

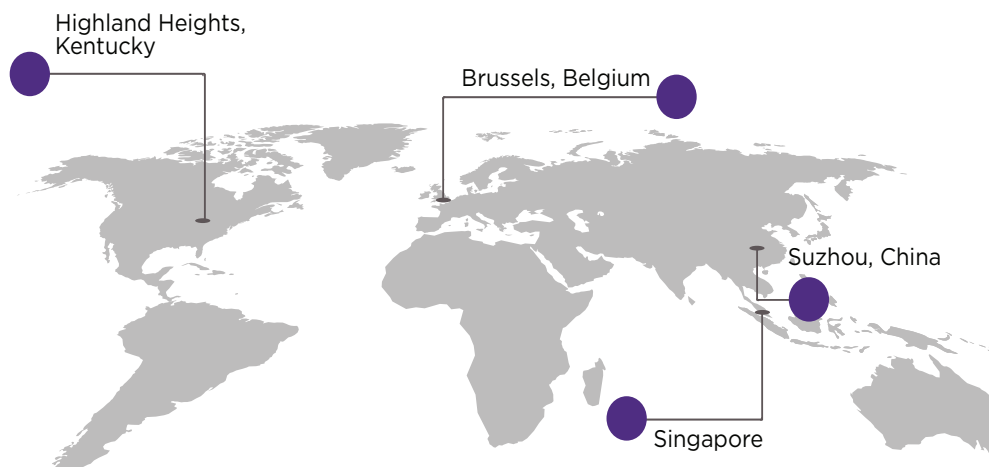
Central Lab Overview

High-quality data and service without compromise

PPD® Laboratory Services

Our **Central Lab** is dedicated to helping our customers make more informed **decisions faster** about their clinical trials through our award winning drug development database solution, globally standardized clinical testing and centralized data visibility.

We support customers' programs where they need us, and when they need and with four wholly owned laboratories in the U.S., Europe, Singapore and China, which maintain a robust roster of accreditations.



Central lab services to meet your complex and time-sensitive testing requirements

- Anatomic pathology*
- Autoimmune, inflammatory and allergy testing
- Cell-based assays and flow cytometry
- Chemistry and immunoassays
- Chromatography and mass spectroscopy
- Genomics and molecular assays
- Hematology and coagulation
- Microbiology
- Protein analysis
- Urinalysis

*Provided through our strategic alliance with NeoGenomics

Preclarus® lab solutions to optimize and streamline your clinical trial

- **Central lab database:** Our proprietary and award-winning enterprise and information management system is purposefully designed to manage every aspect of a central lab clinical trial
- **Investigator site portal:** Secure clinical site access to manage study activities (e.g. sample/subject registration, kit supply ordering and query resolution) and provides 24/7 access to real time data for investigators
- **Lab data portal:** Secure access for customer project teams to real-time, studywide data including the ability to visualize, organize search and manage lab data
- **3PL (third-party lab) portal:** Allows customers to easily track their specimens and results at partner labs
- **PM (project management) dashboards:** Real-time access for PPD project teams to program, region, site level data (labs results, quality data, budget)

We have been integrating lab and clinical data in near real time for more than 10 years and have very short study start up timelines.

Discipline/Methodology	Example Biomarkers/Assays		Key Instrumentation/ Platform
Anatomic Pathology	<ul style="list-style-type: none"> Histological services Grossing, embedding, microtomy and macrodissection Immunohistochemistry (IHC) 	<ul style="list-style-type: none"> H&E, special stains, PAP stain and IHC stains Cytology processing Digitization of prepared specimens Sample interpretive reporting customized to meet client requirements 	<ul style="list-style-type: none"> Thermo Scientific™ HistoStar™ Embedding Workstation Leica® RM2245 and Histocore Multicut Microtome Leica® HistoCore BioCut Microtome Leica® ST5020 Multistainer Ventana® BenchMark ULTRA Aperio® AT2 Digital pathology scanner Leica® ASP300S Tissue processor Leica® ASP6025S Tissue processor Histologic ThinPrep 5000 Processor
Autoimmune/ Inflammatory/Allergy	<ul style="list-style-type: none"> Rheumatoid factor Autoantibodies Complement Interferon 	<ul style="list-style-type: none"> Free light chains Interleukins Serum IgE 	<ul style="list-style-type: none"> Thermo Scientific Phadia® 1000 Siemens Healthcare BN™ II DiaSorin Liaison XL
Cell-based Assays/Flow Cytometry	<ul style="list-style-type: none"> Immune response Cell surface assays CD 3, 4, 8, 25, 19, 20, 39, 127, etc. Cell enumeration TBNK panel MDSC - myeloid derived suppressor cells T-reg assays 	<ul style="list-style-type: none"> CD4 Receptor Occupancy and Density Magnetic cell sorting, enrichment and purity assessment for CD3+, CD14+, CD15+, CD19+ and CD34+ in whole blood and bone marrow. PNH Mixed Leukocytes Plus CCR3 	<ul style="list-style-type: none"> BD FACSLytic BD FACSDuet BD FACSCanto™ II
Chemistry/Immunoassay	<ul style="list-style-type: none"> Bone markers Diabetes Toxicology Endocrinology Metabolic Infectious diseases 	<ul style="list-style-type: none"> Cardiac markers Drugs of abuse Oncology Routine chemistry Liver function COVID-19 antibody testing 	<ul style="list-style-type: none"> Roche Cobas® 6000 and 8000 ADVIA Centaur XP Immunoassay System DiaSorin Liaison® XL
Chromatography/Mass Spectrometry	<ul style="list-style-type: none"> Amino acids Nutritional (vitamins) 	<ul style="list-style-type: none"> Diabetes (hemaglobin A1C) Bone markers (vitamin D) 	<ul style="list-style-type: none"> Waters Acquity Sciex 4000™, 5000™, 6500™ triple quadrupoles Waters Xevo® Tosoh G8 HPLC Analyzer

Discipline/Methodology	Example Biomarkers/Assays		Key Instrumentation/ Platform
Genomics/Molecular	<ul style="list-style-type: none"> • Sanger Sequencing • 16S rRNA Sequencing • SARS-CoV-2 RT-PCR in Swab and Saliva • Viral Load Assay - HBV, HCV, HIV-1 and CMV • Sexually Transmitted Infections and Antimicrobial Resistance Genes 	<ul style="list-style-type: none"> • Respiratory Tract Infections • Single Nucleotide Polymorphism (SNP) genotyping • RNA/DNA (extraction, quantitation, purity, etc.) • Next Generation Sequencing, Targeted and Whole Genome 	<ul style="list-style-type: none"> • Applied Biosystems® 3500 XL • Applied Biosystems® 7500 Fast Dx and QuantStudio™ Dx • QuantStudio 12K Flex Real Time PCR System • KingFisher™ Flex Purification System • Illumina MiSeq Dx • BioFire® Respiratory (RP2.1) Panel • Abbott m2000 RealTime System • Abbott Alinity m System • Roche cobas® Ampliprep/ Taqman® • Roche cobas® 4800 System • Roche cobas® 6800 System • Roche Lightcycler 2.0 • Qiagen QIAasympphony • Quidel® Solana® • Thermo Scientific NanoDrop™ 2000 • Thermo Scientific NanoDrop™ 8000
Hematology/Coagulation	<ul style="list-style-type: none"> • Clotting time studies • D-dimer 	<ul style="list-style-type: none"> • Factor evaluations • CBC and differential 	<ul style="list-style-type: none"> • IL ACL Top® 500 • Sysmex XN Series
Microbiology	<ul style="list-style-type: none"> • Bacteriology 		<ul style="list-style-type: none"> • Bruker MALDI-TOF • Sensititre Vizion system
Protein Analysis	<ul style="list-style-type: none"> • Lipoproteins • C-reactive protein • HDL, LDL, VLDL and ratios 	<ul style="list-style-type: none"> • Protein electrophoresis • Triglycerides 	<ul style="list-style-type: none"> • Roche Cobas® 8000
Sample Processing	<ul style="list-style-type: none"> • PBMC Isolations • Granulocyte Enrichment • Leukocyte Isolations 	<ul style="list-style-type: none"> • Zellsafe Chip Preparation • Customized Aliquoting 	<ul style="list-style-type: none"> • NC-202
Urinalysis	<ul style="list-style-type: none"> • Automated particle recognition (casts, crystals, cells etc.) 	<ul style="list-style-type: none"> • Dipstick testing (ketone, protein, bilirubin etc.) 	<ul style="list-style-type: none"> • Iris® iQ200™ and iChem® Velocity™