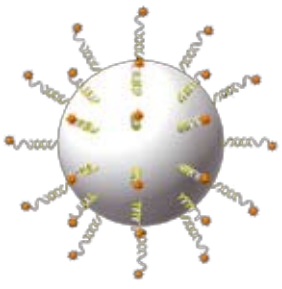
For Research Use Only

HUMAN HEALTH

ENVIRONMENTAL HEALTH

FOR RAPID AND ENHANCED DETECTION OF CHROMOSOMAL ABNORMALITIES



CONSTITUTIONAL BoBs™

Image courtesy of Luminex Corporation

PerkinElmer®
For the Better

FASTER RESULTS WITH PERKINELMER REVOLUTIONARY BACS-ON-BEADS™ TECHNOLOGY

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Constitutional BoBs™*, is a BACs-on-Beads™ based assay designed to detect the 5 most common aneuploidies plus gains and losses in 9 well characterized target regions. Constitutional BoBs is a simple, robust assay that offers significant benefits in terms of ease of handling, minute sample volumes, reduced time-to-result and improved pick-up rates.

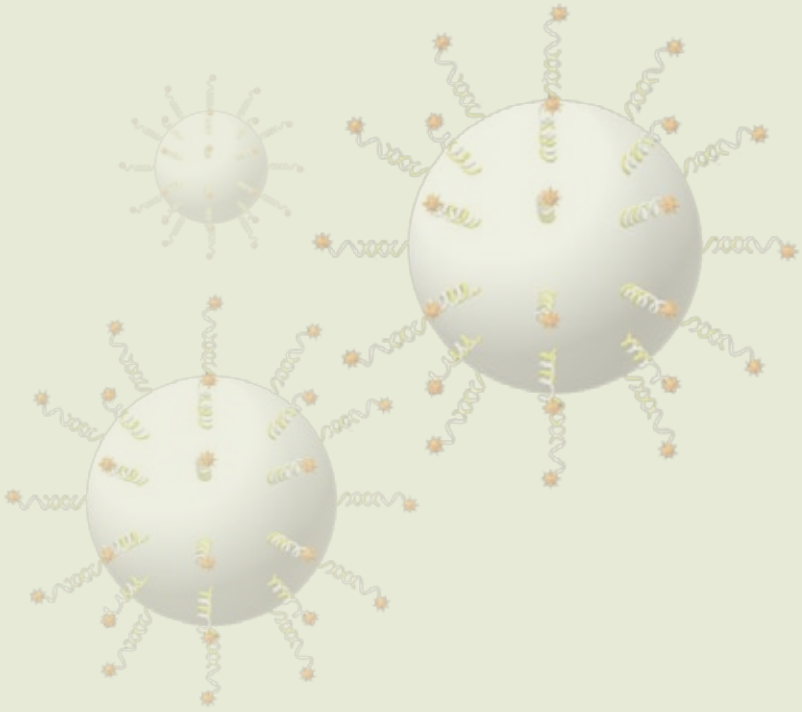
- **Detection of chromosomal gains and losses** in 9 microdeletion regions in addition to the most common aneuploidies
- **Results in less than 24 hours** from only 100-200 ng of DNA
- **More than 80 targets** in one assay, up to 96 reactions in a run

TECHNOLOGY FOR THE GENOME®

46 CHROMOSOMES, INFINITE POSSIBILITIES®

THE POWER INSIDE Luminex | xMAP® TECHNOLOGY Because you want to know more

BACs-on-Beads technology has been developed on the Luminex® xMAP® Technology



WHAT IS CONSTITUTIONAL BoBs™?

Constitutional BoBs™ is a BACs-on-Beads™ product designed for rapid detection of gains and losses of DNA. By utilizing 83 PCR-amplified BAC clones attached to color coded beads, the proprietary BACs-on-Beads technology enables molecular karyotyping in a well. In addition to detecting copy number changes of chromosomes 13, 18, 21, X and Y, the product enables aberration detection in 9 additional meticulously chosen microdeletion regions. This assay includes five markers for aneuploidy detection of chromosomes 13, 18, 21, X and Y and 4 to 8 independent markers for the additional target regions.

Analysis may be performed on as little as only 100-200 ng of genomic DNA extracted directly from amniotic fluid or chorionic villae samples and results are obtained in less than 24 hours.

The Constitutional BoBs kit contains the multiplex encoded microsphere probe set, sample labeling reagents, hybridization reagents, wash reagents, and reporter reagents. The signals generated by the kit are read by the Luminex® 200™ system and analyzed with the BoBsoft™ analysis software*. The kit contents are sufficient for 96 reactions.

BACs-on-Beads™ flowchart

Estimated time needed for complete processing of 16 samples

Work-module	Hands-on time	Total time
Labeling	45 min	1 hr 40 min
Purification	35 min	35 min
Hybridization setup	25 min	25 min
Hybridization incubation	--	16 hrs (o/n)
Wash + Reporter addition	30 min	50 min
Result generation	15 min	30 min
Total procedure	2 hrs 30 min	20 hrs

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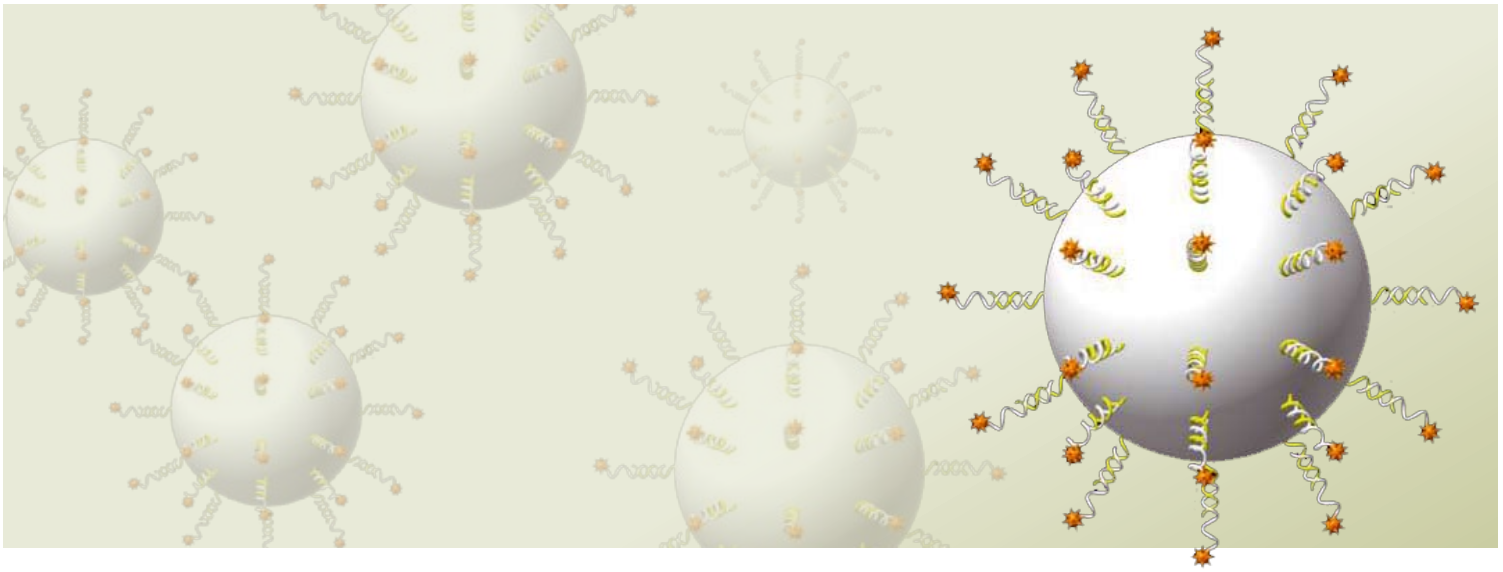


BASICS OF THE BACS-ON-BEADS™ TECHNOLOGY

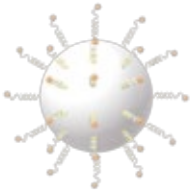
BACs are Bacterial Artificial Chromosomes, large cloned sequences of human DNA typically 170,000 bases long. BAC probes have long been used for FISH. BACs-on-Beads is a technology where probes generated from selected BACs are immobilized onto Luminex® encoded beads. The resulting bead sets are used to assay chromosomal gains and losses from minute sample amounts with high throughput.

BACs-on-Beads analysis comprises hybridization of DNA sample sequences to BAC-derived probes representing the identified target regions. Samples are enzymatically labeled with biotin, and after hybridization in a 96-well plate a fluorescent streptavidin-phycoerythrin reporter is bound to the biotin labels. Male and female reference DNA are also hybridized, and the fluorescence ratio between each sample and references indicates whether there is a gain or loss in the sample at the location of each BAC probe.

Sample labeling is done enzymatically, which provides significant amplification of samples down to 100-200 ng.

83 BAC probes are used in the Constitutional BoBs panel: 5 for each chromosome 13, 18, 21, X and Y; 4 to 8 each for nine well-defined target loci; and 6 autosomal controls. Two 70-base oligonucleotides selected to have no homology to the human genome are used for background subtraction.

Fluorescent signals are normalized between the male and female references and each sample. All samples are compared to both male and female references, so the sex of the sample need not be known prior to the assay. Normal diploid loci generate ratios of 1.0. Single copy gains generate ratios of 1.3 to 1.4, and single-allele losses generate ratios of 0.6 to 0.8. In Constitutional BoBs the panel of BACs is selected that generally the entire region of 4 – 8 probes will deflect together if a gain or a loss has occurred in the probed regions.



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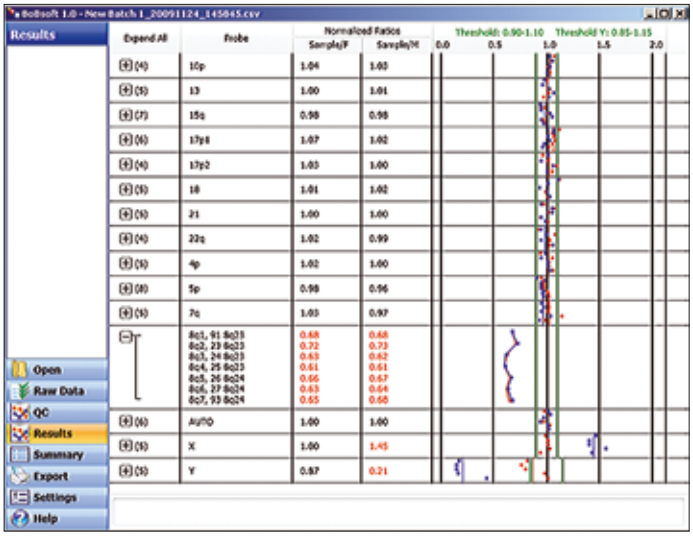
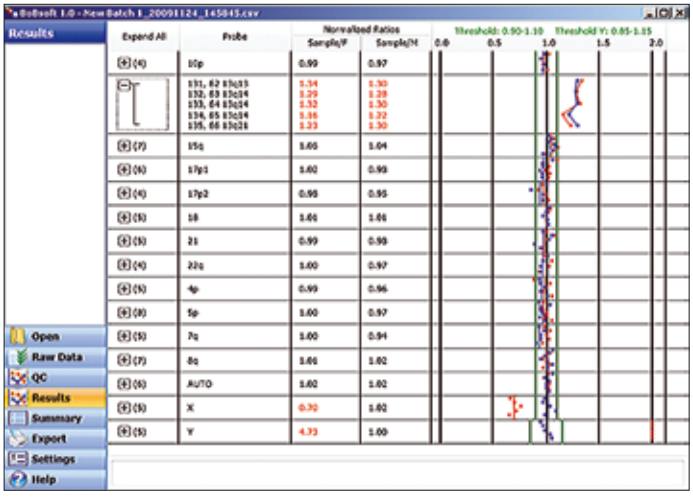
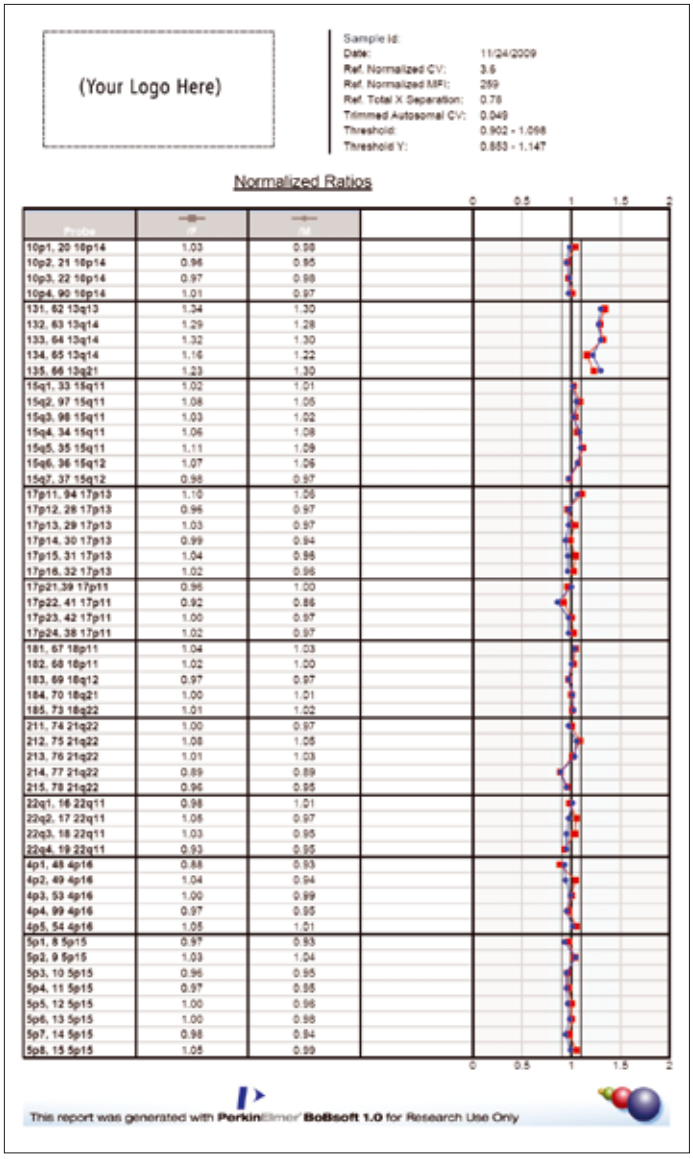




The BoBsoft results section was designed for easy interpretation. Each region is identified in a compressed form but expansion of the information is possible so that each probe can be viewed individually. The quick view plot allows for graphical interpretation of gains and losses. Tabs allow for quick and easy views of Raw Data, QC and Reporting.



BoBsoft reporting includes the QC results from the assay, lists each probe description, the Chromosomal Location for each probe and the ratio for each result. The report is customizable so that sample results can be printed individually.

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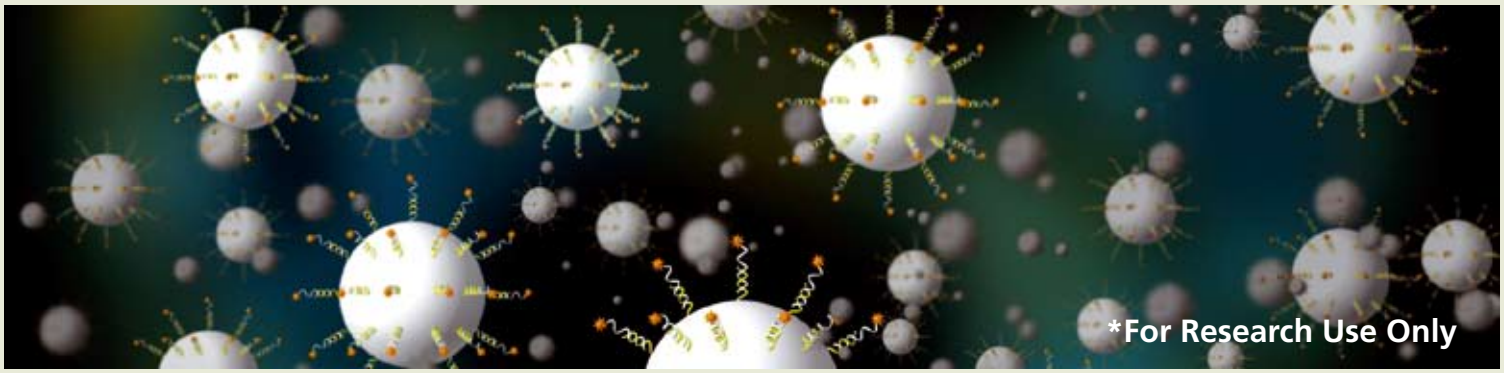
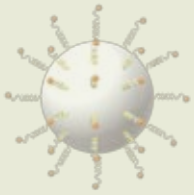


IMPROVED DETECTION

For fast, precise and cost-effective targeted molecular karyotyping

- **Results in less than 24 hours**
  Complete procedure from sample to result takes less than 24 hours, allowing your laboratory to obtain results the following day.
- **Quick and easy implementation**
  All main reagents needed to perform BACs-on-Beads are provided in a single kit with easy to learn protocols.
- **Cost-efficiency**
  Tens of samples can be run simultaneously reducing the hands-on time required compared to traditional cytogenetic protocols.
- **Easy interpretation**
  With excellent coverage of each target region, both male and female references in every run and the intuitive BoBsoft™ analysis software* results are clear and easy to interpret.
- **Improved coverage**
  By targeting copy number changes in chromosomes 13, 18, 21, X and Y, and also 9 additional target regions, Constitutional BoBs enables detections of gains and losses that could easily be missed with other commonly used methods.



Constitutional BoBs™ target regions:
Chromosomes 13, 18, 21, X and Y
4p16.3.
5p15.3-p15.2
7q11.2
8q23-q24
10p14
15q11-q12
17p13.3
17p11.2
22q11.2

All PerkinElmer diagnostic products may not be available in all countries.
For information on availability please contact your local representative.

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