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TATA CONSULTANCY SERVICES
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Genomics Research Services

Life Sciences & Healthcare

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With the shift towards personalized medicine, the focus of life sciences research is to capture, correlate and connect a patient's molecular level information with diseases and treatments. Multi-omics, an approach that analyzes combination of genomic, meta-genomic proteomic, epigenomic, phenomic, and omics data to discover new cures — is fast gaining ground. Life sciences organizations and research institutions are in the process of compiling genomic sequences and detailed molecular information for millions of people to improve wellness and health outcomes.

Tata Consultancy Services (TCS') Genomics Research Services enables life sciences organizations to derive actionable insights by providing state of the art sequencing and analysis services enabled by TCS proprietary tools, algorithms and platforms. TCS can help design and execute genomics studies that can lead to improved understanding of underlying biology, identification of new targets and novel biomarkers which in turn lead to personalize therapies and patient stratification for clinical research or treatment selection.

Overview

While significant improvements in DNA sequencing technologies are leading to a generation of vast amounts of genomic data, clinical interpretation of such data like linking of DNA sequence anomalies or variations to the phenotypes and clinical conditions, still remains a tremendous challenge. The genome interpretation process, is encumbered by the many steps required to assemble raw sequences, perform quality assurance checks, create DNA annotations by integrating information from a multitude of sources and prioritize variants relevant to the phenotypes of interest.

Our focus is to use comprehensive data integration and analytics techniques to accelerate genomic interpretation in drug discovery and clinical research efforts. Our services ensure that sequencing experiments meet acceptable quality benchmarks and data quality can be traced back to individual lab steps. Our bioinformatics pipeline for the automated execution of genome as well as metagenome sequence analysis, includes a combination of open source and proprietary algorithms deployed on our in-house or client software platform.

Our Solution

TCS' Genomics Research Services include:

- Strategy and design - Option analysis, study planning, protocol development and execution methodologies
- Sequencing services - Nucleic acid extraction, library preparation (including custom library design) and sequencing
- Genome analysis - High quality reproducible genome data analysis with biologically meaningful interpretation
- Marker identification - Multivariate, model - based and data mining approaches for potential biomarker candidates

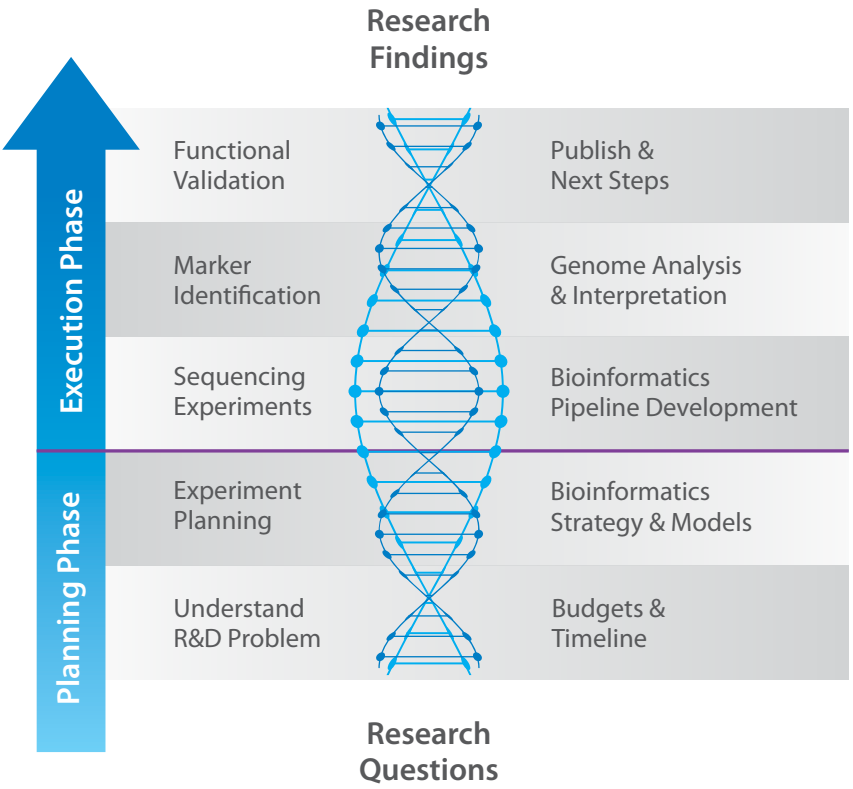
Our services support various applications such as target resequencing, transcript profiling, miRNA sequencing and microbiome profiling (16 S rRNA sequencing) with sample processing from different samples including frozen tissue, blood, saliva, FFPE, stool and so on.

Benefits

TCS' Genomics Research Services offer benefits including:

Advanced and patented genomics analysis solutions in the areas of text mining, variant or gene prioritization algorithms, and meta-genomics analysis algorithms.

Access to a state-of-the-art genomics laboratory for sequencing and validation.



The TCS Advantage

Working with TCS offers advantages including:

- Proven research expertise with genomics and meta-genomics research collaboration.
- Strong digital capabilities, specifically in Big Data, analytics, cloud, data integration, and visualization to develop context-specific pipelines.
- Large scale transformation experience and ability to handle scalability and standardization requirements for genomics research

How we help our customers

TCS, under the aegis of its Co-Innovation Network (COIN ™) program, has been investing in genomics research in collaboration with University of California, Berkeley. One of the goals of the research program is to develop tools to interpret genetic variation and apply those techniques for identifying rare genetic disorders. In addition to solving specific cases of SCID and related diseases the TCS-UCB collaboration has also been organizing a world-wide community experiment, Critical Assessment of Genome Interpretation (CAGI), to evaluate the state of the art in genome interpretation.

TCS has helped solve rare genetic Severe Combined immunodeficiency (SCID) disorders by identifying putative disease-causing variants. Some of this work is published in journals such as New England Journal of Medicine. According to Prof. Steven Brenner at University of California, Berkeley, "Our studies with TCS are having profound implications in the clinic for the families of diagnosed children, and influencing the use of genome analysis methods in research laboratories and clinical practice worldwide. This groundbreaking work is helping to redefine how genetic diseases and traits are diagnosed and analyzed."

Automated and expert reviewed clinical interpretations of patient and/ or individual genetic variations through proven pipelines

Ability to adopt a scalable model for varying research workload requirements.

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Awards & Recognition

To know more

Visit the **Life Sciences & Healthcare** page on **tcs.com**
Email: **lshcip.pmo@tcs.com**

About Tata Consultancy Services Ltd (TCS)

Tata Consultancy Services is an IT services, consulting and business solutions organization that delivers real results to global business, ensuring a level of certainty no other firm can match. TCS offers a consulting-led, integrated portfolio of IT and IT-enabled infrastructure, engineering and assurance services. This is delivered through its unique Global Network Delivery Model™, recognized as the benchmark of excellence in software development. A part of the Tata Group, India's largest industrial conglomerate, TCS has a global footprint and is listed on the National Stock Exchange and Bombay Stock Exchange in India.

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