Rev. 0

Single Cell Whole Genome Amplification Kit (SCWGAK)

Catalog #MB6078

Product Description

ScienCell's Single Cell Whole Genome Amplification kit is designed for whole genome amplification from single cells, limited samples, or purified genomic DNA. The 5x RWGA master mix contains ScienCell's unique thermal-stabled Phi 29 polymerase and optimized buffers and reagents. It allows for DNA amplification to be performed at a higher temperature, which provides maximal inhibition of GC content bias and nonspecific amplification. This product also allows the use of a flexible volume of starting sample and to scale-up depending on final yield requirement. The average product length of SCWGAK is in a range between 2 kb and 100 kb, enabling all downstream applications, such as long-range copy number variations, next-generation sequencing, array CGH genotyping or qPCR analysis. The genomic DNA yields is up to 20 µg per 30 µL reaction, depending on the quality of input sample (intact cells or DNA).

Kit Components

Cat. #	# of Vials	Reagent	Quantity	Storage
MB6078a	1	Buffer WL	100 µL	-20°C
MB6078b	1	Buffer WR	300 µL	
MB6078c	1	RWGA Master Mix, 5x	300 µL	
MB6078d	1	Nuclease-free water	1.5 mL	4°C

Quality Control

The performance of SCWGAK is verified by amplifying genomic DNA from 1-3 intact human cells. The quality of resultant DNA was verified by qPCR. DNase activity was NOT detected by incubating each component of SCWGAK with single-stranded and double-stranded DNA at 37°C for 24 hours.

Product Use

SCWGAK is for research use only. It is not approved for human or animal use, or for application in clinical or *in vitro* diagnostic procedures.

Shipping and Storage

The product is shipped on dry ice. Upon receipt, store nuclease-free H_2O (Cat. #MB6078d) at 4°C and all other components at -20°C in a manual defrost freezer. Aliquot as needed. Avoid repeated freeze-and-thaw cycles.

Procedure

1. Thaw Buffer WL (Cat. #MB6078a), Buffer WR (Cat. #MB6078b), Buffer WLD (see Step 2b.1) and Buffer WRD (see Step 2b.2) at room temperature. Thaw and keep RWGA Master Mix on ice until use.

2. Prepare template DNA sample as follows, based on sample type (for DNA from cell material, follow Step 2a; for genomic DNA, follow Step 2b):

   2a. **From cell material**

   Note: *This kit is optimized for 1-1000 intact cell material that are not fixed by formalin or any other cross-linking agents.*

   2a.1. Place 1-10 µL cell material (1-1000 intact cells supplied with 1x PBS) into a PCR reaction tube. Consistent volume is recommended between samples.

   2a.2. Add 1 µL Buffer WL (Cat. #MB6078a). Mix by stirring gently with a pipette tip.

   2a.3. Incubate at room temperature according to the cell number:

1-10 cells	3 mins
11-50 cells	4 mins
51-200 cells	6 mins
200-1000 cells	10 mins

   2a.4. Add 3 µL Buffer WR (Cat. #MB6078b). Store on ice.

   2b. **From genomic DNA**

   2a.1. Prepare Buffer WLD by adding 67 µL Nuclease-free water (Cat. #MB6078d) to 5 µL Buffer WL. The volumes given are sufficient for 20 reactions. Buffer WLD can be stored at -20°C for up to 6 months.

   2a.2. Prepare Buffer WRD by adding 57 µL Nuclease-free water (Cat. #MB6078d) to 15 µL Buffer WR. The volumes given are sufficient for 20 reactions. Buffer WRD can be stored at -20°C for up to 6 months.

   2a.2. Dilute 10 pg - 10 ng genomic DNA to a volume of 3 µL using Nuclease-free water (Cat. #MB6078d) in a PCR reaction tube.

   2a.2. Add 3 µL Buffer WLD.

   2a.3. Incubate at room temperature for 3 mins.

   2a.4. Add 3 µL Buffer WRD. Store on ice.

3. Bring the volume to 24 µL in the PCR tube containing the template DNA sample by adding Nuclease-free water (Cat. #MB6078d):

   3a. **For samples from cell material.** Subtract the volume of starting cell material from 20 µL. Add the calculated volume of Nuclease-free water (Cat. #MB6078d). For example, if the starting cell material is 5 µL, add 15 µL Nuclease-free water (Cat. #MB6078d) to the PCR tube.

3b. **For samples from genomic DNA.** Add 15 µL Nuclease-free water (Cat. #MB6078d) to the PCR tube.

4. Add 6 µL RWGA Master Mix, 5x (Cat. #MB6078c).

5. Incubate at 37°C for 6 hours.
   Note: *if a thermal cycler is used, the recommended temperature of the lid is 70* °C.

6. Incubate at 65°C for 5 mins to stop the reaction.

7. Store the amplified DNA at 4°C for up to 2 weeks or at -20°C for long-term storage.