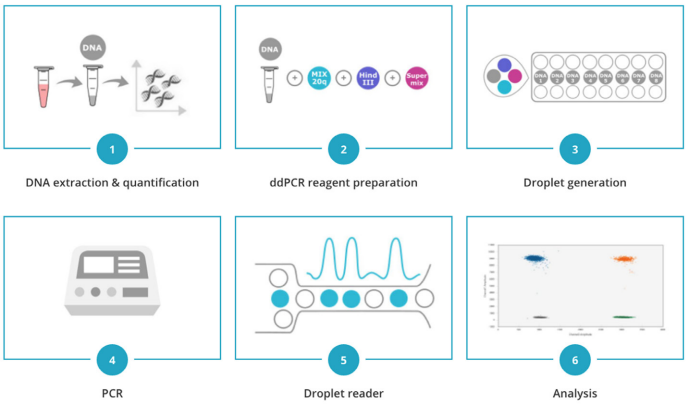
iCS-digital™ PSC 20q-only kit

The iCS-digital ™ PSC 20q-only kit allows the detection by digital PCR of the most recurrent genomic defect in human pluripotent stem cells (hPSCs).



SPECIES	CELL TYPES	COMPATIBLE INSTRUMENTS	STORAGE	SIZE	COVERAGE	MOSAICISM
Human	hPSCs: ESCs & iPSCs	QX100 and QX200 Droplet Digital PCR Bio-Rad system	-20°C upon reception	20 tests	The 20q11.21 gain is responsible for >20% of the recurrent abnormalities	> 20% (depending on sample quality)

The iCS-digital ™ PSC 20q-only kit is based on the droplet digital PCR (ddPCR) technology and allows the reliable quantification of the sub-karyotypic 20q11.21 amplification. Gain of 20q11.21 copy-number variant (CNV) is detected in more than 20% of worldwide cultured human Pluripotent Stem Cells (hPSCs) [1-3] and represents 22.9% of the recurrent structural variants identified in hPSCs [4], making it the most common genomic abnormality in hPSCs.

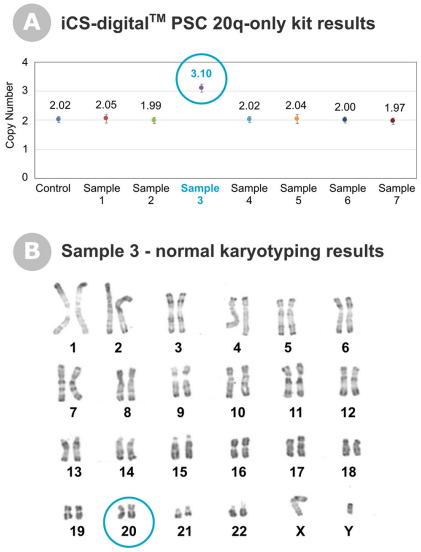
Cells harbouring the 20q11.21 amplification display a selective advantage and can completely overtake the culture in few passages [5].

Detection of the 20q11.21 amplification using a dedicated technology is critical because most of these mutations fall below the size detection limit of conventional G-banding karyotyping (as illustrated on the right, panel B).

The kit also includes a validated normal genomic DNA control sample.

For Research Use Only

[1, 2, 3, 4, 5] Refer to scientific publication number 1, 2, 3, 4 or 5 (bottom of page)



Sub-karyotypic 20q11.21 duplication in hPSCs (A) detected using the iCS-digital ™ PSC 20q-only kit (sample 3) and (B) not identified by G-banding karyotyping method. Images are for illustrative purposes only.

The iCS-digital™ 20q-only kit allows the fast and easy in-house analysis of the sub-karyotypic 20q11.21 amplification in hPSCs.

1. Halliwell J, Barbaric I, Andrews PW. Acquired genetic changes in human pluripotent stem cells: origins and consequences. Nat Rev Mol Cell Biol. 2020 Dec;21(12):715-728.

2. Baker D, Hirst AJ, Gokhale PJ, Juarez MA, Williams S, Wheeler M, Bean K, Allison TF, Moore HD, Andrews PW, Barbaric I. Detecting Genetic Mosaicism in Cultures of Human Pluripotent Stem Cells. Stem Cell Reports. 2016 Nov 8;7(5):998-1012.

3. Avery S, Hirst AJ, Baker D, Lim CY, Alagaratnam S, Skotheim RI, Lothe RA, Pera MF, Colman A, Robson P, Andrews PW, Knowles BB. BCL-XL mediates the strong selective advantage of a 20q11.21 amplification commonly found in human embryonic stem cell cultures. Stem Cell Reports. 2013 Oct 31;1(5):379-86.

4. Assou S, Girault N, Plinet M, et al. Recurrent Genetic Abnormalities in Human Pluripotent Stem Cells: Definition and Routine Detection in Culture Supernatant by Targeted Droplet Digital PCR. Stem Cell Reports. 2020;14(1):1-8.

5. Assou S, Bouckenheimer J, and De Vos J. Concise Review: Assessing the Genome Integrity of Human Induced Pluripotent Stem Cells: What Quality Control Metrics? Stem Cells. 2018; 36: 814-821.

stemgenomics cell integrity

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