



Cell Karyotyping Analysis Kit

For chromosome counting of cells

Catalog Number: ST01004

Size: 20 tests

Karyotype is the number and appearance of chromosomes in the nucleus of a eukaryotic cell. Karyotypes describe the chromosome count of an organism, and what these chromosomes look like under a light microscope. The study of karyotypes is important for cell biology and genetics, and the results may be used in evolutionary biology and medicine. Karyotypes can be used for many purposes; such as to study chromosomal aberrations, cellular function, taxonomic relationships and to gather information about past evolutionary events.

Product Description

Stemmera™ Cell Karyotyping Analysis Kit is a ready-to-use kit which composed of necessary reagents and tool intended for chromosome counting after cell expansion for karyotyping analysis of eukaryotic cells.

Product Application

This product is used to identify chromosome number after cell passaging. It serves as a good evidence to guide the scientists whether they require to perform further cytogenetic analysis, such as G-banding (G-banding is a technique used in cytogenetics to produce a visible karyotype by staining condensed chromosomes. It is useful for identifying genetic diseases through photographic representation of the entire chromosome complement). For example, if the chromosome number is not correct, G-banding is not necessary to do. On the contrary, if the chromosome number is correct, scientists can perform G-banding to identify chromosomal abnormalities, such as translocations. Karyotyping analysis is a necessary and simple way to check the quality of cells.

Product Component

Component	Size	Storage	Catalog #
Meta-block Solution (100x)	1 ml	2°C to 8°C	ST01004-S1
Meta-block Supplement (1000x)	50 µl	RT	ST01004-S2

Cell Dissociation Solution	30 ml	RT	ST01004-S3
Pre-fix Solution (1x)	2 x 50 ml	RT	ST01004-S4
Fix Solution I	5 x 30 ml	RT	ST01004-S5
Fix Solution II	2 x 25 ml	RT	ST01004-S6
Staining Solution I	40 ml	RT	ST01004-S7
Staining Solution II	10 ml	RT	ST01004-S8
Microscope Slides	25 pcs	RT	ST01004-S9

Note: Due to Fix Solution I and II are toxic, use with gloves and lab coat is necessary. Rinse with tap water immediately if spill on the body or on the bench.

Storage and Handling

Stemmera™ Cell Karyotyping Analysis Kit is shipped with blue ice pack. Store all components as directed in manual instruction upon arrival. Alternatively, it is fine to store all components at 2°C to 8°C.

Product Use

This product is intended for *in vitro* use and research use only. Not intended for human or animal diagnostic or therapeutic uses.

General Precautions

1. Always use fresh, clean gloves and wear lab coats.
2. Material Safety Data Sheet (MSDS) is available online.
3. Clean working space with 70% ethanol or other suitable disinfectant.

Preparation of Reagents

Pre-cool Fix Solution I and II: Cool Fix Solution I and II at -20°C freezer for at least an hour or overnight.

Preparation of mixture of Fix Solutions: Mix Fix Solution I and II at ratio 3:1 (Fix Solution I: Fix Solution II=3:1) in a new 15 ml Falcon tube **on ice**.

Preparation of clean slides (1 slide per sample): sink slides in Fix Solution I (Stemmera, Cat # ST01004-S5) and wipe off, repeat once and dry out.



Making staining solution: Mix Staining Solution I and II at ratio 4:1 and ready to use.

Protocol

1. Grow cells on T25 flask or 6-well plates to about 70% confluent in culture medium.
2. Change medium two hours prior to treatment of cells with Meta-block Solution.
3. Treat the cells with Meta-block Solution (100x) (Stemmera, Cat# ST01004-S1) at 100x dilution. For example, if the medium is 4ml in T25 flask, add 40 μ l of Meta-block Solution in medium and 4 μ l of Meta-block Supplement (1000x) (Stemmera, Cat # ST01004-S2) simultaneously.
4. Incubate the cells for 2 hours in 37°C, 5% CO₂ incubator.
5. Dissociate the cells with 2 ml of Cell Dissociation Solution (Stemmera, Cat# ST01004-S3) for 5 minutes in 37°C, 5% CO₂ incubator and stop reaction by adding the same volume of culture medium.
6. Centrifuge the cells in 15 ml Falcon tube at 1000 rpm for 3-5 minutes. Aspirate suspensions and leave 0.5 ml of medium for resuspension.
7. Add 5ml of Pre-fix Solution (1x) (Stemmera, Cat# ST01004-S4) in cell and incubate at room temperature for 20-30 minutes.
8. Centrifuge the cells at 500-700 rpm (low break) for 5 minutes.
9. Aspirate the suspensions and leave 0.5ml for cell resuspension.
10. Add 5 ml of mixture of fix solution drop wise with flicking or vortexing at first 2 ml.
11. Centrifuge the cells at 500-700 rpm (low break) for 5 minutes.
12. Aspirate the suspensions and leave 0.5ml for cell resuspension.
13. Repeat steps 10-12 for a couple of times, total 3 times of treatment with mixture of fix solution.
14. Add 1-2 ml of mixture of fix solution in cells to resuspend the cells and put it on ice.
15. Drop the cells on slides. Make sure the drop height from drop to slide surface is around 15-30 inches tall.
16. Dry dropped slides at room temperature for around 10-15 minutes.
17. Stain the cells with mixture of Staining Solution I and Staining Solution II at room temperature for 15-20 minutes.
18. Flood the slides gently with tap water and dry at room temperature.

19. Take pictures of best spread chromosomes.
20. Count the chromosomes number for each spread.
21. Above 80% of counting with correct chromosome number is defined as normal chromosome and vice versa.

Note: Extra cell suspension can be stored at 2°C to 8°C, fridge for a week and drop again if needed.

Quality Control

This product is used to count chromosomes of any eukaryotic cells. The following images represent chromosome spread of iPSCs and Fibroblast.



Chromosome counting of Mouse iPSCs



Chromosome counting of Mouse fibroblast

Warranty and Limited Liability

Stemmera™ will not be liable for any damage caused by misuse, improper handling and storage of the product, non-compliance with precautions and procedures, and damages caused by events occurring after the product is released.

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Reference number of chromosomes from different species

Organism	Chromosome number
Human	46
Rhesus Monkey	42
Rat	42
Mouse	40
Rabbit	44
Pig	38
Dog	78
Horse	64
Cow	60
Chicken	78
Donkey	62
Sheep	54
Cat	38
Zebrafish	50

Related Products

Product	Cat #	Size
Alkaline Phosphatase Detection Kit (Ready-to-Use) - Blue	ST01001	50 tests
Alkaline Phosphatase Detection Kit (Ready-to-Use) - Red	ST01002	50 tests
Human Fibroblast (hFIB) Reprogramming Kit	ST01003	5 reactions
Human Blood Cell (hBLD) Reprogramming Kit	ST01005	5 reactions
Human ESCs/iPSCs Serum-/Feeder-free Medium (hStemSFM)	ST02001	500 ml
Human ESCs/iPSCs Xeno-Free Medium (hStemXFM)	ST02002	500 ml
Human Fibroblast (hFIB) Reprogramming Medium	ST02003	500 ml
Fibroblast Growth Medium	ST02005	500 ml
Human Blood Cell (hBLD) Growth Medium	ST02006	2 x 25 ml
Non-Enzymatic Cell Dissociation Solution (1x)	ST03001	100 ml
Serum-Free Cryopreservation Solution for Human ESCs/iPSCs	ST03002	50 ml
0.2% Gelatin	ST03003	100 ml
0.1% Gelatin	ST03004	100 ml
Universal Cryopreservation Solution (1x)	ST03005	50 ml

Technical Support

For more product and technical information, please visit our website at www.stemmera.com.

For further assistance, email your inquiries to our Technical Support team at techsupport@stemmera.com.

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