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# Identification of novel therapeutics for influenza using an in vitro kinetic model

**Guy Gubi and Leslie Lobel**

Department of Virology and Developmental Genetics, Faculty of Health Sciences, Ben-Gurion University of the Negev, Israel

The influenza virus is one of the most important pathogens the human race has ever encountered due to its great potential to rapidly change and cause major epidemics and pandemics. Therefore, research into new treatments for infections caused by this virus is critical. Today, few options exist for anti-influenza treatment primarily due to widespread resistance to both classes of influenza antivirals (Adamantanes, of which Amantadine is one analogue, and neuraminidase inhibitors), which occurs in pandemic and seasonal viruses, rendering these drugs to be of marginal utility in the treatment modality. To address the need for more effective therapeutics, we hypothesize that treatment with a combination of antiviral drugs, composed of drugs with different mechanisms of action, inhibiting different steps in the viral life cycle and working together in a complementary or synergistic manner, can achieve optimal inhibition, and be a broadly reactive treatment as well as a prophylactic for many differing strains of influenza. A kinetic model for virus replication using flow cytometry was developed and demonstrated the effect on viral kinetics of anti-influenza treatments. Drug cocktails were screened for synergy with our kinetic model and we determined that using a triple combination of Amantadine, Oseltamivir and Ribavirin demonstrated a significant synergistic effect, which suggests that this formulation may have potential for an improved treatment. We also identified a novel anti-influenza peptide, which targets the conserved PA-B1 binding domain of the Influenza's RNA-dependent RNA polymerase. This peptide demonstrated significant inhibition of Influenza replication in our kinetic model for viral replication.

## Biography

Guy Gubi received his B.Sc. degree in 2005 and M.Sc. degree in 2007 with excellence from the Department of Virology, Faculty of Health Science, Ben-Gurion University of the Negev, Beer-Sheva, Israel. He is currently completing his Ph.D. degree in the Department of Virology, Faculty of Health Science, Ben-Gurion University of the Negev. His research work involves study of novel anti-Influenza treatments and developing a kinetic model for virus replication.