



HIV Treatment Response  
Prediction System

## PRESS RELEASE

### **New computer modelling system predicts responses to HIV and AIDS treatments**

*“System puts the experience of treating thousands of patients at the doctor’s fingertips”*

**LONDON, UK; 06:00 GMT, 6th October 2010.** A ground-breaking system for predicting how individual patients with HIV and AIDS will respond to different drugs is launched today by RDI, a UK-based not-for-profit research group. The experimental system, called the HIV Treatment Response Prediction System (HIV-TRePS), is available free of charge over the Internet and helps physicians select the best treatment for their patients.

HIV-TRePS harnesses the power of complex computer models that have been trained with data from tens of thousands of patients treated in hospitals around the world. Physicians access the system over the Internet and enter their patient’s data, and the system predicts how the patient will respond to hundreds of alternative combinations of HIV drugs. Within seconds, the physician receives a report listing the drug combinations that the models predict are most likely to work.

Studies conducted by the RDI and its partners have demonstrated that the system can potentially improve patient outcomes and reduce the overall number – and therefore cost – of drugs used.

“This is a very exciting development – the system literally puts the experience of treating thousands of different patients at the doctor’s fingertips,” commented Dr. Julio Montaner, Past President of the International AIDS Society and Director of the BC Centre for Excellence in HIV & AIDS, based in Vancouver, Canada. “This has the potential to improve outcomes for people living with HIV and AIDS around the world, particularly where resources and expertise are scarce.”



Selecting and changing treatments for patients with HIV and AIDS in order to keep the virus suppressed is complex and challenging. There are approximately 25 HIV drugs available, from which physicians normally choose a combination of three or more to suppress the virus. However, mutations occurring in the viral genetic code can cause resistance to the drugs used against it. The physician then has to select a new combination of drugs to overcome this resistant strain.

The computational models within HIV-TRePS, called “Random Forests,” base their predictions on a range of more than 80 different variables including mutations in the viral genetic code, the drugs used to treat the patient in the past, CD4 cell counts (a type of white blood cell that is attacked by HIV) and the amount of virus in the bloodstream. The models estimate the probability of each combination of drugs reducing the amount of virus to below the limit of detection in the blood (50 copies HIV RNA/ml) based on what the system has ‘learnt’ during its training with thousands of real clinical cases. The system’s overall accuracy during development and testing was approximately 80%.

The easy-to-use system has proven to be a significantly more accurate predictor of response than genotyping with rules-based interpretation – a test that is commonly used today to help drug selection.

“We are really excited about the launch of this system, which is a milestone for us, our research partners around the world and also for the use of bioinformatics in medicine,” said Dr Brendan Larder, Scientific Chair of the HIV Resistance Response Database Initiative (RDI). “We believe this approach can make a significant difference in a variety of settings and diseases.”

The RDI is already working on a version of HIV-TRePS for use in resource-limited settings where there are fewer treatment options and health care workers do not have access to all the information that this initial system requires. The RDI’s approach could also have potential benefit in other diseases, most obviously where drug resistance can be a problem such as Hepatitis.

The RDI is an independent, not-for-profit research group set-up in 2002 with the mission to improve the clinical management of HIV infection through the application of bioinformatics to HIV drug resistance and treatment outcome data. Over the eight years since its inception, the RDI has worked with many of the leading clinicians and scientists in the world to develop the world’s largest database of HIV drug resistance and treatment outcome data, containing information from approximately 70,000 patients in more than 15 countries.



**Note:** HIV-TRePS is an experimental system intended for research use only. The predictions of the system are not intended to replace professional medical care and attention by a qualified medical practitioner and consequently the RDI does not accept any responsibility for the selection of drugs, the patient's response to treatment or differences between the predictions and patients' responses.

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More information can be found at: [www.hivrdi.org](http://www.hivrdi.org).

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The following personnel are available for interview on request, arranged through Andrew Revell above:

**Dr Julio Montaner:** Past President of the International AIDS Society and Director of the BC-Centre for Excellence in HIV & AIDS, based in Vancouver, Canada (time difference –8 hours)

**Dr Brendan Larder:** Scientific Chairman of the RDI, Cambridge, UK

**Dr Andrew Revell:** Executive Director, RDI, London, UK.

**The RDI's International Advisory Group**

- Dr Julio Montaner (BC Centre For Excellence in HIV/AIDS, Vancouver, Canada)
- Dr Carlo Torti (University of Brescia, Italy)
- Dr John Baxter (Cooper University Hospital, Camden, NJ, USA)
- Dr Sean Emery (National Centre in HIV Epidemiology and Clinical Research, Sydney, Australia)
- Dr Jose Gatell (Hospital Clinic of Barcelona, Spain)
- Dr Brian Gazzard (Chelsea and Westminster Hospital, London, UK)
- Dr Anna-Maria Geretti (Royal Free Hospital, London, UK)
- Dr Richard Harrigan (BC Centre For Excellence in HIV/AIDS, Vancouver, Canada)