VIROLAB – a Virtual Laboratory for Decision Support in Viral Diseases Treatment

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Abstract

The main objective of the ViroLab project is developing a Virtual
Laboratory for Infectious Diseases that facilitates medical knowledge
discovery and decision support for e.g. HIV drug resistance.

Large, high quality, clinical and patient databases have become avai-
lable which can be used to relate genotype to drug-susceptibility phe-
notype. The relevant data has two main characteristics: it spans in a
rule-based decision support system for drug ranking. The Virtual Labo-
ratory supports tools for statistical nalysis, visualization, modelling and
simulation, to predict the temporal virological and immunological re-
sponse of viruses with complex mutation patterns to drug therapy. The
Virtual Laboratory provides the medical doctors with a decision sup-
port system to rank drugs targeted at patients. It provides the virolo-
gists with an advanced environment to study trends on an individual,
population and epidemiological level. By virtualizing the hardware,
compute infrastructure and databases, the virtual laboratory is a user
friendly environment, with tailored workflow templates to harness and
automate such diverse tasks as data archiving, data integration, data
mining and analysis, and modelling and simulation. HIV drug resis-
tance is one of the few areas in medicine where genetic information
is widely used for a considerable number of years. Large numbers of
complex genetic sequences are available, in addition to clinical data.
ViroLab offers a unique opportunity as a blueprint for the potentially
many diseases where genetic information becomes important in future
years.

References

1. VIROLAB – EU IST STREP Project 027446; http://www.virolab.eu