**Nature-Inspired Antivirals with Distinctive Mechanisms of Action: Focus on HIV and SARS-CoV-2**

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This project is focused on nature-based discovery of antiviral agents that target putative drug targets in the human immunodeficiency virus (HIV) and the severe acute respiratory syndrome (SARS) coronavirus disease 2019 (COVID-19) virus (SARS-CoV-2) for which screening procedures have lately been established. The presenter has previously developed the web-accessible African Natural Products Database (ANPDB). The application aims to set up a cloud-based computing platform with an *in silico* pipeline coupling artificial intelligence/machine learning (AI/ML) with physics-based methods (e.g. molecular docking, molecular dynamics, etc.) and standard ligand-based statistical search methods (e.g. quantitative structure-activity relationships (QSAR), sub-structure and similarity searches along with pharmacophore-based methods). The *in silico* (virtual) hits from the pipeline, starting from the entire natural products library of all medicinal plants growing in Africa, will be screened in a panoply of assays with the aim of identifying compounds inhibiting vital targets like the SARS-CoV-2 spike protein and proteases, as well as vital ion channels and latency reversal in HIV. Lead expansion aimed at exploring the chemical space around the identified compounds from the screens is also planned, along with the screening of the entire in-house library of synthetic mimics of natural products from the applicant’s laboratory. In addition to targeting these vital viral proteins with synthetic analogues aiming at nanomolar range inhibitors that could be taken to *in vivo* experiments, the project aims at transferring the know-how in assay development and cloud computing to our African laboratory.