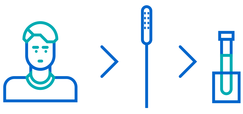
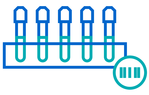
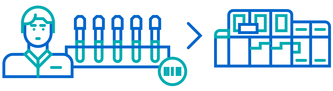
How Roche molecular testing detects **SARS-CoV-2**, the virus causing **COVID-19**



1. The **patient's swab** is taken and sent to the **lab for analysis**.



2. **Trained lab professionals** prepare the swab sample in the tube **for processing**. To ensure correct identification and traceability each tube has a **unique barcode**.



3. The tube is **loaded into the high throughput system** with other patients' sample.

These highly automated **systems** are very sophisticated pieces of robotics with complexity approaching that of modern-day jet aircraft. They can have **more than 20,000 fine-tuned components** and require hundreds of hours to assemble.

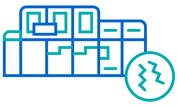
4. The **system** begins the process of extraction, amplification and detection of the **virus genetic material**.

9 reagents are used to process a full PCR reaction. Reagents are complex mixtures of biochemicals or chemicals. The manufacturing of quality reagents at industrial scale is technically demanding.

The **virus SARS-CoV-2** uses positive-sense single-stranded RNA (ribonucleic acid) as its genetic material.

4a. The **viral RNA** is extracted **to isolate** it from other cellular components.

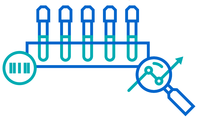
4b. **Multiple copies** of a short fragment of that **RNA** are made.



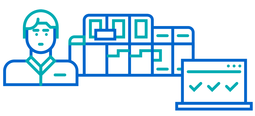
4c. The presence of those copies is detected with **fluorescent dye**.

Positive and **negative** controls ensure the reaction is working properly.

4d. The signal from the **fluorescent dye** is analysed by a complex mathematical algorithm to decide whether **viral RNA** was present in the sample.



About **3 hours** after loading the sample, the system provides test results.



5. Specialised lab professionals **analyse**, **control** and **approve** the **test results** before they go into the lab reporting information **system**.

6. These **results** are made **available** to the **healthcare provider** to improve patient management and to enable more **informed decisions**.