Nucleotides analysis of of human ancient from Sangiran (11.883 ± 93 BP)

Tanto Budi Susilo¹,², Adang Suwandi Ahmad³, Yan Rizal⁴, Akhmaloka¹*

¹Biochemistry Research Group, Faculty of Mathematics and Natural Sciences, Institut Teknologi Bandung, Bandung 40132, West Java, Indonesia, ²Biochemistry Division, Faculty of Mathematics and Natural Sciences, Lambung Mangkurat University, Banjarbaru, South Borneo, Indonesia, ³School of Informatics and Electrical Engineering, Institut Teknologi Bandung, Bandung 40132, West Java, Indonesia, ⁴Quaternary Geology, Faculty Earth Science and Technology, Institut Teknologi Bandung, Bandung 40132, West Java, Indonesia

*Corresponding author: loka@chem.itb.ac.id

Abstract

Pre-historic migration of Austronesian peoples was the largest in the world. Indonesia has the greatest of potential data. Eighty percent of its spread in Indonesian and the remaining twenty percent spread from Mandagaskar (Africa) to Easter Island (Pacific Far) and from the islands of Hawaii to New Zealand (South Pacific). Migration map can be constructed through theory Out of Sundaland, based on data of D-loop/HVS mtDNA diversity of Austronesian populations present day. However, studies on the nucleotide sequence data have not empirical evidence D-loop mtDNA Austronesian on Early Holocene (10.000 BP). Here, we will report new empirical evidence of four nucleotide sequences of mtDNA D-loop ancient Sangiran (11.833 BP, before present).

Amplification of target fragments were conducted by PCR and combined with the method of Sanger dideoxy. Mutations in the fragment (150 bp) with positions 16046-16196 indicate the number of mutations to ancient no.1, 2, 3, 4 were 7, 17, 11 and 17, respectively. There are 33 positions mutation that has not been reported MITOMAP (June 28, 2010). The nucleotide sequence of ancient Sangiran were proposed new empirical evidences for early H. sapiens in Sangiran Java.

Keywords: Austronesian, D-loop mtDNA and Sangiran

Introduction

Pre-historic life of the mankind has been unknown clearly on Early Holocene and Late Pleistocene (10,000-100,000 BP). The bioarchaeologist have been discussed many empirical evidence of fossils, artifact, and linguistics as tool for reconstruction of human migration. In Indonesian; fossil of fauna (Morwood et al., 2005 and 2008), genetics of flora and fauna (Soares et al., 2008) and language of ethnic (SIL, 2001) has the highest diversity in the world. In developing context the idea of evolution, Weidenreich (1946) suggested “Multiple Origins/Regional Continuity” that the high level of diversity in human populations originated the diversity of fossil hominid. The general stages in human of development, that process of evolution has been occured differentially represented both spatially and temporally in Asia, Europe and Africa. Diversity of fossil hominid of Java were reported very impressive and supported to theory “Regional Continuity”. The morphology of fossil contributed to explain of early Homo sapiens inhabitants in Java 50,000-250,000 BP, such as fossil Ngandong 12 (Ng12, 50,000-150,000 BP), Sambungmacan 4 (SM4, 300,000-400,000 BP), Pithecanthropus (PVIII/Sang-iran, 700,000-800,000 BP). Base on morphology and genetics data, bioanthropologist (Wolpoff, 1988) and genetist (e.g. Cann, 1992; Stringer, 2003) debates centred around Multiple Origins/Regional Continuity and Single Origin/Out-of-Africa models of human origins and diversity. Aziz et al. (2001) and Kaifu et al. (2008) stated that diversity of fossil of Java has been proved a process of local evolution between 800,000 and 50,000 BP. The fossil evidence were proposed for support to a theory “Regional Continuity” that human genetics inherited continuously from African to generation other continental since 1.9 million years ago, inbreeding with the local population and emigration occurs only once (Weidenreich, 1946; Wolpoff et al., 1988). In the context of the pre-history of a nation/ethnic Austronesian, the fossil discussion is satisfactory on Early Holocene. Indonesian have 80% Austronesian ethnic, consisting of 97 million Javanese ethnic. The Austronesian is the largest diaspora in the pre-history of mankind. The area diaspora have been covered from Madagascar to Paskaah island and from Hawai‘i to New Zealand or half of earth global since Early Holocene (Bellwood, 2005; Simanjuntak & Asikin, 2004). Therefore, discussion of pre-historic Austronesian in the world (10,000 BP) is still unfinished, including the geopolitics of Indonesia. Indonesian has the greatest of genetics data and become a strategic of position for traced to diaspora Austronesian in the world. The hilly karst area, Sewu Mountain Range of of Java, stretches from Pacitan Bay in the east to the Oyo River in the west, became a major concern for Austronesian research, because many of the findings of stone tools and bones. Austronesian is a nation that has a sail high skill. However, research has not

T. B. susilo et al.