

Figure S1. Replication kinetics and morphologic analysis of RSV infected individual pediatric HNO-ALIs and adult HNO-ALIs **A)** RT-PCR for apical RSV/A/ON for 4 pediatric HNO-ALIs at 1, 2, 5, and 8 days post-infection (dpi). Each HNO-ALI is assigned a specific color, and two replicates of each line are shown on the graph, with composite mean values plotted in a line. **B)** Corresponding plaque data for RSV/A/ON pediatric HNO-ALIs. **C)** RT PCR for apical RSV/B/BA for 4 pediatric HNOs at 1, 2, 5, and 8 dpi. **D)** Corresponding plaque data for RSV/B/BA pediatric HNO-ALIs. **E)** RT-PCR for apical RSV/A/ON for 4 adult HNO-ALIs at 1, 2, 5, and 8 or dpi. Each HNO-ALI is assigned a specific color, and two replicates of each line are shown on the graph, with composite mean values plotted in a line. **F)** Corresponding plaque data for RSV/A/ON adult HNO-ALIs. **G)** RT PCR for apical RSV/B/BA for 4 adult HNO-ALIs at 1, 2, 5, and 8 dpi. **H)** Corresponding plaque data for RSV/B/BA adult HNO-ALIs. **I)** Area of the epithelium of 4 adult HNO-ALIs after infection with RSV/A/ON, RSV/B/BA, or mock infection at 1, 2, 5, and 8 dpi. **J)** Area of the epithelium of 4 pediatric HNO-ALIs after infection with RSV/A/ON, RSV/B/BA, or mock infection at 1, 2, 5, and 8 dpi.

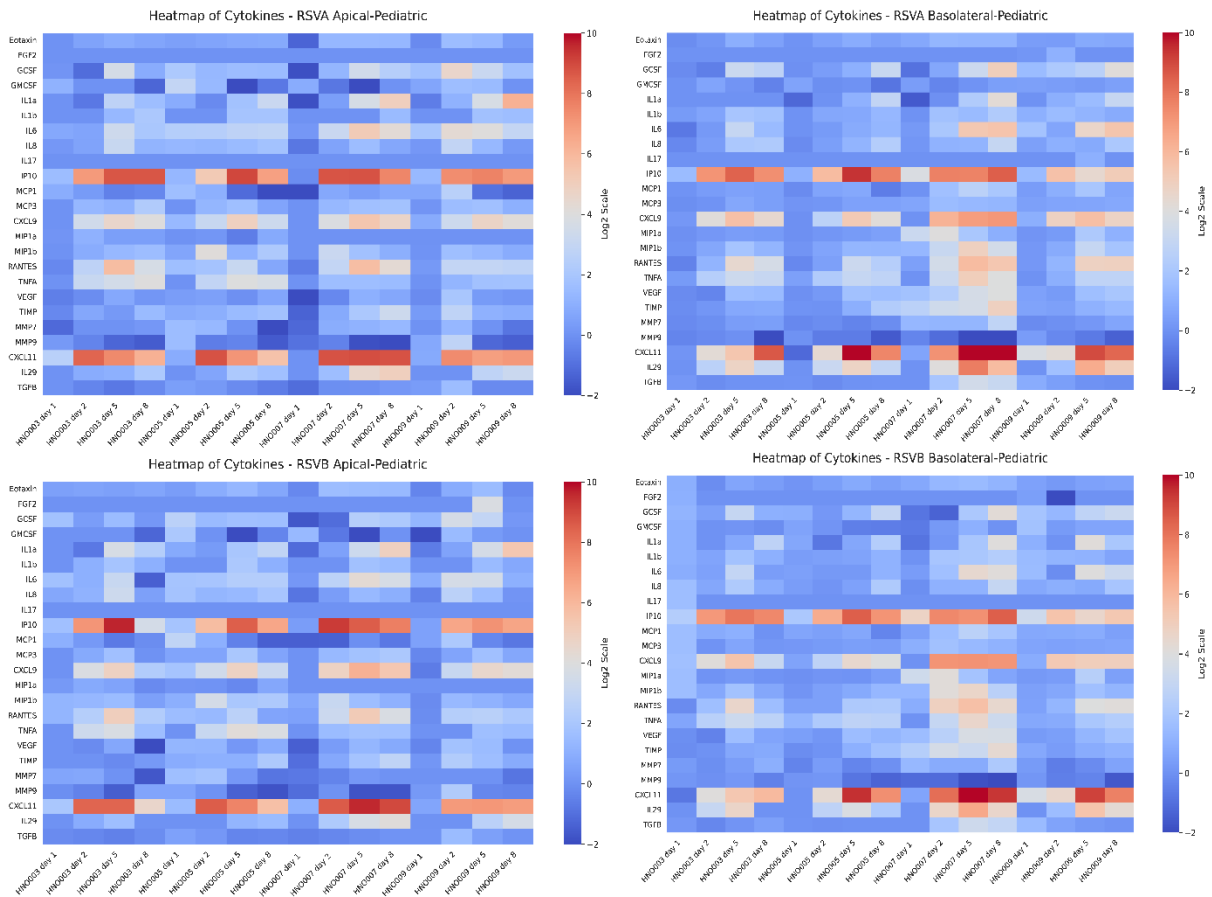


Figure S2. Heat map of cytokine expression for all 4 pediatric HNO-ALI lines. Expression over time for RSV/A/ON apical, RSV/A/ON basolateral, RSV/B/BA apical, and RSV/B/BA basolateral. Each value is normalized to the corresponding mock value at that time point.

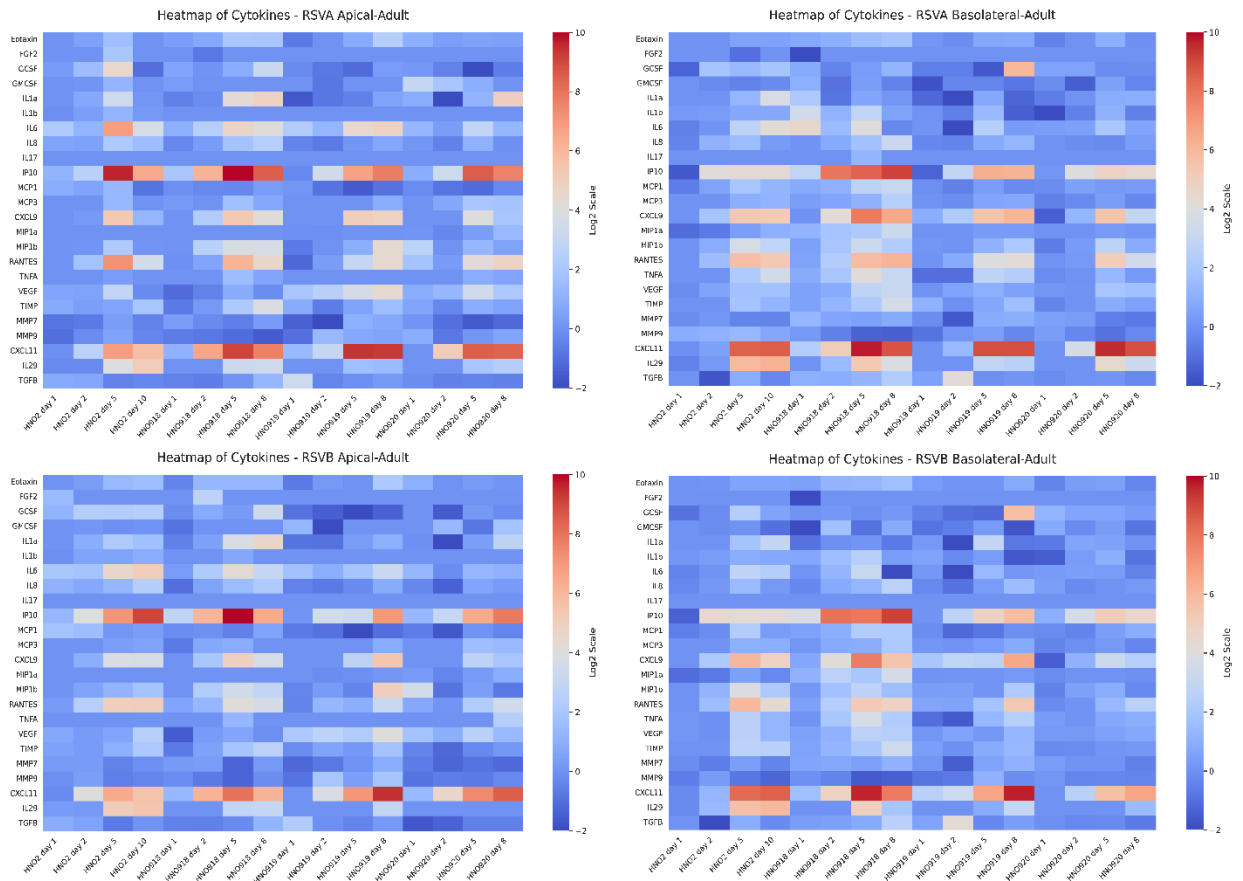


Figure S3. Heat map of cytokine expression for all 4 adult HNO-ALI lines. Expression over time for RSV/A/ON apical, RSV/A/ON basolateral, RSV/B/BA apical, and RSV/B/BA basolateral. Each value is normalized to the corresponding mock value at that time point.

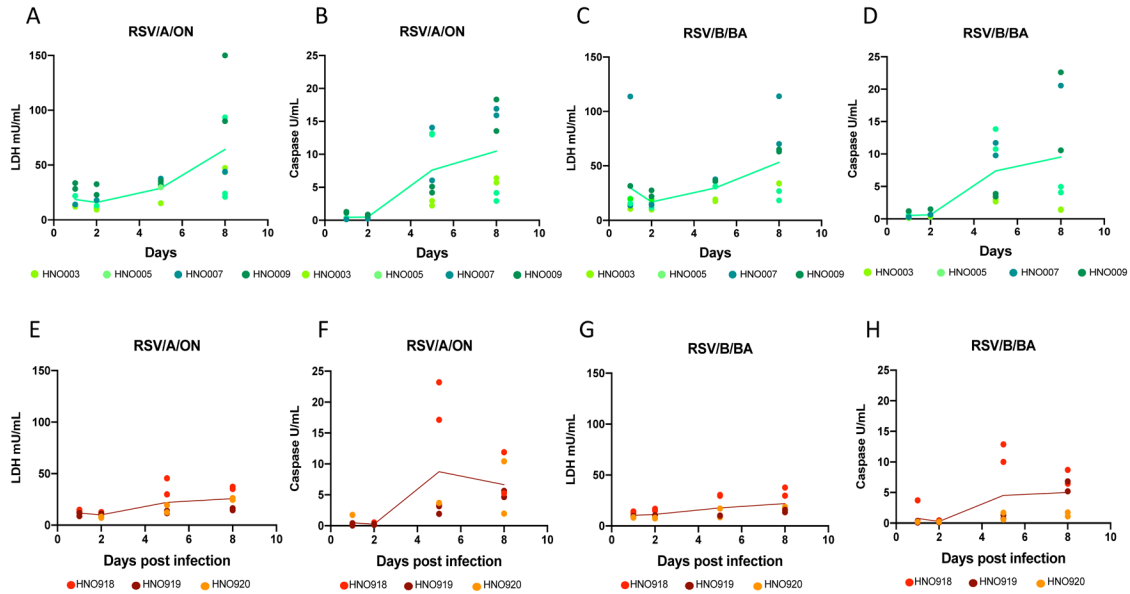


Figure S4. Apical LDH and Caspase levels during RSV infection in individual pediatric and adult HNO-ALIs **A)** Levels of apical LDH for 4 pediatric HNO-ALIs at 1, 2, 5, and 8 days post-infection (dpi) with RSV/A/ON. Each HNO-ALI is assigned a specific color, and two replicates of each line are shown on the graph, with composite mean values plotted in a line. **B)** Levels of apical caspase for 4 pediatric HNO-ALIs at 1, 2, 5, and 8 dpi with RSV/A/ON. **C)** Levels of apical LDH and **D)** Levels of apical caspase for 4 pediatric HNO-ALIs at 1, 2, 5, and 8 dpi with RSV/B/BA. **E)** Levels of apical LDH and **F)** and levels of apical caspase for 3 adult HNO-ALIs at 1, 2, 5, and 8 dpi with RSV/A/ON. **G)** Levels of apical LDH and **H)** level of apical caspase for 3 adult HNO-ALIs at 1, 2, 5, and 8 dpi with RSV/B/BA.

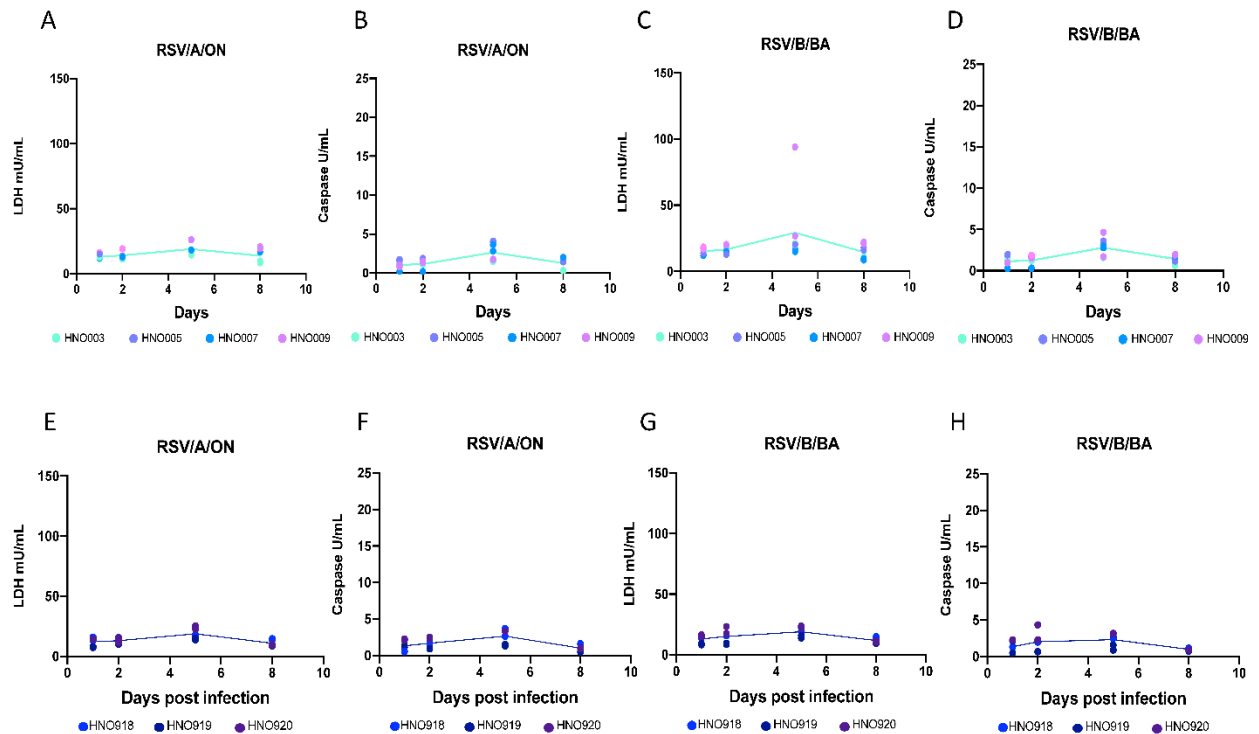


Figure S5. Basolateral LDH and Caspase levels during RSV infection in individual pediatric and adult HNO-ALIs **A)** Levels of basolateral LDH for 4 pediatric HNO-ALIs at 1, 2, 5, and 8 days post-infection (dpi) with RSV/A/ON. Each HNO-ALI is assigned a specific color, and two replicates of each line are shown on the graph, with composite mean values plotted in a line. **B)** Levels of basolateral caspase for 4 pediatric HNO-ALIs at 1, 2, 5, and 8 dpi with RSV/A/ON. **C)** Levels of basolateral LDH and **D)** Levels of basolateral caspase for 4 pediatric HNO-ALIs at 1, 2, 5, and 8 dpi with RSV/B/BA. **E)** Levels of basolateral LDH and **F)** and levels of basolateral caspase for 3 adult HNO-ALIs at 1, 2, 5, and 8 dpi with RSV/A/ON. **G)** Levels of basolateral LDH and **H)** level of basolateral caspase for 3 adult HNO-ALIs at 1, 2, 5, and 8 dpi with RSV/B/BA.

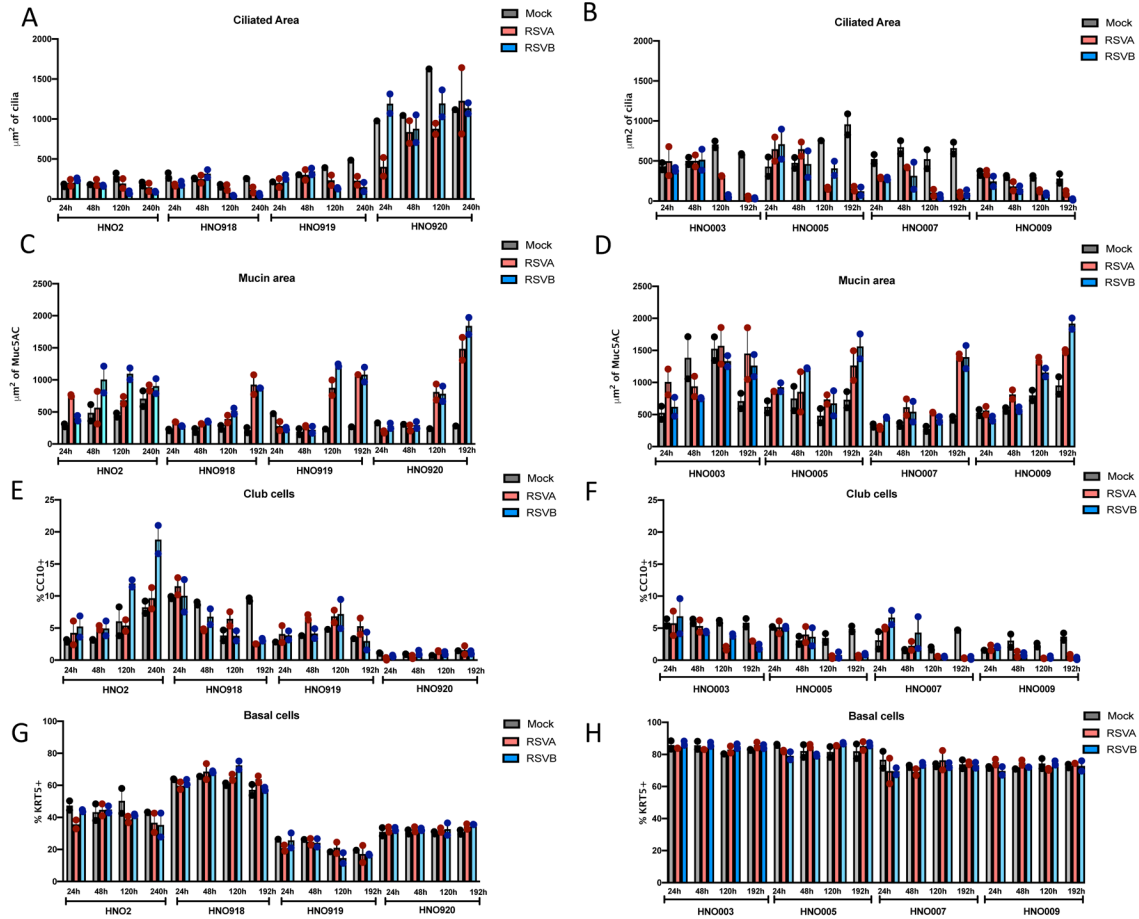


Figure S6. Cellular and morphological changes in pediatric and adult HNO-ALIs **A)** Amount of apical ciliated area after infection with RSV in 4 adult HNO-ALIs and **B)** 4 pediatric HNO-ALIs at 1, 2, 5, and 8 days post-infection (dpi). with RSV/A/ON, RSV/B/BA, or mock infection. **C)** Area of mucous quantified by Muc5AC+ after infection with RSV in 4 adult HNO-ALIs and **D)** 4 pediatric HNO-ALIs at 1, 2, 5, and 8 dpi. **E)** Percentage of CC10+ club cells over / number of DAPI+ cells after infection with RSV in 4 adult HNO-ALIs and **F)** 4 pediatric HNO-ALIs at 1, 2, 5, and 8 dpi. **G)** Percentage of Krt5+ basal cells /total number of DAPI+ cells after infection with RSV in 4 adult HNO-ALIs and **H)** and 4 pediatric HNO-ALIs at 1, 2, 5, and 8 dpi.