Case #614

DUOX1 Inhibitors for Treatment of Allergic Disorders

Current treatments for allergic diseases such as asthma, atopic eczema and psoriasis are still not effective for 10% of the millions of patients worldwide with these diseases. Dual oxidase (DUOX1) is a member of the NADPH oxidase family and is a critical mediator of innate immune response to allergens. Several thiol-reactive electrophiles have been identified that inhibit airway allergen response via DUOX1 inhibition and based on this work, selective peptide-based inhibitors have been designed to provide a novel approach to treat patients with allergic asthma or skin disorders, which will serve as a base for small molecule design as well.

Applications:

- Asthma, atopic eczema and psoriasis.

Advantages:

- Novel targeting of a central immune mediator.
- Selective inhibition via covalent cysteine binding.
- Peptide and small molecule targeting.

Intellectual Property and Development Status:

US Patent 10,143,718
Licensing, peptide development and lead compound optimization.

References:

Acrolein and thiol-reactive electrophiles suppress allergen-induced innate airway epithelial responses by inhibition of DUOX1 and EGFR, Danyal *et al.* PMC5130541

Dual oxidase: a novel therapeutic target in allergic disease, van der Vliet *et al.* PMC5900994

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