

Aptasensor designed via the stochastic tunneling-basin hopping method for biosensing of vascular endothelial growth factor

Hung-Wei Yang, Shin-Pon Ju, Che-Hao Cheng, Ying-Tzu Chen, Yu-Sheng Lin, See-Tong Pang



PII: S0956-5663(18)30581-5
DOI: <https://doi.org/10.1016/j.bios.2018.07.073>
Reference: BIOS10662

To appear in: *Biosensors and Bioelectronics*

Received date: 9 May 2018
Revised date: 28 July 2018
Accepted date: 30 July 2018

Cite this article as: Hung-Wei Yang, Shin-Pon Ju, Che-Hao Cheng, Ying-Tzu Chen, Yu-Sheng Lin and See-Tong Pang, Aptasensor designed via the stochastic tunneling-basin hopping method for biosensing of vascular endothelial growth factor, *Biosensors and Bioelectronics*, <https://doi.org/10.1016/j.bios.2018.07.073>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Aptasensor designed via the stochastic tunneling-basin hopping method for biosensing of vascular endothelial growth factor

Hung-Wei Yang¹, Shin-Pon Ju^{2,3,*}, Che-Hao Cheng², Ying-Tzu Chen¹, Yu-Sheng Lin², See-Tong Pang⁴

¹Institute of medical science and technology, National Sun Yat-sen University, Kaohsiung 80424, Taiwan

²Department of Mechanical and Electro-Mechanical Engineering, National Sun Yat-sen University, Kaohsiung 80424, Taiwan.

³Department of Medicinal and Applied Chemistry, Kaohsiung Medical University, Kaohsiung 80708, Taiwan

⁴Division of Urology, Department of Surgery, Linkou Chang Gung Memorial Hospital, Taoyuan 33305, Taiwan; School of Medicine, Chang Gung University, Taoyuan 33302, Taiwan

*Corresponding author: Shin-Pon Ju, Tel: (+886)-7-5252000#4231, E-mail: jushin-pon@mail.nsysu.edu.tw

Abstract

The Systematic Evolution Ligands by Exponential Enrichment (SELEX) is common used for selection of high affinity single-stranded DNA (ssDNA) aptamer with target protein. However, we do not know what the most stable configuration of the selected aptamer bound with target protein is. Therefore, a systematic search process using the stochastic tunneling-basin hopping (STUN-BH) method is proposed to find the most stable configuration of the ssDNA aptamer specific for vascular endothelial growth factor (VEGF) capture (Apt_{VEGF}; 5'-TGTGGGGGTGGACGGGCCGGGTAGA-3'). After the most stable configuration was obtained by the STUN-BH method, molecular dynamics (MD) simulation was carried out to investigate the

Download English Version:

<https://daneshyari.com/en/article/7228869>

Download Persian Version:

<https://daneshyari.com/article/7228869>

[Daneshyari.com](https://daneshyari.com)