LJI Available Technologies

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HRF Inhibitors for the Prevention of Food Allergy

Researchers at the La Jolla Institute for Immunology (LJI) have developed rabbit monoclonal antibodies that recognize the HRF N19 peptide and are working to humanize these antibodies for therapeutic use. These mAbs were generated by screening a phage antibody library, and they inhibited IgE binding of HRF *in vitro* and in ovalbumin-induced food allergy *in vivo*.
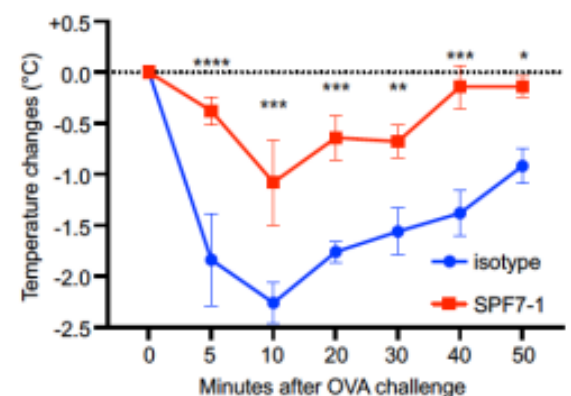
Histamine releasing factor (HRF) is a highly conserved protein required for fundamental intracellular functions such as proliferation and survival. Since it is secreted during allergic reactions, it is implicated in allergic diseases. Recent studies demonstrated that HRF amplifies allergic inflammation by promotion IgE-dependent activation of mast cells and basophils in animal models of anaphylaxis, asthma, and food allergy. HRF directly binds to a subset of IgE and IgG molecules via low-affinity interactions between Ig-Fab portions and two Ig-binding sites within HRF, the amino-terminal 19 residues (N19) and the helical domain H3. It was also shown that a fusion protein GST-N19 and a recombinant monomeric HRF mutant with two cysteine residues replaced with alanine (HRF-2CA) work as strong inhibitors for *in vitro* HRF-IgE interactions and *in vivo* allergic inflammation. Thus, it is likely that HRF dimers, but not monomers, can activate murine mast cells through high-affinity IgE receptors.

As such, researchers at LJI have developed a monoclonal antibody that targets the N19-Ig interactions, using an ovalbumin (OVA) sensitization/OVA challenge model of food allergy. So far, a rabbit N19 mAb has been developed, and a humanized version of this mAb is in development.

ADVANTAGES:

- No risk of anaphylaxis and other adverse events commonly associated with oral tolerization therapy
- May suppress anaphylaxis and other adverse events

Novel anti-HRF antibody for the treatment of food allergy

Anti-N19 mAb (SPF7-1) suppressed OVA-induced hypothermia in OVA-sensitized mice

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