

**Research Project Proposal**  
Academic year 2016-2017

<b>Project Nº 36</b>
<b>Title:</b> HIV-1 molecular epidemiology from newly diagnosed adult patients in Kinshasa: prevalence of subtypes and resistance mutations to antiretrovirals.
<b>Department/ Laboratory</b> 1. Laboratory of Clinical Microbiology, Department of Microbiology, Clínica Universidad de Navarra. 2. Department of Preventive Medicine and Public Health, University of Navarra.
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<b>Summary</b>  Unlike most economically developed countries, where HIV infections are linked to HIV-1 subtype B, in the Democratic Republic of Congo (DRC) there is a higher genetic diversity of the circulating strains, some of them showing extended high viremics, different risk of transmission or resistance mutations to antiretroviral drugs. Genetic studies of HIV can be carried out in dried blood spots on filter paper as an alternative cost-effective sample to plasma.  The main <u>objectives</u> of this project are:  1. To compare the performance of HIV-1 viral load through 2 commercial virological assays (one point-of-care test and one standard test) from newly HIV diagnosed patients at Monkole Hospital in Kinshasa.  2. To identify the HIV-1 variant (subtype and recombinants) by sequencing and phylogenetic analysis of viral protease and partial reverse transcriptase sequences in each infected adult.  <u>Methods:</u>  Prospective cohort study with individuals aged 15-59 years living in Kinshasa (DRC) attending Monkole Hospital and getting a positive or indeterminate HIV test.  For those newly diagnosed HIV positive patients, 2 cards (with 5 dried blood spots



each), will be collected and shipped to Navarra to be tested.

HIV viral load will be quantified through 2 real time RT-PCR tests; subtype and antiretroviral resistance mutations will be analyzed by viral sequencing, mutations interpretation and phylogenetic analysis using available software (ClustalW2, MEGA 6.2 geno2pheno, Stanford-hivdb). With these data we will be able to describe the most frequent HIV-1 drug resistance mutations to each antiretroviral drug identifying the most affected drugs and the predicted level of drug susceptibility, in order to inform about potential future individualized rescue treatment strategies, and community resistance patterns for empirical treatment.

**References:**

TenoRes Study Group. Global epidemiology of drug resistance after failure of WHO recommended first-line regimens for adult HIV-1 infection: a multicentre retrospective cohort study. *Lancet Infect Dis.* 2016

Muwonga J, Edidi S, Butel C, et al. Resistance to antiretroviral drugs in treated and drug-naive patients in the Democratic Republic of Congo. *J Acquir Immune Defic Syndr.* 2011;57 Suppl 1:S27-33.

Carlos S, Martínez-González MÁ, Burgueño E, et al. Misconceptions about HIV infection in Kinshasa (Democratic Republic of Congo): a case-control study on knowledge, attitudes and practices. *Sex Transm Infect.* 2015 Aug;91(5):334-7.

**POSSIBILITY OF PhD**

YES (depending of funding)\*

\* (PhD grant required)