Highlights of the MetaCov project

- **Deepest metatranscriptomic profiling of global cities to date.**
  - **We examined >3.3K samples** (collected 1H2020), containing **>100B reads** to study RNA virus biology in urban environments, hosts, and pathogenicity.
- **Our analysis uncovered two novel *Duplornaviricota* phyla** supporting the polyphyletic nature of this clade, with support from the published literature (Neri *et al.*, 2022, Zayed *et al.*, 2022).
- **Selection analyses of RdRp identified amino acid sites with directional selective pressures**, this may describe local adaption of viral groups.

Future directions in metagenomics

Tying our work together

- **Viruses are the largest reservoir of unexplored genetic diversity on Earth.**
- **Creating molecular maps of Earth's cities.**
- **Space-based metagenomics:** shifts from terrestrial composition, mechanisms for adaptation.