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Infinium® XT Production-Scale Genotyping Solution

A new assay workflow and 96-sample BeadChip support targeted array genotyping for large sample numbers.

Introduction

The Infinium XT Kit provides the highest throughput array format that Illumina has to offer to date.* The 96-sample BeadChip offers laboratories the ability to perform genotyping on larger numbers of samples, scaling up to more than 1 million samples per year. This solution is ideally suited for agrigenomics applications, which require low plexity assays, especially for parentage, traceability, and genomic selection. This product also enables human applications, particularly for biobanks and personalized medicine initiatives with large-scale targeted genotyping.

1. What are the key features of the Infinium XT solution?

The Infinium XT solution enables cost-effective genotyping for large-scale studies with a throughput range of 100,000 to > 1,000,000 samples per year, all in a single lab. The new 96-sample BeadChip format supports 100s up to 50,000 marker applications with catalog or custom content. An improved assay reduces turnaround time from 3 days to 2 days.

Note: There is a 100,000 sample minimum order commitment.

2. Should I consider purchasing the new Infinium XT Kit?

If you require a highly targeted assay for large-scale sample screening (≤ 50,000 markers and ≥ 100,000 samples), the Infinium XT Kit is a great fit.

3. When will Illumina begin shipping the Infinium XT Kit?

This product will be available in the third quarter of 2016.

4. Why is there a 100,000 sample minimum order size at launch?

The Infinium XT solution was designed to support customers looking to scale their Infinium labs to ≥ 1,000,000 samples per year. Standard throughput scenarios will continue to be supported with existing Illumina Infinium assays and BeadChip formats.

5. How will the Infinium XT Kit be priced?

Pricing is now available and accessible through your local Illumina sales representative.

6. What is needed to prepare for a transition to Infinium XT production-scale genotyping?

Transitioning to the Infinium XT solution may require additional hardware investments, personnel training, and bead pool builds. Also, labs will need to prepare to reallocate or rearrange existing resources (eg hardware, personnel, monetary, etc.) for new workflow efficiency gains.

The Infinium XT assay is similar to current Infinium assays. Current customers can expect a 1-day training session for the assay and < 1-day training for the analysis pipeline.

* Compared to the Infinium iSelect 24-HTS Custom Genotyping BeadChip

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7. What other BeadChip formats will migrate over to the 2-day Infinium XT assay?

The 2-day Infinium XT assay will be specific to the 96-sample BeadChip at launch. Illumina scientists are exploring whether other BeadChip formats will be migrated to the Infinium XT assay, but this will not occur in 2016.

8. Is Illumina launching any commercial arrays on this new format?

The initial launch will be for custom content on the Infinium XT BeadChip. Illumina will support the launch of consortia and/or commercial products as deemed appropriate for high-throughput opportunities requiring ≤ 50,000 markers.

9. What are some of the key features associated with the new workflow?

- 96 samples per BeadChip
- Reduced assay turnaround time from 3 days to 2 days
- Ability to guarantee validated custom content conversion rate of ≥ 95% with DesignStudio™ Software
- 100s up to 50,000 markers
- Multispecies support (up to 4 per assay)
- Bulk reagent kit packaging for high-throughput use
- Automated genotyping analysis and QC report generation on demand
- Polyploid genotype calling in Beeline™ Software and enhanced clustering algorithms in GenomeStudio® Software
- Harnesses existing Infinium hardware (ie iScan® System, Tecan robots, and most accessories)
- Updated Laboratory Information Management System (LIMS) for enhanced performance and 96-sample support

10. How might the Infinium XT solution impact current Infinium customers not yet scaled to buy this kit?

- Automated genotyping analysis and QC report generation on demand
- Polyploid genotype calling in Beeline Software and enhanced clustering algorithms in GenomeStudio Software
- Updated LIMS for enhanced performance

11. Will Infinium XT genotyping be limited to agrigenomics applications at launch?

This product fully supports any custom iSelect®, consortia, or off-the-shelf product opportunities within human or agrigenomics applications that meet the content and throughput requirements (≤ 50,000 markers, ≥ 100,000 samples per year).

12. What software upgrades will I need?

- Tecan Illumina Automation Control (IAC) Software will need an onsite upgrade to v 6.0
- LIMS will need a remote or onsite upgrade to v 4.8
- iScan Systems will need an onsite upgrade to v 3.4

13. What automation hardware do I need to purchase to run Infinium XT BeadChips?

Infinium XT BeadChips can be processed with current Infinium automation (ie Tecan robots, LIMS, and assay accessory hardware). Optimizations are being made to IAC Software for the Tecan liquid handling robot to increase efficiency and save time with pre-PCR liquid transfer steps. An updated LIMS version supports the entire process. Some accessory hardware updates will be required to support the new format and reduce hands-on time.

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14. What new ancillary hardware will be required to process the 96-sample BeadChip?

- New BeadChip glassware (XCG glass back plate)
- Infinium 96-XT Tip Guides (1–3)
- Infinium XT flow-through chamber assembly
- Infinium XT hybridization chamber
- XCG glass drying rack
- XCG flow-through chamber frame
- XCG flow-through chamber clip

Illumina will package these items for both new and existing Infinium customers who need to start or upgrade to the Infinium XT solution with the following:

Product Name	Catalog Number
Infinium XT Starter Kit (48 BeadChip batches)	20011069
Infinium XT Starter KIt (24 BeadChip batches)	20011100
Infinium XT Upgrade Kit (24 BeadChip batches)	20011101
Infinium 96-XT Tip Guide Set	20011102

15. How do I configure my lab to achieve various throughput goals?

An example lab layout with systems, automation units, and ancillary equipment required for processing 1,000,000 samples per year is depicted in the Infinium XT data sheet. Contact your local sales representative for details regarding your specific throughput needs.

16. What additional support does Illumina provide for scaling to a production lab?

Illumina is developing a new Professional Services offering for Infinium XT customer consultation. Contact your local sales representative for more information.

17. Are there any changes to data quality with Infinium XT genotyping?

Expect the same data quality you achieve with all Illumina Infinium arrays.

For questions and additional information, contact a representative at insidesales@illumina.com

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