National Genomics & Genotyping Facility (NGGF)

Introduction

NGGF - A single Window Solution for Genomics & Genotyping

ABOUT US

The National Genomics and Genotyping Facility (NGGF) is a pioneering initiative established by the Department of Biotechnology (DBT), Government of India, at BRIC-NIPGR, New Delhi. Operated by N2Jenomics Lab Pvt. Ltd., NGGF serves as a single-window service platform dedicated to democratizing access to advanced genomics.

VISION

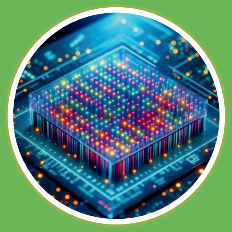
Our primary mandate is to empower breeders in the public and private sectors to fast-track varietal development. As a designated nodal center, we also provide critical DNA fingerprinting services for the certification of lines and varieties.

TECHNOLOGY

We combine government trust with private-sector efficiency. Our state-of-the-art laboratory is equipped with high-end solutions including the Novaseq 6000, GeneTitan, and Agena MassArray to support high-throughput Sequencing and Genotyping. We are strictly committed to data sovereignty, ensuring all processing adheres to India's biodiversity laws, guaranteeing data reliability and confidentiality within the country.

Services offered

Next - Generation Sequencing



Genotyping

Gene Expression

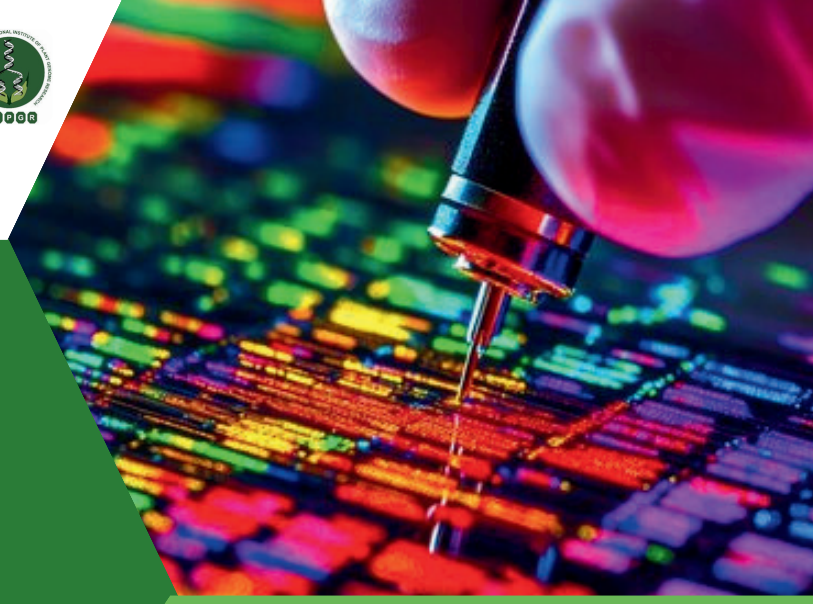
Bioinformatics

+91-11-26735110/195/181
pdnggf@nipgr.ac.in
National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.

National Genomics & Genotyping Facility (NGGF)

Next - Gen Sequencing Services



Sequencing Services

- De novo Genome Sequencing - WGS
- Exome & Targeted resequencing
- Transcriptome (RNA-Seq)
- Small RNA Sequencing
- ChIP-Seq / RIP -Seq
- Pooled Amplicon Seq (PAS)
- Genotyping by Sequencing
- Metagenomics
- Epigenetic studies
- Bulk Segregant Sequencing (BSA-Seq)

NovaSeq- 6000

NexSeq 550

+91-11-26735110/195/181
pdnggf@nipgr.ac.in
National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.

बीआरआईसी
बायोटेक्नोलॉजी विभाग का संगठन
BRIC
a DBT Organization
NIPGR

National Genomics & Genotyping Facility (NGGF)

SNPLine plate-based Genotyping

Workflow

The SNPline workflow consists of all instruments, software, and validated procedures needed to establish a highly cost-effective, flexible, and scalable PCR-based genotyping solution.

Perform tens of millions of SNP assays per year with a cost-effective and flexible total endpoint PCR workflow. The SNPLine PCR genotyping system was designed to provide high throughput SNP genotyping and verification for new or established genomics programs through flexible modularity.

Applications

AGRIGENOMICS

- SNP GENOTYPING
- ADVENTITIOUS PRESENCE
- QUALITY TESTING
- GMO DETECTION

GENETIC SCREENING

- ANCESTRY TESTING
- PHARMACOGENOMIC TESTING
- TESTING FOR DISEASE PREDISPOSITION

+91-11-26735110/195/181
pdnggf@nipgr.ac.in

National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.

National Genomics & Genotyping Facility (NGGF)

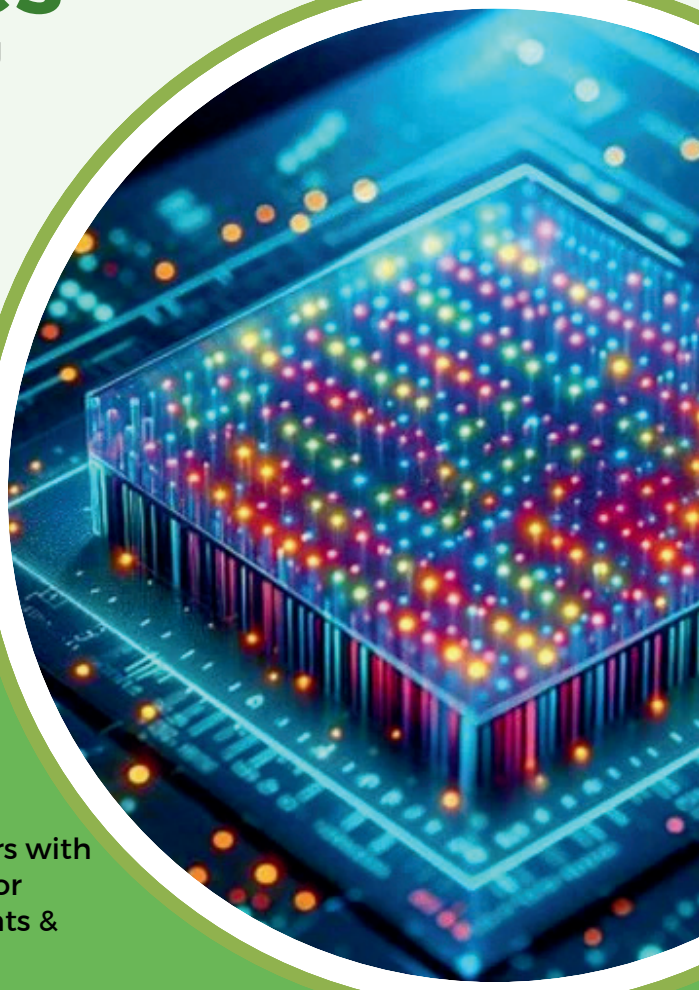
बीआरआईसी
बायोटेक्नोलॉजी विभाग का संगठन
BRIC
a DBT Organization
NIPGR

Microarray Services

High Density & Low Throughput SNP Genotyping

About Us

At our facility, we design and customise microarray chips with multiple genomic targets which potentially contributing to disease or variation and their analysis requires flexibility and accuracy. Our data analysis tools can analyse results for millions of markers and probes and detect sample outliers, providing insight into the functional consequences of genetic variation.



Microarray Solutions

Versatile Tool
Provides breeders & researchers with powerful and flexible options for analyzing genetics in both plants & animals.

Cost-Effective Screening
The technology offers an affordable way to identify, validate, and screen for complex genetic traits.

Comprehensive Variant Detection
Allows scientists to explore various types of genetic changes, including:
- Single nucleotide variants (SNVs)
- Copy number variants (CNVs)
- Large structural DNA changes

Disease Understanding
It facilitates a deeper understanding of disease causes (etiology) at the molecular level.

+91-11-26735110/195/181
pdnggf@nipgr.ac.in

National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.

National Genomics & Genotyping Facility (NGGF)

बीआरआईसी
बायोटेक्नोलॉजी विभाग का संगठन
BRIC
a DBT Organization

GeneTitan MC

Features

- **Scalable**— Meets both medium and high-throughput needs, enables fast time to data, and requires the least amount of manual intervention of all microarray processing instruments.
- **Efficient**— Condenses handson processing time to as little as 30 minutes, images an array in less than five minutes, and operates unattended overnight.
- **Flexible**— Supports genotyping studies on multiple array plate formats.
- **Accurate**— Enables high quality, consistent data by processing multiple samples under identical conditions.
- **Adaptable**— Creates flexible workflows and sample registration via Applied Biosystems™ , GeneChip™ , Command Console ™ Software.

Applications

Human

- Genome Wide Analysis
- Polulation Genetics & Bio-Banking
- Targetted Genotyping
- Pharmacogenomics
- Reproductive Screening

Custom SNP Array Designing

Agri-Genomics

- Genomic selection by NGS or SNP validation
- Association mapping
- Genome Wide Analysis
- Genomic Selection

+91-11-26735110/195/181
pdnggf@nipgr.ac.in

National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.

National Genomics & Genotyping Facility (NGGF)

Agena MassARRAY System

Low density and low throughput SNP genotyping

- We offer service on MassARRAY System, this is an open platform that has the power to expand across multiple applications and the potential to consolidate your molecular menu to a single workflow. It allows selecting from a broad menu of robust chemistries to develop molecular tests for genotyping, somatic mutation detection, and quantitative analysis.
- The MassARRAY system can detect SNPs, insertions, deletions, translocations, copy number variation, and methylation markers allowing it to be used across a variety of applications.

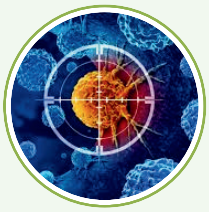
Salient Features

- Ability to perform multiple detections of 384 samples on a single chip and each well can achieve up to 40 reactions.
- Low cost per SNP.
- No minimum sample number required for a single test.
- Ability to quickly and easily modify an existing genotyping panel.

Applications

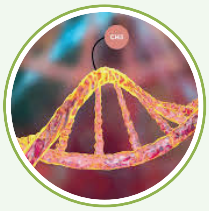
Pharmacogenetics

Tumor Profiling



Liquid Biopsy

Methylation Studies



Heriditary Genetics

Blood Typing

+91-11-26735110/195/181
pdnggf@nipgr.ac.in

National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.

National Genomics & Genotyping Facility (NGGF)

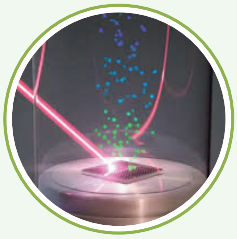
Agena MassARRAY System

Low density and low throughput SNP genotyping

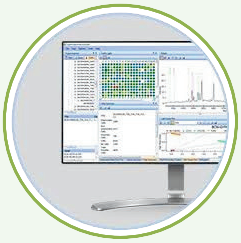
System Workflow

- The MassARRAY System workflow couples mass spectrometry with end-point PCR, enabling highly multiplexed reactions under universal cycling conditions to provide accurate, sensitive and rapid genetic analysis.
- After nucleic acid extraction, approximately 10-40ng of sample advances through a simple workflow with 3 easy steps:

PCR/SAP/Extension
Multiplex end-point PCR followed by a single base extension reaction



Target Sequence Detection
Automated analyte transfer and data acquisition



Data Analysis
Data display and report generation

96- Format

Run Time: 5.5 Hrs*
Hands on Time: 23 Min → Run Time: 5.5 Hrs*
Hands on Time: 23 Min → Run Time: 5 - 10 Min.
Hands on Time: 23 Min

384- Format

Run Time: 5.75 Hrs*
Hands on Time: 45 Min → Run Time: 2.5 Hrs*
Hands on Time: 5 Min → Run Time: 5 - 10 Min

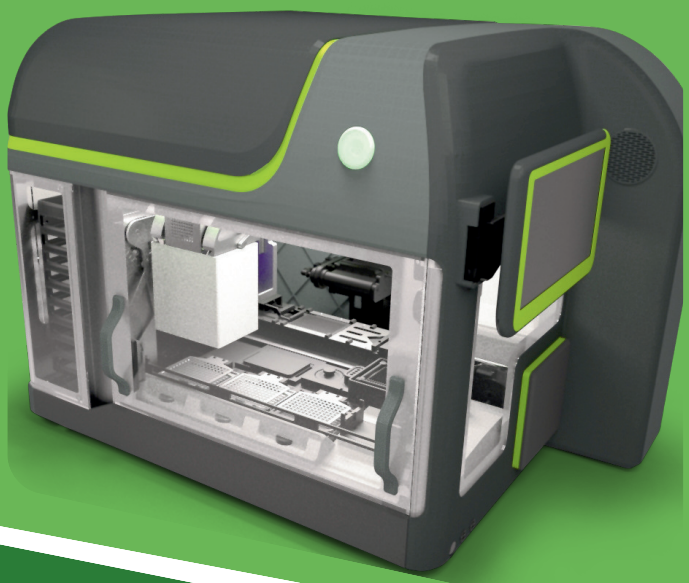
+91-11-26735110/195/181
pdnggf@nipgr.ac.in

National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.

National Genomics & Genotyping Facility (NGGF)

बीआरआईसी
बायोटेक्नोलॉजी विभाग का संगठन
BRIC
a DBT Organization



IntelliQube®

High-throughput low density SNP genotyping

The Instrument :

- True Walk-Away Automation: The world's first fully integrated instrument. From liquid handling and thermal cycling to detection and data analysis , it does it all.
- Array Tape® Innovation: Say goodbye to plates. Experience the seamless speed and inline automation of Array Tape.
- Versatile Powerhouse: Master qPCR, End-Point PCR, and Isothermal chemistries in one compact unit.
- Application Features :
  - QTL Screening , Copy Number Variation.
  - Quality testing & GMO Detection.
  - Marker Assisted Screening & Back Cross.

The Chemistry : KASP™

- Unrivaled Accuracy: Robust, competitive allele-specific PCR for precise bi-allelic scoring of SNPs and Indels.
- Cost-Effective Precision: Drastically reduce reagent costs without sacrificing data quality.
- Complex Genome Ready: From basic research to the most challenging genomic samples, KASP delivers.

+91-11-26735110/195/181
pdnggf@nipgr.ac.in

National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.

National Genomics & Genotyping Facility (NGGF)

Flex-Seq® Ex-L

Targeted genotyping by sequencing

The Chemistry

Flex-Seq® Ex-L is an ultra-high-throughput targeted genotyping platform for commercial, next-generation sequencing applications. Focusing on scalability paired with data accuracy, reproducibility, and completeness allows Flex-Seq® Ex-L to deliver industry-scale solutions for industry-scale genotyping.

Flex-Seq® Ex-L genotype data matches genotyping array (SNP chip) technology, ensuring consistency between legacy datasets.

Salient features

- Capable of targeting upwards of 20,000 DNA markers.
- It is suitable for plant and animal breeding objectives including genomic selection, imputation, marker-assisted selection and parentage analysis.
- It gives flexibility to add or delete markers in existing marker pool without any hassle.
- Genotyping data from other technologies can also be incorporated into Flex-Seq® Ex-L panels.
- Genotyping data from other technologies can also be incorporated into Flex-Seq® Ex-L panels and novel, customer-specific genotyping markers can be developed for any species.

+91-11-26735110/195/181
pdnggf@nipgr.ac.in

National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.

National Genomics & Genotyping Facility (NGGF)

बीआरआईसी
बायोटेक्नोलॉजी विभाग का संगठन
BRIC
a DBT Organization

NIPGR

Gene Expression

About Us

We offer gene expression services on Nanostring nCounter® SPRINT Profiler, It is an automated solution for multiplex analysis of 800+ targets. It produces highly reproducible data, requiring no amplification or technical replicates. Sprint profiler integrates sample prep and analysis into a single instrument, minimizes manual steps, and streamlines the overall workflow.

Nanostring nCounter®

Nanostring nCounter® Profiler analyse 10s to 100s of targets simultaneously using single-tube multiplexing and avoid waste by eliminating RNA extraction. It generates high quality data from FFPE & other degraded samples from as little as 10 ng of RNA. It eliminates cDNA synthesis, amplification, and library prep. Hence, it offers less technical variation in assay.

- Copy number variation analysis
- High-throughput detection of genes expression
- Single-cell gene expression analysis
- miRNA expression analysis

+91-11-26735110/195/181
pdnggf@nipgr.ac.in

National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.

National Genomics & Genotyping Facility (NGGF)

Bioinformatic Services


Biologists


Samples


Sequencing

RAW Data


Analysis


Results

- Analysis of next-generation sequencing (NGS) data, it needs a systematic and intelligent approach to process the NGS data efficiently. We have developed workflows and programs to analyse large scale biological data sets, especially focused towards NGS data.
- Our analysis process includes data quality assessment, comprehensive analysis, interpreting results, and communicating and presenting results to the customers in meaningful formats. The analysis process may also include development of algorithm for some special projects.

High Performance Computer Servers & Computational Genomics Software

- 7 computer Node each of 250 GB
- 1 Head Node with 250 GB
- 1 Sequence Node with 250 GB
- 1 GPU Node - 250 GB & Nvidia A 100 GPU
- 1 Ldap Server Node
- Isilon A 2000 & F200 Combined Storage with 2.2PB capacity for DC
- Isilon A 2000 Storage with 3.4PB capacity for DR

Data Analysis Offerings

Exome Data Analysis | Metagenome Analysis | ChIP Seq. Analysis | Small RNA Seq. Analysis | Genomic & Phenotypic Data Analysis | Whole Genome Analysis | Transcriptome Analysis

+91-11-26735110/195/181
pdnggf@nipgr.ac.in
National Institute of Plant Genome Research,
Aruna Asaf Ali Marg, New Delhi 110067
Lab No.: 206 & 207

Operated By :
N2Jenomics Lab (P) Ltd.