# Invitae Genetic Health Screen
# Patient Consent Form

Name:
Birthday: sex:
ID :
Patient record No:

| | |
|---|---|
| Panel | Invitae Genetic Health Screen |
| Specimen types | 3ml whole blood- purple-top EDTA tube (***Blood can be kept at room temperature**) |
| Gene List (DNA: 163 genes) | ABCD1, ACTA2, ACTC1, ACTN2, ACVRL1, APC, APOB, ATM, ATP7B, AXIN2, BAG3, BAP1, BARD1, BMPR1A, BMPR2, BRCA1, BRCA2, BRIP1, BTD, CACNA1C, CACNA1S, CALM1, CALM2, CALM3, CASQ2, CAV1, CAV3, CDC73, CDH1, CDK4, CDKN1B, CDKN2A, CHEK2, COL3A1, COL5A1, COL5A2, CRYAB, CSRP3, DES, DICER1, DMD, DSC2, DSG2, DSP, EGFR, EMD, ENG, EPCAM, F2, F5, F9, F11, FBN1, FH, FHL1, FLCN, FLNC, G6PD, GAA, GCH1, GDF2, GLA, GREM1, HAMP, HCN4, HFE, HJV, HMBS, HNF1A, HNF1B, HOXB13, JUP, KCNE1, KCNH2, KCNJ2, KCNQ1, KIT, LAMP2, LDLR, LDLRAP1, LMNA, LZTR1, MAX, MEFV, MEN1, MET, MITF, MLH1, MSH2, MSH3, MSH6, MUTYH, MYBPC3, MYH11, MYH7, MYL2, MYL3, MYLK, NF1, NF2, NTHL1, OTC, PALB2, PCSK9, PDGFRA, PKP2, PLN, PMS2, POLD1, POLE, POT1, PRKAG2, PRKAR1A, PRKG1, PROC, PROS1, PTCH1, PTEN, RAD51C, RAD51D, RB1, RBM20, RET, RPE65, RYR1, RYR2, SCN5A, SDHA, SDHAF2, SDHB, SDHC, SDHD, SERPINA1, SERPINC1, SGCD, SLC40A1, SMAD3, SMAD4, SMAD9, SMARCA4, SMARCB1, STK11, TCAP, TFR2, TGFB2, TGFB3, TGFBR1, TGFBR2, TMEM127, TMEM43, TNNC1, TNNI3, TNNT2, TP53, TPM1, TRDN, TSC1, TSC2, TTN, TTR, VCL, VHL, WT1 |

## A. Purpose

Your sample will be sent to Labcorp Genetics, Inc. Laboratory (located at 1400 16th Street, San Francisco, California 94103, USA), a laboratory accredited by the College of American Pathologists (CAP). Invitae Genetic Testing can accurately detect the presence or absence of hereditary genetic mutations, based on the world's high standard testing methods. Thereby the test provides accurate clinical findings and, predicts the risk of diseases, and the individual can take appropriate precautions. You may refer to the website below for more details: https://www.invitae.com/en/

## B. Information about the test

- **Test description:**
  This test is intended for use to screen individuals for hereditary conditions, allowing individuals to be more proactive about their health, which, if detected early, may have effective medical interventions and preventive measures. Conditions tested include, but are not limited to: (1) cancers (2) cardiovascular diseases (3) metabolic diseases.
- **Testing Fees:** This is an out-of-pocket testing, not covered by national health insurance, with a fee of NT$28,000 per person.
- **Sample Requirements & Instructions:** A 3ml whole blood sample is required, and fasting is not necessary before collection.
- **Applicable subjects:**
  1. General public, as a self-paid health check item.
  2. Individuals with habitual smoking, alcohol consumption, high stress, staying up late, being overweight, or lack of regular exercise.

3. People who prioritize their health.
4. Individuals seeking to prevent potential health problems by identifying their genetic risk factors.

## C. Procedure

Once you decide to undergo the **Invitae Genetic Health Screen**, we will arrange for a sample collection. After the sample is collected, a blood sample will be sent to the designated laboratory, Labcorp Genetics, Inc. Laboratory (located at 1400 16th Street, San Francisco, California 94103, USA), for genetic testing to identify inherited genetic variants. Once the results are processed, we will receive a report that includes your genetic testing results and potential risks.

Then you could review these results with your doctor or a healthcare professional, considering other factors like your medical history and other tests. Based on the findings, personalized recommendations can be provided to help you adjust your lifestyle and create a tailored health management plan.

## D. Sequencing methodology

Labcorp Genetics's test uses next-generation sequencing (NGS) to check for DNA mutations in the patient's blood. Confirmation of results is performed using additional methods such as Sanger sequencing, array comparative genomic hybridization (aCGH), multiplex ligation-dependent probe amplification (MLPA), and PacBio sequencing, depending on the type of mutation detected.

NGS involves four key steps: library preparation, library amplification, sequencing reaction, and data analysis. These steps help generate the full DNA sequence, which is then compared to a database to identify any potential genetic mutations.

## E. Potential Risks and Benefits

- **Benefits:**

Labcorp Genetics, Inc. Laboratory, accredited by the College of American Pathologists (CAP), has developed the Invitae Genetic Health Screen which assists doctors and patients in assessing health risks and developing effective preventive strategies for potential cancers and cardiovascular diseases.

- **Potential Risks:**

1. This assay achieves >99% analytical sensitivity and specificity, there remains a possibility of false positive or false negative results. False negative results may lead individuals to mistakenly believe they are entirely free from disease risk, potentially causing them to neglect subsequent monitoring and preventive measures, thereby increasing their risk of developing the disease. False positive results could lead individuals to mistakenly believe they are at risk, resulting in unnecessary additional testing or interventions.

   Due to limitations in assay chemistry and sample-to-sample variability, even if our clinical team strictly follow standard operating procedures, the possibility of failing to detect variations in specific genes remains. Labcorp Genetics has addressed these challenges through confirmation methods and ensures testing accuracy through peer-reviewed publications in reputable journals, ensuring the quality of their testing. To avoid false negative or false positive results, Labcorp Genetics, Inc. Laboratory has obtained accreditation from the College of American Pathologists (CAP) for its standard operating procedures and internal controls, including specimen collection, data verification, DNA extraction, NGS testing, advanced confirmation methods, data analysis and interpretation, and report release. This effectively helps prevent testing errors.
2. Blood sampling is a safe procedure. There are possibilities of pain at the injection site,

bruising, and dizziness. In rare cases, infection may occur. To minimize complications, it is recommended to apply pressure to the puncture site for at least 5 minutes, use heat pack for bruising, and rest if you feel dizzy. Seek immediate medical attention if you notice signs of infection.

3. In rare cases, test cannot be conducted due to insufficiency of the specimen or low quality of the specimen. With the consent of the doctor and the patient, a second set of specimen can be sent to Labcorp Genetics, Inc. Laboratory. The release time of the report can vary, based on the number of genes of the test and the mutations.

## F. Alternative options

The test is driven by a technology called next-generation sequencing (NGS), which provides a large volume of sequencing results quickly in a single assay. An alternative method is Sanger Sequencing, a traditional testing approach predating NGS. However, significant variations exist among laboratories regarding specific genetic analysis, including the extent of variant confirmation, sequencing of non-coding DNA, and the techniques used for detecting large genomic rearrangements (such as aCGH, quantitative PCR, and PacBio systems). However, NGS is currently the fastest and most accurate testing method available.

## G. Specimen Handling

- Labcorp Genetics, Inc. Laboratory uses and discloses Protected Health Information (PHI) under the Health Insurance Portability and Accountability Act (HIPAA) for purposes related to "treatment, payment, and healthcare operations."
- Labcorp Genetics, Inc. Laboratory discards specimens after 30 days. In unusual cases when testing takes longer than 30 days, the specimen will be retained until the report is delivered, which may be up to 60 days, or otherwise in accordance with Labcorp Genetics, Inc. Laboratory policy and regulatory requirements. In accordance with policies applicable to CLIA-certified laboratories and applicable laws, some specimens may be de-identified and retained beyond 60 days for laboratory process and quality improvement purposes.
- To ensure the quality and safety of the specimen during the collection and transportation process, our hospital will follow the sampling instructions provided by Almar Biotech Co., Ltd. Samples will be properly packaged according to storage and shipping specifications for international shipment to Labcorp Genetics, Inc. Laboratory.

## H. Limitations

Based on validation study results, this assay achieves >99% analytical sensitivity and specificity for single nucleotide variants, insertions and deletions <15bp in length, and exon-level deletions and duplications. This test detects insertions and deletions larger than 15bp but smaller than a full exon but sensitivity for these may be marginally reduced. Deletion/duplication analysis for this test determines copy number at a single exon resolution at virtually all targeted exons.

However, in rare situations, single-exon copy number events may not be analyzed due to inherent sequence properties or isolated reduction in data quality. Certain types of variants, such as structural rearrangements (e.g. inversions, gene conversion events, translocations, etc.) or variants embedded in sequence with complex architecture (e.g. short tandem repeats or segmental duplications), may not be detected.

Additionally, it may not be possible to fully resolve certain details about variants, such as mosaicism, phasing, or mapping ambiguity. Unless explicitly guaranteed, sequence changes in the promoter, non-coding exons, and other non-coding regions are not covered by this assay. In very rare cases the analyzed DNA may not represent that individual's constitutional genome, such as in the case of a circulating hematolymphoid neoplasm, bone marrow transplant, blood

transfusion, chimerism, culture artifact or maternal cell contamination.
Sequencing generally covers clinically important regions of each gene including coding exons, 10 to 20 base pairs of intronic sequence on either side of the coding exons, and select noncoding variants. Labcorp Genetics's deletion/duplication analysis determines copy number at a single exon resolution at virtually all targeted exons. Labcorp Genetics's next-generation sequencing panels generate an average depth of coverage of 350x per assay, meaning that 350 sequence reads are available, on average, at any DNA nucleotide position in the reportable range. Unless otherwise indicated (learn more from https://www.invitae.com/en/), all targeted regions are sequenced with ≥50x depth or are supplemented with additional analysis. Reads are aligned to a reference sequence (GRCh37), and sequence changes are identified and interpreted in the context of a single clinically relevant transcript. Enrichment and analysis focus on the coding sequence of the indicated transcripts, 20bp of flanking intronic sequence, and other specific genomic regions demonstrated to be causative of disease at the time of assay design. If you have any questions about the report, please consult a specialist physician.

## I. Informed Consent and Patient Confidentiality

In accordance with the "Personal Information Protection Act" and relevant regulations, since your sample needs to be sent to Labcorp Genetics, Inc. Laboratory for the **Invitae Genetic Health Screen**, the hospital will provide the personal information included in this consent form to Almar Biotech Co., Ltd. (the Taiwanese distributor of Labcorp Genetics, Inc. Laboratory) and Labcorp Genetics, Inc. Laboratory. We will respect your rights and only process and use your information within the necessary scope of the specified purpose, ensuring that all actions are reasonable and legitimate, and done in good faith.
I hereby confirm that I understand this consent aligns with the requirements of the Personal Information Protection Act and other relevant regulations, and it serves as a formal agreement allowing the hospital to collect, process, and use my personal information. I also have understood the purpose, benefits, and risks of the **Invitae Genetic Health Screen**, and has provided the following information：

1. I understood my **Invitae Genetic Health Screen** report will be included in my medical record. My doctor and Labcorp Genetics, Inc. Laboratory also kept the report in accordance with relevant laws. This information may be provided to individuals/organizations who are authorized to obtain my medical records, including but not limited to doctors and nursing staff directly involved in my care, employees of Labcorp Genetics, Inc. Laboratory, my current and future insurance underwriting companies, laws or court orders Other authorized persons, and other persons specially authorized by me or my authorized representative to obtain my medical records. Without my written authorization, no other person or entity may obtain or retain my **Invitae Genetic Health Screen** results.
2. Labcorp Genetics, Inc. Laboratory will retain the results for customer service consultation, discussion with the doctor who issued the medical order, and/or for the purpose of diagnosis or treatment as outlined in this consent form, with applicable fees, as necessary.
3. The information in this consent form will be used only once, and after the testing application is completed, the consent form will be retained for seven years. Almar Biotech Co., Ltd, during the process of shipping specimen to Labcorp Genetics, Inc. Laboratory, may handle my personal information including: Chinese name, English name, ID number, medical record number, gender, date of birth, and whether you have undergone an organ transplant. This information will be used only once. Under the Personal Data Protection Act and other applicable laws, you may (1) enquire and request for a review of your personal data; (2) request to make duplications of your personal data; (3) request to supplement or correct your personal data; (4) request to discontinue or restrict collection, processing, or use of your

personal data; (5) request to delete your personal data. Labcorp Genetics, Inc. Laboratory and Almar Biotech Co., Ltd reserves the right to reject any request based on operational reasons.

4. I understand that Labcorp Genetics, Inc. Laboratory, apart from what is necessary for its business operations, does not share de-identified data and samples with academic researchers, commercial entities, or other genetic testing laboratories. It also does not use them for research or commercial activities.

**I have understood and agree to proceed with the self-paid genetic testing items as outlined on the first page of the testing project's basic information. I also agree to authorize the Koo Foundation Sun Yat-Sen Cancer Center to send my specimen to Labcorp Genetics, Inc. Laboratory, which is accredited by the American College of Pathologists (CAP) and CLIA, for examination, and for Labcorp Genetics, Inc. Laboratory to release the test report. Labcorp Genetics, Inc. Laboratory is responsible for the quality of the testing process and the accuracy of the test report, and it strictly adheres to personal data protection laws and privacy protection regulations. It will not use my specimen-related data for purposes other than those necessary for registration, archival, business execution, or internal quality assurance/operations.**

*** Please read carefully before signing. This consent form must be fully completed and signed by you or your parent/guardian or legally authorized representative. ***

Signature of Doctor：_____ Date of Signature：_____

Signature of Consent Person (Patient/Agent)：_____

Patient's English Name (Last , First)：_____Phone：_____

Date of Signature：_____

*** If the person signing the consent form is not the Patient, please fill in the following information：**

Relationship to patient：_____ ID number or Passport Number：_____