

Simply clever

Genius5

Smelltester



The nose as a sensor for SARS-CoV-2  
Sensitiv, calibrated by Genius5  
<https://genius5-instruments.com>

## How the sense of smell is tested

The odor tester injects one of 3 smells into a stream of air. If the test person recognizes the odor in a reaction time of 15 seconds, the test has been successfully completed. If the first odor is not recognized, a validation test is carried out with 3 odor.

If no odor is detected in the validation test, the clinical criterion „loss of the sense of smell“ is met. Failure to detect 2 out of 3 smells is rated as a „sense of smell disorder“.



Odor profile over time

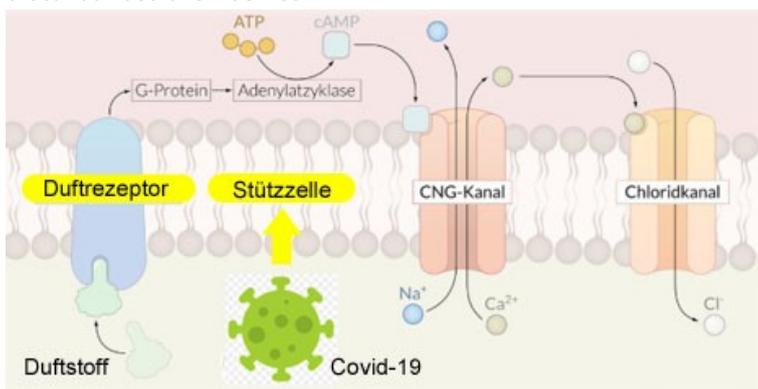
Our tester is based on the scientifically proven impairment of the sense of smell caused by SARS-CoV-2 viruses, which multiply in the supporting cells and lead to inflammation there.

As a result of the inflammation, fewer odor molecules reach the odor cells. By reducing the transport proteins formed by the supporting cells, fewer hydrophobic odor molecules dissolve in the mucus and fewer olfactory nerves are stimulated.

The fragrances were selected based on a clinical study carried out by DanubePrivateUniversity.

## Smell disorder caused by SARS-Cov-2

The olfactory mucous membrane absorbs SARS-Cov-2 viruses by inhaling aerosols containing viruses. The virus multiplies in the supporting cells of the olfactory mucous membrane, and the triggered inflammation affects the chemical processes of odor recognition. More for pleasant smells, less for smells that serve as a warning. E.g. smoke. The odor threshold increases. The sense of smell is disturbed in more than 85% of the infected, many of them are wrongly considered asymptomatic because they do not recognize minor olfactory disturbances themselves.



## Used smells

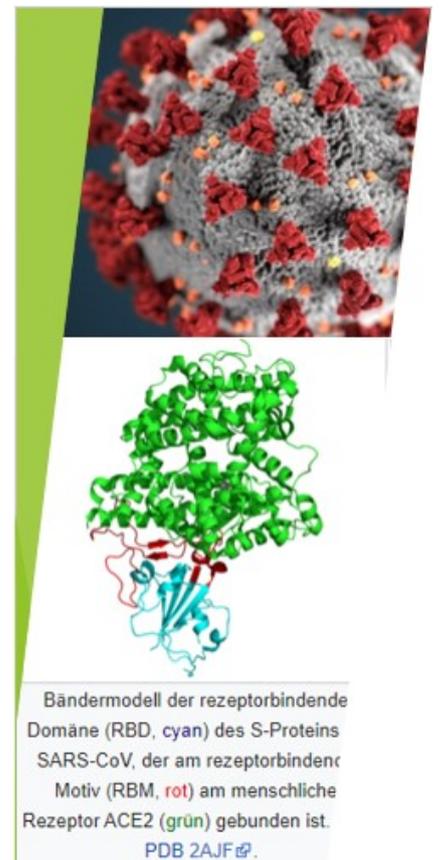
The fragrances were selected based on a clinical study by DPU Krems.



The fragrances are injected briefly as a peak in concentrations of 0.3 to 2 ppm.

## Entry receptor ACE2

There is a very high concentration of ACE2 in the supporting cells of the olfactory mucosa (500x higher). The SARS-CoV-2 virus binds to ACE2, which serves as an entry receptor into the supporting cell, and reproduction begins. With the infection, the sense of smell is disturbed.



## Increasing sensitivity and specificity

Covid-19 shows several symptoms, with children and adolescents having „olfactory disorders“ as the main symptom. 90% of children with olfactory impairment or loss are „SARS-CoV-2“ positive.

In the first clinical study it was shown that the disturbance occurs early with certain smells, it was determined how the olfactory competence, age, smoking behavior and gender influences specificity and sensitivity. Odors were determined that can be diagnosed by people with influenza, but not by Covid-19 sufferers. The odor tester is particularly effective in the periodic testing of groups of people.

## Best possible use for young people

The sense of smell is well developed from the age of 5. Depending on their job and life experience (e.g. award-winning chef), adults can differentiate between several hundred nuances of smell. This ability to differentiate worsens again after the age of 40.

- ✓ To increase the olfactory competence (ability to recognize a smell with an intact sense of smell), odors are taught to healthy people. The younger the test person, the more important it is to learn in order to avoid false positive test results.
- ✓ Once the smells have been learned, an odor log is created for healthy people, which measures the individual reaction times to the smell and individually documents the undisturbed sense of smell.
- ✓ Subsequently, a „quicktest“ lasting 25 seconds with the lowest intensity is sufficient to detect the „sudden olfactory disorder“ days before the test person recognizes it himself.

There are numerous publications describing impairment of the sense of smell as the main symptom in children. 90% of the olfactory disorders in children are due to the SARS-CoV-2 virus.

## Use in the elderly

From the age of 40, the performance of the sense of smell decreases. Odors are recognized more slowly and only with a higher intensity. Odor disorders (anosmia or hyposmia) can also occur due to other diseases such as Alzheimer’s, dementia and Parkinson’s caused by damage to the trigeminal nerve. This restriction is more likely the older the test subjects are. We recommend the following application for older subjects

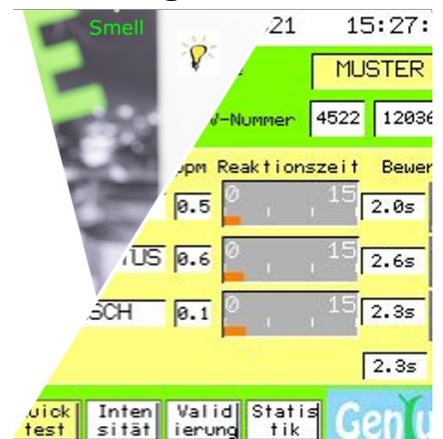
- ✓ Learning 3 basic smells
- ✓ Creation of the odor log with individual odor intensity
- ✓ Quicktest with individually determined odor intensity

## Learning smells

The smells used are available in a set of 3 bottles for teaching.

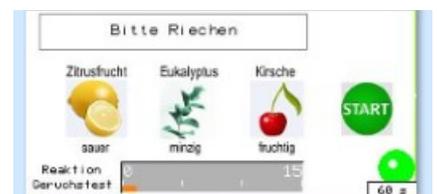


## Odor log



## Daily quick test

The Genius5® odor tester can check the Covid-19 infection status on a daily basis.



If the test result deviates from the odor log protocol, it is recommended that a new odor protocol be carried out in order to measure the deterioration. If impairment of the sense of smell is measured, confirmation with an antigen or PCR test is recommended.

## Advantages

1. Results in seconds
2. Very low costs of less than 10 Cent/testing – one device can carry out 200.000 tests per year
3. We lower the threshold for recognizing the odor disorder – Asymptomatically ill people are recognized as symptomatic
4. The odor test is rated as pleasant and interesting
5. Detection of the onset of Alzheimer's, dementia and Parkinson's as a side effect, with a corresponding medical follow-up examination

## Odor irritation

The smells used exert both „olfactory“ and „trigeminal stimuli“ to increase specificity of smell test.

## Events, vacations and sports

At events, participants are in contact in a confined space and thus exposed to direct droplet infection. The Genius5 odor test creates security by lowering the probability.

## Exclusion criteria for the test

The clinical study showed that 40% of people who survived Covid-19 infection could also have an olfactory disorder months later. In order to reduce false positive results, this group must be assessed differentially.

## Variants that can be ordered

The self-test variant (G5\_GS\_light) consists of the control unit, where the touchscreen represents the user part.

For guided tests the proband is tested behind a screen, used with touchless buttons are symbols on a glass screen only.



G5\_GS\_Light

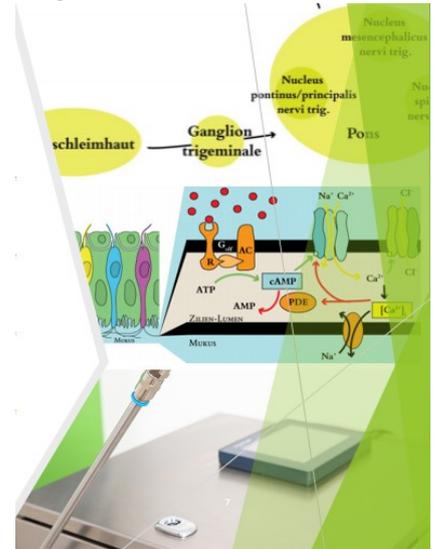
G5\_GS\_school

G5\_GS\_Safe

Information and specification herein are subject to revision without prior notice.

© Copyright 2021 by Genius5-Instruments GmbH, Kottlingbrunn

All rights reserved. Printed in Austria.



## Service interval

The design allows a large number of measurements without service. Odor substances in the device are enough for 50.000 tests.



## Contact:

Genius5-Instruments GmbH

2542 Kottlingbrunn, Austria

Phone: +43 676 4304383

Fax: +43 890346 15

[info@genius5-instruments.com](mailto:info@genius5-instruments.com)

More info at:

[www.genius5-instruments.com](http://www.genius5-instruments.com)