NeuraCell Contract Research Update – Kao Lab

Mar 24, 2016

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GIH143 Reprogramming Summary
GIH143-SeV-hiPSC Clones 1-3

GIH143-SeV-hiPSC
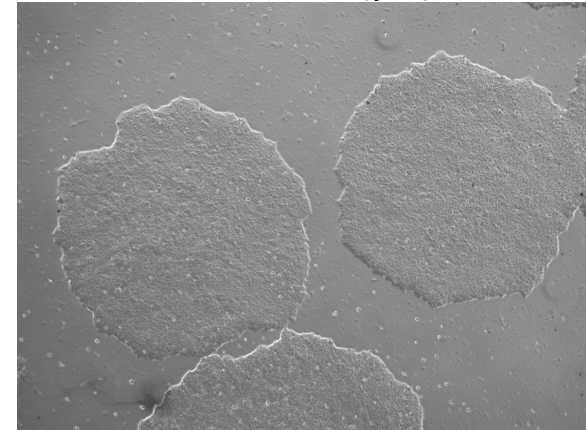---
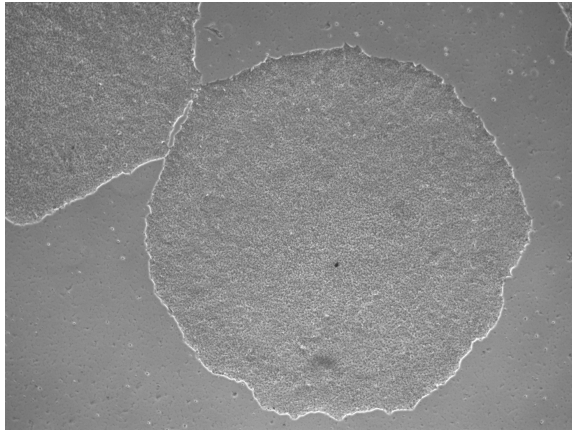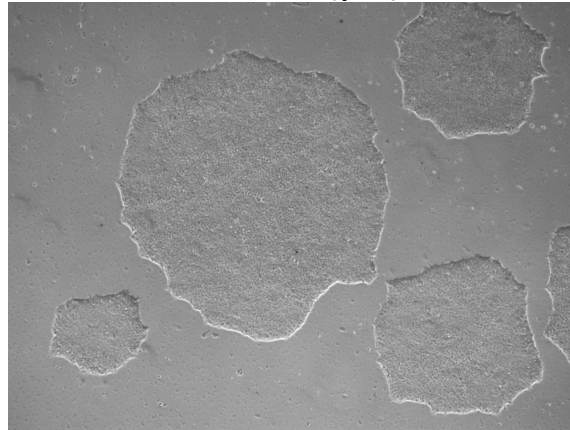
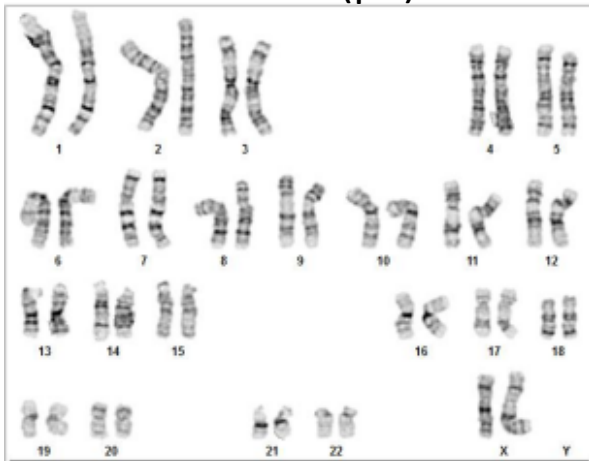| Clone A (p8) | Clone B (p8) | Clone C (p8) |

- Reprogramming summary:
  - All lines were derived using Sendai Virus 2.0 (Transgenic free system)
  - Length = 5 weeks; Split at Day 6 onto MG (BD)
  - Format: 25K and 50K; 12w plate;

- 5 lines were obtained for GIH143. Three clone from each patient fibroblasts was fully characterized

GIH143-SeV-hiPSC Characterization Summary
KT and FP confirms genomic integrity and identification

GIH143-SeV-hiPSC
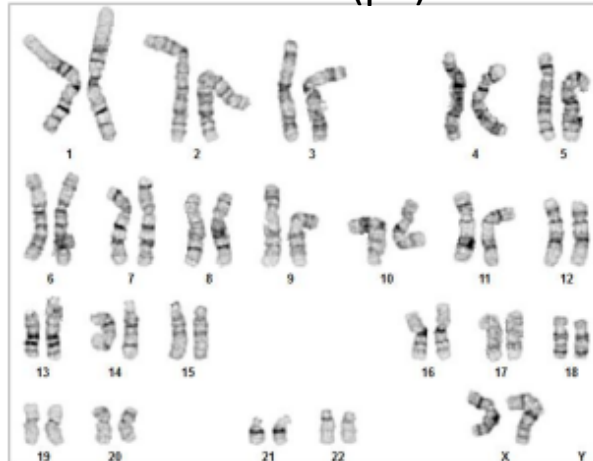
Clone A (p8)   Clone B (p8)   Clone C (p8)

GIH143-SeV-hiPSC clones A-C all have a normal karyotype. No clonal abnormalities were detected at the stated band level of resolution.

GIH143-SeV-hiPSC Characterization Summary
KT and FP confirms genomic integrity and identification

| STR Locus	STR Genotype Repeat #	STR Genotype
FGA	16–18,18.2,19,19.2,20,20.2,21,21.2,22, 22.2, 23, 23.2, 24, 24.2, 25, 25.2, 26–30, 31.2, 43.2, 44.2,45.2, 46.2	25,25
TPOX	6-13	8,9
D8S1179	7-18	14,14
vWA	10-22	18,18
Amelogenin	X,Y	X,X
Penta_D	2.2, 3.2, 5, 7-17	11,13
CSF1PO	6-15	11,12
D16S539	5, 8-15	11,12
D7S820	6-14	10,12
D13S317	7-15	11,13
D5S818	7-16	12,12
Penta_E	5-24	5,14
D18S51	8-10, 10.2, 11-13, 13.2, 14-27	12,15
D21S11	24,24.2,25,25.2,26-28,28.2,29,29.2, 30, 30.2,31, 31.2,32,32.2,33,33.2, 34,34.2,35,35.2,36-38	29,30
TH01	4-9,9.3,10-11,13.3	7,8
D3S1358	12-20	15,19

Results: Based on the MEF 143 p8 (27383) cells submitted by WiCell Cytogenetics – Neural Stem Cell Institute dated and received on 11/23/15, this sample (Label on Tube: **MEF 143 p8 (27383)) defines the STR profile of the human stem cell line MEF 143 p8 (27383) and matches samples GIH-143 Clone A p8 (25839), GIH 143 Clone B p8 (25840), and GIH 143 Clone C p8 (25841)**. It is comprised of 26 allelic polymorphisms across the 15 STR loci analyzed.

Interpretation: No STR polymorphisms other than those corresponding to the human MEF 143 p8 (27383) stem cell line were detected and the concentration of DNA required to achieve an acceptable STR genotype (signal/ noise) was equivalent to that required for the standard procedure (~1 ng/amplification reaction) from human genomic DNA. **This result suggests that the MEF 143 p8 (27383) sample submitted corresponds to the MEF 143 p8 (27383) stem cell line, matches samples GIH-143 Clone A p8 (25839), GIH 143 Clone B p8 (25840), and GIH 143 Clone C p8 (25841), and was not contaminated with any other human stem cells or a significant amount of mouse feeder layer cells**.

Sensitivity: Sensitivity limits for detection of STR polymorphisms unique to either this or other human stem cell lines is ~2-5%.

GIH143-SeV-hiPSC Characterization Summary
Pluripotency expression confirmed via immunoflorescence
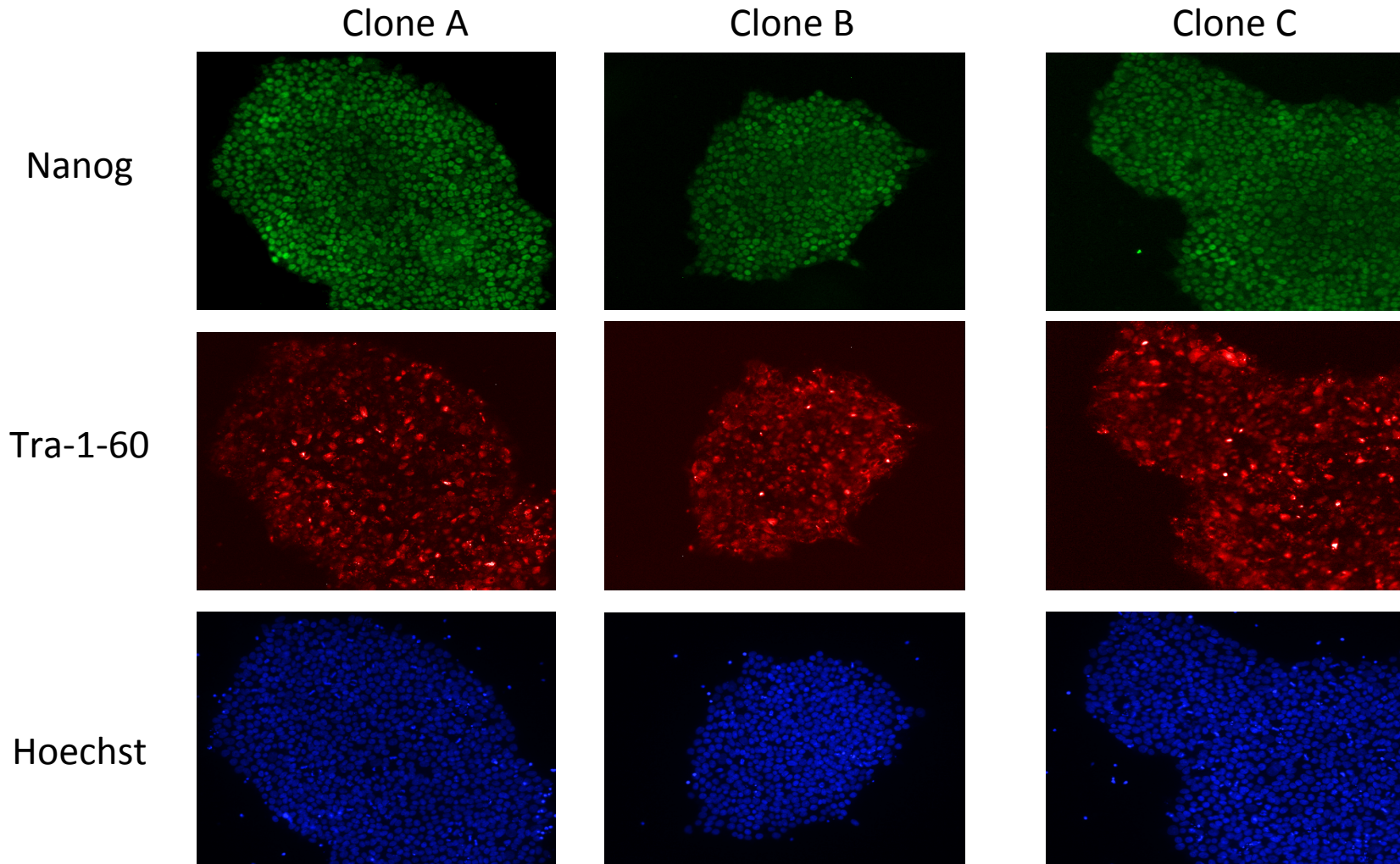
GIH143-SeV-hiPSC Characterization Summary

Differentiation potential confirmed via directed tri-lineage