During an infectious virus outbreak, global medical workers are anxious to find effective therapeutic drugs to suppress the virus. Antiviral drugs can include vaccines, small molecular compounds, peptide inhibitors, nucleoside analogues, natural products and monoclonal antibodies. No matter what the drug development strategy is, in vitro assays in microplates are essential. The following shows the main types of microplate-based assays and detection methods.

**In Vitro Assays for Antiviral Drug Development: Solutions from BioTek**

- **Virus Titration**
  - TCID50 assay
- **Antiviral Activity**
  - Traditional plaque assay
  - Fluorescent plaque assay
  - Virus induced cell-cell fusion
  - CPE quantification
  - eGFP-Reporter virus assays
- **Drug Toxicity**
  - XTT/MTT assay
  - Cell viability assay
  - PI/Hoechst assay
  - Cell counting/subpopulation
- **Drug Analysis**
  - Multi parameter analysis
  - Plaques counting

There are many repetitive procedures in the research of anti-coronavirus drug in vitro assays, including cell plating, fluid handling, high-throughput reading/imaging requirements, etc. BioTek’s washers, dispensers and automation products are versatile and can be combined into different automatic solutions to help researchers by reducing the repetitive manual work, while ensuring stable and reliable data.

**Liquid Handling Solutions**
- Cytation™ 7 cell imaging multi-mode reader with WFOV can easily capture the viral plaques in a whole well. Gen5 software is used to count the plaques.
- High-throughput imaging with 6- to 1536-well plates.

**Automation Solutions**
- Image & data analysis with Gen5 software. Linear and non-linear curve fitting, EC50/IC50 calculation, statistics and data management.

BioSpa Live Cell Analysis System automates many applications in multiple plates for continuous live cell imaging and analysis. The system includes BioSpa 8 Automated Incubator, Cytation imaging readers and BioTek liquid handling instruments. Together, they automate kinetic live cell workflows in multiple plates for hours, days or weeks.