Title: 1DF-PCR application in otorhinolaryngological investigations

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ABSTRACT

1DF-PCR (one drop of body fluid-PCR) is a novel biotechnology being able to directly amplify DNA (i.e., w/o pre-isolation of the DNA molecules) present in a tiny volume (< ~20 μL) of crude sample for further analysis by sequencing or other methods.

The unprecedented capability of 1DF-PCR is made possible by combining well-designed adapter and optimized experimental protocol with effective reagents. Firstly, the adapter molecules do not form dimers which would otherwise inhibit the amplification of the target DNA. Secondly, a "single-tube procedure" is implemented in the protocol to allow the user to complete the key part of the experimental procedure in the same tube, i.e., no need to change buffer or purify experimental intermediates during the key steps. By combining these unique advantages with selected, effective reagents, we produce the 1DF-PCR kit aiming to facilitate biomedical research and molecular diagnosis. Notice that, since 1DF-PCR does not require pre-isolation of DNA, there is no pre-selection upon the target DNA species and all DNA fragments are subjected to analysis.

Taken together, we believe that these advantages will make 1DF-PCR a robust product suitable for otorhinolaryngological investigations, because small volumes of body liquids are frequently encountered by otorhinolaryngologists.

BIOGRAPHY

Kuo-Ping Chiu completed his PhD in Microbiology from UC Davis and did postdoc at Harvard Medical School. His industrial experiences include a 2-yr experience working at Bio-Rad as an R&D scientist and a 6-yr experience working at Genome Institute of Singapore to develop Paired-End Ditag (PED) (or Mate-Pair, MP) sequencing library preparation strategy and to analyze various sequence data. He moved back to Taiwan in 2008 to work for Academia Sinica (AS) and teach in a number of universities. At AS, he developed a number of biotechnologies for biomedical investigations, including 1DF-PCR, gene net-digital PCR and other related technologies.

Dr. Chiu has published ~50 papers with diverse subjects in international journals and is the inventor of ~10 patents. After decades working in academia, he is now running a biotech company in Taiwan to continue his interest in developing cutting-edge biotechnologies for the scientific community.

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