INVITAE

PATH4WARD
Patient Access To Hope
for Rare Primary Immunodeficiencies

**ORDER ID**
For Invitae internal use only

# Requisition Form
**PATH4WARD TRF950-10**

Please use this form to submit an order for the **PATH4WARD** program, a testing program available for US patients that is sponsored by X4 Pharmaceuticals in partnership with Invitae Corporation - or order online at **Invitae.com/path4ward**. The objective of this program is to help facilitate the diagnosis of patients suspected of having a congenital neutropenic disorder or a primary immunodeficiency, including WHIM syndrome.

**INSTRUCTIONS: Review and indicate your order option in the Test Selection section and then complete all sections of this form. Required 'eligibility criteria' fields are denoted by an asterisk.**

## PATH4WARD Sponsored Testing Program Eligibility Criteria

### 1. PATH4WARD PROGRAM

For patients who meet the eligibility criteria below and wish to receive the program-specific genetic testing panels.

**REQUIRED ELIGIBILITY CRITERIA: The patient must have ALL THREE (3) of the following – check all appropriate selections below.**

**1**

**Suspicion of one or more of the following:***

- ◯ A congenital neutropenic disorder
- ◯ A primary immunodeficiency

+

**2**

**A history of the following:***

- ◯ Absolute neutrophil count (ANC) ≤ 1,000 on multiple occasions that is not related to drugs or chemotherapy or secondary to viral infection

+

**3**

**One or more of the following (complete all fields):***

| | YES | NO | UNKNOWN |
|---|---|---|---|
| Personal history of recurrent and/or severe infections | ◯ | ◯ | ◯ |
| Personal history of lymphopenia | ◯ | ◯ | ◯ |
| Personal history of hypogammaglobulinemia | ◯ | ◯ | ◯ |
| Personal history of refractory or recalcitrant warts | ◯ | ◯ | ◯ |
| Family history of recurrent and/or severe infections | ◯ | ◯ | ◯ |
| Family history of neutropenia | ◯ | ◯ | ◯ |

### 2. GENE-SPECIFIC FAMILY FOLLOW-UP TESTING

For relatives of program patients who received a Pathogenic/Likely Pathogenic result or Invitae-approved variants of uncertain significance (VUS) who want to receive gene specific family follow-up testing at no additional charge. Relatives do not need to meet the eligibility criteria listed above. Learn more at **www.invitae.com/family**.

## PATIENT INFORMATION

First name | MI | Last name

Date of birth (MM/DD/YYYY) | Biological sex ◯ M ◯ F | MRN (medical record number)

Ancestry ◯ Asian ◯ Black/African American ◯ White/Caucasian ◯ Ashkenazi Jewish ◯ Hispanic ◯ Native American ◯ Pacific Islander ◯ French Canadian ◯ Sephardic Jewish ◯ Mediterranean ◯ Other: _____

Phone | Email address (report access after clinician releases)

Address | City

State/Prov | ZIP/Postal code | Country

**Ship a kit to this patient** (optional) by faxing or emailing this completed form to Invitae

**Kit type:** ◯ Buccal swab kit ◯ Saliva kit

**Ship to:** ◯ Address above ◯ Alternate address: _____

## SPECIMEN INFORMATION

**Specimen type:** Blood (3-mL purple EDTA) **-OR-** Buccal Swabs (OCD-100, 2 devices) **-OR-** Saliva (Oragene™) **-OR-** DNA source: _____

*We are unable to accept blood/buccal/saliva from patients with:*
- *Allogeneic bone marrow transplants*
- *Blood transfusion <2 weeks prior to specimen collection*

**Specimen collection date (MM/DD/YYYY):** ☐☐ ☐☐ ☐☐☐☐

**Special cases:** ◯ History of/current hematologic malignancy in patient

**INVITAE PARTNER CODE** PATH

## CLINICIAN INFORMATION

Organization name

Phone | Fax

Address | City

State/Prov | ZIP/Postal code | Country

**Primary clinical contact name** (if different from ordering provider) | NPI

Primary clinical contact email address (for report access)

**Ordering provider** (select one ordering provider by marking the checkbox before the name)

| | Name | NPI | Email address (for report access) |
|---|---|---|---|
| ◯ | | | |
| ◯ | | | |
| ◯ | | | |
| ◯ | | | |
| ◯ | | | |
| ◯ | | | |

**Additional clinical or laboratory contacts (optional, to share access to order online)**

◯ **Share this order with the primary clinical contact's default clinical team, manage at invitae.com**

Name | Email address (for report access)

Name | Email address (for report access)

 

## CLINICAL HISTORY

### FAMILY HISTORY

**Is there a family history of disease for which the patient is being tested?** ◯ Yes ◯ No If yes, describe below and attach pedigree and/or clinical notes.

| Relative's relationship to this patient | Maternal or paternal | Diagnosed condition | Age at diagnosis | Relative's relationship to this patient | Maternal or paternal | Diagnosed condition | Age at diagnosis |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |

### PERSONAL HISTORY

**Is this patient affected or symptomatic?†** ◯ Yes ◯ No

Provide details in the required clinical history questions (if applicable).

*†Symptomatic means this patient has features or signs known or suspected to be related to the genetic testing being ordered and could include findings on physical examination, laboratory tests, or imaging.*

Has the patient ever had a pathologic finding of myelokathexis? ◯ Yes ◯ No ◯ Unknown

Indicate if the patient is on the following treatment(s):

◯ Ig ◯ G-CSF ◯ Other, specify: _____

How did you learn about PATH4WARD? ◯ X4 Pharma ◯ Invitae ◯ Independent search ◯ Colleague

## OPTIONAL - REQUESTED VARIANTS FOR THIS PATIENT'S REPORT, IF KNOWN

*To have the presence or absence of specific variants commented on in this patient's report, provide the details below. For gene-specific family follow-up see **Note** under Test Selection.*

**Was the proband (patient with variant) tested at Invitae?** ◯ Yes, Invitae Order ID: RQ# _____ ◯ No: Attach copy of lab results (*required*)

| **Variant(s)** *(e.g. GENE c.2200A>T (p.Thr734Ser) NM_00012345) If left blank, all variants identified in the proband will be commented on.* | | **This patient's relationship to proband:** |
|---|---|---|
| | | ◯ Parent ◯ Sibling ◯ Grandchild |
| | | ◯ Child ◯ Self ◯ Other: _____ |

## TEST SELECTION – Select test(s) from either option 1 or 2 below:

### 1. PATH4WARD PROGRAM

| Test code | Test name | # of genes | Gene list |
|---|---|---|---|
| ◯ 08104 | Invitae Inborn Errors of Immunity and Cytopenias Panel | 574 | ABCB7, ABCG5, ABCG8, ACAN, ACD, ACP5, ACTB, ACTN1, ADA, ADA2, ADAM17, ADAMTS13, ADAR, ADGRE2, AICDA, AIRE, AK2, AK7, ALAS2, ALG6, ALPK1, ANGPT1, ANKRD26, ANKZF1, ANO6, AP3B1, AP3D1, ARHGEF1, ARMC4, ARPC1B, ASAH1, ATM, ATP6AP1, ATR, B2M, BACH2, BCL10, BCL11B, BLM, BLNK, BLOC1S3, BLOC1S6, BRCA1, BRCA2, BRIP1, BTK, C11orf70, C15orf41, C17orf62, C1QA, C1QB, C1QC, C1S, C2, C3, C5, C6, C7, C8A, C8B, C9, CARD11, CARD14, CARD8, CARD9, CARMIL2, CASP10, CASP8, CBL, CCBE1, CCDC103, CCDC114, CCDC151, CCDC39, CCDC40, CCDC65, CCNO, CD19, CD247, CD27, CD3D, CD3E, CD3G, CD40, CD40LG, CD46, CD55, CD59, CD79A, CD79B, CD81, CD8A, CDAN1, CDC42, CDCA7, CEBPE, CEP164, CFAP298, CFB, CFD, CFH, CFI, CFP, CFTR, CHD7, CHEK2, CIB1, CIITA, CLCN7, CLPB, COL7A1, COPA, CORO1A, CR2, CSF2RA, CSF2RB, CSF3R, CTC1, CTLA4, CTPS1, CTSC, CXCR2, CXCR4, CYBA, CYBB, CYCS, CYP27A1, DBR1, DCLRE1C, DDX41, DDX58, DEF6, DGAT1, DGKE, DIAPH1, DKC1, DNAAF1, DNAAF2, DNAAF3, DNAAF4, DNAAF5, DNAH1, DNAH11, DNAH5, DNAH8, DNAH9, DNAI1, DNAI2, DNAJB13, DNAJC21, DNAL1, DNASE1L3, DNASE2, DNMT3B, DOCK2, DOCK8, DRC1, DSG1, DTNBP1, DUOX2, EFL1, EIF2AK3, ELANE, EPCAM, EPG5, ERBIN, ERCC2, ERCC3, ERCC4, ERCC6L2, ETV6, EXTL3, FADD, FANCA, FANCB, FANCC, FANCD2, FANCE, FANCF, FANCG, FANCI, FANCL, FANCM, FAS, FASLG, FAT4, FCHO1, FERMT1, FERMT3, FLI1, FNIP1, FOXI3, FOXN1, FOXP3, FPR1, G6PC, G6PC3, G6PD, GAS8, GATA1, GATA2, GFI1, GINS1, GLRX5, GP1BA, GP6, GP9, GTF2E2, GTF2H5, GUCY2C, HAX1, HELLS, HMOX1, HPS1, HPS3, HPS4, HPS5, HPS6, HTRA2, HYOU1, ICOS, ICOSLG, IFIH1, IFNAR1, IFNAR2, IFNGR1, IFNGR2, IGLL1, IKBKB, IKZF1, IL10, IL10RA, IL10RB, IL12B, IL12RB1, IL12RB2, IL17F, IL17RA, IL17RC, IL18BP, IL1RN, IL21, IL21R, IL23R, IL2RA, IL2RB, IL2RG, IL36RN, IL6R, IL6ST, IL7R, IRAK4, IRF2BP2, IRF4, IRF7, IRF8, IRF9, ISG15, ITCH, ITGA2B, ITGAM, ITGB2, ITGB3, ITK, JAGN1, JAK1, JAK2, JAK3, KAT6A, KDM1A, KDM6A, KIF23, KIT, KLF1, KLHDC8B, KMT2A, KMT2D, LAMTOR2, LARS2, LAT, LCK, LCT, LIG1, LIG4, LIPA, LPIN2, LRBA, LRRC56, LRRC6, LRRC8A, LYN, LYST, MAD2L2, MAGT1, MALT1, MAP3K14, MBD4, MCIDAS, MCM4, MECOM, MEFV, MKL1, MLH1, MOGS, MPL, MPLKIP, MS4A1, MSH2, MSH6, MSN, MTHFD1, MVK, MYD88, MYH9, MYO5B, MYSM1, NAF1, NBAS, NBN, NCF2, NCF4, NCKAP1L, NCSTN, NDUFB11, NEUROG3, NF1, NFAT5, NFE2L2, NFKB1, NFKB2, NFKBIA, NHEJ1, NHP2, NLRC4, NLRP1, NLRP12, NLRP3, NME8, NOD2, NOP10, NOTCH2, NPAT, NSMCE3, OAS1, OFD1, ORAI1, OSTM1, OTULIN, P2RY12, PALB2, PARN, PAX1, PEPD, PGM3, PIH1D3, PIK3CD, PIK3R1, PLA2G4A, PLCG2, PLG, PLVAP, PMM2, PMS2, PNLIP, PNP, POLA1, POLD1, POLD2, POLE, POLE2, POLR3A, POLR3F, POMP, POT1, PRF1, PRKCD, PRKDC, PSENEN, PSMA3, PSMB4, PSMB8, PSMG2, PSTPIP1, PTEN, PTPRC, PUS1, RAB27A, RAC2, RAD51, RAD51C, RAG1, RAG2, RANBP2, RASGRP1, RASGRP2, RBCK1, RBM8A, RECQL4, REL, RELA, RELB, RFWD3, RFX5, RFXANK, RFXAP, RHOH, RIPK1, RMRP, RNASEH2A, RNASEH2B, RNASEH2C, RNF113A, RNF168, RNF31, RNU4ATAC, RORC, RPGR, RPL11, RPL15, RPL18, RPL19, RPL23, RPL26, RPL27, RPL31, RPL35, RPL35A, RPL5, RPL9, RPS10, RPS15A, RPS19, RPS24, RPS26, RPS27, RPS28, RPS29, RPS7, RPSA, RSPH1, RSPH3, RSPH4A, RSPH9, RTEL1, RUNX1, SAMD9, SAMD9L, SAMHD1, SAR1B, SBF2, SCO2, SEC23B, SEC61A1, SEMA3E, SERPING1, SGPL1, SH2D1A, SH3BP2, SH3KBP1, SI, SIAE, SKIV2L, SLC10A2, SLC19A2, SLC25A38, SLC26A3, SLC29A3, SLC35C1, SLC37A4, SLC39A7, SLC46A1, SLC51B, SLC5A1, SLC7A7, SLC9A3, SLX4, SMARCAL1, SMARCD2, SNX10, SP110, SPAG1, SPINK5, SPINT2, SPPL2A, SRP54, SRP72, STAT1, STAT2, STAT3, STAT4, STAT5B, STIM1, STK4, STN1, STX11, STX3, STXBP2, TAOK2, TAP1, TAP2, TAPBP, TAZ, TBX1, TBXA2R, TCF3, TCIRG1, TCN2, TERC, TERF2IP, TERT, TET2, TFRC, TGFB1, TGFBR1, TGFBR2, THBD, THPO, TICAM1, TIMM50, TINF2, TLR3, TLR7, TMC6, TMC8, TMEM173, TMPRSS15, TNFAIP3, TNFRSF11A, TNFRSF13B, TNFRSF13C, TNFRSF1A, TNFRSF4, TNFRSF6B, TNFRSF9, TNFSF11, TNFSF12, TONSL, TOP2B, TP53, TP63, TPP2, TRAF3, TRAF3IP2, TREX1, TRNT1, TSR2, TTC37, TTC7A, TUBB1, TYK2, UBE2T, UNC13D, UNC45A, UNC93B1, UNG, USB1, VAV1, VIPAS39, VPS13B, VPS33B, VPS45, WAS, WDR1, WIPF1, WNT2B, WRAP53, XIAP, XRCC2, YARS2, ZAP70, ZBTB24, ZCCHC8, ZMYND10, ZNF341 |

### 2. GENE-SPECIFIC FAMILY FOLLOW-UP TESTING *For relatives of a program patient ('proband') who received a Pathogenic/Likely Pathogenic result or approved VUS.*

| ◯ Family follow-up testing for Proband's Invitae Order ID: RQ#_____ | **This patient's relationship to proband:** ◯ Parent ◯ Sibling ◯ Grandchild ◯ Child ◯ Other: _____ | **Gene(s) to be tested in this patient:** |
|---|---|---|

***NOTE**: The presence or absence of all variants identified in the proband will be reported for this patient unless a limited selection is specified in the Requested Variants section above.*

*Invitae continually updates its panels based on the most recent evidence. If an order is placed using an outdated test requisition form, Invitae reserves the right to upgrade ordered tests to their current versions. Test IDs containing add-on codes will include the original panel as well as the add-on.*

By signing this form, the medical professional acknowledges that the patient/family member authorized to make decisions for the patient has been supplied information regarding and consented to undergo genetic testing, substantially as set forth in Invitae's Informed Consent for Genetic Testing (www.invitae.com/forms). The medical professional will retain evidence that the patient consented to genetic testing. The patient has been informed that Invitae may notify them of clinical updates related to genetic test results (in consultation with the ordering medical professional as indicated) and has been informed that deidentified (also referred to as pseudonymized) patient data may be used and shared with third parties in connection with the Program, for research and commercial purposes. For orders originating outside the United States, the Patient has been informed that their personal information and specimen will be transferred to and processed in the United States. The medical professional warrants that (i) he/she will not seek reimbursement for this no-charge test from any third party, including but not limited to government healthcare programs; (ii) participation in the Program will not influence his/her medical decisions; (iii) he/she is not obligated to purchase or prescribe any product or service offered by a sponsor of the Program; (iv) he/she is not obligated to participate in or to encourage patients to participate in any clinical trial or other research program conducted by a sponsor; and (v) he/she will participate in the Program in accordance with applicable laws. The medical professional consents to the sharing of organization and clinician contact information with third parties, including commercial organizations, who may contact the medical professional directly in connection with the Program. A list of third party partners will be provided upon request. I attest that I am authorized under applicable law to order this test.

| **Medical professional signature (required)** | **Date (MM/DD/YYYY)** |
|---|---|
| | |

  