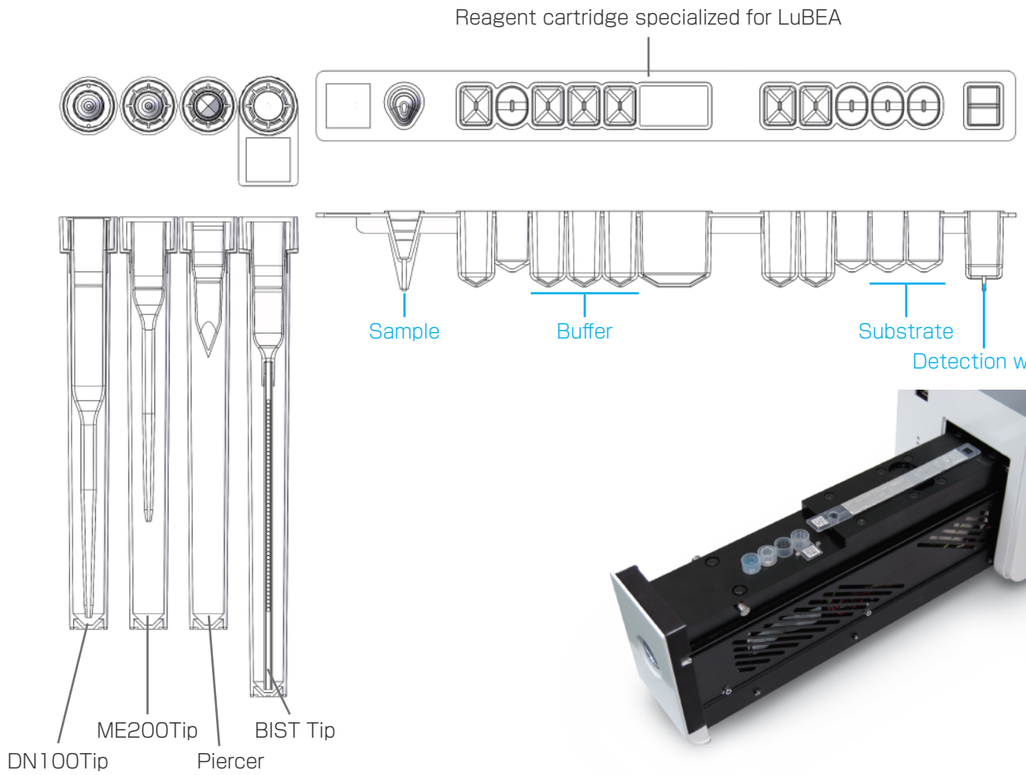
## Specification Overview

| | |
|---|---|
| Instrument type | Benchtop |
| Dimensions | Approx. H397 × W168 × D488 mm |
| Weight | Approx. 22 kg |
| Detection System | Chemiluminescence or Fluorescence |

## Layout (Reagent Cartridge)







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PSS-Leaf_LuBEA-E-2015.01.Rev001


## All Process In Tip technology

Multiplex
Quantitative
Highly sensitive
Fully Automated

**Micro Plate ⟶ 1 mm beads**

# LuBEA System

Produced by Precision System Science Co., Ltd.

- 20 Beads in Tip
- Liner Prefilled Reagent Cartridge
- 1 mm immuno assay
- 1 mm DNA Typing
- Chemiluminescence
- Fluorescence

) 2 Types Detection method

## Device Overview

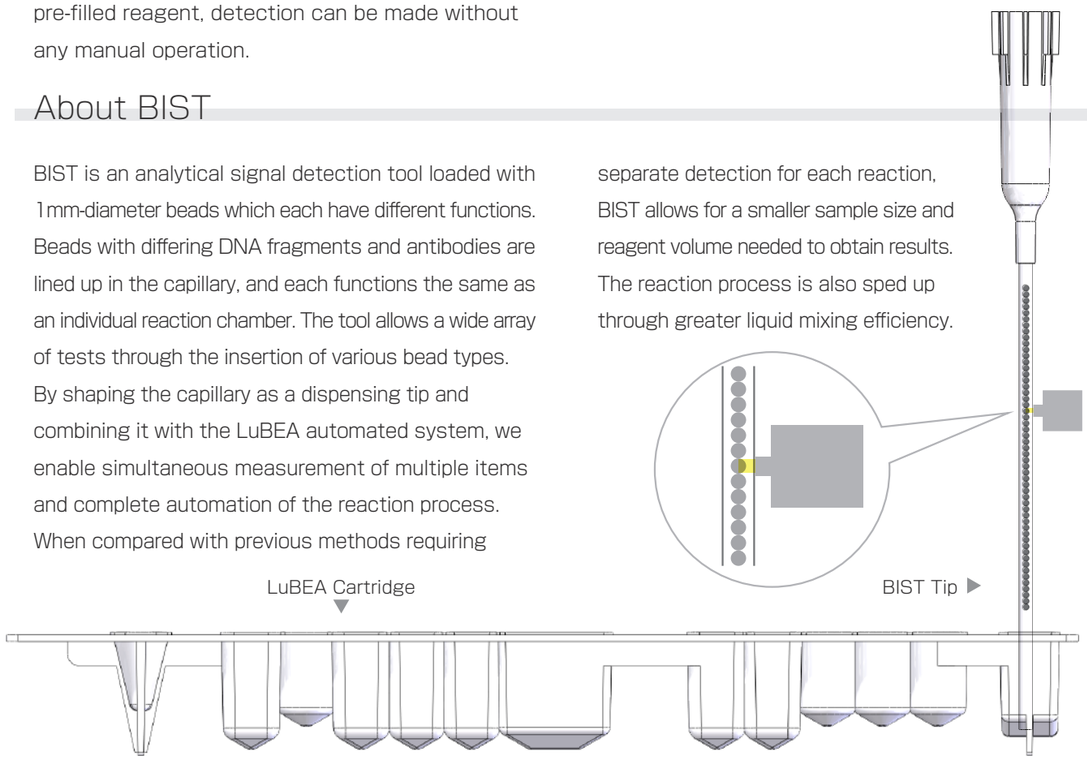
LuBEA is a small, automated detection device which uses the multi-item detection tool "BIST" (Beads array In Single Tip).
An original PSS technology, BIST allows the building of an automatic reaction protocol, and when further combined with pre-filled reagent, enables automation of reaction, washing, and detection.
With the combination of BIST, test sample, and pre-filled reagent, detection can be made without any manual operation.

The automated device is easy to use for a variety of fields, including polymorphic DNA-based tailor made direction, clinical testing, and food.

※We are currently developing a detection unit that combines both chemiluminescence and fluorescence to allow selection of multiple items to be simultaneously detected using one BIST.

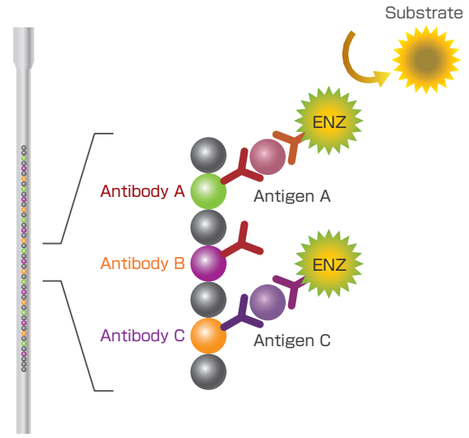
## About BIST

BIST is an analytical signal detection tool loaded with 1mm-diameter beads which each have different functions. Beads with differing DNA fragments and antibodies are lined up in the capillary, and each functions the same as an individual reaction chamber. The tool allows a wide array of tests through the insertion of various bead types.
By shaping the capillary as a dispensing tip and combining it with the LuBEA automated system, we enable simultaneous measurement of multiple items and complete automation of the reaction process.
When compared with previous methods requiring separate detection for each reaction, BIST allows for a smaller sample size and reagent volume needed to obtain results. The reaction process is also sped up through greater liquid mixing efficiency.



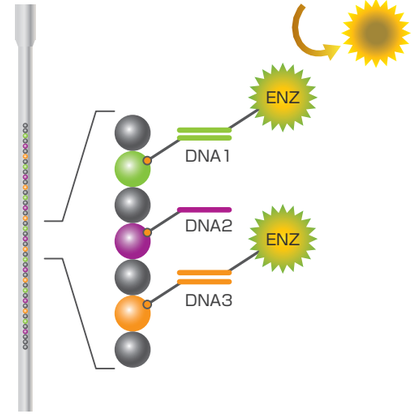

## BIST for ELISA Immunoassay

This is a BIST for immunoassay that allows ELISA by lining up beads affixed with antibodies and antigens in the capillary. Results can be gained with certainty even for low concentration samples (such as antibodies and antigens) by efficiently mixing reaction fluid and establishing a high sensitivity detection system.




## BIST for DNA Typing

DNA testing requires numerous steps, including nucleic acid extraction from the sample, PCR, SNP detection reaction, and BIST reaction. We have developed an instrument that performs all processes from nucleic acid extraction to BIST detection for a stable testing process that avoids the complexity of manual operation.




## Test items requiring Multiplex (Ex.)

| | | |
|---|---|---|
| Body testing for health guidance (obesity factors), talent analysis, other applications | β3AR、UCP1、AGT235、MTHFR | Whole blood, serum, plasma |
| Allergic reaction tests | Cedar, cypress, hogweed, house dust | |
| Cancer markers | AFP (Liver cancer), PSA (prostate cancer), P53 antibody | |
| Cancer-related tests | HLA Typing, sugar chain detection | |
| Cardiac disease marker | Myoglobin, troponin, PCT | |
| Clinical testing items | TSH, Free T3, Free T4, AFP, albumin | |
| Autoimmune diseases | | |
| Pharmacogenomics | IL28, CYP2C19, EGFR (Iressa target agent) | |
| Immunodeficiency disease | CD3 (T lymphocyte), CD19 (B lymphocyte), CD45 (leukocyte) | |
| Infant mass screening | TSH、17-OHP、Free T4 | Paper filter blood |
| Genetically modified food (GMO) proteins | Herbicide-resistant enzyme PAT, CP4-EPSPS | Foods (corn, soybeans) |
| Genetically modified food (GMO) genes | Specific gene detection | |

| | | |
|---|---|---|
| Food allergens | Wheat, buckwheat, peanuts, eggs, milk, shrimp, crab | Food |
| Crop production location identification, variety identification | Tuna variety identification, cashmere identification | Meat, hair, etc. |
| Food poisoning | Salmonella (bacteria)<br>Staphylococcus aureus (bacteria, toxins: enterotoxins)<br>Vibrio parahaemolyticus (bacteria)<br>Bacillus cereus (bacteria, toxins)<br>E. coli (bacteria, toxins) | Stool, food |
| Legal communicable diseases | Cholera, dysentery, typhoid | |
| Diarrheal viruses | Norovirus, rotavirus, adenovirus | |
| Enterohemorrhagic E. coli | O157、O26 | |
| Communicable diseases | Mumps, EV virus | |
| Communicable diseases | Legionella | Water |