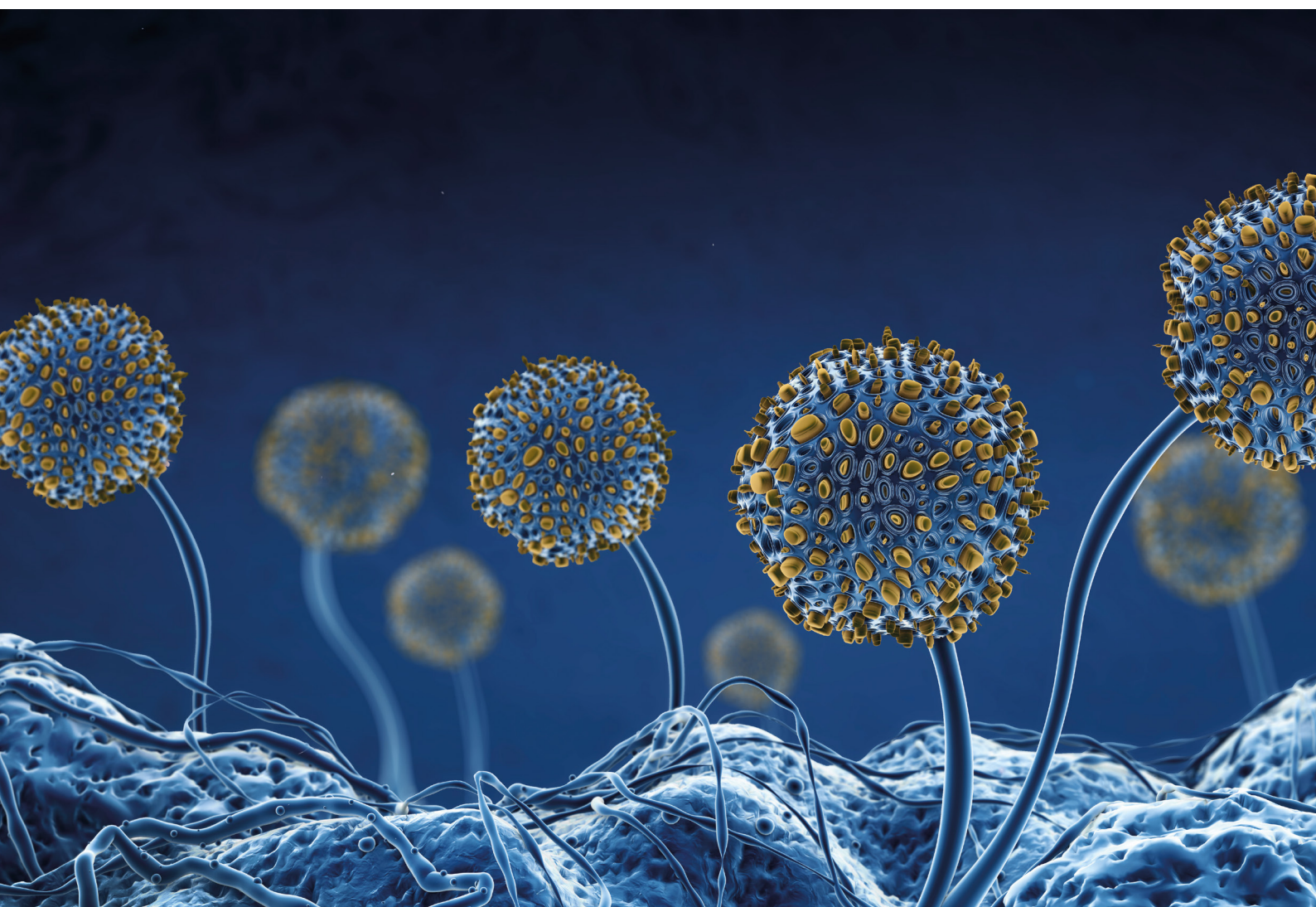


# Mould Contamination

## Cytokine Release Test



RELIABLE DETECTION OF MOULD CONTAMINATION  
AND CLARITY FOR THOSE AFFECTED

## DIAGNOSTICS AT A GLANCE

At biovis, you can have the following parameters tested:



**K611 Mould Contamination  
(Cytokine Release)**

## MOULD CONTAMINATION CYTOKINE RELEASE TEST

In Germany, moisture and mould in indoor spaces are a significant health issue. According to a study, approximately one in five to six homes is affected.<sup>1</sup> In addition, around ten percent of building damage cases are linked to mould.<sup>2</sup> These figures illustrate the extent of mould contamination due to construction defects and the associated health risks for residents.

The symptoms of mould exposure are often vague and cover a wide range of complaints. Respiratory issues such as chronic cough, shortness of breath, and recurrent infections are common. Many affected individuals report non-specific symptoms like headaches, dizziness, chronic fatigue, and concentration difficulties, which can significantly impact overall well-being. Skin reactions and eye irritation are as frequent as gastrointestinal issues or joint pain.

Mould exposure can also trigger neurotoxic effects, leading to symptoms such as memory problems, irritability, and even depressive moods. The non-specific nature of these symptoms makes diagnosis difficult, often resulting in affected individuals going from doctor to doctor without finding a clear cause or effective treatment.

**SYMPTOMS OF MOULD  
CONTAMINATION  
ARE OFTEN DIFFUSE  
AND INCLUDE A  
WIDE RANGE OF  
COMPLAINTS.**



In severe cases, these varied symptoms can become so intense that they significantly reduce quality of life and even threaten a person's ability to work. Some individuals, particularly those who are highly sensitive, may develop chronic conditions that lead to long-term limitations in daily life and professional activities. The psychological strain associated with this, combined with the feeling of not being taken seriously, further exacerbates the problem.

The new functional **Cytokine Release Test** provides a way to detect immune reactions triggered by mould or mycotoxins.

This highly sensitive test delivers results within a few hours and can differentiate between acute and latent exposures. A positive result can help affected individuals link their symptoms to mould exposure, increasing recognition by medical professionals and health insurers – an important step towards targeted support measures and potential compensation.

[1] Dtsch Arztebl Int 2024;121:265-71; DOI:10.3238/arztebl.m2024.0018.

[2] Fraunhofer Institute for Building Physics, press release 11.2016

# MOULDS

Here is a brief overview of the mould species included in the profile, their occurrence and potential health risks for patients:



## Acremonium strictum

### Occurrence:

Damp floors, carpets, damp building walls

### Effects of exposure:

Can cause skin infections and, in rare cases, severe systemic infections, particularly in immunocompromised individuals (e.g. endophthalmitis, mycetoma)



## Aspergillus fumigatus

### Occurrence:

Soil, compost, decaying organic matter, damp indoor spaces

### Effects of exposure:

Can lead to allergies (e.g. allergic bronchopulmonary aspergillosis) and severe infections, such as invasive aspergillosis in immunocompromised patients (e.g. transplant patients)



## Alternaria alternata

### Occurrence:

Outdoor environments (soil, plants, leaves) and indoor spaces (walls, textiles, window frames)

### Effects of exposure:

Causes allergic reactions, asthma and can lead to skin infections or invasive infections in immunocompromised patients



## Cladosporium cladosporioides / sphaerospermum

### Occurrence:

Outdoor environments (plants, soil) and indoor spaces (walls, carpets, damp surfaces)

### Effects of exposure:

A common cause of respiratory allergies, asthma, and chronic rhinitis; rarely, it can cause invasive infections in immunocompromised individuals



## Aspergillus flavus

### Occurrence:

Cereals, nuts, spices, damp storage conditions

### Effects of exposure:

Produces aflatoxins, which are highly carcinogenic; in immunosuppressed individuals, it can cause invasive aspergillosis, a severe infection affecting the lungs and other organs



## Fusarium solani

### Occurrence:

Soil, plants, water, damp buildings

### Effects of exposure:

Can cause keratitis (corneal inflammation), skin infections, and, in immunosuppressed individuals (e.g. after transplantations), may lead to serious systemic infections



### **Penicillium chrysogenum/notatum**

**Occurrence:**

Air, damp walls, spoiled food

**Effects of exposure:**

Produces penicillin (in controlled environments), but in uncontrolled environments, it can cause allergic reactions and, in rare cases, infections in immunocompromised individuals



### **Chaetomium globosum**

**Occurrence:**

Damp walls, buildings with water damage (wood, paper, textiles)

**Effects of exposure:**

Can cause skin and nail infections in immunocompromised individuals, as well as rare systemic infections



### **Serpula lacrymans**

**Occurrence:**

Wood, particularly in damp buildings, leading to dry rot and wood decay

**Effects of exposure:**

Direct health risks are rare, but structural damage caused by this fungus can create damp conditions that promote the growth of other potentially harmful moulds



Black mould spores

### **Conclusion:**

Most of these moulds are found in damp, poorly ventilated environments such as walls, carpets, or wooden structures in buildings. They can pose serious health risks, particularly to immunocompromised individuals, leading to allergic reactions, respiratory diseases, and, in some cases, even severe systemic infections.

**DAMP, POORLY  
VENTILATED  
ENVIRONMENTS ARE  
AN IDEAL BREEDING  
GROUND FOR MOULDS.**

# MYCOTOXINS

Here is a concise overview of the mycotoxins included in the test, with information on their occurrence, clinical relevance, and potential cause of chronic diseases:



## Aflatoxins (especially aflatoxin B1)

### Occurrence:

Nuts, cereals, maize, mouldy food

### Relevance:

Highly carcinogenic (especially liver cancer), hepatotoxic

### Chronic diseases:

Liver cirrhosis, liver cancer with prolonged exposure



## Fumonisin B2

### Occurrence:

Maize, cereals, food storage

### Relevance:

Nephrotoxic, potentially carcinogenic

### Chronic diseases:

Kidney and oesophageal cancer, chronic kidney damage



## Citrinin

### Occurrence:

Rice, cereal products, damp storage conditions

### Relevance:

Nephrotoxic

### Chronic diseases:

Chronic kidney disease with long-term exposure



## Fumonisin B4

### Occurrence:

Rarer in maize and cereals

### Relevance:

Lower toxicity than B2, also nephrotoxic

### Chronic diseases:

Possible chronic kidney damage



## Deoxynivalenol (DON)

### Occurrence:

Cereals (especially wheat, maize), damp harvests

### Relevance:

Leads to gastrointestinal symptoms and immunosuppression

### Chronic diseases:

Weakening of the immune system and chronic gastrointestinal problems



## Gliotoxin

### Occurrence:

*Aspergillus* species, mould in damp buildings

### Relevance:

Strongly immunosuppressive, respiratory issues

### Chronic diseases:

Chronic respiratory diseases, immunodeficiency



## Ochratoxin A

### Occurrence:

Cereals, coffee, wine, damp storage

### Relevance:

Nephrotoxic, carcinogenic, immunosuppressive

### Chronic diseases:

Chronic renal failure, kidney cancer, immunodeficiency



## T-2 toxin

### Occurrence:

Cereals, especially in humid conditions

### Relevance:

Highly toxic, causes cell and organ damage

### Chronic diseases:

Chronic toxicity, weakens the immune system, leads to organ damage



## Sterigmatocystin

### Occurrence:

Cereals, cereal products, cheese, coffee, spices, beer

### Relevance:

Hepatotoxicity, nephrotoxicity, immunomodulatory effects, neurotoxicity, mutagenicity, possible carcinogenicity

### Chronic diseases:

Chronic liver diseases, liver cirrhosis, association with cancer



## Zearalenone

### Occurrence:

Maize, cereals, damp harvests

### Relevance:

Oestrogen-like effect, impairs the reproductive system

### Chronic diseases:

Hormonal disorders, fertility problems

## Conclusion:

Chronic illnesses caused by **building contamination** mainly concern mycotoxins such as **gliotoxin**, which is found in mould contamination and can lead to long-term respiratory illnesses and immune deficiency. **Ochratoxin A** can also contribute to chronic renal failure in heavily mouldy living spaces.



**AGRICULTURAL PRODUCTS  
AND FOOD ITEMS THAT  
ARE POORLY STORED ARE  
OFTEN AFFECTED.**

# PREANALYTICS AT A GLANCE

Important information on blood collection for our cytokine release tests:

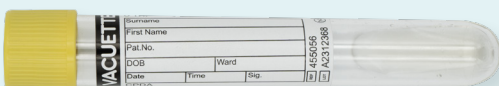
- Drink one glass of water (approx. 200 ml) per hour within 2 hours before blood collection
- Athletes should avoid physical activity 48 hours before blood collection
- The patient should sit for at least 10 minutes before the blood sample is taken (resting pulse)
- Allow disinfectant to take effect and dry completely
- Monovette/Vacutainer must always be completely filled (discard underfilled Monovettes/Vacutainers)
- Draw the Monovette slowly (to prevent platelet activation). Slowly draw up the monovette
- Immediately after collection, invert the Monovette/Vacutainer three times (do not shake).
- Store blood at room temperature, protected from light!

The following materials are required:



3 x CPDA monovette

or



3 x CPDA vacuette



THE BASIS OF ALL  
GOOD ANALYTICS.

The mailing bags are labelled with the specially developed sticker for our cytokine release tests.



The labelling ensures that the samples are recorded promptly and integrated into the processing workflow within the required time frame.

You can order these stickers on our material order form.



biovis  
material  
order form



**FURTHER  
INFORMATION  
CAN BE FOUND  
ON OUR  
HOMEPAGE.**



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