh	○ Tamil Nadu
○ Gujarat	○ Meghalaya	○ Uttar Pradesh
○ Goa	○ Manipur	○ Uttaranchal
○ Haryana	○ Mizoram	○ West Bengal

22. Language you speak at home.
○ Assamese
○ Bengali
○ Gujarati
○ Hindi
○ Kashmiri
○ Konkani
○ Marathi
○ Malyalam
○ Oriya
○ Punjabi
○ Sindhi
○ Telugu
○ Tamil
○ Urdu
○ Others

23. Your Mother Tongue ☐☐☐☐☐☐☐☐☐☐☐☐

24. Educational status
Illiterate ○
Literate ○
Professional course ○
High School ○
Graduation ○

25. Caste/Sub-Caste/Tribe/Sub-Tribe

26. What Religion do you follow ?

- ○ Buddhism
- ○ Christianity
- ○ Hinduism
- ○ Islam
- ○ Jainism
- ○ Judaism
- ○ Sikhism
- ○ Zoroastrianism
- ○ Local Deity/Ancestors
- ○ Others

27. Nature of work.

- ○ Exposure to Chemicals/radiation etc.
- ○ Manual
- ○ Professional

28. Marriage (Please fill the appropriate)

Specify for each of the following and also indicate the relationship if any.

Different Caste	(DC)	(A)	Self
Different Religion	(DR)	(B)	Parents
Different Region	(DRG)	(C)	Maternal Grandparents
Related	(R)	(D)	Paternal Grandparents
None of these	(N)		

	DC	DR	DRG	R	N
A	○	○	○	○	○
B	○	○	○	○	○
C	○	○	○	○	○
D	○	○	○	○	○

29. Your ethnic Background

Ethnic Background	Mother	Father
Indo-Aryan	○	○
Dravidian	○	○
Austro-Asiatic	○	○
Tibeto-Burman	○	○

30. History of Vaccination

- None ○
- BCG ○
- OPV ○
- DPT ○
- MMR ○
- HBV ○
- Not Sure ○

31. Adverse reaction to medication or drugs :

Yes ○ No ○ If yes, then please specify the drugs :

32. Are you under any kind of medication (including Vitamins, Iron tonic etc.)?

Yes ○ No ○ (If yes, then please specify)

34. Do you have a family history of any of the following?

(A) (Darken at the appropriate place)

	Hypertension	Heart Disease	Neurological Disorder	Respiratory Disorder	Epilepsy	DMT1	DMT2	Psychiatric Problems	Tuberculosis	Liver Disease	Kidney Disease	Infectious Disease	Bones related	Bronchial Asthma	Eye Disease	Others*
You	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Father	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Mother	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Sister	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Brother	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Wife	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Son	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Daughter	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Maternal Grandparents	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Paternal Grandparents	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Maternal Uncles / Aunts	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Paternal Uncles / Aunts	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Maternal First Cousins	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Paternal First Cousins	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

* IF the column OTHERS(Malaria, Kala-Azar, Cholera, Filariasis, Tremor, Dementia & Cancer) is marked then Please specify :

Name of Disease	Age when Affected

Note : The information given in this form will be CONFIDENTIAL. *Please do NOT mark below this line.

Date of Collection.

D D M M Y E A R

Code No.

Sample collection by :

Blood collected for

DNA ○ Serum ○

RNA ○ Plasma ○

Any other observations : Yes ○ No ○

If yes specify -