

Stem Cell TF Activation Profiling Plate Array

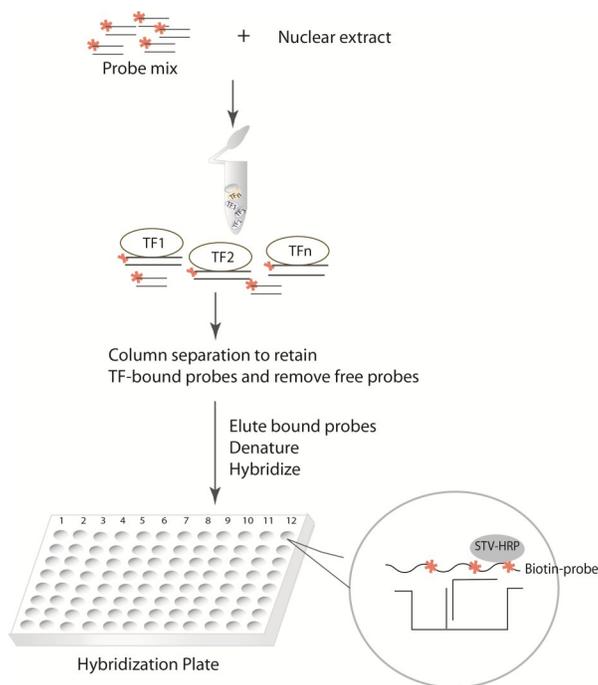
Multiple transcription factors (TFs) have been reported to associate with stem cell self-renewal and pluripotency such as EGR1, OCT4, FOXD3, FOXO, Nanog, SOX2, SOX18, ETS, GLI, KLF4, MEF2, Myc, RNUX1, Pax6, TCF/LEF and GATA. Analyzing the activities of these TFs can provide valuable insight into the study of stem cells. Signosis has developed Stem Cell Transcription Factor Activation Plate Array to analyze the activities of 16 stem cell related TFs simultaneously for mammalian samples. The assay can be used with the whole cell lysate from 1000-10000 cells.

Benefits:

- **Multiplex** - A single assay allows the measurement of the activities of 16 stem cell associated TFs .
- **Quantitative comparison** - The difference between two samples can be quantitatively analyzed and compared.
- **Simple procedures** - Probe incubation, spin column separation, plate hybridization, and HRP detection.
- **No special equipment needed** - Capital instrument such as Luminex is not needed.

Principal of the Technology:

Signosis' stem cell TF activation profiling plate array is used for monitoring the activation of multiple TFs simultaneously. In the technology, a series of biotin-labeled probes are made on the basis on the consensus sequences of TF DNA-binding sites. When the nuclear extracts are incubated, individual probes will bind their corresponding TFs and form TF/probe complexes. These complexes can be easily separated from free probes through a simple spin column purification. The bound probes are then detached from the complex and analyzed through hybridization with the hybridization plate, of which each well is specifically pre-coated with sequences complementary to the probes. The captured DNA probe is further detected with streptavidin-HRP, and luminescence is reported as relative light units (RLUs) on a microplate luminometer.



Product

Cat.#

Stem Cell TF Activation Profiling Plate Array I FA-1003

List of Applicable TFs

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|-------|---------|
| A | EGR1 | Ets |
| B | FoxD3 | Gli |
| C | FoxO1 | KLF4 |
| D | GATA | MEF2 |
| E | Nanog | Myc |
| F | OCT4 | RNUX1 |
| G | SOX2 | Pax6 |
| H | SOX18 | TCF/LEF |

Stem Cell miRNA Array

miRNAs are reported to regulate a variety of stem cells. Signosis has developed the miRNA array to target **69 miRNAs** that have been shown to associate with stem cell differentiation and maintenance. The array can be used for human, mouse and rat samples. Profiling the expression of these miRNAs can help reveal the functions of miRNAs in stem cells.

Benefits:

- **High discriminative power** - Able to differentiate all miRNA isoforms. All let7 isoforms can be clearly distinguished in the assay.
- **Linear amplification** - Captured miRNAs are subjected to T7 amplification without introduction of bias in PCR.
- **No pre-isolation of miRNA** - Total RNA can be directly used for the assay without pre-isolation of miRNA.
- **Simple procedure** – The assay is simple and straightforward.

Principal of the Technology:

Step 1: Mix the miRNA with the provided oligos to form miRNA/oligo hybrids.

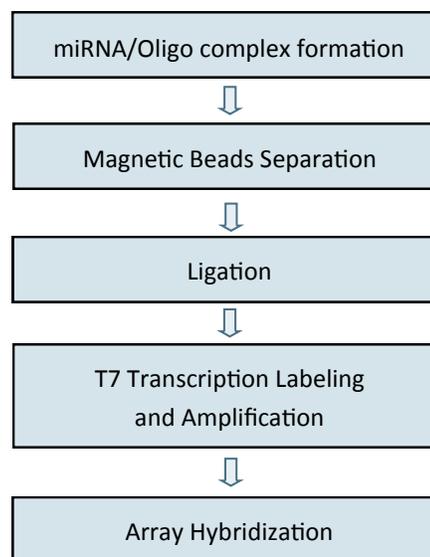
Step 2: Remove free oligos by washing them away.

Step 3: Use DNA ligase to ligate oligos aligned by miRNAs.

Step 4: To increase the stability, we extend the oligos with complementary oligos, to make double stranded DNA.

Step 6: Amplify the ligated DNA with T7 transcription into RNA.

Step 6: Tag sequences are differentiated through array hybridization. To differentiate the isoforms, we assigned unique tag sequences to the specific miRNAs. Therefore, the differences of single nucleotides can be converted to those of tag sequences, and can be easily distinguished.



Product

Stem Cell miRNA Array

Cat.#

AP-0007

Stem Cell-Specific miRNA Plate Assay Kits

MicroRNAs (miRNAs) are small RNA molecules, regulating up to 30% of mammalian gene expression. Some of these molecules are reported to be stem cell-specific. Signosis has developed a miRNA plate assay kits to analyze the expression of a unique set of miRNAs in stem cells.

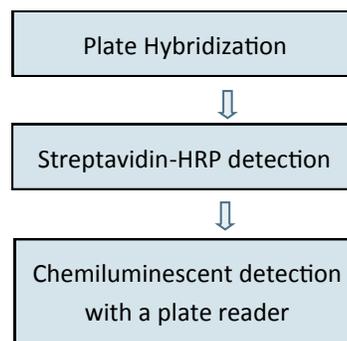
- **Simple** - Do miRNA detection as doing ELISA. It does not need the enzymatic conversion from miRNA into cDNA. The entire assay procedure is “incubation and wash”.
- **Higher sensitivity and better discrimination power** - The detection is approximately 1000 times more sensitive than miRNA Northern blot. In addition, it has higher discrimination power than miRNA Northern blot in differentiating miRNA isoforms.
- **Quantitative comparison** – The difference of two or more samples in the expression of a specific miRNA can be quantitatively analyzed.

| Product | miRNAs | Cat.# |
|--|---|---------|
| Stem Cell-specific miRNA Plate Assay Kit I | let4, miR-1, miR-9, miR-21, miR-24, miR-26a, miR-26b, RNU48 | MA-0129 |
| Stem Cell-specific miRNA Plate Assay Kit II | miR-124, miR-125b, miR-129, miR-130a, miR-133, miR-134, miR-155 | MA-0130 |
| Stem Cell-specific miRNA Plate Assay Kit IIv | miR-290 cluster | MA-0131 |

Stem Cell-Associated miRNA Plate Array

Signosis has developed a miRNA array specifically to target **48 miRNAs** that are shown to be associated with stem cell differentiation and maintenance. The array can be used for human, mouse and rat samples.

- **Simple** - Profiling the expression of 48 miRNAs even simpler than ELISA. It does not need the enzymatic conversion from miRNA into cDNA. The entire assay procedure is “incubation and wash”.
- **Higher sensitivity and better discrimination power** - The detection is approximately 100 times more sensitive than miRNA Northern blot. In addition, it has higher discrimination power than miRNA Northern blot in differentiating miRNA isoforms.
- **Quantitative comparison** – The difference between two or more samples in the expression of a specific miRNA can be quantitatively analyzed.



| | |
|----------------|---|
| Product | Stem Cell-Associated miRNA Plate |
| Cat. # | MA-1003 |

| | | | | | |
|---------|-----------|------------|-----------|----------|----------|
| Let-7a | miR-16 | miR-25 | miR-99a | miR-125b | miR-146a |
| Let-7b | miR-17-5p | miR-26a | miR-101-1 | miR-126 | miR-149 |
| Let-7c | miR-19a | miR-27a | miR-103 | miR-128a | miR-150 |
| miR-1 | miR-19b | miR-30a-3p | miR-106a | miR-132 | miR-155 |
| miR-9 | miR-21 | miR-34a | miR-107 | miR-133a | miR-181a |
| miR-10a | miR-22 | miR-92b | miR-122a | miR-134 | miR-193a |
| miR-15a | miR-23a | miR-93 | miR-124a | miR-135b | miR-218 |
| miR-15b | miR-24 | miR-96 | miR-125a | miR-141 | U6 |

Single Stem Cell Gene Expression Assay Kit

The lack of stem cell resources hampers its accessibility of these genes. Signosis has developed single stem cell gene expression assay kit by combining PCR and signal amplification together, which can dramatically increase the sensitivity of detection. The kit can be used for analyzing 8 stem cell-associated gene expression simultaneously.

Benefits:

- **High sensitive detection** - A few stem cells are enough for the measurement of the expression of 8 genes.
- **Human and mouse samples**- The assay kit can be used for the analysis of human and mouse stem cells.
- **Quantitative comparison** – The difference of two or more samples in gene expression can be quantitatively analyzed.

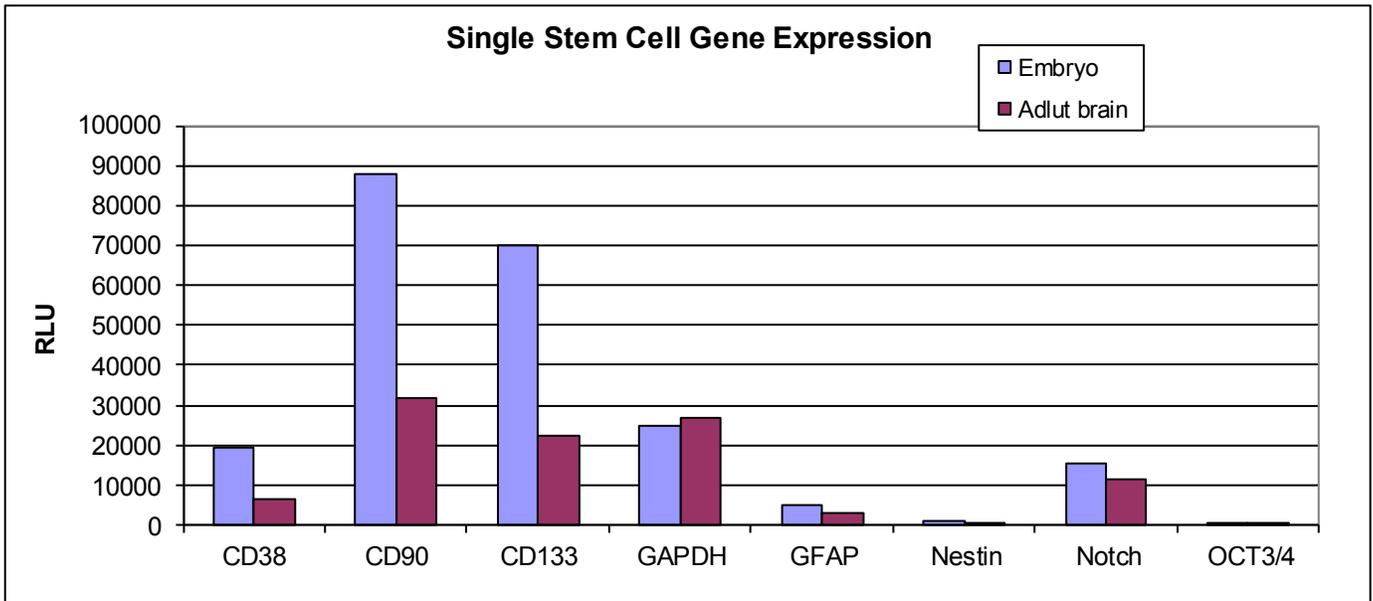
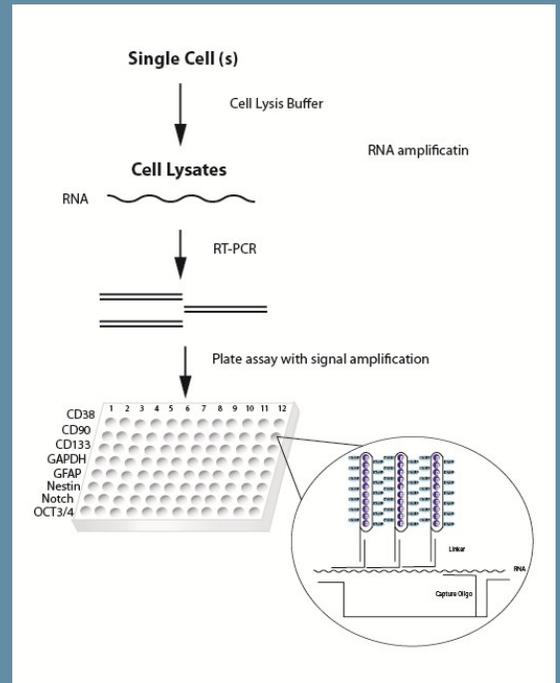


Figure: Analysis of 8 gene expression in mouse embryo and brain with Single Stem Cell Gene Expression Assay Kit.

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|----------------|--|
| Product | Single Stem Cell Gene Expression Assay Kit |
| Cat. # | SC-0001 |

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