



## Allergenomics Services Section Home

### History

The history of allergenomics is rooted in the study of allergic reactions, which have been recognized for centuries. However, the systematic investigation of the molecular basis of allergies began in the 20th century.

The term "allergy" was coined by Austrian pediatrician Clemens von Pirquet in 1906 to describe hypersensitivity reactions. The early 20th century also saw the development of skin tests to diagnose allergies, and the identification of common allergens like pollen and dust.

In the 1960s and 1970s, advances in immunology led to a better understanding of the immune responses underlying allergies. Techniques such as enzyme-linked immunosorbent assays (ELISAs) were developed to detect allergen-specific antibodies in patients.

The advent of molecular biology and genomics in the late 20th century paved the way for allergenomics. The first allergen gene, Bet v 1 from birch pollen, was cloned in the 1980s, marking a pivotal moment in the field's history.

### Clemens von Pirquet

The father of allergy, his early work laid the foundation for understanding hypersensitivity reactions.

2.

### Ulf von Euler

His research on the immune system's response to allergens advanced our understanding of allergic reactions.

4.

### Ruby Pawankar

Her contributions to the field of allergenomics have furthered our understanding of allergic diseases.

## **Industrial Applications of Allergenomics**

The impact of allergenomics extends to various sectors:

1.

### **Allergen Component Testing**

Identifying specific allergenic components for precise diagnosis and immunotherapy.

3.

### **Personalized Medicine**

Tailoring allergy treatments based on individual genetic profiles and allergen sensitivities.

5.

### **Allergen Immunotherapy**

Designing effective allergen immunotherapy regimens for long-term allergy relief.

7.

### **Cosmetic and Pharmaceutical Industry**

Identifying potential allergens in products to ensure consumer safety.

9.

### **Plant Breeding**

Engineering hypoallergenic plants to reduce allergen content.

11.

### **Allergy Prevention**

Studying genetic predispositions to allergies for preventive strategies.

13.

### **Microbiome-Allergy Connection**

Exploring how gut microbiota influence allergic sensitization.

15.

## **Allergy Education**

Raising awareness and educating the public about allergens and allergic reactions.

17.

## **Genetic Counseling**

Providing genetic counseling for families with a history of allergies.

19.

## **Biotechnology**

Using genetic engineering to modify allergen molecules for safer vaccines and therapies.

## **Precision Allergy Diagnosis**

Advanced diagnostic tools for accurate identification of allergens.

2.

## **Preventive Approaches**

Early interventions based on genetic risk factors to prevent allergies.

4.

## **Gut Microbiota Interventions**

Using microbiome modulation to prevent or manage allergies.

6.

## **Immune Modulation**

Targeting immune responses to reduce allergic reactions.

8.

## **Epigenetic Therapies**

Modulating epigenetic marks to prevent or treat allergies.

10.

### **Early Life Interventions**

Addressing allergies during infancy to prevent long-term sensitization.

12.

### **Allergy Education**

Raising awareness and providing accurate information about allergies.

14.

### **Predictive Modeling**

Using computational tools to predict allergen interactions and sensitization.

16.

### **Nutritional Approaches**

Developing diets that modulate the immune system to prevent allergies.

18.

### **Synthetic Biology**

Designing non-allergenic molecules for vaccines and therapies.

20.