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**Title:** Effect of inhaled SNG001 (interferon-beta 1a) on sputum and blood antiviral biomarkers following a respiratory virus infection in asthmatic subjects

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**Body:** Introduction: SG005 (ClinicalTrials.gov Identifier: NCT01126177) was a randomised, double-blind, placebo-controlled phase II study, comparing the efficacy and safety of inhaled SNG001 to placebo administered to asthmatic subjects after the onset of a respiratory viral infection (RVI) for the prevention or attenuation of asthma symptoms caused by respiratory viruses. Aim: To follow antiviral biomarkers in sputum and blood samples collected during clinical study SG005. Methods: Samples for biomarker analysis were collected at clinic visits before and after initiation of dosing at the onset of an RVI (Day 1). Blood samples (serum and PAXgene RNA tubes) were collected at screening and on days 1,4,7,10,13 and 17 (3 days post final dose). Gene expression from whole blood was assessed using Agilent whole genome arrays. Serum protein markers were measured by ELISA or Luminex platform. Induced sputum was collected at screening and on days 4 and 7 at selected sites. Sputum cell antiviral gene expression was determined by qPCR. Results: Serum protein levels and blood cell gene expression of antiviral markers were increased in both SNG001 and placebo groups on Day 1, compared to screening, prior to initiation of treatment. Levels were maintained in subjects receiving SNG001 throughout the treatment period whereas levels decreased in the placebo group from Day 1. Antiviral gene expression in sputum followed a similar trend. Conclusions: Sputum and blood antiviral biomarkers were upregulated in response to an RVI. SNG001 maintained antiviral responses during the treatment period suggesting that SNG001 treatment had boosted antiviral responses.