In a particular example, the header described in step B is the product formed by annealing a nucleotide sequence such as SEQ ID NO: 1 and a nucleotide sequence such as SEQ ID NO: 2. Usually, the synthesized dry header primer powder is diluted to the concentration of 100 μM by using 1× annealing buffer, and then annealed in an equal volume, that is, 50 μL of each header primer is taken, and kept at 85°C for 2 minutes after mixing, and the temperature is lowered by 1°C per minute until 15°C and incubate at 4°C to obtain the header, or using methods and kits known in the art to prepare the header.

SEQ ID NO: 1 sequence: 5'- $A_t(N)_a(N)_b$-3';

SEQ ID NO: 2 sequence: 5'-$(N)_c(N)'_aT$-3',

The said primer with a cleavage site is the primer containing a deoxyuracil nucleotide, such as the nucleotide sequences shown in SEQ ID NO: 3 and SEQ ID NO: 4.

SEQ ID NO: 3 sequence: 5'-$(N)_e(N)'_{b(}(N)'_aU(M)_k$-3';

SEQ ID NO: 4 sequence: 5'-$(N)_f(N)_c(N)'_aU(M)_g$-3',

Wherein, N is one of the any four types of nucleotides, Adenine, Guanine, Cytosine and Thymine and M is a random nucleotide. Wherein $(N)_a$,$(N)_b$, $(N)_c$, $(N)_e$, $(N)_f$, $(N)'_a$, $(N)'_b$ are 7 independently selected segments from the sequence of A, T, C, G nucleotides and contain a, b, c, e, f, a, b Ns, respectively. The nucleotide sequence of $(N)_a$ is the reverse-complement counterpart of $(N)'_a$ and the nucleotide sequence of $(N)_b$ is the reverse-complement counterpart of $(N)'_b$. Wherein t is 0 or 1, when t equals to 0, there is 0 Adenine, and when t is 1, there is 1 Adenine. Wherein a, b, and c are separate natural numbers with the value over 5. Preferably, a is the number between 5-30, more preferably, a is the number between 10-20; preferably, b is the number between 5-20, more preferably, b is the number between 10-20; preferably c is the number between 10-20; Wherein e and f are natural numbers, preferably e is the number between 0-20 and f is the number between 0-20, more preferably, e is 0 and f is 0; Wherein g

Claims

1. A method of non-specific replication of DNA fragments, including:

Step B: Adding headers to processed DNA fragments that are expected to be replicated to generate ligated DNA fragments with headers; the headers contain breaking areas, the headers with breaking areas are annealing products of nucleotide sequences as shown in SEQ ID NO: 1 and SEQ ID NO: 2;

Step C: Using primers that bind to the headers to amplify the ligated DNA fragments to obtain PCR products; the primers contain breaking areas, the primers with breaking areas have a nucleotide sequence as shown in SEQ ID NO: 3 and SEQ ID NO: 4, wherein k and g in SEQ ID NO: 3 and SEQ ID NO: 4 is 0; KAPA HiFi Uracil+ system is used for the amplification;

Step D: Breaking the PCR products to obtain usable DNA fragments which are substantially similar to the DNA fragments that are expected to be replicated.

2. The method according to claim 1, wherein in said Step D the breaking of the PCR products is achieved through reagent cleavage; wherein the reagent cleavage is performed by cleavage reagents to break the PCR product at least once.

3. The method according to claim 2, wherein the cleavage reagents contain at least an enzyme with cleavage function,

the enzyme with cleavage function is selected from one or more of the groups consisting of restriction endonucleases, exonucleases, enzyme with deoxyuracil cleavage function and enzyme with single-strand specific cleavage function.

4. The method according to claim 3, wherein the enzyme with deoxyuracil cleavage

function is Uracil-DNA Glycosylase or a mixture of Endonuclease VIII and UDG.

5. The method according to claim 3, wherein the enzyme with single-strand specific cleavage function is Mung Bean Nuclease and/or S1 Nuclease.

6. The method according to claim 1, wherein quantity of the DNA fragments expected to be replicated in Step B is 0.1 to 100 ng, and size of the DNA fragments expected to be replicated in Step B is 80 to 1000 bp.

7. The method according to claim 6, wherein size of the DNA fragments expected to be replicated in Step B is 100 to 250bp.

8. The method according to claim 1, wherein the method further comprises a Step A-2 performed before the Step B, wherein the Step A-2 comprises end-repairing DNA fragments expected to be replicated to obtain the processed DNA fragments that are expected to be replicated; or end-repairing DNA fragments expected to be replicated and subsequently or simultaneously adding Adenine nucleotide to the 3' end of the DNA fragments to obtain the processed DNA fragments that are expected to be replicated.

9. The method according to claim 8, wherein the method further comprises a Step A-1 performed before the Step A-2, wherein the Step A-1 comprises disrupting the sample DNA to obtain the DNA fragments that are expected to be replicated.

10. A kit for non-specific replication of DNA fragments, wherein the kit is used to implement any of the methods according to claims 1-9, including:

reagents for adding a header, wherein the reagents for adding a header include headers,

PCR amplification reagents, wherein the PCR amplification reagents include KAPA HiFi Uracil+ system and primers, and/or

cleavage reagents, wherein the cleavage reagents include enzymes with cleavage functions;

wherein the headers are headers containing breaking areas; the headers containing breaking areas are annealing product of nucleotide sequences as shown in SEQ ID NO: 1 and SEQ ID NO: 2;

wherein the primers are primers containing breaking areas; wherein the primers containing breaking areas have nucleotide sequences as shown in SEQ ID NO: 3 and SEQ ID NO: 4, wherein k and g in SEQ ID NO: 3 and SEQ ID NO: 4 is 0;

the cleavage reagents contain at least one enzyme with cleavage function.