

The Pleasure in My Life

I licked the speckled brown-and-white cinnamon sugar mixture off my fingers after grazing over the take-home fried dough squares. It tasted so good, for my seven-year-old self, so good. I felt like a criminal, guilty, doing something I knew I shouldn't have been doing: I felt a strange mix of guilt and pleasure as I licked the cinnamon from the tips of my fingers. I thought I would be fine. And I was, for about an hour— then, I felt the first signs, tight constriction around my throat, a familiar, strained rasp, rough, irregular, gasps for breath. My asthma attack had begun, and what started at home ended overnight in the emergency room.

My childhood was punctuated by numerous similar episodes, each concluding with that familiar stethoscope, white-sheet-covered examining bed, loud, nebulizer machine. Through such a distressing period of my life, Maxair, Symbicort, Cingular, Dulera gave me hope. Animal research was the foundation of that hope.

Asthma plagues numerous individuals, near 25.7 million as estimated by a recent health care study; while each of these individuals may experience a different level of pain, animal research has vastly improved their condition regardless. During an asthma attack, irritants, allergic reactions, or action like exercise triggers inflammation and constriction of the airways, leading to wheezing, coughing and shortness of breath (Akimbani et al.). The very understanding that asthma is tied to a unique inflammatory response associated with specific proteins evolved from initial animal studies utilizing mice (Shin). Recently, researchers have used genetically manipulated mouse models to isolate the genetic causes of the asthmatic disease. Besides mice, guinea pigs are also utilized for the evaluation of anti-asthma drugs, due to their similarity to humans in the anatomy of their lungs and inflammatory response (Ricciardolo et al.). Every

aspect of asthma, from its physiological pathways, causes, symptoms, associated molecules, and responses have been steadfastly studied with animal models— the modern understanding of asthma is an understanding intimately tied to animal research.

Inhaled medicines are the prominent means of delivering anti-asthma medication— such medication would not exist absent animal research. Glucocorticosteroids, the category of molecules used to suppress airway inflammation administered in preventative inhalers, were only found and categorized through animal models: these medicines' effects on lung growth, protein production, and inflammation were only understood through animal testing (Sharma et al.). A team of scientists from the Van Andel Research Institute and University of California at San Francisco have developed an experimental glucocorticosteroid molecule labeled VSGC12 that outperforms others drugs in its anti-inflammation properties— a mouse respiratory model made this novel breakthrough possible (He et al.).

Growing up, medicine was a solace, my retreat during pain, my helper in distress: two medicines in particular, Albuterol and Advair, played a significant role in alleviating my pain during my tenuous struggle with asthma. I still starkly reminisce on the nights when I would twist the plastic lid off a clear vial of Albuterol, loading the liquid into the nebulizer to patiently inhale, to patiently diminish my coarse, hacking cough. Albuterol, a short acting bronchodilator, is often used for immediate relief of airway constriction and the resulting cough. Dr. David Jack, an industrial researcher, discovered Salbutamol (an alternate name for Albuterol) through rigorous experimentation studying guinea pig and rat tracheal muscles (Jack). Dr. Jack later discovered Salmeterol, one of the prominent drugs used within Advair, through similar methods employing testing on animal airway models (Page and Humphrey). At his research site, he relied upon biomedical animal testing to revolutionize the treatment of asthma, developing numerous

drugs that would alter the quality of life for individuals like me. For many, terms like Salbutamol and Salmeterol are pedantic, scientific jargon, but to me, they are meaningful terms— they are antidotes, antidotes which granted a life of minimized pain.

From the notion that asthma is a disease of inflammation to the synthesis of complex drugs targeting cell-surface receptors, the modern understanding of asthma has advanced greatly— this advance is due to animal research. This research must continue so that millions of other individuals can enjoy freedom from the debilitating illness of asthma. Animal research has given me back the ability to strap on my shoes and feely run across the track, to hike with my family on a sunny Sunday morning, to indulge in delicate pastries made with cinnamon. Animal research returned the pleasure in my life.

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