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**Identification of SNP-SNP interaction for chronic dialysis patients**

Cheng-Hong Yang<sup>a</sup>, Zi-Jie Weng<sup>a</sup>, Li-Yeh Chuang<sup>b\*</sup>, Cheng-San Yang<sup>c\*</sup>

<sup>a</sup> Department of Electronic Engineering, National Kaohsiung University of Applied Sciences, No.1, Sec. 1, Syuecheng Rd., Dashu District, Kaohsiung City 84001, Taiwan.

<sup>b</sup> Department of Chemical Engineering & Institute of Biotechnology and Chemical Engineering, I-Shou University, No.415, Jiangong Rd., Sanmin Dist., Kaohsiung City 807, Taiwan.

<sup>c</sup> Department of Plastic Surgery, Ditmanson Medical Foundation Chia-Yi Christian Hospital, Chiayi 60002, Taiwan

C-HY: chyang@cc.kuas.edu.tw

Z-JW: dsa0543@hotmail.com

L-YC: chuang@isu.edu.tw

\*Corresponding author. Tel.: +886-6151100 ext3421.

**ABSTRACT**

Analyses of interactions between single nucleotide polymorphisms (SNPs) have reported significant associations between mitochondrial displacement loops (D-loops) and chronic dialysis diseases. However, the method used to detect potential SNP-SNP interaction still requires improvement. This study proposes an effective algorithm named dynamic center particle swarm optimization  $k$ -nearest neighbors (DCPSO-KNN) to detect the SNP-SNP interaction. DCPSO-KNN uses dynamic center particle swarm optimization (DCPSO) to generate SNP combinations with a fitness function designed using the KNN method and statistical verification. A total of

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