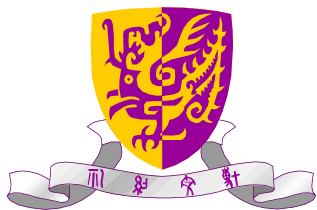




何鴻燊博士醫療拓展基金會  
Dr. Stanley Ho Medical Development Foundation

# What's New on Childhood Food Allergy?



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# Outline of this Presentation

- Epidemiology
- Diagnosis
- General management
- Newer treatments

# Food Allergy (食物過敏)

- Second wave of the allergy epidemic, asthma being the first  
*Prescott S, Allen KJ. *Pediatr Allergy Immunol* 2011; 22:155-60*
- Leading cause of anaphylaxis (休克反應) in emergency departments in a number of countries  
*Shaker M, et al. *Curr Opin Pediatr* 2009; 21: 667-74*
- Food-induced anaphylaxis accounted for 125,000 emergency department (ED) visits and 150-200 deaths per year in U.S.  
*Bock SA, et al. *J Allergy Clin Immunol* 2007; 199: 1016-18*

## 敏感女童 年年生日無蛋糕

【明報專訊】慶祝生日，總少不了吃蛋糕，但對於3卻沒有吃的分兒。受食物敏感困擾的她，出生至今未嘗

黃太說，女兒出生後5個半月開始手脚生濕疹，痕癢。次吃雞蛋、粟米或魚時，全身都會有出疹及紅腫等過敏腫如「孖腸」，要送院急救。

黃太說，曾為女兒做驗血測試，發現她對牛奶、蛋及蔬菜、水果、豬肉及穀米，「家中長者不忍因困「無啖她吃半隻指頭大小的魚肉，結果女兒全身出疹、眼腫、些窒息，要即時入院打針，留醫3天。」

黃太無奈嘆道，連生日蛋糕也列入女兒「禁食」之列未有抗拒，「生日蛋糕用雞蛋造，我寧願她不吃，總好大後，食物敏感症會離她而去」。

(Adapted from MingPao 14 Jan 2008)

## 女生食南瓜敏感入院

文章日期：2011年4月20日

【明報專訊】一名對南瓜過敏的小四女生，昨午在黃大仙校舍內午餐，意外進食含有南瓜成分午餐，旋即敏感症發作雙臂紅腫痕癢，幸好送院治療後無大礙。

意外進食南瓜後敏感症發作女生年約十餘歲，就讀沙田坳道聖母小學四年級。女童入院期間仍然清醒，但雙臂又紅又癢，不時要以手搔癢，既不適又狼狽。女事主事後表示，自小發現對南瓜有過敏反應，經治理亦未能痊癒，惟有日常注意飲食，避免進食南瓜以免病發不適。

## 疑誤吃含南瓜成分醬料

現場消息稱，出事飯餐由一間食物供應商向學校提供，女童進食的菜式，包括黑椒雞及一盒粉麵，初步懷疑粉麵含有南瓜成分醬料，女童用餐時不見飯餐中有南瓜塊，不知就裏如常進食而「中招」。

## 航空公司漠視花生敏感者要求特別膳食 男童食飛機餐險喪命

【明報專訊】加拿大有很多人患有花生敏感症，尤其小孩子在加國的學校或家裏都會獲家長要小心，當這些小孩子乘搭國幾乎是沒有航空公司可以保證這些小生的食物或不接觸到花生。

他的忠告是：花生敏感症患者乘搭飛機外，還要帶備兩劑敏感藥注射，最好乘搭最早的一班機，並選擇機尾A2版

2歲兒子就是在由日本飛往香港的航生汁的沙律而險些送命，降落香港

或噩夢

，她與家人在上月8日乘坐國泰航空公司的班機，出發往香港兼月，一行5人，當中包括患有花生敏感症的12歲兒子Ryan。而這套去年6月透過萬錦廣場的大班旅行社分店所訂購的，其中包括的12月8日多倫多飛香港(CX828)、12月10日香港飛東京(CX504)、香港(CX505)、以及12月31日香港飛多倫多(CX829)。

後自己亦有再致電旅行社，通知對方兒子Ryan有花生敏感的情況特別飛機餐。「當時，旅行社的職員就說會幫我打個，替我通知航空公司。」何太憶述。

(Adapted from MingPao 4 May 2008)

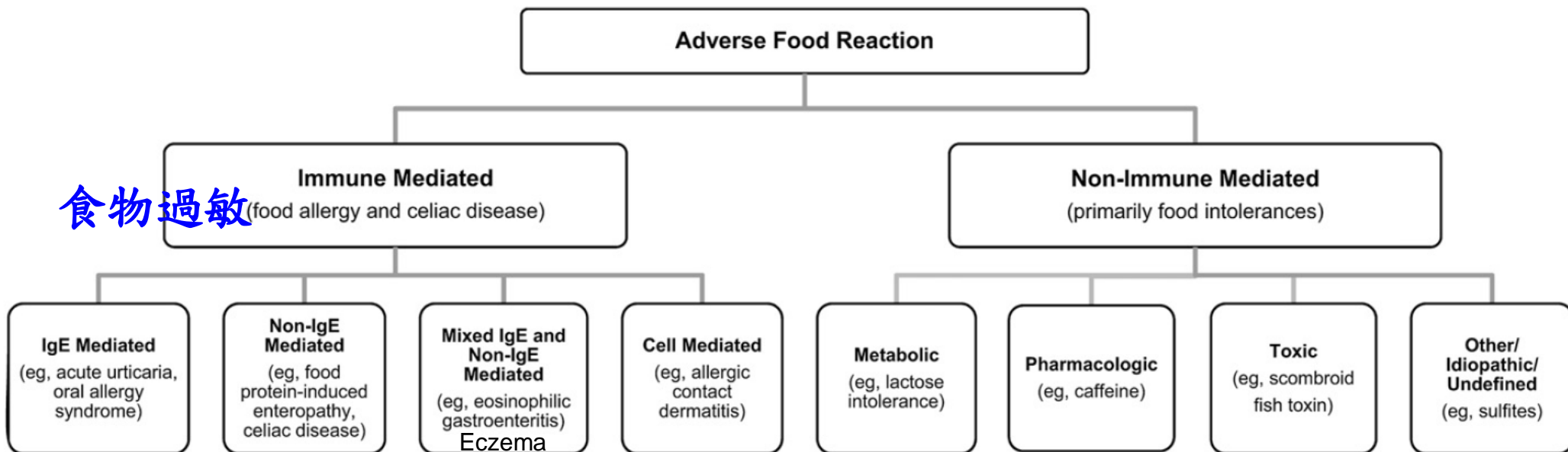


何生何太與患有花生敏感症的兒子Ryan(中)手持上月所乘搭的國泰航班機票。



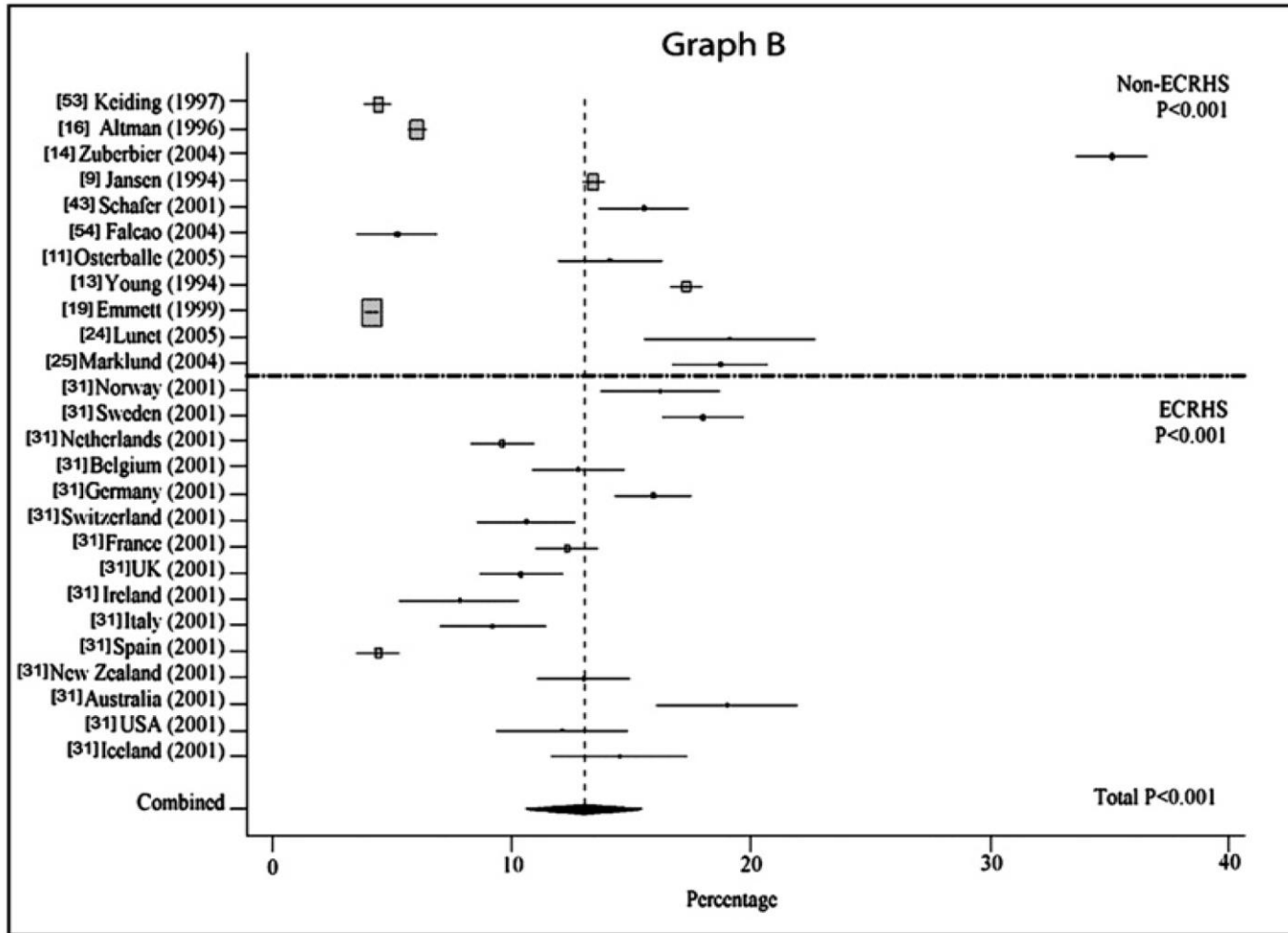
Ryan在香港瑪嘉烈醫院急症室的單據。(李守銘攝)

# 食物不良反應



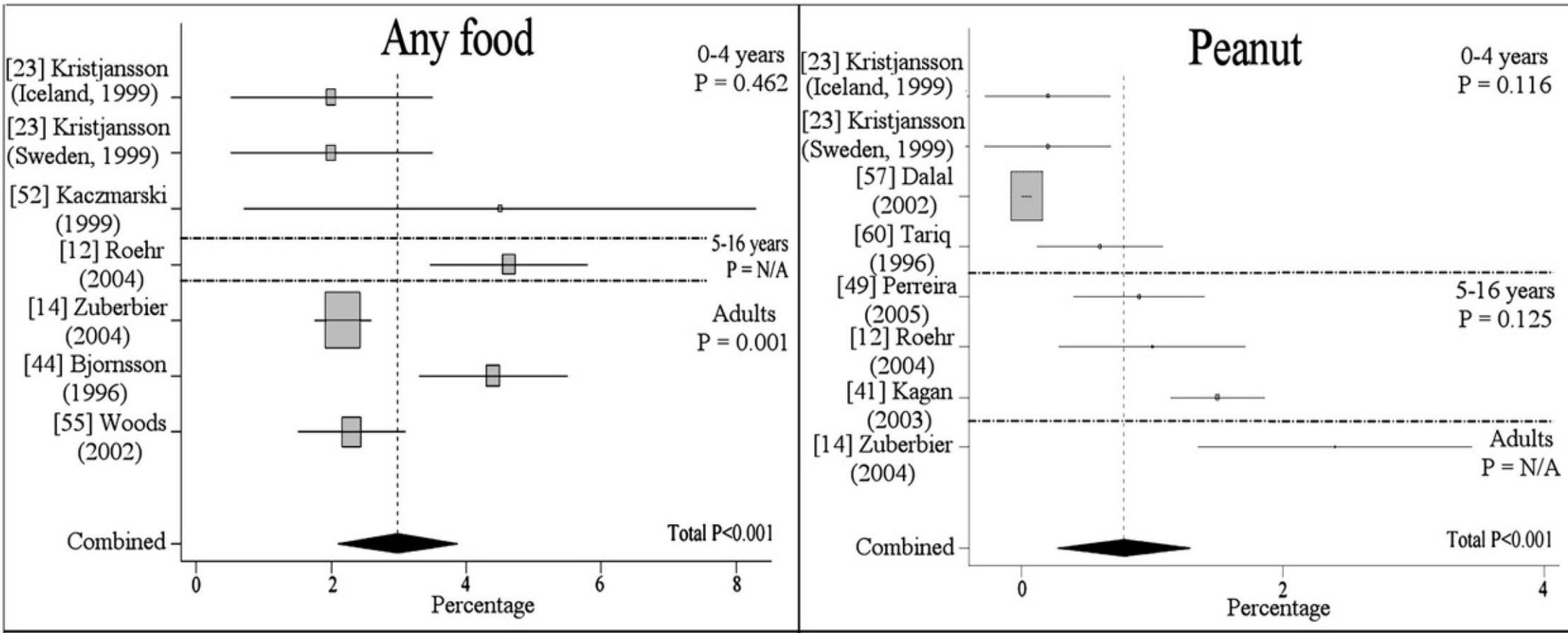
# Prevalence of Food Allergy: a Meta-analysis

## Reported symptoms only



N/A means not applicable. The reference number is given in brackets before the name or country.

# Studies with SPT/sIgE/DBPCFC



# Food Allergy:

## ? an uncommon problem in Chinese children

- Very little published data
- Clinical experience:
  - “uncommon in general”
  - seafood: relatively common in southern China
  - unusual allergen: bird’s nest
  - milk allergy is rare
  - peanut allergy is rare despite heavy consumption
- Confusion between lactose intolerance and milk allergy



# Population Studies on FA / AFR Prevalence in Asia

	Country	n	Age (yr)	Methodology	Overall (%)	Shellfish (%)	Egg (%)	Peanut (%)	Cow's milk (%)
Chen J (2011)	China	477	<1	Report, SPT, DBPCFC	3.8	-	2.5	0.4	1.3
Chen J (2012)	China	1604	0-2	Report, SPT, DBPCFC	6.2	0.2-0.4	3-4.4	-	0.8-3.5
Leung TF (2009)	Hong Kong	3677	2-6	Report & Doctor Dx	8.1 / 4.6	0.9	0.4	0.5	0.3
Ho MHK (2012)	Hong Kong	548	<1	Report	4.9	-	-	-	-
		1433	2-5	Report	5.3	-	-	-	-
		2755	6-10	Report	4.5	-	-	-	-
		2657	11-14	Report	4.7	-	-	-	-
		7393	all	Report	4.8	1.8	1.3	0.8	1.0
Wu TC (2012)	Taiwan	813	<3	Convincing hx +/- SPT/IgE	3.4	1.1	0.36	1.1	1.1
		15169	4-18	Convincing hx +/- SPT/IgE	7.6	7.7	0.5	0.9	0.9
		14036	>19	Convincing hx +/- SPT/IgE	6.4	7.1	0.31	0.5	0.5
Shek LP (2010)	Singapore	4115	4-6	Convincing hx	-	1.2	-	-	-
		4390	4-6	Convincing hx	-	-	-	0.6	-
		6342	14-16	Convincing hx	-	5.2	-	-	-
		6450	14-16	Convincing hx	-	-	-	0.5	-

# Epidemiology of AFR in HK Preschoolers

- Reported prevalence, clinical features and risk factors for parent-reported AFR in young Chinese children in Hong Kong
  - 3677 children aged 2-6 yrs from 21 nurseries and kindergartens
  - subjects' parents answered a self-administered questionnaire that was modified based on the International Study of Asthma and Allergy in Childhood
  - prevalence of parent-reported AFR was 8.1% and parent-reported and doctor-diagnosed AFR was 4.6%



# Foods Responsible for Majority of Food-Allergic Reactions

Infants	Children	Older children / Adults
Cow milk	Cow milk	Peanut
Eggs	Eggs	Tree nuts
Peanut	Peanut	Fish
Soy	Soy	Shellfish
	Wheat	
	Tree nuts (walnut, cashew, etc)	
	Fish	
	Shellfish	

Table 4. Spectrum and population prevalence of reported allergic reaction to a food\* by adverse food reaction (AFR) category

Food	Parent-reported AFR			Parent-reported, doctor-diagnosed AFR		
	n	% of those with allergic reaction (n = 298)	Prevalence (%) in total population (n = 3677)	n	% of those with allergic reaction (n = 170)	Prevalence (%) in total population (n = 3677)
Crustacean shell fish (mostly shrimp)	47	15.8	1.28	33	19.4	0.90
Egg	27	9.1	0.73	15	8.8	0.41
Peanut	24	8.1	0.65	19	11.2	0.52
Beef	19	6.4	0.52	12	7.1	0.33
Cow's milk	17	5.7	0.46	12	7.1	0.33
Tree nuts	15	5.0	0.41	11	6.5	0.30
Fish	12	4.0	0.32	9	5.3	0.25
Chocolate†	11	3.7	0.30	11	6.5	0.30
Cheese†	9	3.0	0.24	7	4.1	0.19
Tomato	9	3.0	0.24	7	4.1	0.19
Lamb	9	3.0	0.24	4	2.4	0.11
Orange, banana	5	1.7	0.14	5	2.9	0.14
Other foods‡	39	13.1	1.06	21	12.4	0.57
Reacted to ≥1 type of foods	60	20.1	1.63	42	24.7	1.14

# EuroPrevall

## Epidemiological studies

### Cross-sectional surveys

general population: 8 centers

Questionnaire-based

- school children (7-10 yrs)
- adults

**Target:** 3000 children and  
3000 adults per center

### Case-control study:

all cases\* (reported history)

+

1 to 3 controls per case

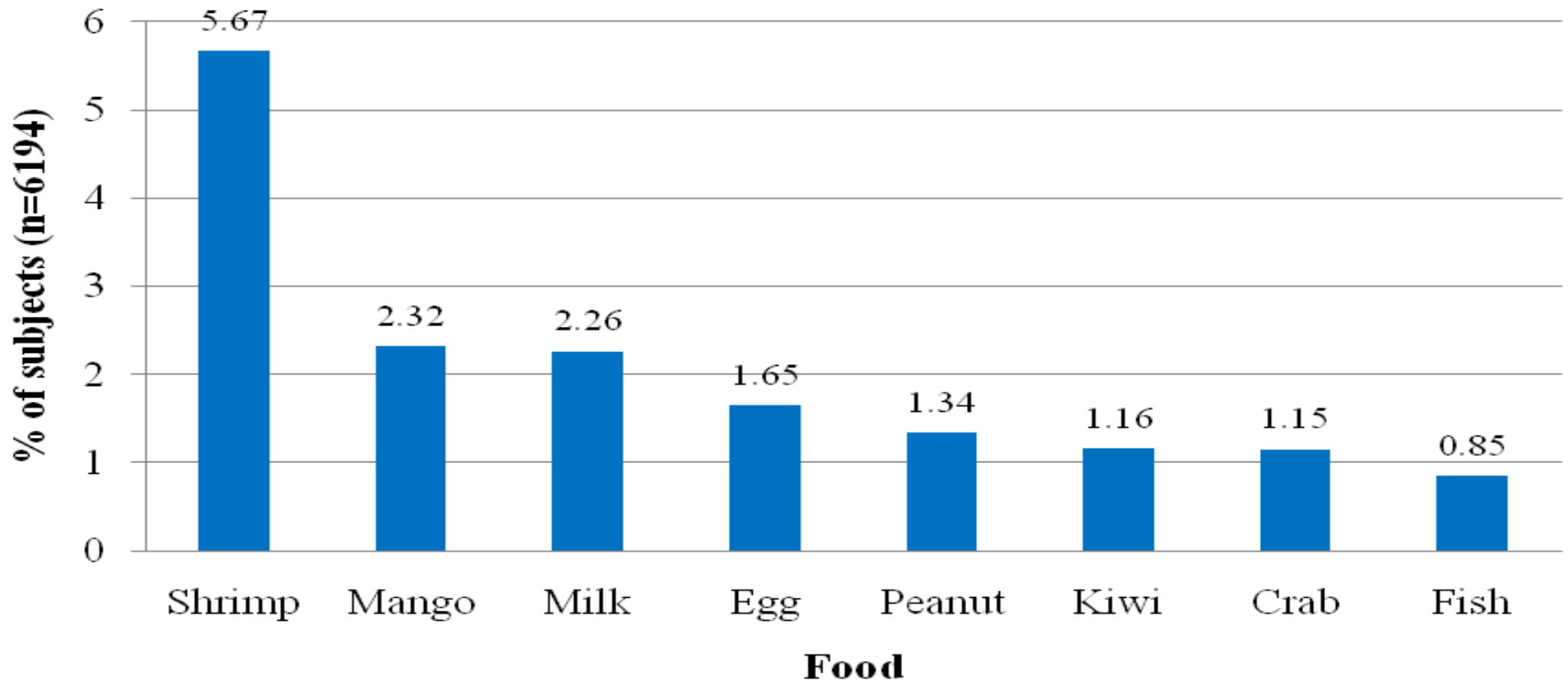
\* for 24 priority foods of EuroPrevall



# Food Allergy in Hong Kong

- “Probable food allergy”
  - Subject reported to have experienced certain food allergy, with reactions **within 2 hours** after ingestion **AND evidence of sensitisation**
    - **SPT size  $\geq 3$  mm** on the reported food  
AND/OR
    - Serum specific **IgE level  $\geq 0.35$  kU<sub>A</sub>/l** on the reported food (Class 1 to Class 6)
- The prevalence of “probable food” allergy in the 6,194 selected sample is **2.81%**

## Common Food Allergens Reported in Chinese Primary Schoolchildren



Hong Kong school children

# Longitudinal Changes in Prevalence of FA / AFR

- Prevalence of FA appears to be increasing worldwide:
  - Self-reported survey data in US *Branum AM, et al. Pediatrics 2009; 124: 1549-5*
    - 18% increase in food allergies from 1997 to 2007
  - Rate of food allergy in China *Hu Y, et al. Pediatr Int 2010; 52: 820-4*
    - Reported FA: 13.7% in 1999 to 16.7% in 2009 ( $P=0.268$ )
    - SPT: 9.9% in 1999 to 18.0% in 2009 ( $P=0.002$ )
    - FA diagnosed by food challenge: 3.5% in 1999 to 7.7% in 2009 ( $P=0.017$ )
- Limited evidence on the longitudinal changes of food allergy prevalence in both Asian and non-Asian populations



# Comparison between 2006 and 2013 Surveys

	2006 Study n=3677	2014 Study n=3525	P-value
Food allergy, n (%)			
Parent-reported AFR	298 (8.1)	341 (9.7)	<b>0.019*</b>
Parent-reported and doctor-diagnosed AFR	170 (4.6)	139 (3.9)	0.155*
Current food avoidance	423 (11.5)	465 (13.2)	<b>0.029</b>
Hospitalization due to AFR ever, n (%)	26 (0.7)	38 (1.1)	0.094
Hospitalization due to AFR in past year, n (%)	27 (0.7)	27 (0.8)	0.876
Co-morbid atopic disorders, n (%)			
Wheeze ever	513 (14.0)	740 (21.0)	<b>&lt;0.0001</b>
Doctor-diagnosed asthma	184 (5.0)	164 (4.7)	0.487
Current wheeze	295 (8.0)	471 (13.4)	<b>&lt;0.0001</b>
Wheezing attack in past year, n (%)			
1-3 episodes	202 (5.5)	320 (9.1)	<b>&lt;0.0001</b>
4-12 episodes	73 (2.0)	117 (3.3)	<b>0.0004</b>
>12 episodes	25 (0.7)	32 (0.9)	0.276
Hospitalization due to wheeze ever, n (%)	170 (4.6)	236 (6.7)	<b>0.0001</b>
Received asthma medications in past year, n (%)	620 (16.9)	937 (26.6)	<b>&lt;0.0001</b>
Rhinitis ever, n (%)	879 (23.9)	1146 (32.5)	<b>&lt;0.0001</b>
Eczema ever, n (%)	1165 (31.9)	1427 (40.5)	<b>&lt;0.0001</b>

\*  $P=0.521$  for parent-reported AFR, adjusted for maternal education level;

$P=0.008$  [OR 0.72, 95% CI 0.56-0.92] for parent-reported, doctor-diagnosed AFR, adjusted for maternal education level

# Diagnosis of Food Allergy

# Food Hypersensitivity Disorders

Type	Disorders
------	-----------

## *IgE-mediated*

Cutaneous	Urticaria, angioedema morbilliform rashes, flushing
Gastrointestinal	Oral allergy syndrome, gastrointestinal anaphylaxis
Respiratory	Acute rhinoconjunctivitis, bronchospasm
Generalized	Anaphylactic shock



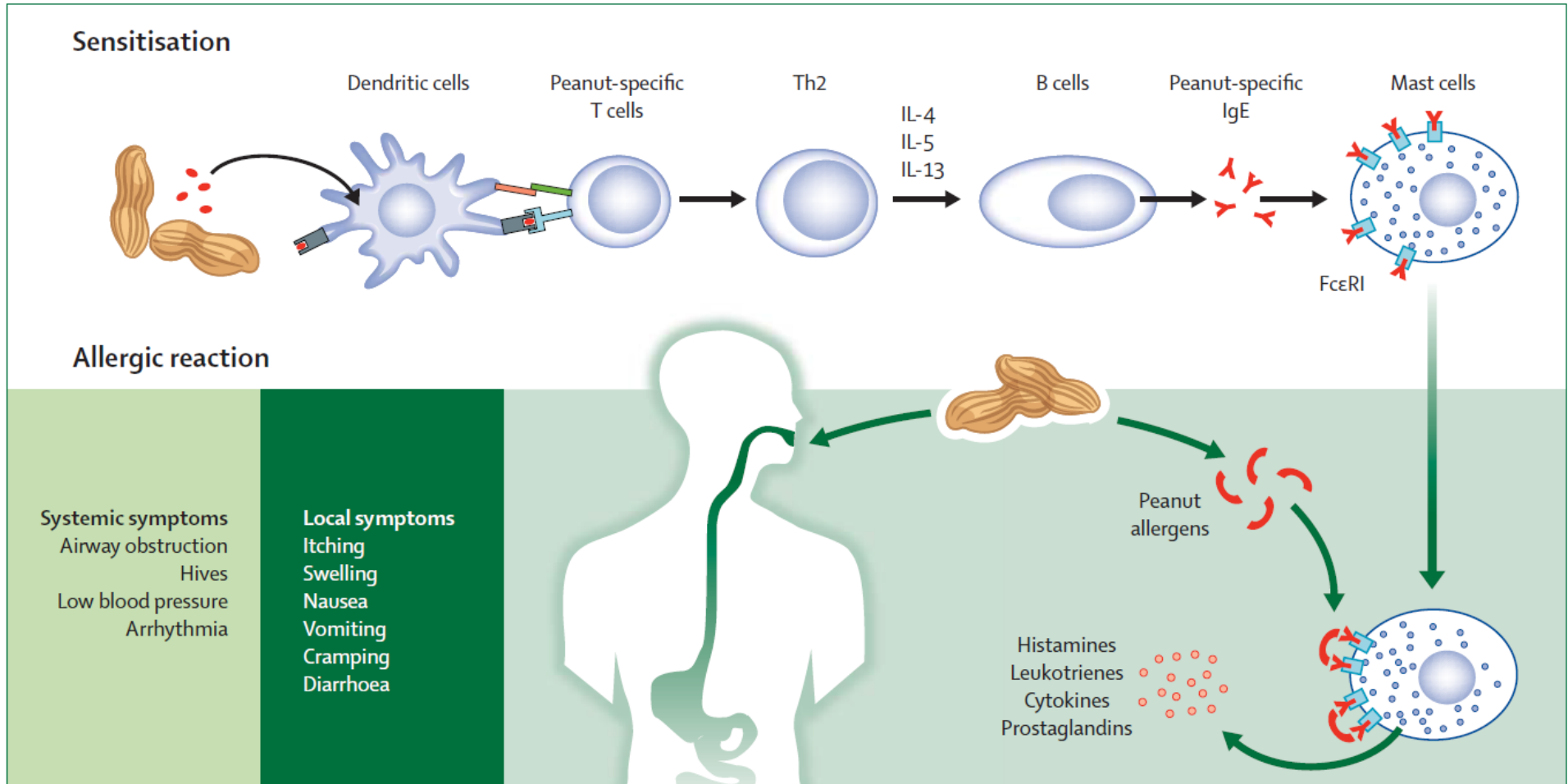
## *Mixed IgE and cell-mediated*

Cutaneous	Atopic dermatitis
Gastrointestinal	Allergic eosinophilic esophagitis and gastroenteritis
Respiratory	Asthma

## *Cell-mediated*

Cutaneous	Contact dermatitis, dermatitis herpetiformis
Gastrointestinal	Food protein-induced enterocolitis and enteropathy, celiac disease
Respiratory	Food-induced pulmonary hemosiderosis (Heiner Syndrome)

# Allergic Reaction to Peanut



# Diagnosis of Food Allergy

## (1) Acute urticaria $\pm$ angioedema (IgE-mediated)

- immediate reactions (< 2 hours)
- may present with upper airway obstruction or anaphylactic shock
- diagnosis can usually be confirmed by typical history *plus* the presence of food-specific IgE (by skin prick tests or RAST)
- needs supervised oral food challenges for diagnosis in doubtful cases

## (2) Eczematous (IgE/cell-mediated)

- immediate (< 2 hours) or delayed (up to 72 hours)
- food-specific IgE and atopy patch test may not be accurate
- needs to consider food elimination and re-challenge to confirm the diagnosis if history is suspicious

# Double-blind Placebo-controlled Food Challenge (DBPCFC)

- the gold standard in diagnosing food allergy
- 2 day test: placebo/active
- preparation of the testing material
- each day: 3-4 hrs
- assessment periodically
- may induce severe allergic reaction / anaphylaxis



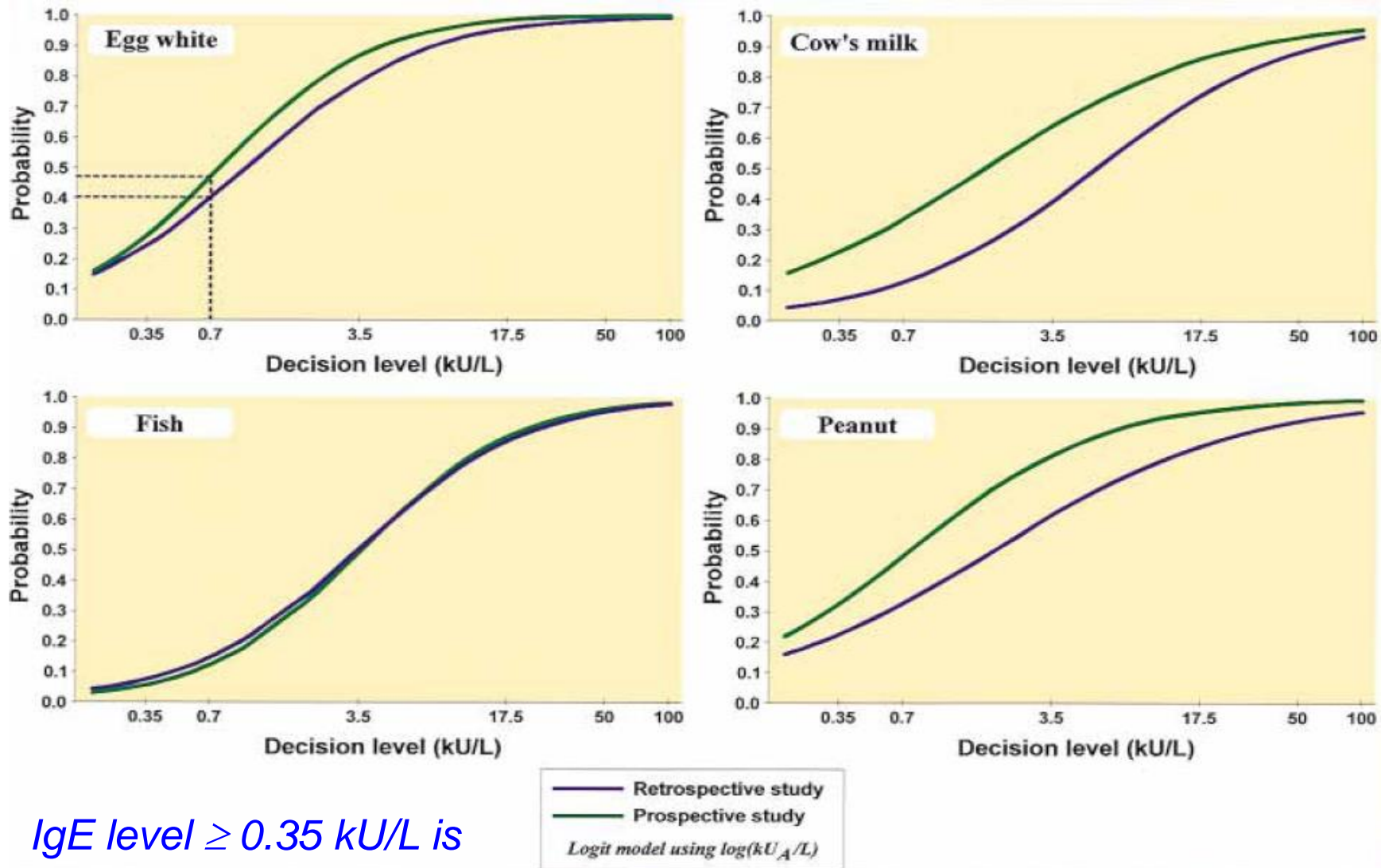
Conventional cut-offs for positive results:

Skin prick tests -  $\geq 3$  mm (induration)

Serum specific IgE by RAST -  $\geq 0.35$  kU/l



# Probability of Food Reaction at a Given IgE Value



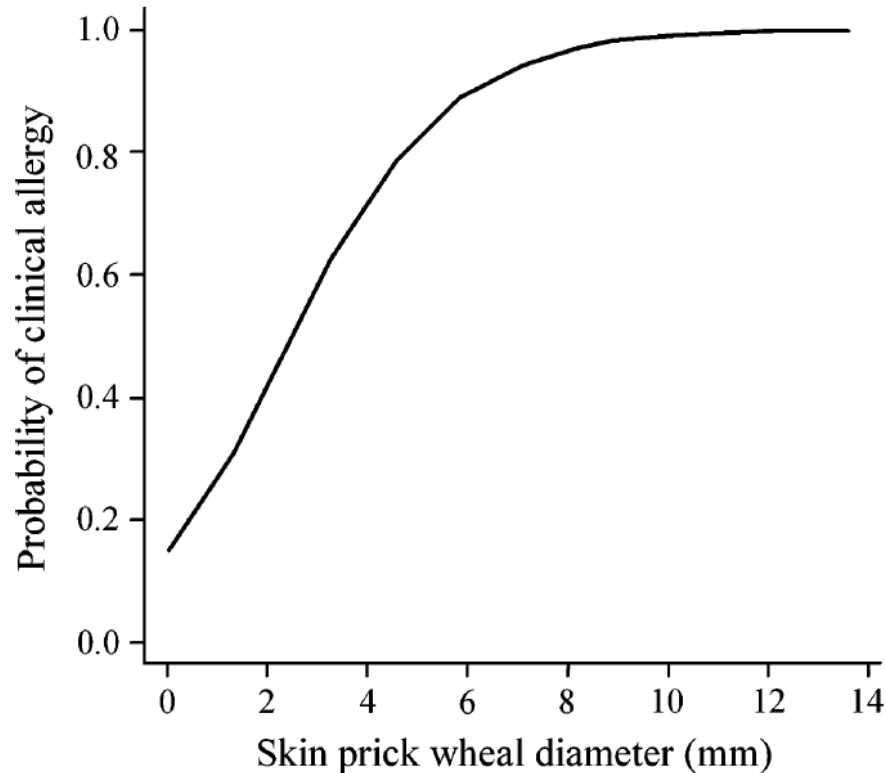
*IgE level  $\geq 0.35$  kU/L is reported as positive*

# Predict Reactions Upon Oral Food Challenge Using the Pharmacia CAP-RAST FEIA System

Allergen	Decision Point (kIU/L)	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Egg	7	61	95	98	38
Cow milk	15	57	94	95	53
Peanut	14	57	100	100	36
Fish	3	63	91	56	93
Soybean	30	44	94	73	82
Wheat	26	61	92	74	87

# Peanut Allergy Diagnosis in UK ALSPAC

(*n=161 challenges*)



Group	Skin prick test result (mm)	Challenge result		
		Number positive (%)	Number negative (%)	
All subjects	<8	50 (42.7%)	67 (57.3%)	
	≥8	17 ( <b>94.4%</b> )	1 (5.6%)	
Where				
	St Mary's	<8	38 (40.9%)	55 (59.1%)
	≥8	5 ( <b>100.0%</b> )	0 (0.0%)	
ALSPAC	<8	12 (50.0%)	12 (50.0%)	
	≥8	12 ( <b>92.3%</b> )	1 (7.7%)	
Age				
	<7 y	<8	26 (41.9%)	36 (58.1%)
	≥8	3 ( <b>75.0%</b> )	1 (25.0%)	
	≥7 y	<8	24 (43.6%)	31 (56.4%)
	≥8	14 ( <b>100.0%</b> )	0 (0.0%)	
Time between test and challenge				
	<6 mo	<8	33 (41.2%)	47 (58.8%)
	≥8	14 ( <b>93.3%</b> )	1 (6.7%)	
	6-24 mo	<8	17 (46.0%)	20 (54.0%)
	≥8	3 ( <b>100.0%</b> )	0 (0.0%)	
Type of challenge				
	Double-blind	<8	12 (48.0%)	13 (52.0%)
	≥8	12 ( <b>92.3%</b> )	1 (7.7%)	
	Open	<8	38 (41.3%)	54 (58.7%)
	≥8	5 ( <b>100.0%</b> )	0 (0.0%)	

Roberts G *et al.* JACI 2005;115:1291-6

# Diagnosis of Food Allergy

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# Emerging Trend in Measuring Specific IgE to Allergen Components

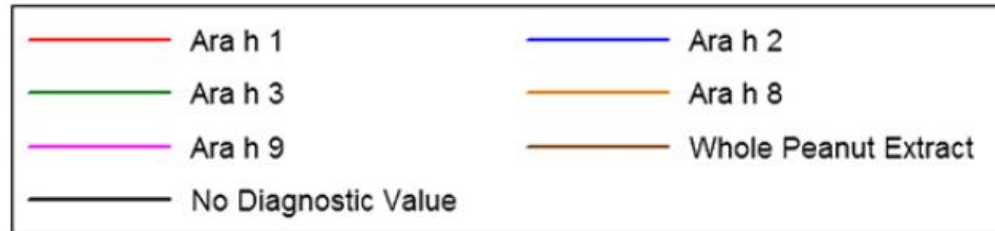
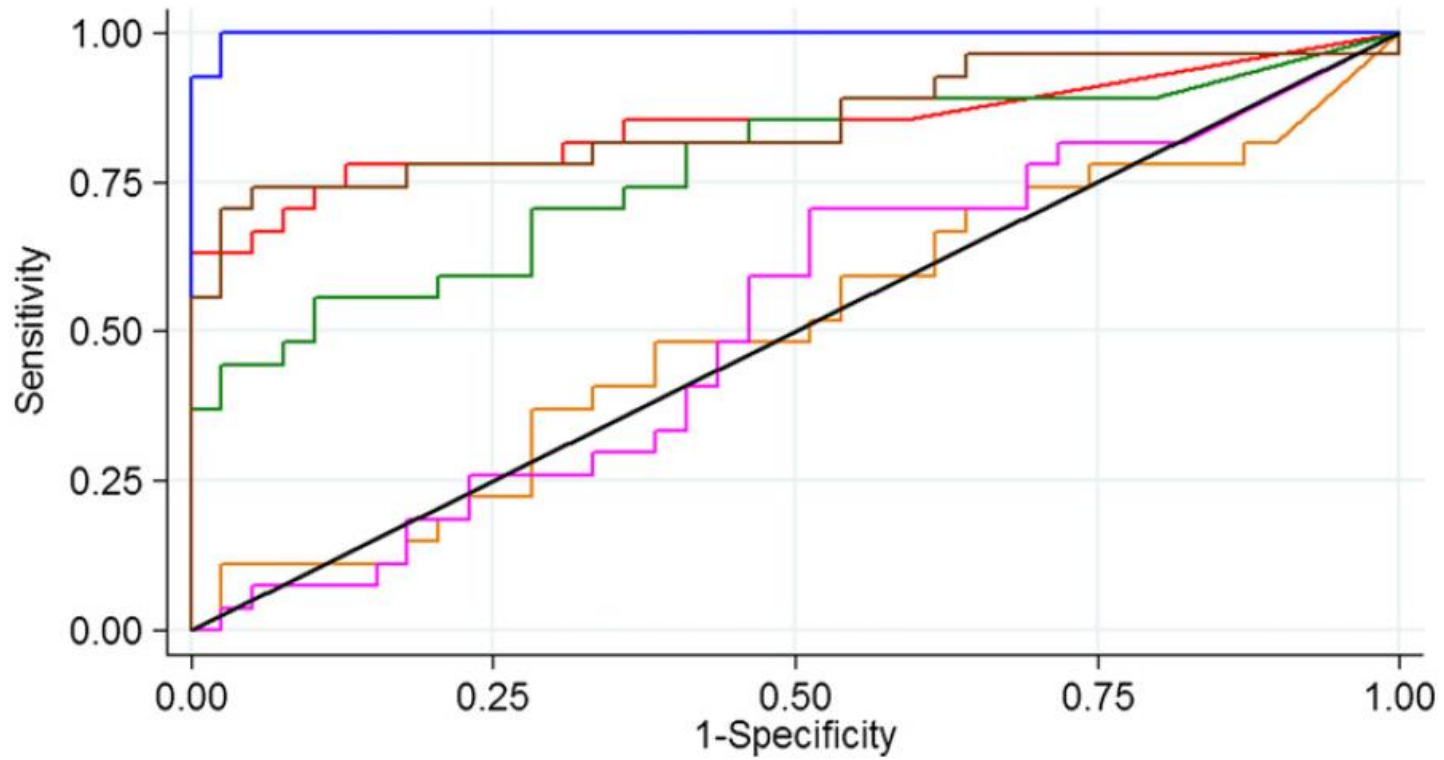
# Peanut Allergen

- Peanut = *Arachis hypogaea* (Greek; hypogaea means “under the earth”)
- Belongs to legume family along with beans, peas, lentils and lupines
- Peanut is phylogenetically distinct from tree nuts
- Classify according to potency to elicit symptoms based on main route of sensitization:
  - (i) **Class I** - induce allergies via gastrointestinal tract (e.g. cow’s milk, hen egg, fish, shellfish, tree nuts, wheat, soybean, peanuts)
  - (ii) **Class II** - foods of plant origin that induce food allergy via respiratory tract via cross-reactivity with pollens (i.e. birch pollen/apple or hazelnut allergy)
- Crude natural extracts contain both allergenic and non-allergenic molecules, with some molecules cross-reacting with homologous proteins from other sources (e.g. pollen)

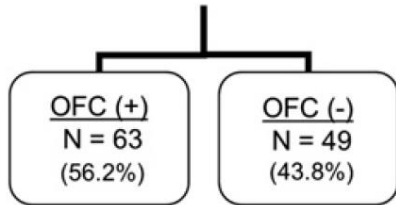
**Table 2.** Classification of peanut allergens applying physical and biochemical criteria

Allergen	Protein families	Sedimentation coefficient	Biological function	Alias names/ synonyms in proteomics
Ara h 1	cupin superfamily	7 S vicilin	storage protein	conarachin
Ara h 3	cupin superfamily	11 S legumin, glycinin	storage protein	arachin
Ara h 2	prolamin superfamily	2 S albumin	storage protein, trypsin inhibitor	conglutin
Ara h 6	prolamin superfamily	2 S albumin	storage protein	conglutin
Ara h 7	prolamin superfamily	2 S albumin	storage protein	conglutin
Ara h 9	prolamin superfamily		nsLTP	
Ara h 5	profilin			
Ara h 8	Bet v 1-related protein		PR-10	
Ara h 10	oleosin		oil body forming	
Ara h 11	oleosin		oil body forming	
Ara h 12	defensin		PR-12	
Ara h 13	defensin		PR-12	

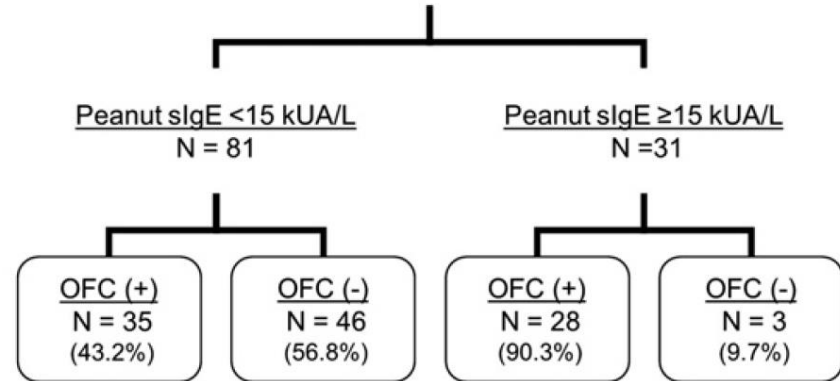




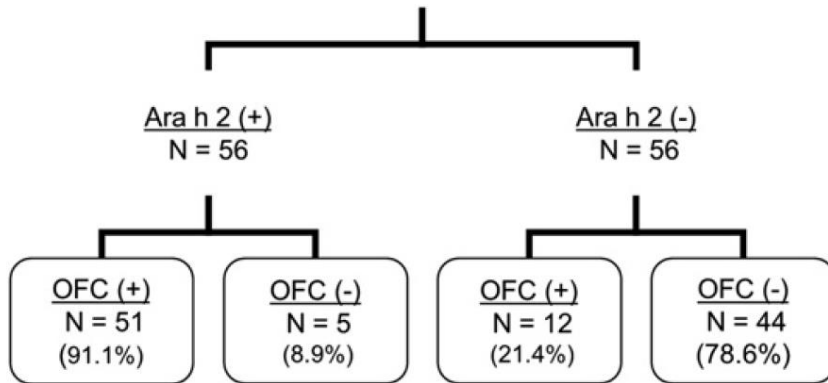
Positive peanut sIgE ( $\geq 0.35$  kUA/L)  
N = 112



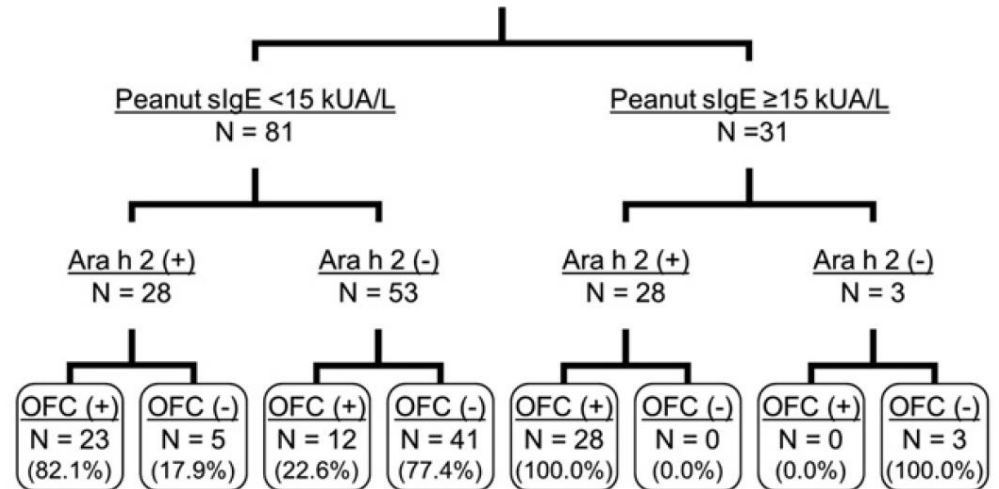
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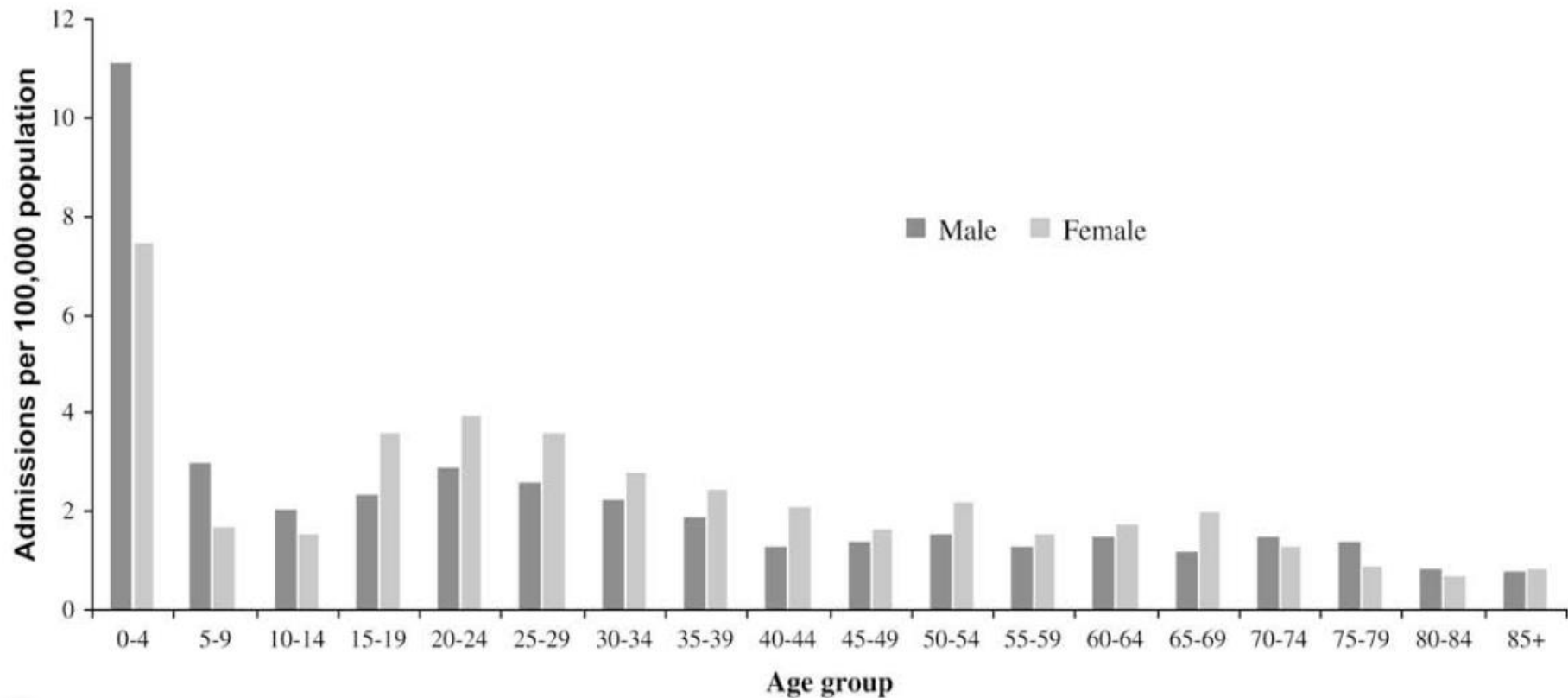


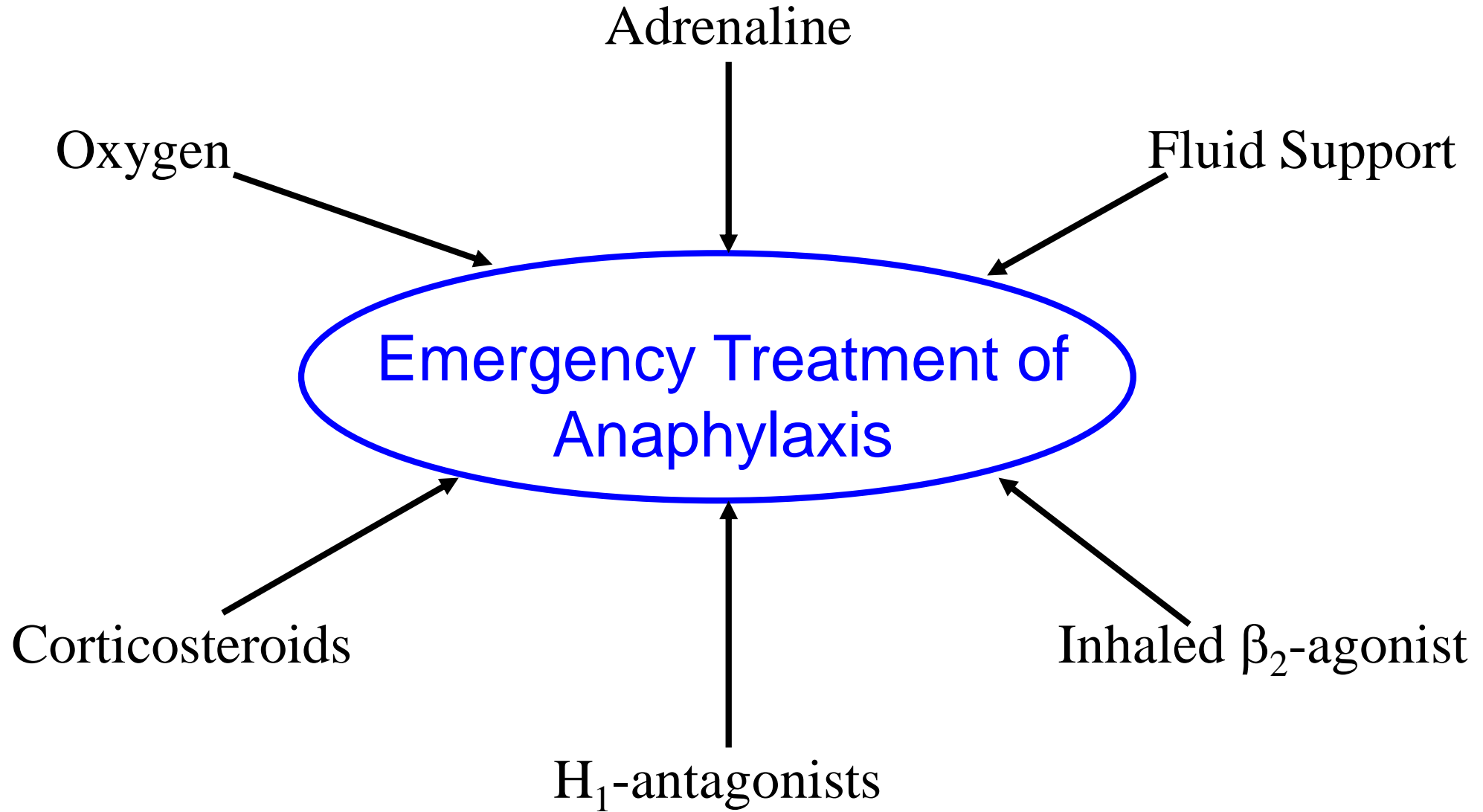
Positive peanut sIgE ( $\geq 0.35$  kUA/L)  
N = 112



*Strict avoidance of sensitized food(s) is the  
mainstay of food allergy management over  
the past few decades*

# Food-induced Anaphylaxis Admissions in Australia 1994-2005





# Adrenaline for Anaphylaxis

- Adrenaline (1:1,000) is the *medication of choice* for anaphylactic episodes; other medications should be regarded as adjuvants
- Recommended dosage 0.01 mg/kg up to 0.3 mg
- Relatively narrow therapeutic window
- Intramuscular adrenaline is rapidly bioavailable; peak levels within 10 minutes
- Lateral thigh (vastus lateralis) is the preferred site
- Early use of adrenaline has been associated with a better outcome
- May need another dose 5-20 minutes later
- Cautious use in infants and children with body weight < 10 kg (i.e. possible overdose)



# Tailored Action Plan for Anaphylaxis

## Patient Factors

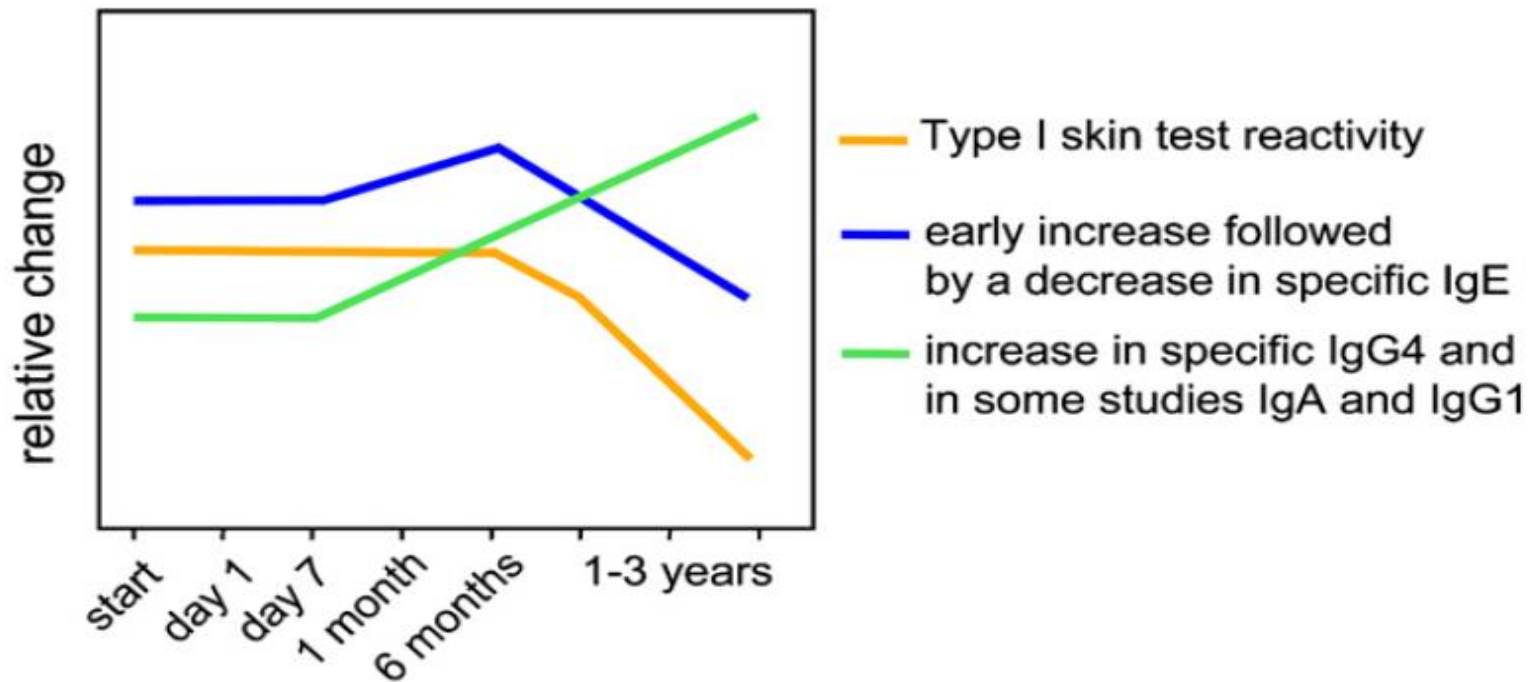
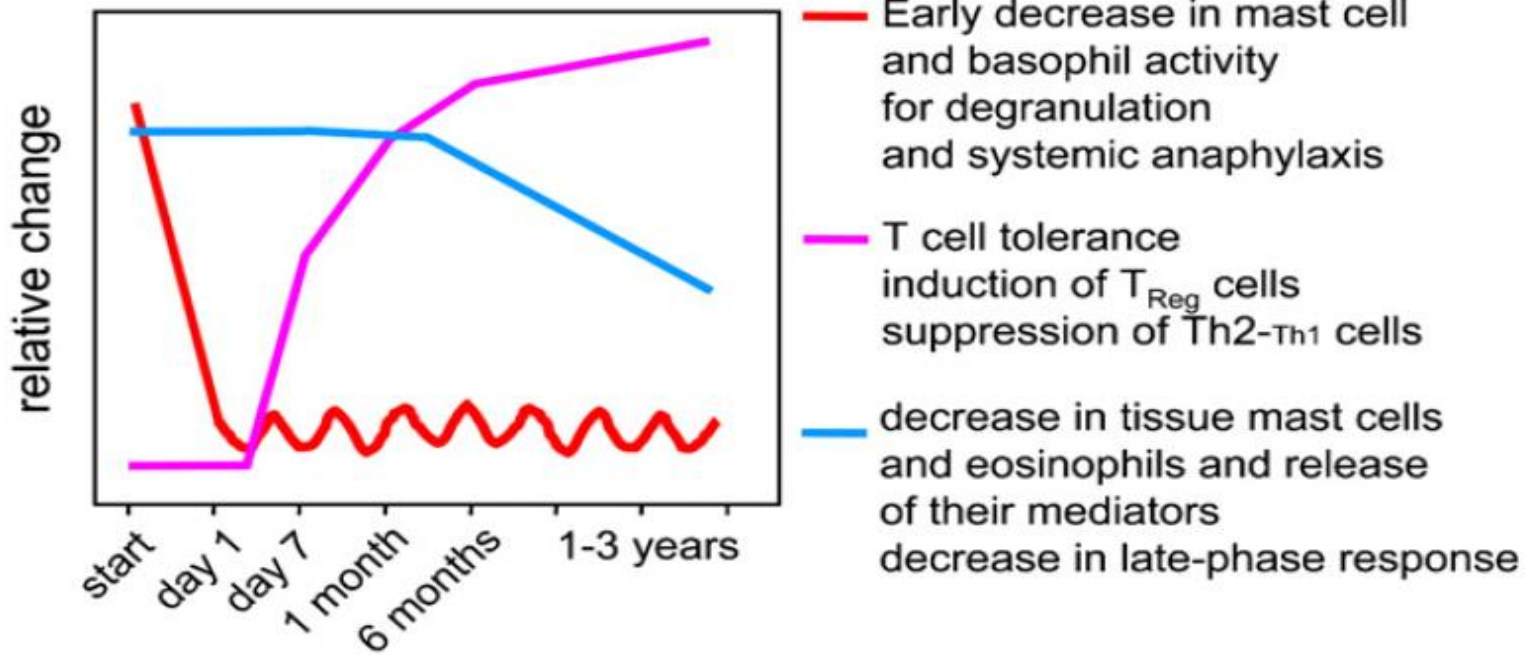
## Components of Anaphylaxis

## Action Plan

Previous severe reaction	Coexisting persistent asthma	Other risk factors*	Self-Injectable Adrenaline	Anti-histamine	Inhaled $\beta$ -agonist
Yes	No	Yes / No	Yes	Yes	No
Yes	Yes	Yes / No	Yes	Yes	Yes
No	Yes	Yes / No	Yes	Yes	Yes
No	Yes	No	Yes	Yes	Yes
No	No	Yes	Consider	Yes	No

*Is there any new treatment for food allergy?*





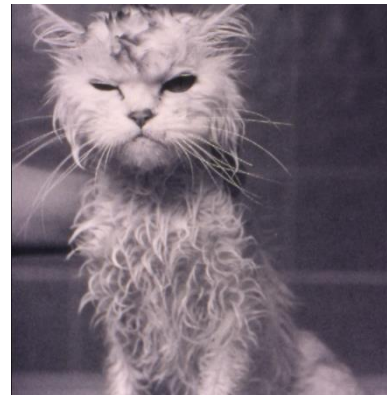
# Allergens of Proven Efficacy in Double-Blind Placebo-Controlled Immunotherapy Studies



Pollens



Role of immunotherapy for foods?



**TABLE I.** Characteristics of OIT and sublingual immunotherapy for peanut allergy

	Clark et al <sup>23</sup>	Jones et al <sup>20</sup>	Blumchen et al <sup>22</sup>	Anagnostou et al <sup>26</sup>	Varshney et al <sup>25</sup>	Kim et al <sup>9</sup>
Tolerated dose of peanut (median and range) after immunotherapy	2400 mg (2400-2800 mg) of peanut protein	27/29 subjects tolerated 3900 mg of peanut protein	1000 mg (250-4000 mg) of peanut = 250 mg (62-1000 mg) of peanut protein	6459 mg (800-7510 mg) of peanut protein	<ul style="list-style-type: none"> <li>● Verum group: 5000 mg of peanut protein</li> <li>● Placebo group: 280 mg (0-1900 mg) of peanut protein</li> </ul>	<ul style="list-style-type: none"> <li>● Verum group: 1710 mg of peanut protein</li> <li>● Placebo group: 85 mg of peanut protein</li> </ul>
	Completed protocol: 4	Completed protocol: 29	Completed protocol: 14	Completed protocol: 18	Completed protocol: 25 Verum/placebo: 16/9	protocol: 18 Verum/placebo: 11/7
Age of patients (y)	9-13	1-9	3-14	4-18	1-16	1-11
Inclusion criteria	Increased peanut-specific IgE and positive DBPCFC result	(1) Clinical history of reaction to peanut, SPT $\geq 3$ mm, and peanut-specific IgE $\geq 15$ kU/L or (2) clinical history of reaction to peanut within previous 6 mo and peanut-specific IgE $\geq 7$ kU/L	Peanut-specific IgE $>0.35$ kU/L and positive DBPCFC result	Peanut-specific IgE $>0.35$ kU/L and positive DBPCFC result	(1) Clinical history of reaction to peanut and SPT $\geq 3$ mm and peanut-specific IgE $\geq 15$ kU/L or (2) clinical history of reaction to peanut within previous 6 mo and peanut-specific IgE $\geq 7$ kU/L	Clinical history of reaction to peanut and peanut-specific IgE $\geq 7$ kU/L
Build-up	Biweekly	<ul style="list-style-type: none"> <li>● Initial dose escalation day (1 d)</li> <li>● Afterward biweekly</li> </ul>	<ul style="list-style-type: none"> <li>● Rush: 2-4 doses/d (1 wk)</li> <li>● Afterward: every 2-4 wk</li> </ul>	Biweekly	Biweekly	Biweekly
Time for build-up (median)	Not given	Not given	<ul style="list-style-type: none"> <li>● Rush: 7 d</li> <li>● Than 7 mo</li> </ul>	5 mo	11 mo	6 mo
Maintenance dose	800 mg of peanut protein	300 mg of peanut protein	0.5-2.0 g of peanut (= 125-500 mg of peanut protein depending on clinical reactivity)	800 mg of peanut protein	4000 mg of peanut protein	2000 $\mu$ g

# Sublingual immunotherapy for peanut allergy: Clinical and immunologic evidence of desensitization

Edwin H. Kim, MD,<sup>a</sup> J. Andrew Bird, MD,<sup>a</sup> Michael Kulis, PhD,<sup>a</sup> Susan Laubach, MD,<sup>a</sup> Laurent Pons, PhD,<sup>a</sup> Wayne Shreffler, MD, PhD,<sup>b</sup> Pamela Steele, CPNP,<sup>a</sup> Janet Kamilaris, RN,<sup>a</sup> Brian Vickery, MD,<sup>a</sup> and A. Wesley Burks, MD<sup>a</sup> *Durham, NC, and Boston, Mass*

*J Allergy Clin Immunol 2011;127:640-6*

- double-blind immunologic
- 18 children
- 6 months of followed by
- subjects were
- study drug
- dose escalation biweekly until the

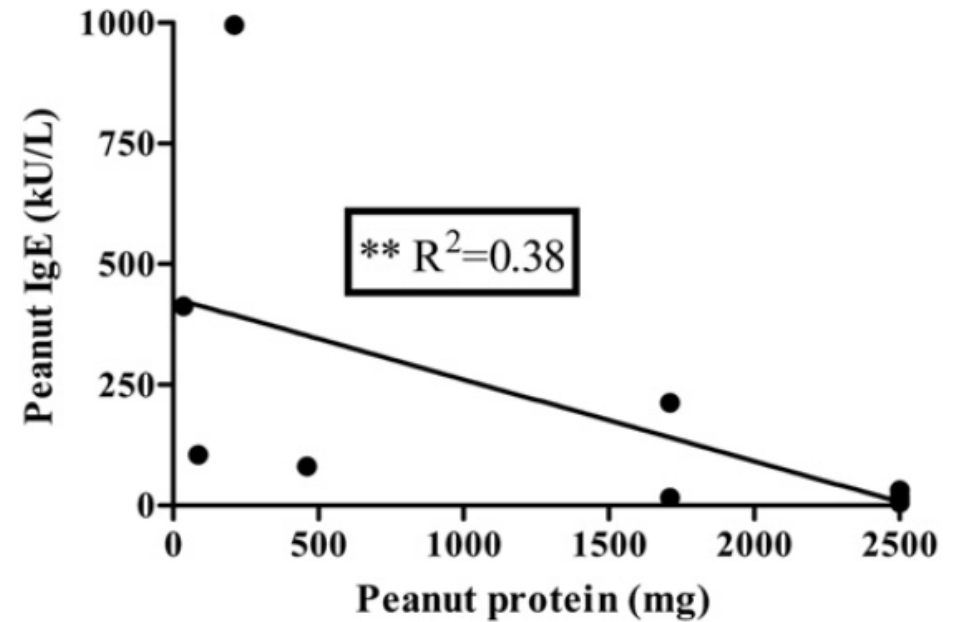
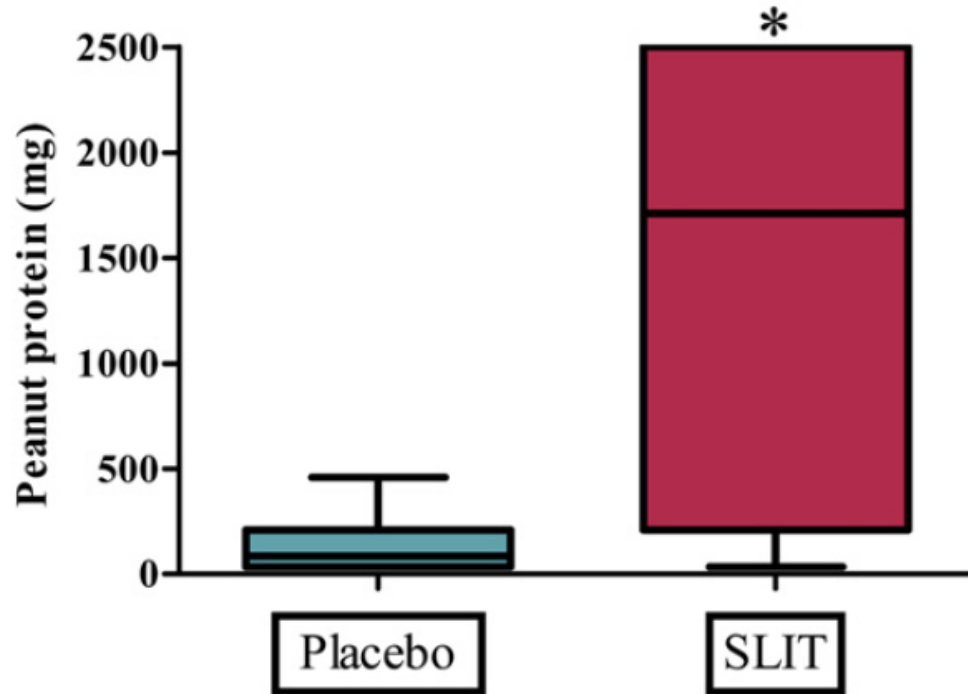
**TABLE I.** Baseline subject characteristics

	Active group	Placebo group
No.	11	7
Age (y), median (range)	5.8 (2.8-10.5)	4.7 (1.6-7.4)
Sex	7 Male, 4 female	5 Male, 2 female
Race	10 White, 1 Asian	7 White
Asthma	5 (45%)	4 (57%)
Atopic dermatitis	9 (82%)	3 (43%)
Allergic rhinitis	8 (73%)	3 (43%)
Other food allergy	5 (45%)	1 (14%)
Median peanut-specific IgE (kU/L), range	33.5 (8.5-1,260)	31.1 (15-639)

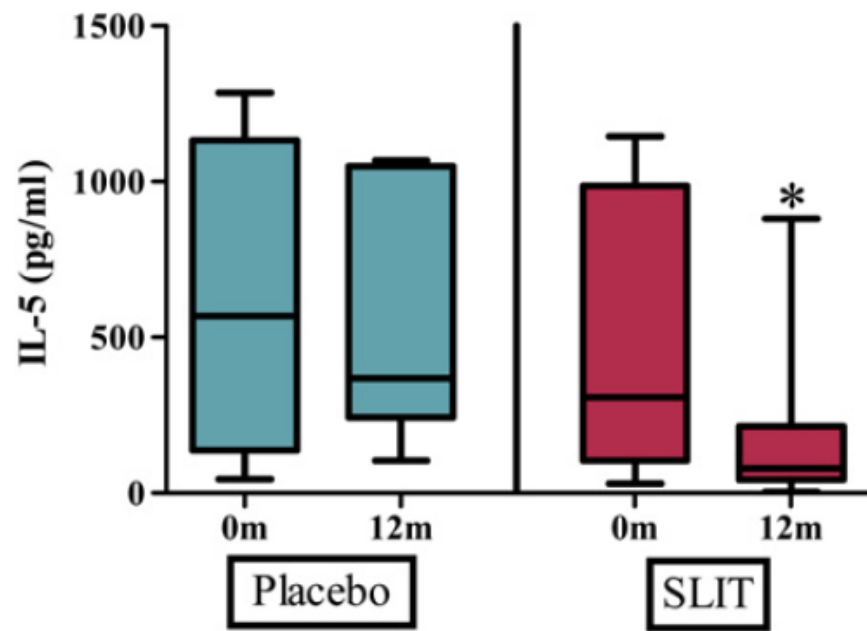
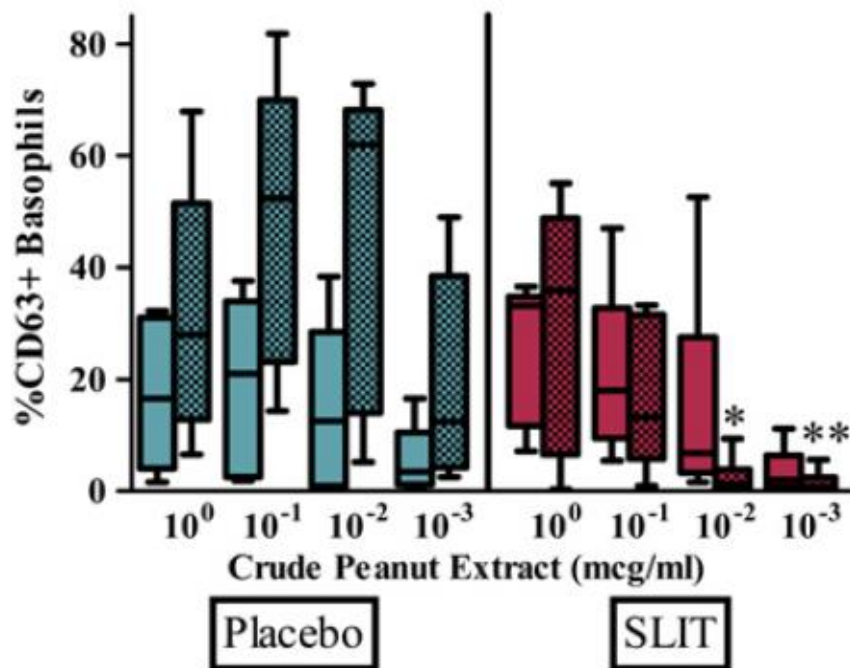
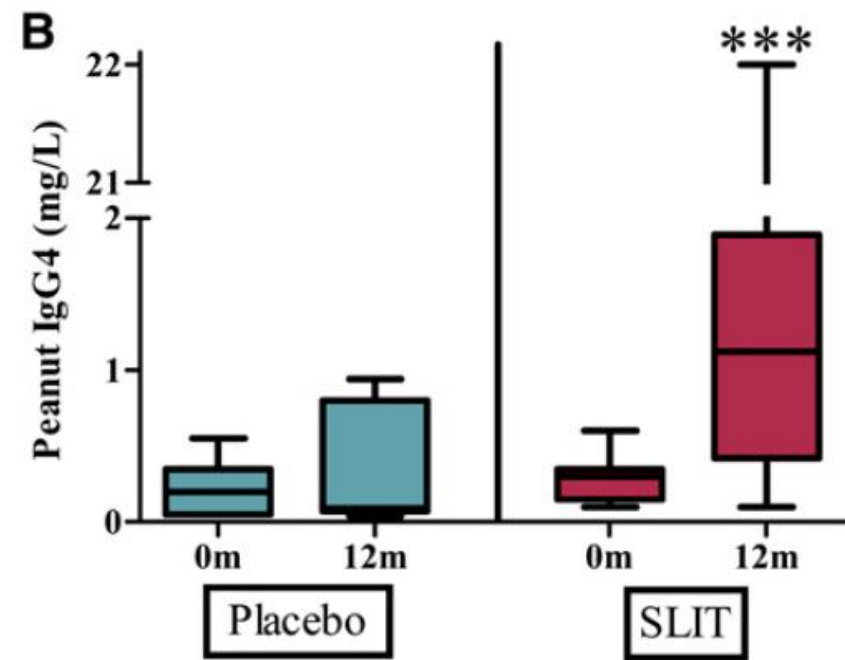
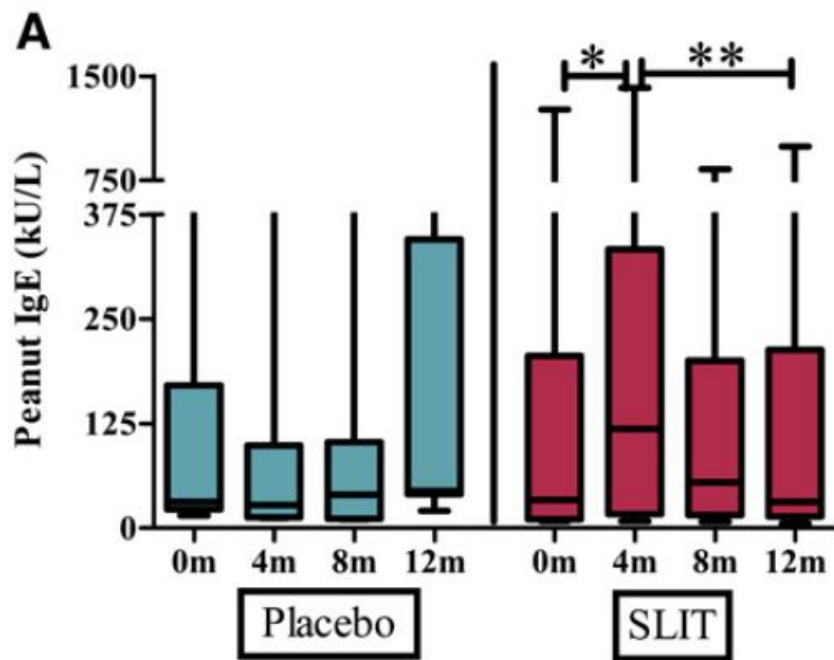
iveness,  
gy  
whole study  
peanut protein,  
tes after dosing  
hen swallowed  
followed by 13  
% to 100%

subjects continued the same dose daily at home for 2 weeks  
maintenance phase: 2000-mg maintenance dose

## DBPCFC with 2500 mg peanut protein at 12-month



\*  $P = .011$ ; \*\*  $P = .043$



**TABLE II. SLIT dosing safety**

	<b>Active group (n = 11)</b>	<b>Placebo group (n = 7)</b>
Total doses	4182	2875
Reactions	480 (11.5%)	248 (8.6%)
Symptoms		
Oropharyngeal	391 (9.3%)	43 (1.5%)
Skin	25 (0.6%)	188 (6.5%)
Upper respiratory	59 (1.4%)	54 (1.9%)
Chest	2 (0.05%)	0
Abdominal	50 (1.2%)	53 (1.8%)
Treatment		
Antihistamine	11 (0.3%)	0
Epinephrine	0	0
Albuterol	1 (0.02%)	0

ORIGINAL ARTICLE

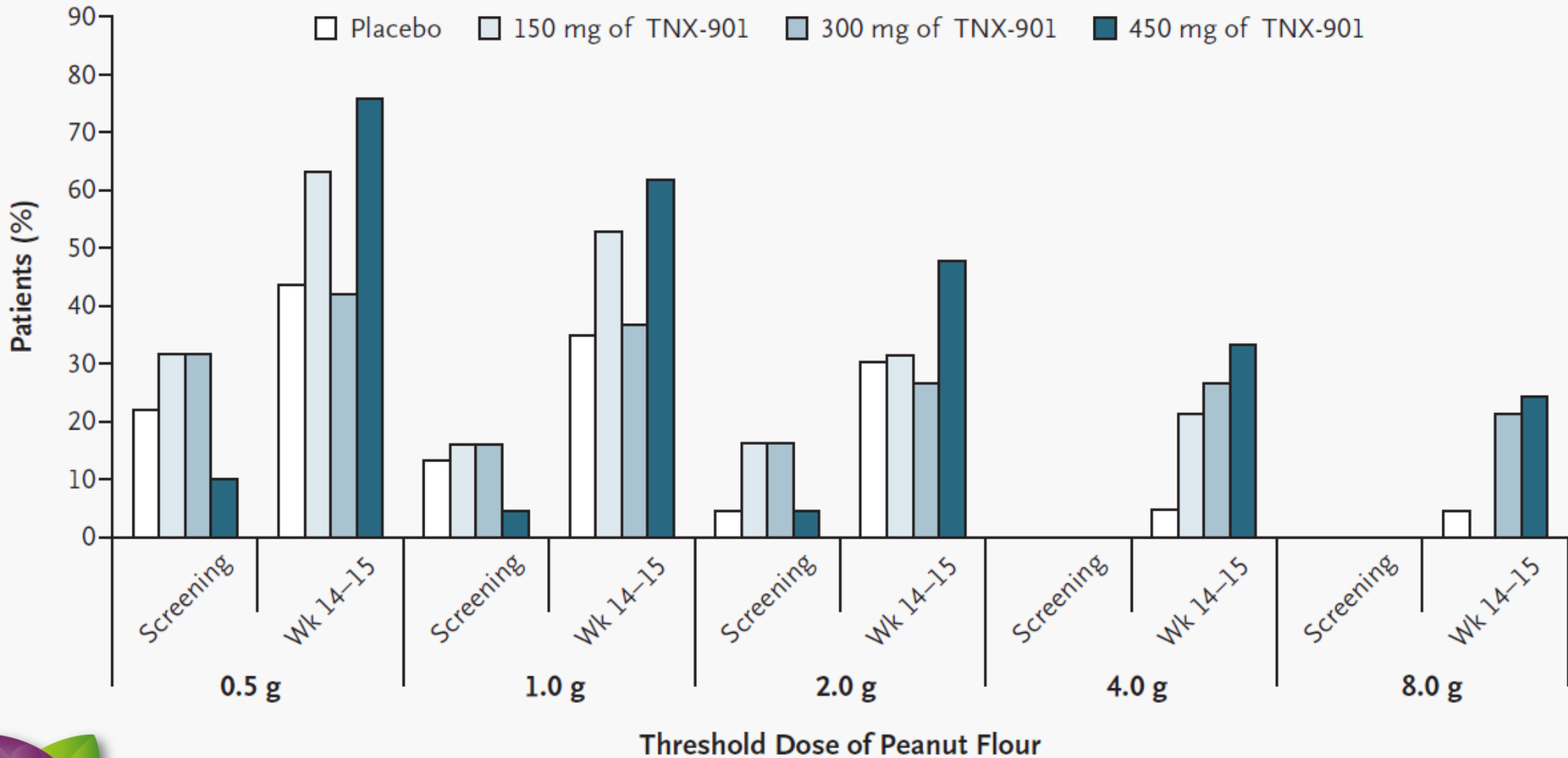
## Effect of Anti-IgE Therapy in Patients with Peanut Allergy

Donald Y.M. Leung, M.D., Ph.D., Hugh A. Sampson, M.D.,  
John W. Yunginger, M.D., A. Wesley Burks, Jr., M.D., Lynda C. Schneider, M.D.,  
Cornelis H. Wortel, M.D., Ph.D., Frances M. Davis, Ph.D., John D. Hyun, B.S.,  
and William R. Shanahan, Jr., M.D., for the TNX-901 Peanut Allergy Study Group\*

- TNX-901 is a humanized IgG<sub>1</sub> monoclonal antibody against IgE that recognizes and masks an epitope in the CH3 region of IgE responsible for binding to the high-affinity Fcε receptor on mast cells and basophils
- a double-blind, randomized, dose-ranging trial in 84 patients with a history of immediate hypersensitivity to peanut → randomly assigned in a 3:1 ratio to receive either TNX-901 (150, 300, or 450 mg) or placebo SC every 4 wks for four doses
- patients underwent a final oral food challenge within 2-4 wks after the fourth dose



# Percentage of Patients Who Tolerated Specified Dosing Thresholds during Oral Food Challenge at Screening and Wk 14-15



# TCM for Food Allergy

**TABLE I.** Components of herbal medicines in FAHF-2\*

Name of TCM Materia Medica (Pin Yin)	Equivalent pharmaceutical name	Part used	Amount (% of total)
Ling Zhi (Chi)	Ganoderma Lucidum	Fruiting body	28.17
Wu Mei	Fructus Pruni Mume	Fruit	28.17
Chuan Jiao	Pericarpium Zanthoxyli Bungeani	Seed	1.41
Huang Lian (Chuan)	Rhizoma Coptidis	Root	8.46
Huang Bai	Cortex Phellodendri	Root	5.63
Gan Jiang	Rhizoma Zingiberis Officinalis	Root	8.45
Gui Zhi	Ramulus Cinnamomi Cassiae	Twig	2.81
Ren Shen (Hong)	Radix Ginseng	Root	8.45
Dang Gui (Shen)	Corpus Radix Angelicae Sinensis	Root	8.45

TCM, Traditional Chinese Medicine

\*All of the herbs are of Chinese origin.



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# **Safety, tolerability, and immunologic effects of a food allergy herbal formula in food allergic individuals: a randomized, double-blinded, placebo-controlled, dose escalation, phase 1 study**

Julie Wang, MD; Sangita P. Patil, PhD; Nan Yang, PhD; Jimmy Ko, MD; Joohee Lee, MD; Sally Noone, RN; Hugh A. Sampson, MD; and Xiu-Min Li, MD

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- evaluated the safety and tolerability of food allergy herbal formula 2 (FAHF-2) in patients with food allergy
- randomized, double-blinded, placebo-controlled, dose escalation, phase 1 trial
- recruited 19 food allergic patients → received 1 of 3 doses of FAHF-2 or placebo: 2.2 g (4 tablets), 3.3 g (6 tablets), or 6.6 g (12 tablets) 3 times a day for 7 days
- monitored vital signs, physical examination results, laboratory data, pulmonary function test results and ECG
- performed immunomodulatory studies





# Conclusions

- Food allergy is a significant healthcare burden in children
- Most self-reported adverse food reactions are not due to food allergy
- Beware of poor diagnostic performance of different allergy tests (e.g. false-positive for SPT or *in vitro* IgE testing)
- Emerging trend for measuring specific IgE to allergen components
- Food allergy evaluation is warranted mainly in children with suggestive history or those with moderate-to-severe eczema
- Food avoidance is advisable as long term management of food allergy, whereas intramuscular adrenaline is the treatment of choice for patients who develops severe allergic reactions/anaphylaxis
- Many exciting immunomodulatory treatments (e.g. anti-IgE, oral/SL immunotherapy, herbal medicine) for food allergy are under investigation