

Name _____

The Allergy Puzzle: Understanding Allergic Reactions

Open-Ended Response Answer Key

1. Allergies develop when the immune system mistakenly identifies harmless substances, known as allergens, as threats to the body. This triggers the production of IgE antibodies, which bind to mast cells and basophils. When the allergen re-enters the body, it binds to IgE antibodies on these cells, triggering the release of inflammatory substances such as histamine. This inflammatory response leads to the characteristic symptoms of allergies.
2. Environmental factors such as exposure to allergens and living conditions can influence the development of allergies. Early exposure to allergens, living in urban areas with high pollution levels, and growing up in highly sanitized environments have been associated with an increased risk of developing allergies. Additionally, genetic factors play a role, as individuals with a family history of allergies are more likely to develop allergic reactions themselves.
3. Allergic reactions can manifest in a variety of symptoms, including sneezing, itching, swelling, runny nose, and watery eyes. These symptoms can vary in severity depending on the individual and the allergen involved. While some allergies may only cause mild discomfort, others can lead to more serious health complications, such as anaphylaxis.
4. Allergic reactions are considered to be a misdirected immune response by the body because they occur in response to harmless substances. Instead of protecting the body from threats, the immune system overreacts to these substances, triggering an inflammatory response that leads to allergy symptoms. This overreaction can become chronic or severe in some individuals, requiring medical intervention to manage symptoms and prevent complications.

