Researchers at the University of South Florida have derived an assay to identify and quantify airborne allergens. Immunoglobulin E (IgE)-mediated allergies affect up to 25% of the world’s population. The most important causes of this form of allergy are proteins from pollens of trees, grasses and weeds, and indoor allergens from dust mites and animals. There are 250,000 pollen-producing plant species, in which approximately 100 of these species are related to potent wind pollinated allergies. Identifying and quantifying pollen in the air is important for interpreting the results of allergy tests and identifying the cause of symptoms. The traditional method for identification of airborne allergen sources has relied upon microscopic recognition of pollen grains and spores. This method requires an automated sampling system and a trained individual’s investment of hours counting individual allergen particles with a microscope. This type of allergen quantification cannot be automated and the number of counting stations worldwide is insufficient to adequately assess the allergen burden.

Identifying allergens will enable physicians to properly interpret allergy tests in which positive test results must be correlated with symptoms and level of allergen exposure. Automated allergen identification would enhance public awareness of sources of disease and assist policy makers in addressing trends of environmental change or effects that could impact human disease.

Our inventors have developed an amplification assay for detection and quantification of pollen from an air sample. The invention enables the quantification of individual components of biologic sources based upon specific genetic components within complex mixtures. This methodology can be automated at a relatively low cost, and can provide an accurate, scalable network of allergen identification. The commercial application of automated allergen quantification would include applications to public health assessment and marketing to news and weather networks that utilize accurate allergen data in public offerings.

**Technology Advantages:**
- Automated quantification
- Relatively low cost
- Accurate, scalable network of allergen identification

**Detect and Quantify Airborne Allergens Automatically**

Figure: A qPCR primer specificity test for Ambrosia artemisiifolia, Morella ceifera, Morus alba, and Juniperus ashei, respectively. DNA (approximately 10 ng per well) from pollen was tested by qPCR against a primer set for the pollen (5.8S rRNA).

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contact

University of South Florida | Technology Transfer Office | Patents & Licensing
3802 Spectrum Blvd., Suite 100, Tampa, Florida 33612-9220
813.974.0994 (office) | 813.974.8490 (fax)
patents@research.usf.edu | http://www.research.usf.edu/pl/
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