

Driving a New Era in Cancer Diagnostics

Network of Advanced Center for Cancer
Diagnostics and Research (ACCDR) Labs





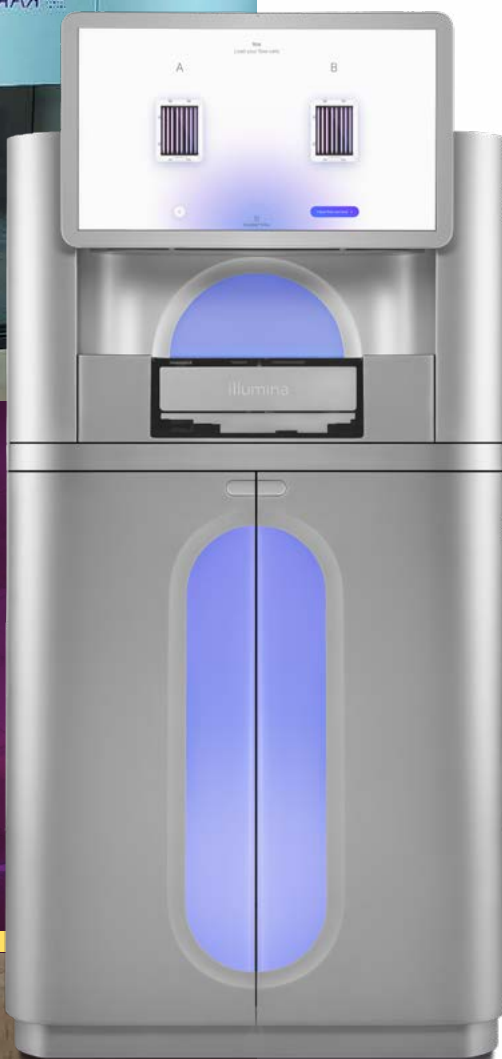
Transforming Cancer Care Through Precision Diagnostics

Karkinos Healthcare is revolutionising cancer diagnostics with a patient-centric, technology-driven approach. By integrating cutting-edge diagnostics, genomics, next-generation sequencing, multiomics, AI-driven analytics, biobanking, and digital pathology, we enable early detection, personalised treatment, and advanced research, delivering improved patient outcomes.

The Critical Need for Advanced Diagnostics

Cancer remains one of the leading causes of death in India, with over 1.16 million new cases reported each year. However, the current landscape of cancer care faces several critical challenges. A staggering 70% of cases are diagnosed at advanced stages, significantly impacting survival rates. India also experiences a 20% higher mortality rate compared to countries with a high Human Development Index (HDI). On average, 10% of cancer patients carry an inherited genetic variant that predisposes them to the disease.

Additionally, patients often face delays of over 12 weeks in diagnosis and treatment due to overburdened healthcare centres. Only 20% of the population can afford treatment, largely because of high costs and inadequate insurance coverage. For rural patients, accessing tertiary cancer centres can require 8–10 hours of travel. To meet the growing demand for cancer care, India needs 35% more oncology beds, four times more linear accelerators, and six times more trained radiotherapy technicians. There is an urgent need to revolutionise the diagnostic process and improve accessibility, affordability, and infrastructure to save lives and bridge these critical gaps.



Nerve Centre for Precision Oncology - Advanced Center for Cancer Diagnostics and Research (ACCDR)

Our Advanced Centers for Cancer Diagnostics and Research are equipped with latest technologies, and a top-tier team, ensuring precise and timely cancer diagnosis.

Building Blocks for ACCDR

The ACCDR is a next-generation lab, established over an area of 25,000 sq. feet in Mumbai. It is a one-of-a-kind, comprehensive, oncology-focused lab that offers histopathology, immunohistochemistry, and molecular diagnostics. Karkinos Healthcare's contribution through amalgamation of data from screening, pathology, imaging, molecular analysis, and digital scanning helps build robust datasets that can revolutionise cancer treatment delivery in India. The vision of next-generation lab is to be a world-class referral lab transforming patient care and research.



Our Pillars of Excellence in Cancer Diagnostics

Diagnostic labs are a cornerstone of cancer care. It is important that a patient receives appropriate diagnosis to undergo the right treatment. Today, labs have moved beyond diagnosis to provide evidence-based precision medicine through tests that help oncologists determine the most effective therapy for each patient. Due to significant genetic diversity within the Indian population, existing genome-level interventions may not be readily applicable. Hence, Karkinos Healthcare believes it is essential to establish next-generation labs that cater to the needs of society, all under one aegis of a seamless oncology platform.



01 Sequencing at scale



02 Comprehensive gene panels and delivery



03 Clinical competence



04 Technology-led



05 Logistics and turnaround time



06 Scientific and academic rigour

Quality Assurance and Accreditations

- » **CAP-Accreditation** ensures adherence to globally accepted standards
- » **NABL Certification** signifies quality and competence in diagnostics
- » **ISO Standards Compliance** guarantees excellence in testing services
- » **Regular External Quality Testing (EQA) and CAP Proficiency Testing (CAP-PT)** maintains high precision



NABL



COLLEGE of AMERICAN PATHOLOGISTS

01

Sequencing at Scale: Powering Discovery and Accessibility

- » **Significant sequencing capacity:** Positioned at the forefront of genomic diagnostics and research in India
- » **Pioneering platforms:** Utilising advanced sequencers, including:
 - Three NovaSeq X Plus & Two NovaSeq 6000 NGS systems
 - India's first PacBio Revio - ultra-long read NGS System
- » **Comprehensive service enablement:** This scale allows for extensive services like Whole Genome Sequencing (WGS) for deep genetic insights

02a

Comprehensive Gene Panels: Tailored Insights for Every Need

- » **Comprehensive diagnostics hub:** Central lab for Karkinos' global oncology network, offering a full spectrum of cancer diagnostic services
- » **Extensive test menu:** Provides Histopathology, Immunohistochemistry (IHC), and over 70 distinct molecular tests
- » **Advanced molecular diagnostics:**
 - Next-Generation Sequencing (NGS) for personalised treatment
 - Liquid biopsy for non-invasive detection
 - PCR-based testing for genetic mutations
 - Mutation analysis for targeted therapy selection
 - High-throughput HPV testing
- » **State-of-the-art Histopathology and IHC:**
 - Complete range of Histopathology services
 - Digital pathology with AI-assisted remote diagnosis
 - Immunohistochemistry (IHC) for biomarker detection
 - Fluorescence In Situ Hybridisation (FISH) for genetic abnormalities
 - Special stains for enhanced tissue analysis
- » **Custom and focused panels:**
 - Development of custom gene panels (KFlex)
 - Focus on India-specific cancer genomic panels
- » **Continuously evolving:** The test menu is constantly expanded based on latest research, guidelines, and technology



02b

Integrated Delivery: Actionable Insights and Support

- » **Anchor point for Virtual Molecular and Tumour Boards**, providing personalised and precision oncology care based on tumour genomics
- » **For clinicians:** Molecular insights, Virtual Tumour Board access
- » **For hospitals:** Comprehensive test menu, from tissue to molecular diagnosis under one roof
- » **For independent laboratories:** Reference ancillary testing services
- » **Integration with discovery platform:** AI/ML analytics integration for predictive modelling; digital pathology network enabling remote consultation; real-time data analysis for dynamic treatment recommendations; clinical decision support leveraging big data insights

03

Clinical Competence: Expertise Guiding Precision

- » **Expert consultation:** The team is composed of board-certified geneticists and molecular biologists
- » **Genetic counsellor:** Availability of pre- and post-test genetic counselling
- » **Clinical relevance:** We provide testing curated for maximum clinical relevance, including genes with the highest level of evidence
- » **Integrated cancer diagnostic services:** A multidisciplinary team — ranging from clinicians to scientists and technologists — works closely to solve problems faced by patients and other clinicians



04

Technology-Led: Advancing Diagnostics with Innovation

Karkinos offers world-class labs equipped with cutting-edge technology for molecular diagnostics. We are among the pioneers in bringing advanced technology to India, with the country's first PacBio Revio NGS platform installed at the Karkinos ACCDR lab in Mumbai. This ultra-long read sequencer enhances our capabilities in oncology diagnosis and research.

For the first time in India — and the third globally — we have introduced latest addition to our equipment - NovaSeq X PLUS by Illumina Inc.

Core Infrastructure

- » Next-Generation Sequencing (NGS) platforms
- » Advanced molecular testing equipment
- » Automated Immunohistochemistry (IHC) processors
- » High-throughput sample processing systems
- » Digital pathology systems for AI-assisted analysis

05

Efficiency Delivered: Optimised Logistics and Turnaround Time

- » **Rapid turnaround time:** We provide increased efficiency, best-in-the-industry turnaround times, and cost-efficiency through latest technology and automation
- » **Logistics support** delivered right to your doorstep



KARKINOS Workflow



Sample collection from partner hospitals and labs

Sample collection centres, strategically placed across our Distributed Cancer Care Network (DCCN) for easy access



Transportation via temperature-controlled logistics



Processing using high-throughput automated systems



Analysis leveraging AI-powered diagnostic tools



Reporting through digital platforms for rapid results



06a

Scientific Rigour: Research-Driven Innovation

- » **Research-first philosophy:** Dedicated to creating future solutions through frugal innovation
- » **Pioneering genomics research:**
 - Bharat Cancer Genome Atlas initiative
 - Development of Karkinos gene panels for the Indian population
 - Conducting population-specific studies and biomarker discovery
 - Utilising Whole Genome Sequencing (WGS) for comprehensive profiling
 - Providing precision medicine support to personalise treatment
 - Conducting real-world evidence studies for diverse patient cohorts
- » **State-of-the-art biobanking (ISO 20387: 2018):**
 - Collecting diverse samples (fresh tissue, blood, saliva, buccal smears, stool)
 - Ensuring long-term preservation under optimal conditions
 - Supporting clinical development of assays and large-scale prospective studies
- » **Facilitating translational research:** Collaborating with renowned institutions to accelerate patient-centric cancer technologies and assay validation
- » **Strategic partnerships:** Leveraging collaborations, such as with SOPHiA GENETICS, to strengthen research, expand genomic access, and support advanced diagnostics

06b

Academic Excellence

- » **Commitment to knowledge sharing:** Collaborating with and conducting educational programs for oncology fraternity and the broader healthcare ecosystem
- » **Educational platforms:**
 - **Knowmics:** Cutting-edge genomics education for professionals and practitioners
 - **geKnowmics:** Awareness and discussion platform for genomics in public health
- » **Comprehensive training offerings:**
 - Specialised programs in next-generation laboratory medicine
 - Short courses focused on clinical interpretation
 - Internship opportunities
 - Workshops, scientific webinars, conferences, and panel discussions



Our Network

Karkinos Healthcare operates an extensive diagnostic network across India, ensuring widespread access to high-quality cancer diagnostics.

- » **Central laboratory:** Hub for advanced testing and genomic research
- » **Sample collection centres:** Strategically located for easy access
- » **Partner facilities:** Collaborations with hospitals and research institutions
- » **Coverage area:** Pan-India presence with a focus on decentralised care

This network enhances timely diagnosis and ensures seamless patient navigation across our distributed cancer care ecosystem.



Empowering Healthcare Decisions through our ACCDR Services

For Hospitals

- » Comprehensive Molecular Test Menu
- » Digital Pathology Integration
- » 24/7 Expert Consultation
- » Custom Solutions
- » Quality Assured Results
- » Hospital Laboratory Management (HLM)

For Independent Laboratories

- » Reference Testing Services
- » Technical Support
- » Quality Control Programs
- » Training and Education
- » Collaborative Research

For Clinicians

- » Rapid Turnaround Time
- » Expert Consultation
- » Research Collaboration
- » Virtual Tumour Board Access
- » Molecular Insights

For Corporate Partners

- » Employee Wellness Programmes
- » Cancer Screening Services
- » Regular Health Assessments
- » Customised Healthcare Packages
- » Prevention Programmes

For Research Institutions

- » Biobanking Access
- » Collaborative Studies
- » Data Sharing
- » Technical Expertise
- » Publication Support

Your Oncology Clinical Trial Partner

- » **Comprehensive oncology trial support:** Offers significant advantages for global oncology clinical trials, specialising in patient matching, faster enrollment, with decentralised delivery, site management, regulatory, CRO and Key Opinion Leader (KOL) advisory services
- » **Extensive network and data:** Leverages a Distributed Cancer Care Network (DCCN) encompassing over 85 hospital sites across India connected by a technology platform, and an elite panel of oncologists along with access to disease specific cohorts
- » **Laboratory services with state-of-the-art infrastructure:** Equipped with world-class sequencing technology, including NovoSeq 6000s/X Plus, PacBio Revio, within a CAP environment, in addition to cell based assays, flow cytometry, pharmacokinetic testing, immunoassay and biomarker testing, among others, significant sequencing capacity (approximately 30% of India's total private capacity), and over 120,000 sq. ft. of precision oncology diagnostics laboratories
- » **Broad patient access:** Utilises a diverse ISO certified cancer patient database with longitudinal records, avenues for patient identification and engagement to execute large scale prospective and retrospective clinical trials including corporate and community outreach, cancer screening camps, advanced risk-assessment tools, and partnerships with academia and industry
- » **Flexible end-to-end service portfolio:** Provides adaptable support for both clinical trials and real-world evidence studies, with GCP trained teams, offering comprehensive services ranging from protocol/study design, regulatory submissions, IND enablement, CRO services supported by decentralised trial capabilities (telehealth, near-home access) and 21 CFR compliant data management solutions, strategic alliances, post marketing support and central laboratory logistics
- » **Expanding beyond oncology:** Rare and rare Orphan Diseases, cardiovascular, immunology, anti-infective and vaccine studies



Our Commitment at ACCDR

Comprehensive Diagnostic and Research Capabilities: Delivered through the state-of-the-art Advanced Center for Cancer Diagnostics and Research (ACCDR) Labs

Advanced Research Capabilities

- » **Extensive Next-Generation Sequencing (NGS):** For research and clinical applications, including WGS, WES, targeted panels (organ-specific, hereditary, guideline-based), single-gene tests, and custom panels (KFlex), utilising significant capacity and multiple advanced platforms (Illumina, PacBio, Thermo Fisher, Sanger)
- » **Multi-omics expertise:** Services extending beyond genomics to include Transcriptomics (bulk and single-cell RNA) and Proteomics (biomarker discovery, phosphoproteomics)
- » **Integrated proteogenomics:** Combining multi-omics data to uncover novel biological insights specific to cancer
- » **Advanced bioinformatics:** In-house pipelines developed for complex data analysis and visualisation, leveraging AI and machine learning
- » **Population-specific focus:** Research dedicated to understanding the unique genomic landscape of cancers in India (e.g., Bharat Cancer Genome Atlas – BCGA)

Assay Development and Diagnostic Offerings

- » **Comprehensive diagnostic menu:** Offering over 70 distinct diagnostic tests
- » **Key molecular assays:** Developing crucial assays for precision medicine, such as high-throughput HPV testing and liquid biopsies
- » **Custom assay building:** Capabilities include custom gene panels (KFlex) with a focus on India-specific cancer genomic panels
- » **Full-spectrum pathology services:** Including standard Histopathology, IHC, advanced molecular pathology, digital pathology solutions, and intra-operative frozen sections
- » **Translational research facilitation:** Supporting investigators and partners to accelerate patient-centric cancer technologies through collaboration and validation

Karkinos Healthcare ACCCR – Guided by The Experts

Scientific and Technology Leadership

- » **Dr. Sridhar Sivasubbu** - Chief Diagnostics & Research Officer and Laboratory Director
- » **Dr. Vinod Scaria** - Chief Data Officer
- » **Mr. Raja Sekhar Kommu** - Chief Technology Officer

Medical Leadership

- » **Dr. R. Sankaranarayanan** - Global expert in cancer prevention, consistently recognised among the top 2% of scientists of Indian origin in oncology by Stanford University
- » **Dr. Moni Abraham Kuriakose** - Co-founder and Medical Director, Karkinos Healthcare, and Visiting Professor at Roswell Park Cancer Institute and New York University
- » **Dr. K. Ramadas** - Director, Clinical Oncology, Karkinos Healthcare, and former Head of the Department of Radiation Oncology at the Regional Cancer Centre, Thiruvananthapuram
- » **Dr. G.K. Rath** - Senior Medical Advisor, Karkinos Healthcare, and former Head of the Oncology Division at AIIMS
- » **Dr. Amit Verma** - Director - Precision Oncology, Clinical Services

Laboratory Operations and Clinical Team

- » **Dr. Amrita Panday** - Head, Histopathology & Molecular Pathology
- » **Dr. Rahul Bhojar** - Head, Molecular Oncology
- » **Dr. Piyush Pathak** - Head, Clinical Reporting
- » **Dr. Shraddha More** - Consultant, Histopathology
- » **Dr. Bani Jolly** - Sr. Scientist, Bioinformatics
- » **Dr. Aarti Darra** - Sr. Scientist, Bioinformatics
- » **Dr. Jagadish Kudkuli** - Head, Molecular Infectious Lab
- » **Dr. Paras Seghal** - Sr. Scientist, Molecular Biology
- » **Ms. Ashwini Patkar** - Vice President - Lab Operations & Compliance
- » **Dr. Jyoti Bajpai Dikshit** - Head of Genetic Counselling

About Karkinos Healthcare

Karkinos Healthcare, a step-down subsidiary of Reliance Industries Limited, is a technology-led, purpose-driven oncology platform, enabling discovery through the delivery of care. Using a hub-and-spoke model, Karkinos has pioneered the Distributed Cancer Care Model that addresses cancer prevention, early detection, diagnostics, care delivery, and research across the patient care continuum.

Through a network of world-class advanced molecular diagnostic and research labs, collaborations with leading academic and healthcare institutions in India and abroad, and a technology-led platform approach, Karkinos delivers quality cancer care in India and beyond. Karkinos is on a mission to provide end-to-end cancer care solutions, ensuring that no person is deprived of care due to lack of access or affordability.



We are a genome generation, and at Karkinos, we offer comprehensive genomic solutions tailored to your specific needs. From cutting-edge sequencing to in-depth analysis and expert consultation, we provide the complete package for precision oncology. We invite you to partner with Karkinos and unlock the full potential of genomic information.



Dr. Sridhar Sivasubbu

Our 'Discovery through Delivery' Approach with Advanced Diagnostics, Genomics & Informatics Engine

- » Patients Served: approx. **100K**
- » Physician Network: **800+**
- » Hospital Partnerships: **200+**
- » Sequencing Leadership: **>30%** of India's private sequencing capacity
- » Flagship NGS infrastructure with a leading-edge fleet of sequencers, including multiple Illumina NovaSeq X Plus units, Illumina NovaSeq 6000 units, and PacBio long-read sequencers
- » K-Cloud powered genome informatics and enhanced clinical interpretation capabilities in-house
- » Industry platform proficiency in analysis and clinical reporting using validated, industry-standard platforms
- » Dynamic test innovation with new genomic test panels added from time to time
- » Dedicated to empowering the medical fraternity through 'Knowmics' – a scalable genomic education programme for clinicians



Advanced Center for Cancer Diagnostics and Research Labs



Facility Locations:

- Navi Mumbai, Maharashtra
- Kochi, Kerala
- Guwahati, Assam
- Lucknow, Uttar Pradesh
- Patna, Bihar
- Chennai, Tamil Nadu

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