

Accepted Manuscript

Title: Analysis of Drug Resistance Mutations in Whole Blood DNA from HIV-1 Infected Patients by Single Genome and Ultradeep Sequencing Analysis

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PII: S0166-0934(17)30574-8
DOI: <https://doi.org/10.1016/j.jviromet.2018.06.020>
Reference: VIRMET 13494

To appear in: *Journal of Virological Methods*

Received date: 8-9-2017
Revised date: 21-4-2018
Accepted date: 29-6-2018

Please cite this article as: Sotillo A, Sierra O, Martínez-Prats L, Gutiérrez F, Zurita S, Pulido F, Rubio R, Delgado R, Analysis of Drug Resistance Mutations in Whole Blood DNA from HIV-1 Infected Patients by Single Genome and Ultradeep Sequencing Analysis, *Journal of Virological Methods* (2018), <https://doi.org/10.1016/j.jviromet.2018.06.020>

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1 **Analysis of Drug Resistance Mutations in Whole Blood DNA from HIV-1 Infected Patients by**
2 **Single Genome and Ultradeep Sequencing Analysis**

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10 **Abstract**

11 In HIV-1 infected patients blood CD4⁺ T lymphocytes could be a valuable target to analyze drug
12 resistance mutations (DRM) selected over the course of the infection. However, detection of viral
13 resistance mutations in cellular DNA by standard genotype resistance techniques (SGRT) is
14 suboptimal.

15 Keywords: HIV-1; Resistance; Proviral DNA; Next Generation Sequencing; Clonal sequencing
16 Whole blood DNA (wbDNA) from 12 HIV-1 infected patients on ART was studied by Single Genome
17 Sequencing (SGS) and 8 of them also by Ultradeep pyrosequencing (UDP).

18 Results were compared with contemporary and historical DRM detected in plasma by SGRT during
19 follow up. All the contemporary DRM detected in plasma from the viremic patients were detected
20 by SGS and UDP (20 from 7 patients and 4 from 5 patients respectively). Out of the 67 historical
21 DRM detected in plasma and no longer present at the time of testing, 38 (57%) were detected by

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