Coronavirus
Overview on SARS-CoV-2
detection workflow for research use

In December 2019 the novel SARS-CoV-2 (formerly named 2019-nCoV) was identified in Wuhan, the capital of China’s province Hubei. Based on its rapid spreading with more than 950,000 confirmed cases by the beginning of April 2020 the World Health Organization declared the outbreak a public health emergency of international concern.

Analytik Jena offers a broad product portfolio in the field of nucleic acid extraction and PCR or real-time PCR with both extraction kits and the necessary equipment. For research purposes for the detection of SARS-CoV-2 the following workflow is suggested.

1. **Sample collection**
   In principle, respiratory material such as nasopharyngeal and oropharyngeal swabs are suitable for the detection of respiratory pathogens. For more detailed information, recommendations of the WHO or other institutions should be observed.
   Serum can also be used for serological tests, acute and convalescence samples.

2. **Nucleic acid extraction**
   Analytik Jena offers a choice of extraction platforms and related extraction kits for extraction of viral RNA from swabs, cell free body fluids (e.g. serum, plasma, liquor) and more. The product line innuPREP AniPath allows the simultaneous extraction of both bacterial and viral DNA and/or RNA from respective starting materials. A detailed overview is shown in the table on the next page.

---

**Basic facts on SARS-CoV-2:**
- (+) ss-RNA virus
- Related to SARS-CoV and MERS-CoV
- Detection based on basis of PCR

---


---

**analytikjena**
An Endress+Hauser Company
3. Amplification and detection

Molecular assays to detect SARS-CoV-2 have been developed and are accessible through the homepage of the WHO. Furthermore, several commercial kits based on real-time PCR are available such as:

- **TIB MOLBIOL**: LightMix® Modular SARS-CoV (COVID19) E-gene
- **TIB MOLBIOL**: LightMix® Modular SARS-CoV-2 (COVID19) RdRP
- **TIB MOLBIOL**: LightMix® Modular EAV RNA Extraction Control
- **R-Biopharm**: RIDA®GENE SARS-CoV-2 RUO
- **PrimerDesign**: Coronavirus (COVID-19)
- **Procomcure Biotech**: PhoenixDx® 2019-nCoV RNA Detection Kit

Confirmed compatibility with qTOWER³

The PCR setup can be pipetted by a liquid handling platform like CyBio FeliX. Using PCR workstations or cabinetts offer maximum safety and minimize contamination risks. Single components such as reverse transcriptase or others are available via Analytik Jena as well. In general all real-time PCR-based assays can be established on real-time thermal cycler of the qTOWER³ family provided by Analytik Jena or similar. Implementations of selected assays are in progress and respective information will be provided as soon as available.

Please note that all Analytik Jena AG products listed here are exclusively intended for research use only unless explicitly marked as CE-IVD.


### Table 1: Overview on Analytik Jena’s extraction kits with intended use for isolation of viral RNA.

<table>
<thead>
<tr>
<th>Handling</th>
<th>Sample throughput</th>
<th>Extraction platform</th>
<th>Key features</th>
<th>Extraction kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual</td>
<td>Low</td>
<td>-</td>
<td>Up to 12 samples / 25 min</td>
<td>innuPREP Virus TS RNA Kit</td>
</tr>
<tr>
<td></td>
<td></td>
<td>InnuPure C16 touch</td>
<td>Up to 16 samples / 31 - 84 min Extraction platform only</td>
<td>innuPREP AniPath DNA/RNA Kit - IPC16, non-filled</td>
</tr>
<tr>
<td></td>
<td>Automated</td>
<td></td>
<td></td>
<td>innuPREP Virus DNA/RNA Kit - IPC16 (MDX)*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CyBio FelIX</td>
<td>Up to 96 samples / 62 - 73 min Extraction platform + liquid handling (e.g. preparation of PCR)</td>
<td>innuPREP AniPath DNA/RNA Kit - FX**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>innuPREP Virus TS RNA Kit 2.0 - FX</td>
</tr>
<tr>
<td></td>
<td></td>
<td>KingFisher Flex</td>
<td>Up to 96 samples / 60 min Extraction platform only</td>
<td>innuPREP AniPath DNA/RNA Kit - KFLX</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>innuPREP RNA Virus PLUS Kit (MDX) - KFFLX*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>innuPREP RNA Virus PLUS Kit - KFFLX</td>
</tr>
</tbody>
</table>

* CE IVD kits only available in Germany
** Release planned for 30th April 2020

More Information ➤

www.analytik-jena.com/cov