1155-92-233 **Stanca Ciupe***, 460 McBryde Hall, Blacksburg, VA 24060, and **Sarah Kadelka** and **Harel Dahari**. *Understanding the antiviral effects of RNAi-based therapy on chronic hepatitis B infection.* Preliminary report.

Reaching functional cure following chronic hepatitis B virus infections is hindered difficult by the presence of large numbers of HBsAg in the blood of infected patients. Therapies with the RNA interference drug ARC-520, which silence viral translation, together with daily administration of the nucleoside analogue drug entecavir have showed reduction in the overall levels of serum HBsAg in HBeAg-positive, treatment naive patients. Understanding the relative effects of ARC-520 alone, and in combination with entecavir, is particularly important in informing the development of new generation anti-HBsAg drugs. A mathematical model describing the mechanistic interactions between HBV DNA, HBsAg, and HBeAg in the presence of ARC-520 and entecavir has been developed. We fitted the model to patient data and investigated the long term dynamics of the virus and viral protein titers under entecavir alone and under combination therapy. We showed that ARC-520 reduces HBsAg to new positive equilibrium corresponding to its production from integrated viral genomes.We run in silico boosting experiments and used them to determine whether and when RNA interference therapies can lead to functional cure and what is the tradeoff between cure and drug induced toxicity. Such results can inform policy. (Received January 14, 2020)