Allergy is defined as a disease resulting from an inappropriate or overactive immune response to potentially harmless common substances in the environment called allergens. The incidence of allergic diseases is rapidly increasing worldwide, and according to estimates by the World Allergy Organization (WAO), it varies from 10% to 40% depending on the country. In most developed countries, allergies affect more than 20% of the population. According to research by the European Academy of Allergy & Clinical Immunology (EAACI), more than 150 million Europeans currently suffer from chronic allergic diseases, and 20% of this number struggle with severe and debilitating allergy forms. It is estimated that by 2025, one in two Europeans will suffer from allergies.

Microscopic phytopathogenic fungi are parasites of plants that are common in the human environment. They are responsible for reducing crop yields, reducing plant product quality, and reducing the decorative value of ornamental plants. Fungi can also threaten human health because they are a well-known and significant source of allergens. Respiratory allergic reactions to fungi evidence that the threat occurs in 30% of sensitive people, and this percentage is increasing dramatically.

The prevalence of plants and fungi depends on the geographical location, air quality, human activity, and the local source of vegetation. Today, their distribution is also influenced by changing climatic conditions (temperature, humidity, extreme weather events).

The small size of fungal spores allows their deeper penetration of the respiratory tract, which can lead to the development of asthma. Asthma is an inflammatory respiratory tract disease characterized by excessive sensitivity and limited airflow. It is a severe public health problem affecting subjects of all ages and an increasing population worldwide. Uncontrolled asthma significantly limits the performance of daily activities and can even lead to death. The increase in the incidence of asthma has drawn attention to its possible environmental causes, especially since there is a clear relationship between meteorological changes and the incidence and severity of asthma, atopic dermatitis, and allergic rhinitis.

Although the essential allergenic fungi belong to the genera *Alternaria, Aspergillus, Cladosporium,* and *Penicillium*, it cannot be ruled out that commonly occurring phytopathogenic fungi can also cause allergy symptoms. In our latest project, "Microscopic phytopathogenic fungi - biochemical characteristics and potential impact on the development of allergies in humans," we have shown that phytopathogenic fungi parasitizing common plants (plum, raspberry, pumpkin, ornamental plants, and weeds) in Poland are a potential source of allergens for humans. Therefore, the main goal of the presented project is to confirm the occurrence of IgE antibodies in humans directed against the species of parasitic microfungi indicated previously. In addition, fractionation of fungal extracts will isolate groups of proteins that cause inflammatory reactions *in vitro* and are simultaneously recognized by specific IgE antibodies of asthma patients.

Since currently available tests (skin and IgE) do not always indicate the cause of fungal allergies, identifying allergenic proteins and their amino acid sequences will be important in obtaining new standardized fungal allergens to expand future allergy diagnostics.