Epi-Pluri-Score Analysis

Are your iPSCs pluripotent?

It is important to check successful reprogramming of induced pluripotent stem cells (iPSCs) into pluripotent state. Our Epi-Pluri-Score provides a simple and robust approach to support classification of human pluripotent and non-pluripotent cells. It facilitates screening of multiple human iPSC clones for quality control in a time-saving and cost-effective manner.

Comparison with other assays

Various different methods can be used for quality control of human iPSCs – such as teratoma formation, analysis of expression of pluripotency genes, or staining of molecular markers (e.g. OCT4, NANOG, TRA-1-60) via immunofluorescence. However, these approaches either require time- and labor-intensive animal experiments or they are not easy to standardize. In contrast, our Epi-Pluri-Score provides a quantitative measure with 99.9% specificity and 98.9% sensitivity (tested in 2,215 DNAm profiles).

How does it work?

DNA-methylation levels (β-values) are measured at three specific CpG sites by pyrosequencing: two CpGs within the genes *ANKRD46* (methylated in pluripotent cells) and *C14orf115* (non-methylated in pluripotent cells), which are combined as Epi-Pluri-Score, and one CpG in the pluripotency gene *POU5F1* (OCT4). A positive Epi-Pluri-Score indicates pluripotency; methylation within *POU5F1* may demarcate early differentiation events.

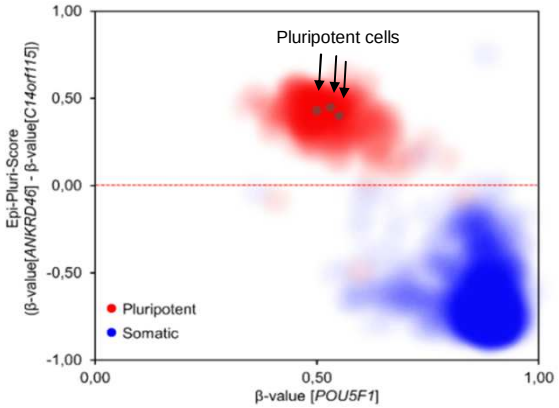

Figure 1: Exemplary analysis of three iPSC lines. *Epi-Pluri-Score clearly demonstrates association with pluripotent cells. Red cloud: DNA methylation profiles of 264 pluripotent samples; blue cloud: DNA methylation profiles of 1,951 non-pluripotent samples.*

Our service for you:

- You send us genomic DNA of your cells of interest (e.g. iPSC clones). Shipment can be performed at room temperature (if possible >200 ng DNA)
- We perform bisulfite conversion of DNA
- We analyze the DNA-methylation at the three relevant sites by pyrosequencing
- We calculate the Epi-Pluri-Score
- Results – including pyrograms, raw data, and graphical presentation – are provided by Email (usually within two weeks)

Publication:

- Lenz M., Goetzke R., et al., ***Scientific Reports*** 2015; 5:8973
- Patent application: 2014; EP 14192699.8

Further Information

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www.cygenia.com.