Ann & Robert H. Lurie
Children's Hospital of Chicago™

Food Allergy Clinical Trials

Jacqueline Pongracic, MD

Division Head, Allergy/Immunology
Professor of Pediatrics and Medicine
Northwestern University Feinberg School of Medicine

BEST CHILDREN'S HOSPITALS
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Outline

- Introduction
- Approaches to therapy
- Food allergy clinical trials in Chicago
  - Food Allergy Herbal Formula-2 (FAHF-2)
  - Viaskin® (VIPES)
  - Oral Immunotherapy for Wheat Allergy (Wheat OIT)
  - Peanut Reactivity Reduced by Oral Tolerance in an anti-IgE Clinical Trial (PRROTECT)

Overview of Approaches to Treatment

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- Food-allergen specific
  - Treatment aimed at a particular allergen
  - Analogy: allergen immunotherapy (IT) for environmental allergens
- Allergen non-specific
  - May impact multiple different allergens
- Adjunctive therapies
  - Being developed to reduce risk of adverse reactions

Food-allergen specific approaches

- Native allergens and mutated recombinant proteins

- Oral IT (OIT)
- Sublingual IT (SLIT)
- Epicutaneous IT (EPIT)

Non-specific approaches

- Humanized monoclonal anti-IgE (omalizumab/Xolair®)*
- Chinese herbal medicine (FAHF-2)

*may also be useful to reduce severity of adverse reactions to food immunotherapy

Desensitization vs Tolerance

- Desensitization: change in the amount of allergen that causes symptoms while on treatment

- Tolerance: long-lasting effects of treatment, in which the patient can eat the food without problems after finishing treatment

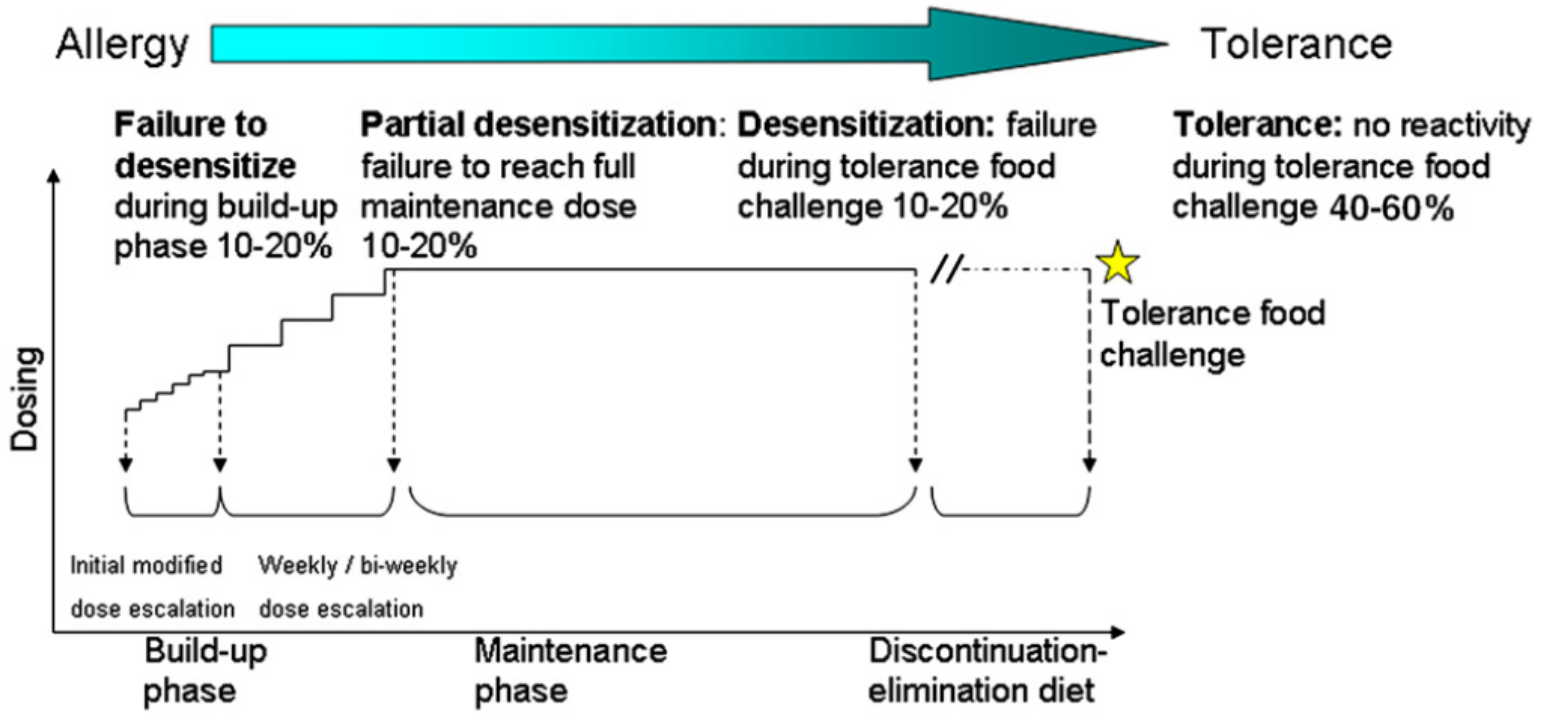
New therapies in clinical trials

Therapy	Stage of study	Allergen studied
Non–allergen-specific therapy		
Anti-IgE therapy	Phase II	Peanut, milk
Traditional Chinese medicine	Phase II	Peanut, tree nut, fish, shellfish, sesame
Allergen-specific therapy		
Oral IT	Phase II-III	Peanut, milk, egg, tree nuts, wheat
Sublingual IT	Phase II	Peanut, milk, hazelnut, kiwi, peach
Heated antigen	Phase II	Egg, milk
Epicutaneous IT	Phase II	Peanut, milk
Recombinant protein IT	Phase I	Peanut
Combination therapy		
Anti-IgE plus oral IT	Phase II	Milk, peanut

Jones & Burks J Allergy Clin Immunol 2013; 131:3-11

Principles of and responses to food OIT

Nowak-Wegrzyn and Sampson J Allergy Clin Immunol 2011;127:558-73



OIT

- Growing body of evidence to support this approach
- Studied for milk, egg and peanut to date
- Appears to have good clinical (and immunologic) outcomes
- Side effects remain a concern (allergic reactions)
  - Usually mild (oral symptoms)
  - More severe allergic reactions have occurred
  - GI side effects in 10-20%, which have required stopping OIT
  - Risk factors: viral infections, menstruation, exercise

Summary of how much of food allergen was ingested in various clinical trials of OIT and SLIT

	Placebo Group	Active Treatment Group
Peanut OIT	280 mg	5000 mg
Milk OIT	500 mg	5100 mg
Egg OIT	250 mg	5000-10,000 mg
(Peanut SLIT)	85 mg	1710 mg

Egg OIT

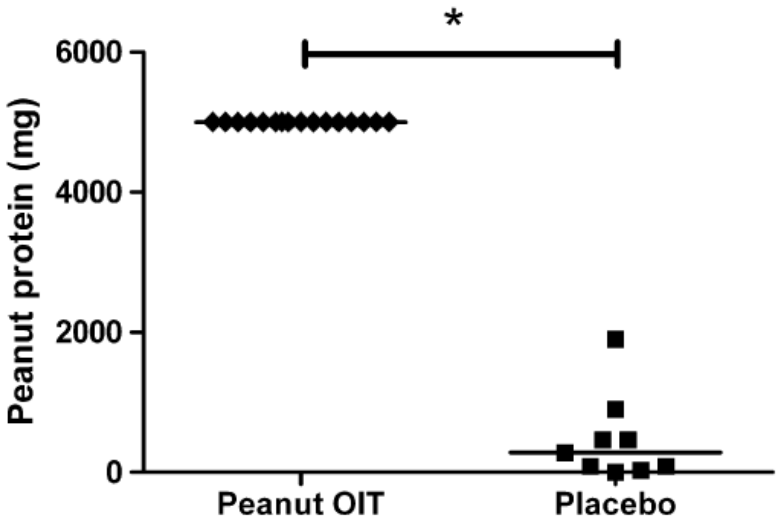
Burks N Engl J Med 2012:367:233-43.

Table 2. Success Rates on Oral Food Challenge.

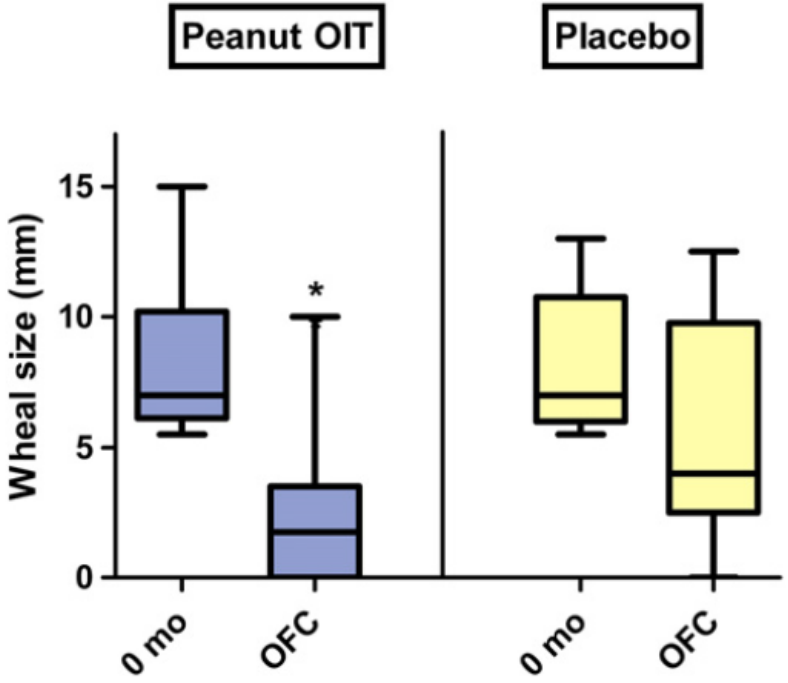
Challenge	Participants Tested*		Response Rate		
	Placebo (N=15)	Oral Immunotherapy (N=40)	Placebo (N=15)	Oral Immunotherapy (N=40)	P Value
	number		*number (percent)*		
Desensitization, 5 g at 10 mo	13	35	0	22 (55)	<0.001
Desensitization, 10 g at 22 mo	1†	34	0	30 (75)	<0.001
Sustained unresponsiveness at 24 mo‡	0	29§	0	11 (28)	0.03

Peanut OIT

Varshney J Allergy Clin Immunol 2011;127:654-60



Cumulative amount of ingested peanut protein during oral food challenge after 12 months of OIT



Skin prick tests at baseline and after 12 months of OIT

Anti-IgE (omalizumab/Xolair®)

Nadeau et al J Allergy Clin Immunol 2011: 127:1622-4

- Pilot study in 11 patients with milk allergy
- Study showed that pre-treatment with omalizumab before and during milk OIT decreased side effects and accelerated time needed to reach maintenance OIT dose

Multi-center studies being performed at Ann and Robert H. Lurie Hospital of Chicago

FAHF-2 (Chinese herbal formula)

- Phase 1 study showed FAHF-2 was safe and well tolerated (mild GI side effects)
- Phase 2 study
  - Randomized, double-blind placebo controlled trial
  - 68 subjects aged 12-45 years
  - Allergy to peanut, tree nut, sesame, fish or shellfish
  - 6 month intervention of 9 herbs taken 3 times a day
  - Study will be completed this summer

Viaskin®/VIPES

- Phase 1 study showed Viaskin® to be safe and well tolerated
- Phase 2 study
  - International, randomized, double-blind placebo controlled trial
  - 220 subjects aged 6-55 years
  - Allergy to peanut
  - 12 month intervention of daily application of Viaskin®

Wheat OIT

- No published studies of wheat OIT exist
- Randomized, double-blind placebo controlled, crossover trial
- 48 subjects aged 4-30 years with history of wheat allergy
- 24 month intervention for active group; 12 month intervention for crossover group

PRROTECT

- Randomized, double-blind, multicenter study
- Objective: to learn if pre-treatment with omalizumab (Xolair®) helps peanut OIT to be done more safely and quickly
  - All participants will receive peanut OIT
  - In the beginning, some will receive omalizumab and others will receive placebo shots. Placebo participants will be offered the chance to receive omalizumab during the trial.
- 36 subjects (9 per site) aged 7-24 years
- Study duration: approximately 1 year

Summary

- Multiple treatment modalities are in development and testing
- Results appear to be promising in terms of safety and results, though different patterns of response have been seen
- Need to identify who is likely to respond to a particular treatment
- The duration of treatment and whether long term tolerance is achievable are still unclear

Contact Information for Food Allergy Studies at Lurie Children's:

Phone: 1.888.573.1833
Email: allergystudy@luriechildrens.org
Website: http://www.luriechildrensresearch.org/allergy/

Thank you!