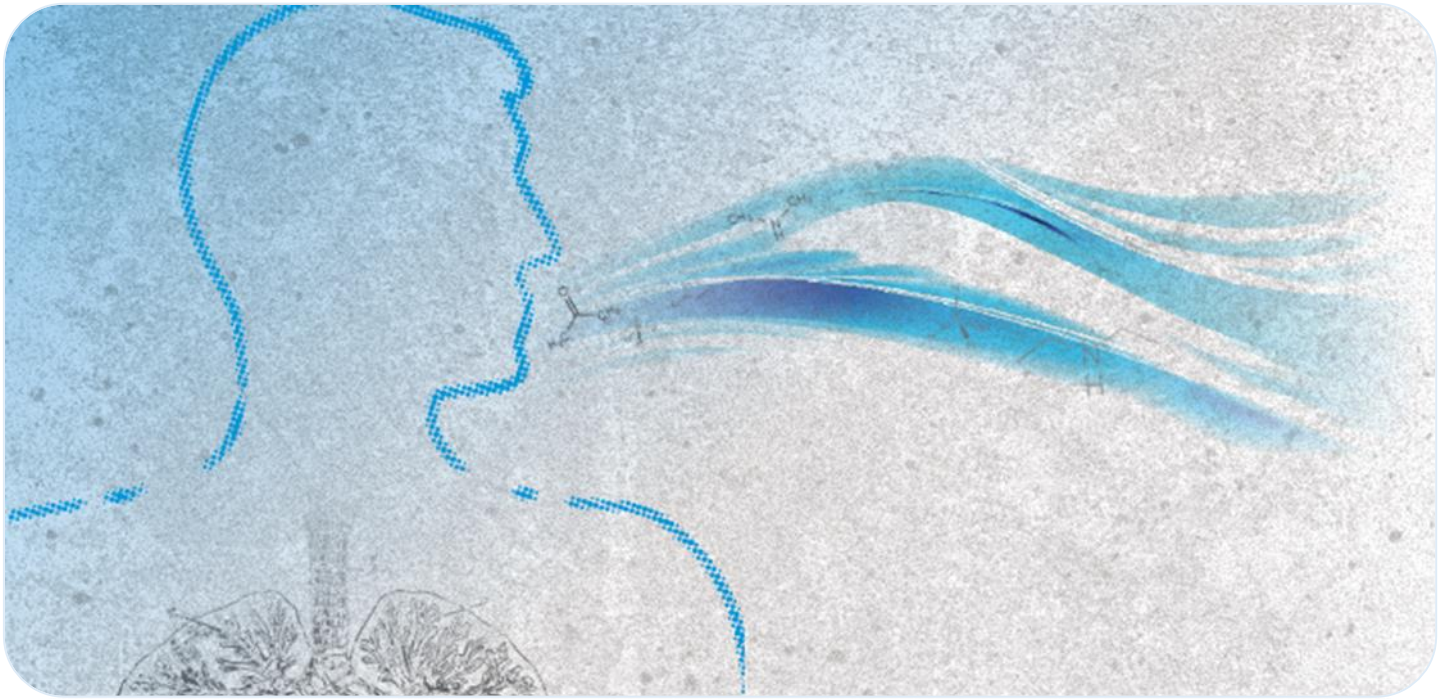
Ο ρόλος της ανοσοθεραπείας στην νέα εποχή της προσωποποιημένης αντιμετώπισης του άσθματος



Ελληνική Πνευμονολογική Εταιρεία
HELLENIC THORACIC SOCIETY
ΟΜΑΔΑ ΑΣΘΜΑΤΟΣ
ASTHMA WORKING GROUP

Φώτης Ε. Ψαρρός
Αλλεργιολόγος
Ναυτικό Νοσοκομείο Αθηνών

Σύγκρουση συμφερόντων

Δεν έχω να δηλώσω καμία σύγκρουση συμφερόντων σε σχέση με την ομιλία αυτή

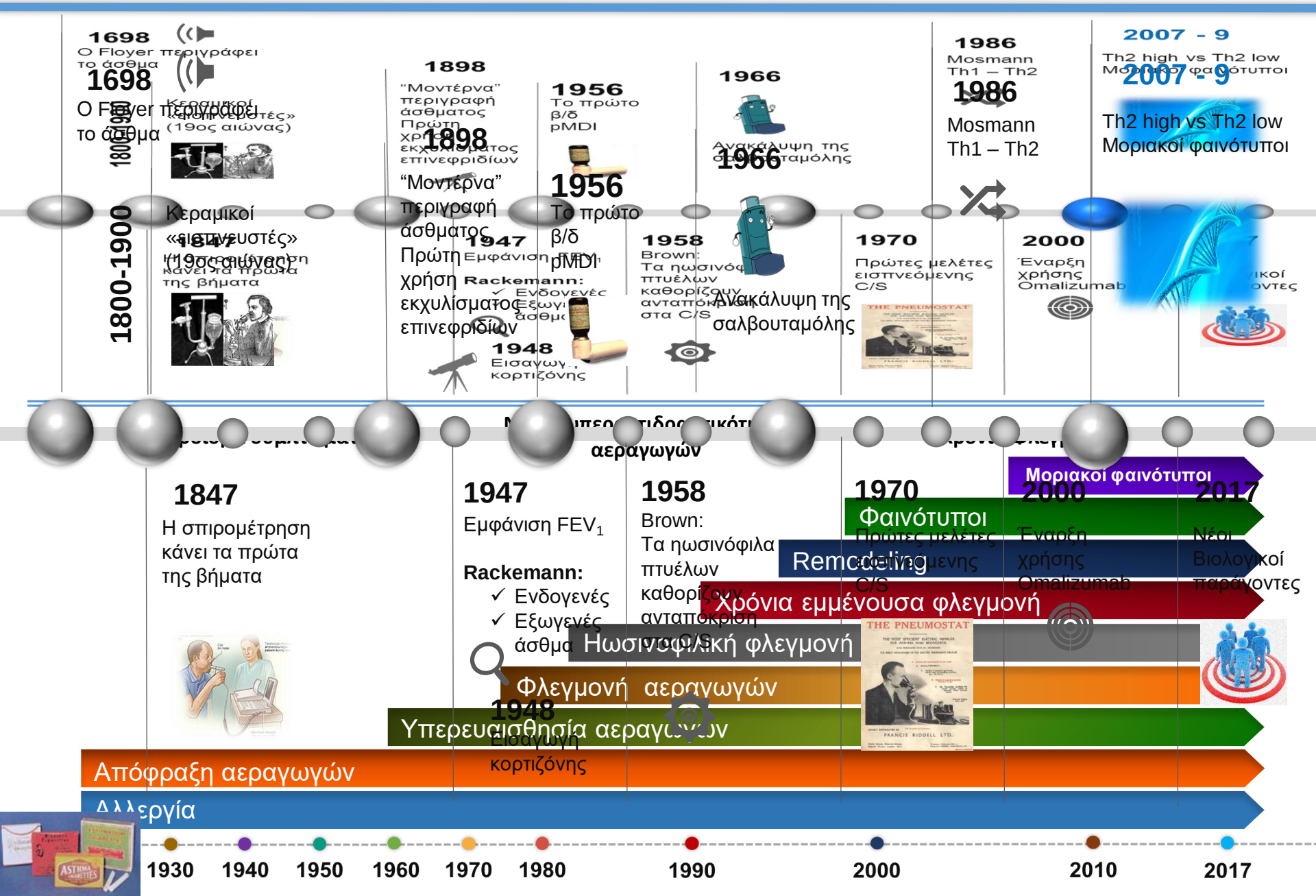
Σύγκρουση συμφερόντων

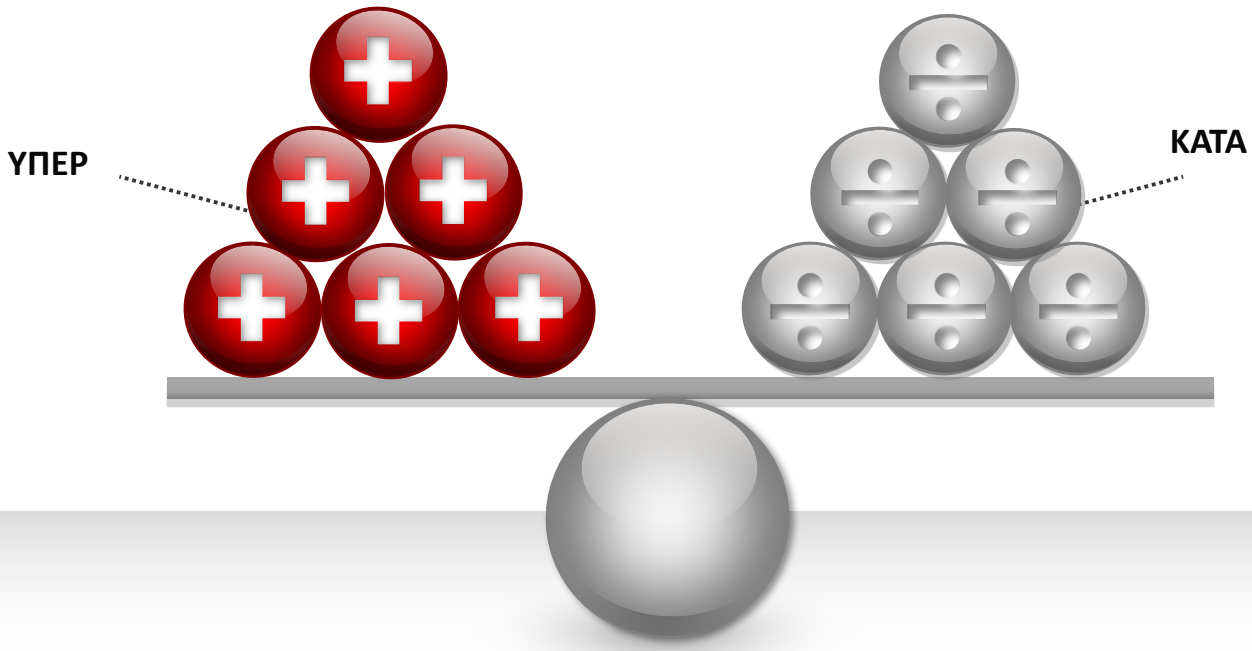
i. Αλλεργιολόγος

ii. Χορηγώ ανοσοθεραπείες για αναφυλαξία σε υμενόπτερα

iii. Χορηγώ ανοσοθεραπείες για αλλεργική ρινίτιδα και αλλεργικό άσθμα

Η εξέλιξη στο άσθμα





- Ανοσοθεραπεία στην <u>αντιμετώπιση</u> του άσθματος

Θεραπευτική στόχευση

Συνολικός έλεγχος του άσθματος

επίτευξη

Τρέχων έλεγχος

Ορίζεται από

- Συμπτώματα
- Φάρμακα Ανακούφισης
- Δραστηριότητα
- Πνευμονική λειτουργία

Ελάττωση

Μελλοντικός κίνδυνος

Ορίζεται από

- Αστάθεια επιδείνωση
- Εξάρσεις
- Απώλεια πνευμον. λειτουργίας
- Ανεπιθύμητες δράσεις φαρμάκων

Ειδική Ανοσοθεραπεία

… Προσδοκά να τροποποιήσει τη φυσική πορεία της νόσου προκαλώντας ανοχή

Πρόληψη νέων ευαισθητοποιήσεων

Πρόληψη ανάπτυξης άσθματος σε ασθενείς με αλλεργική ρινίτιδα

Είναι θεραπεία για το αλλεργιογόνο που προκαλεί τη νόσο και όχι για τη νόσο αυτή καθ αυτή

Ορισμοί της ειδικής ανοσοθεραπείας

Allergen-specific immunotherapy is the practice of administering gradually increasing quantities of an allergen product to an allergic subject to ameliorate the symptoms associated with the subsequent exposure to the causative allergen. Allergen-specific immunotherapy induces clinical and immunologic tolerance, has long term efficacy and may prevent the progression of allergic disease.
Allergen-specific immunotherapy also improves the quality of life of allergic patients. Allergy 2006: 61 (Suppl. 82): 1–20

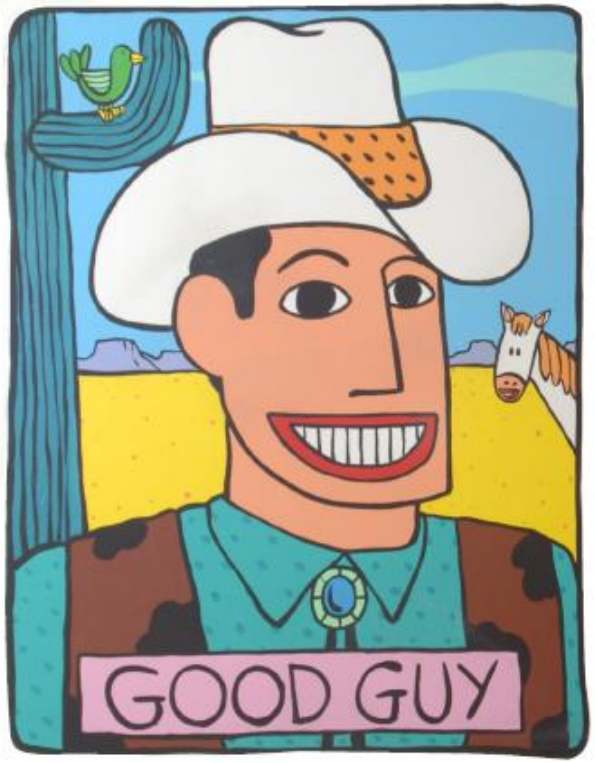
Allergen immunotherapy is defined as the repeated administration of specific allergens to patients with IgE-mediated conditions for the purpose of providing protection against the allergic symptoms and inflammatory reactions associated with natural exposure to these allergens.
Allergen immunotherapy: A practice parameter third update JACI 2011 Jan;127(1 Suppl):S1-55.

Πώς δουλεύει?
(μηχανισμοί)

Starring

IgE

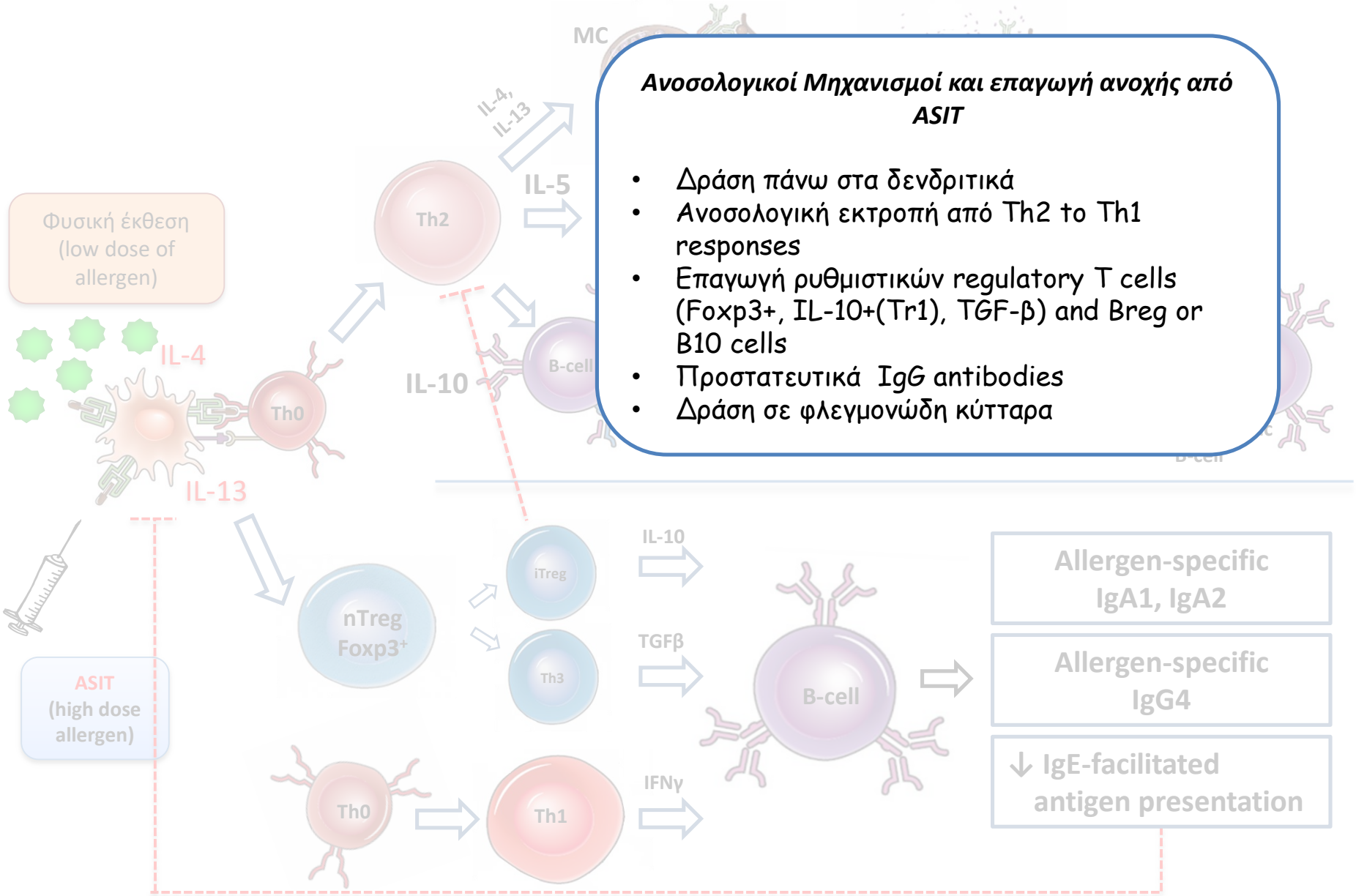
(TH_2)



IgG4

(Treg)

Η αλλεργική αντίδραση– ASIT effects



Ανοσολογικοί Μηχανισμοί και επαγωγή ανοχής από ASIT

- Δράση πάνω στα δενδριτικά
- Ανοσολογική εκτροπή από Th2 to Th1 responses
- Επαγωγή ρυθμιστικών regulatory T cells (Foxp3+, IL-10+(Tr1), TGF-β) and Breg or B10 cells
- Προστατευτικά IgG antibodies
- Δράση σε φλεγμονώδη κύτταρα

Από τη θεωρία στην πράξη
(μελέτες)

Μετα-αναλύσεις

«Στατιστικά» ορθές
Κλινικά σημαντικές ?

Allergen immunotherapy for asthma (Review)

Abramson MJ, Puy RM, Weiner JM

THE COCHRANE COLLABORATION®

Meta-analysis – SCIT and asthma

75 RCT; 3506 pts (3188 asthma)	36 HDM, 20 pollen, 10 animal dander, 2 cladosporium, 1 latex, 6 multiple allergens
Asthma Symptoms Scores SMD (95% CI)	-0.72 (-0.99 - 0.33)
Asthma Medication Scores SMD (95% CI)	-0.90 (-1.13- 0.40)
Allergen-Specific BHR SMD (95% CI)	-0.66 (-0.87 - 0.45)

SCIT

Abramson MJ, et al. Cochrane sys Rev 2003 CD001186 Ia

Allergen immunotherapy for asthma (Review)

THE COCHRANE COLLABORATION®

Abramson MJ, Puy RM, Weiner JM

Meta-analysis – SCIT and asthma

- Need to treat **4** (95% CI 3 to 5) pts with SCIT to avoid one **deterioration in asthma symptoms**
- Need to treat **5** (95% CI 4 to 6) pts with SCIT to avoid one **requiring increased medication**
- Allergen immunotherapy
  - significantly reduced allergen specific bronchial hyper-reactivity,
  - with some reduction in non-specific bronchial hyper-reactivity
- no consistent effect on lung function

SCIT

Abramson MJ, et al. Cochrane sys Rev 2003 CD001186 Ia

Injection allergen immunotherapy for asthma (Review)

Cochrane Library
Cochrane Database of Systematic Reviews

Abramson MJ, Puy RM, Weiner JM

88 RCT; 13 new	42 HDM, 27pollen, 10 animal dander, 2 cladosporium, 2 latex, 6 multiple allergens

SCIT

Abramson MJ. Cochrane Database of Systematic Reviews 2010, Issue 8, CD001186.pub2.

Injection allergen immunotherapy for asthma (Review)

Cochrane Library
Cochrane Database of Systematic Reviews

Abramson MJ, Puy RM, Weiner JM

- Need to treat 3 (95% CI 3 to 5) pts with SCIT to avoid one deterioration in asthma symptoms
- Need to treat 4 (95% CI 4 to 6) pts with SCIT to avoid one requiring increased medication
- Allergen immunotherapy
  - significantly reduced allergen specific bronchial hyper-reactivity,
  - with some reduction in non-specific bronchial hyper-reactivity
- no consistent effect on lung function
- If 9 were treated with SCIT, one would be expected to develop a systemic reaction (of any severity)

SCIT

Abramson MJ. Cochrane Database of Systematic Reviews 2010, Issue 8, CD001186.pub2.

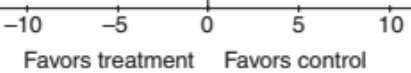
Efficacy of sublingual immunotherapy in asthma: systematic review of randomized-clinical trials using the Cochrane Collaboration method

- ✓ 25 RCTs with 1706 pts (adults and children)
- ✓ mild to moderate asthma

Review: Efficacy of sublingual immunotherapy in asthma
Comparison: 02 Allergen sublingual immunotherapy *vs* placebo (continuous data)
Outcome: 01 Asthma symptoms only

Study or subcategory	N	Treatment Mean (SD)	N	Control Mean (SD)	SMD (random) 95% CI	Weight %	SMD (random) 95% CI
Hirsch 1997	12	0.07 (0.27)	10	0.28 (0.27)		10.01	−0.75 [−1.62, 0.13]
Bousquet 1999	23	0.17 (0.51)	27	0.11 (0.35)		13.74	0.14 [−0.42, 0.69]
D'Ambrosio 1999	14	10.35 (19.92)	16	90.50 (122.87)		11.33	−0.86 [−1.61, −0.10]
Pradalier 1999	17	1.10 (3.57)	25	4.20 (8.28)		12.92	−0.40 [−1.03, 0.22]
Yuksel 1999	11	13.00 (9.90)	8	9.00 (6.80)		9.50	0.44 [−0.49, 1.36]
Pajno 2000	12	6.00 (3.34)	9	13.20 (3.34)		7.83	−2.07 [−3.18, −0.96]
Bahçeciler 2001	8	0.42 (0.45)	7	0.29 (0.26)		8.56	0.33 [−0.70, 1.35]
Pajno 2003	14	6.94 (4.43)	13	11.27 (6.96)		11.00	−0.73 [−1.51, 0.06]
Werninghaus 2004	39	2.54 (5.00)	38	2.50 (5.06)		15.11	0.01 [−0.44, 0.45]
Total (95% CI)	150		153			100.00	−0.38 [−0.79, 0.03]

Test for heterogeneity: $\chi^2 = 22.17$, d.f. = 8 ($P = 0.005$), $I^2 = 63.9\%$
Test for overall effect: $Z = 1.80$ ($P = 0.07$)



SLIT

Calamita Z. Allergy 2006; 61:1162-72.

Sublingual immunotherapy for asthma

Cochrane Library
Cochrane Database of Systematic Reviews

- 52 RCT (18 adults, 25 children, 9 both); **5077** participants
- Mild to intermittent asthma

SLIT

Normansell R. Cochrane Database of Systematic Reviews 2015, Issue 8, CD0011293.pub2.

Sublingual immunotherapy for asthma

Cochrane Library
Cochrane Database of Systematic Reviews

- 52 RCT (18 adults, 25 children, 9 both); 5077 participants
- Mild to intermittent asthma

Authors' conclusions

Lack of data for important outcomes such as exacerbations and quality of life and use of different unvalidated symptom and medication scores have limited our ability to draw a clinically useful conclusion. Further research using validated scales and important outcomes for patients and decision makers is needed so that SLIT can be properly assessed as clinical treatment for asthma. Very few serious adverse events have been reported, but most studies have included patients with intermittent or mild asthma, so we cannot comment on the safety of SLIT for those with moderate or severe asthma. SLIT is associated with increased risk of all adverse events.

SLIT

Normansell R. Cochrane Database of Systematic Reviews 2015, Issue 8, CD0011293.pub2.

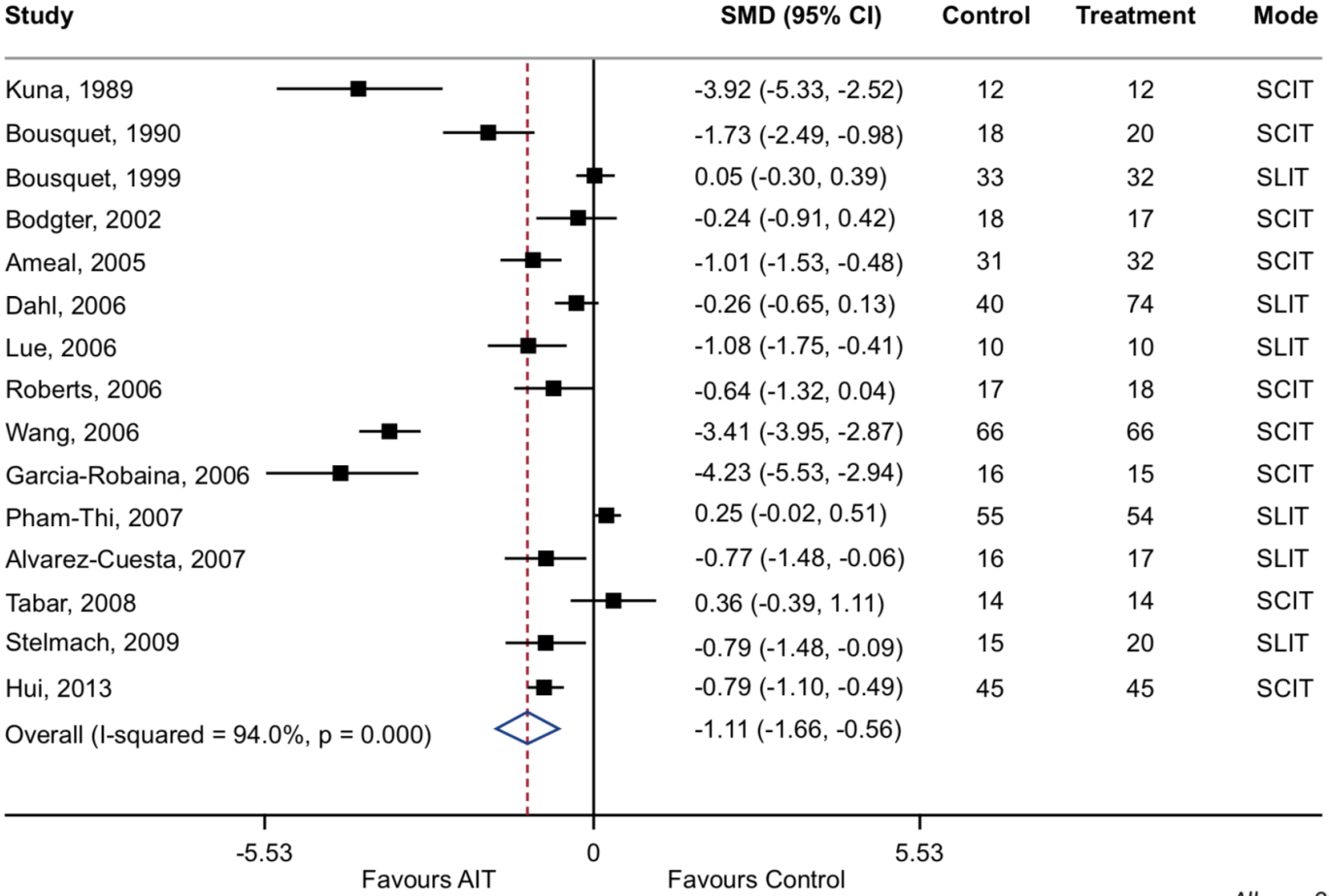
Allergen immunotherapy for allergic asthma: A systematic review and meta-analysis

S. Dhami[1] | A. Kakourou[2] | F. Asamoah[3] | I. Agache[4] | S. Lau[5] | M. Jutel[6,7] | A. Muraro[8] | G. Roberts[9,10,11] | C. A. Akdis[12] | M. Bonini[13] | O. Cavkaytar[14,15] | B. Flood[16] | P. Gajdanowicz[6] | K. Izuhara[17] | Ö. Kalayci[18] | R. Mosges[19] | O. Palomares[20] | O. Pfaar[21,22] | S. Smolinska[6,7] | M. Sokolowska[12] | M. Asaria[23] | G. Netuveli[24] | H. Zaman[25] | A. Akhlaq[26] | A. Sheikh[27]

- **89 double blind RCTs**
- **3 cost effectiveness studies**
- **6 case series (>300 subjects)**

Allergy. 2017;72:1825–1848.

PRIMARY OUTCOMES : Symptoms scores



Allergy. 2017;72:1825–1848.

(SMD) of -**1.11** (95% CI -1.66, -0.56)

PRIMARY OUTCOMES : Symptoms scores

subgroup analysis

PARAMETER	Standardized Mean Difference (SMD)
Children (<18ys) vs Adults (>18ys)	**-0.58** (95% CI -1.17, -0.01) vs **-1.95** (95% CI -3.28, -0.62)
SCIT vs SLIT	**-1.64** (95% CI -2.51, -0.78) vs **-0.35** (95% CI -0.75, -0.05)
Duration <3ys. Vs $\geq 3ys$	**-1.15** (95% CI -1.77, -0.53) vs **-0.79** (95% CI -1.10, -0.49)
Mild/moderate vs moderate/severe asthma	**-1.00** (95% CI -1.81, -0.19) vs **-0.23** (95% CI -0.89, 0.43)
Individual allergenes	HMD **-1,41**, grass **-1,18**, cat/dog dander **-0.77**, tree pollen **-0,24**, molds 0,36
Monosensitized vs Polysensitized	**-4.23** (95% CI -5.53, -2.94). vs -0.31 (95% CI -0.65, 0.04)

Standardized mean difference (SMD): 0.2 represents a small effect size, 0.5 a medium effect size and 0.8 a large effect size

PRIMARY OUTCOMES : Medication scores

subgroup analysis

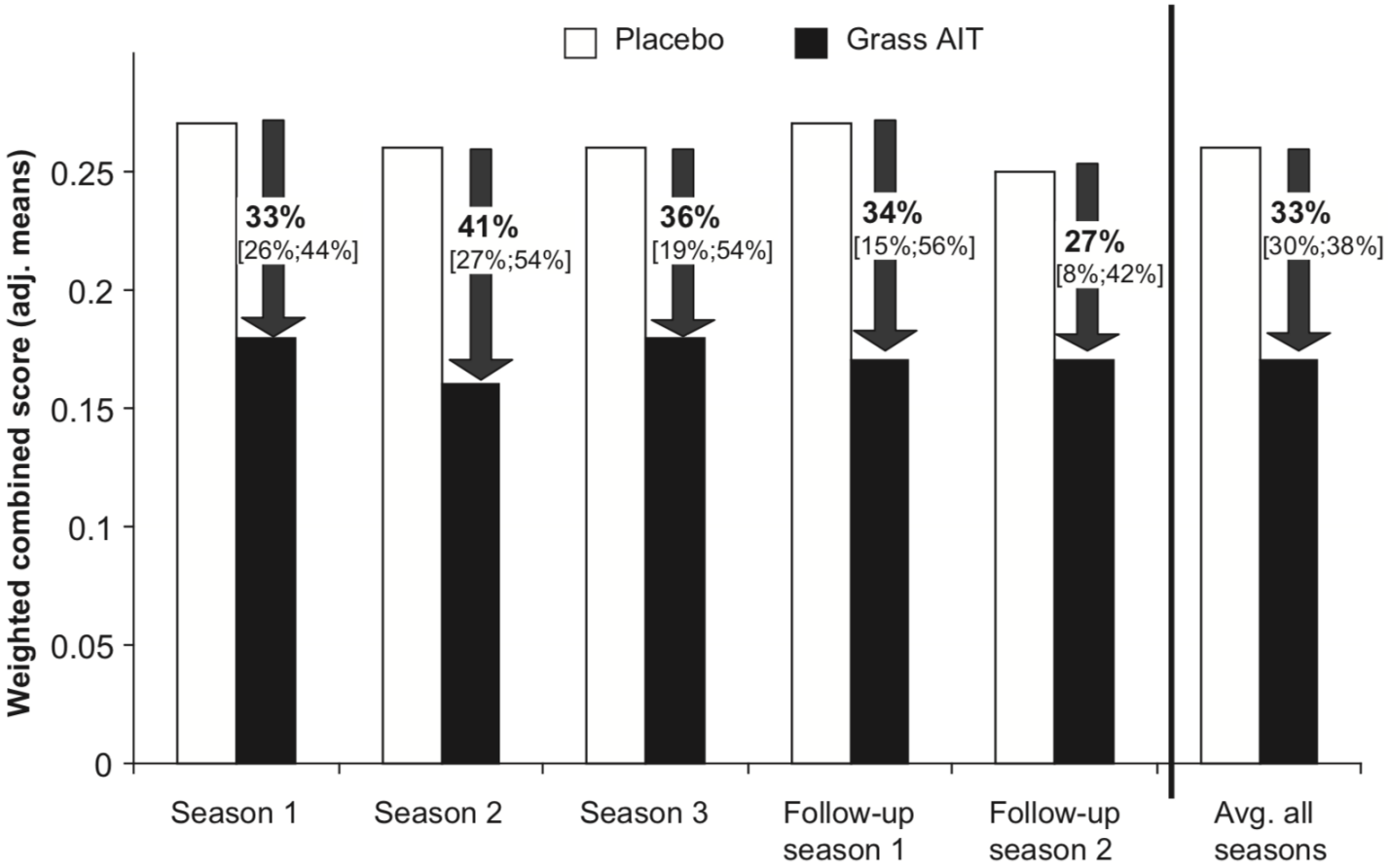
PARAMETER	Standardized Mean Difference (SMD)
Children (<18ys) vs Adults (>18ys)	**-0.49** (95% CI -0.98, 0.00) vs **-4.45** (95% CI -11.23, 2.32)
SCIT vs SLIT	**-1.65** (95% CI -2.52, -0.79) vs **-0.29** (95% CI -0.82, -0.24)
Duration <3ys. Vs $\geq 3ys$	**-1.21** (95% CI -1.94, -0.49) vs -**1.29** (95% CI -2.00, -0.59)
Mild/moderate vs moderate/severe asthma	**-1.59** (95% CI -2.48, -0.70) vs **-0.36** (95% CI -1.03, 0.36)
Individual allergenes	HMD **-2,10**, grass **-0,06**, cat/dog dander **-0.77**, tree pollen **-1,08**, molds **-0,65**
Monosensitized vs Polysensitized	**-1.18** (95% CI -1.16, 0.13). vs -0.36 (95% CI -2.11, 0.25)

Standardized mean difference (SMD): 0.2 represents a small effect size, 0.5 a medium effect size and 0.8 a large effect size

Αποτελεσματικότητα (primary outcomes)

- Short term +
- Long term ?

PRIMARY OUTCOMES : Combined Symptoms-Medication scores



The asthma combined score for participants with grass pollen was reduced by **39%**

Durham S, JACI 2012; 129:717-25

SECONDARY OUTCOMES

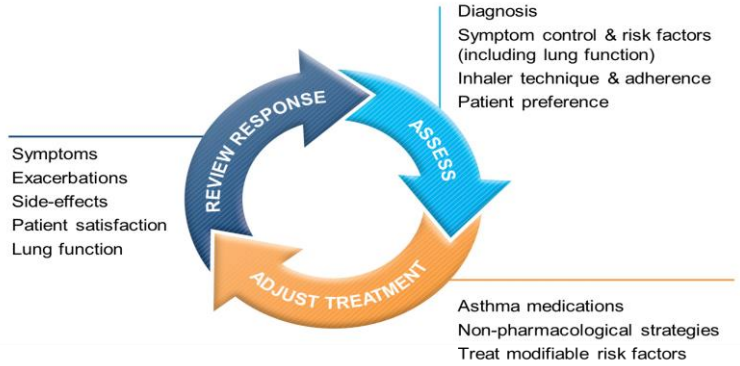
OUTCOME	Standardized Mean Difference (SMD)
Asthma Control (7 SLIT studies)	No Evidence to assess effectiveness
Quality of life (3 SCIT, 7 SLIT studies)	SCIT **-0.83** (95% CI -1.19, -0.47), SLIT no significant
Exacerbations (1 SCIT, 5 SLIT studies)	SCIT no effect, SLIT **positive effect in 2 trials**
Peak Expiratory Flow Rate (14 studies)	No benefit **0.48** (95% CI -0.21, 1.18)
FEV1 (9 studies)	No benefit **0.41** (95% CI -0.46, 1.27)
FEF 25-75 (3 studies)	**0.83** (95% CI 0.31, 1.35), **large beneficial effect**

Standardized mean difference (SMD): 0.2 represents a small effect size, 0.5 a medium effect size and 0.8 a large effect size

SECONDARY OUTCOMES

OUTCOME	Standardized Mean Difference (SMD)
Allergen Specific Airway Hyperreactivity. (21 trials)	**0.93** (95% CI -0.08, -1.79) large effect
Non Specific Airway Hyperreactivity (18 trials)	**0.33** (95% CI 0.01, 0.64) no clear evidence

GINA 2017
Θεραπευτικά βήματα



	ΒΗΜΑ 1	ΒΗΜΑ 2	ΒΗΜΑ 3	ΒΗΜΑ 4	ΒΗΜΑ 5
Επιλογές ρυθμιστικών φαρμάκων		Χαμηλή δόση ICS	Χαμηλή δόση ICS/LABA*	Μέτρια ή Υψηλή δόση ICS + LABA	Προσθήκη tiotropium, anti-IgE, mepolizumab
Άλλες επιλογές	Χαμηλή δόση ICS	*Αναστολέας λευκοτριενίων (LTRA)* *Χαμηλή δόση θεοφυλλίνης**	*Μέτριες/υψηλές δόσεις ICS* *Χαμηλή δόση ICS+LTRA* (ή και θεοφυλλίνη)	+ tiotropium Υψηλή δόση ICS+LTRA (ή και θεοφυλλίνη)	*+ Χαμηλή δόση OCS*
Ανακουφιστικό φάρμακο	**β_2-διεγέρτης βραχείας δράσης κατ' επίκληση**		**Κατ' επίκληση SABA ή χαμηλή δόση ICS/formoterol**		

Μείωση ← → **Αύξηση**

Stepwise management, SLIT as an add-on option for some patients

REMEMBER TO...

- Provide guided self-management education
- Treat modifiable risk factors and comorbidities
- Advise about non-pharmacological therapies and strategies
- Consider stepping up if … uncontrolled symptoms, exacerbations or risks, but check diagnosis, inhaler technique and adherence first
- Consider adding SLIT in adult HDM-sensitive patients with allergic rhinitis who have exacerbations despite ICS treatment, provided FEV_1 is 70% predicted
- Consider stepping down if … symptoms controlled for 3 months + low risk for exacerbations. Ceasing ICS is not advised.

SLIT: sublingual immunotherapy

© Global Initiative for Asthma

Allergen Immunotherapy

Allergen-specific immunotherapy may be an option if allergy plays a prominent role, e.g. asthma with allergic rhinoconjunctivitis. There are currently two approaches: subcutaneous immunotherapy (SCIT) and sublingual immunotherapy (SLIT). Overall, most studies have been in mild asthma. In the past, few studies compared immunotherapy with pharmacological therapy, or used standardized outcomes such as exacerbations.

SCIT: In people with asthma and allergic sensitization, SCIT is associated with a reduction in symptom scores and medication requirements, and improved allergen-specific and nonspecific airway hyperresponsiveness.[233] Adverse effects include uncommon anaphylactic reactions which may be life-threatening.

SLIT: Modest benefits have been seen in adults and children when added to low dose ICS.[234,235] A study of SLIT for house dust mites (HDM) in patients with asthma and HDM allergic rhinitis demonstrated a modest reduction of ICS with high dose SLIT.[191] In patients sensitized to HDM, with allergic rhinitis and persistent asthma requiring ICS, with FEV_1>70% predicted, SLIT for HDM showed benefit in decreasing mild to moderate asthma exacerbations.[190] In such patients with exacerbations despite taking Step 2 therapy, SLIT can be considered as an add-on therapy (Evidence B). Adverse effects include mild oral and gastrointestinal symptoms.[234]

As for any treatment, potential benefits of allergen immunotherapy for individual patients should be weighed against the risk of adverse effects, and the cost to the patient and the health system. When considering SLIT or SCIT, consider only extracts or regimens with efficacy demonstrated in clinical trials, as responses may be specific to extracts and regimens.

Influenza causes significant morbidity and mortality in the general population, and the risk can be reduced by annual

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Comment [A23]: Normansell et al Cochrane 2015 added

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Deleted: ,[233],[234] but there is concern about the design of many of the previous studies.[224]

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Deleted: of the prolonged course of therapy (Evidence D).

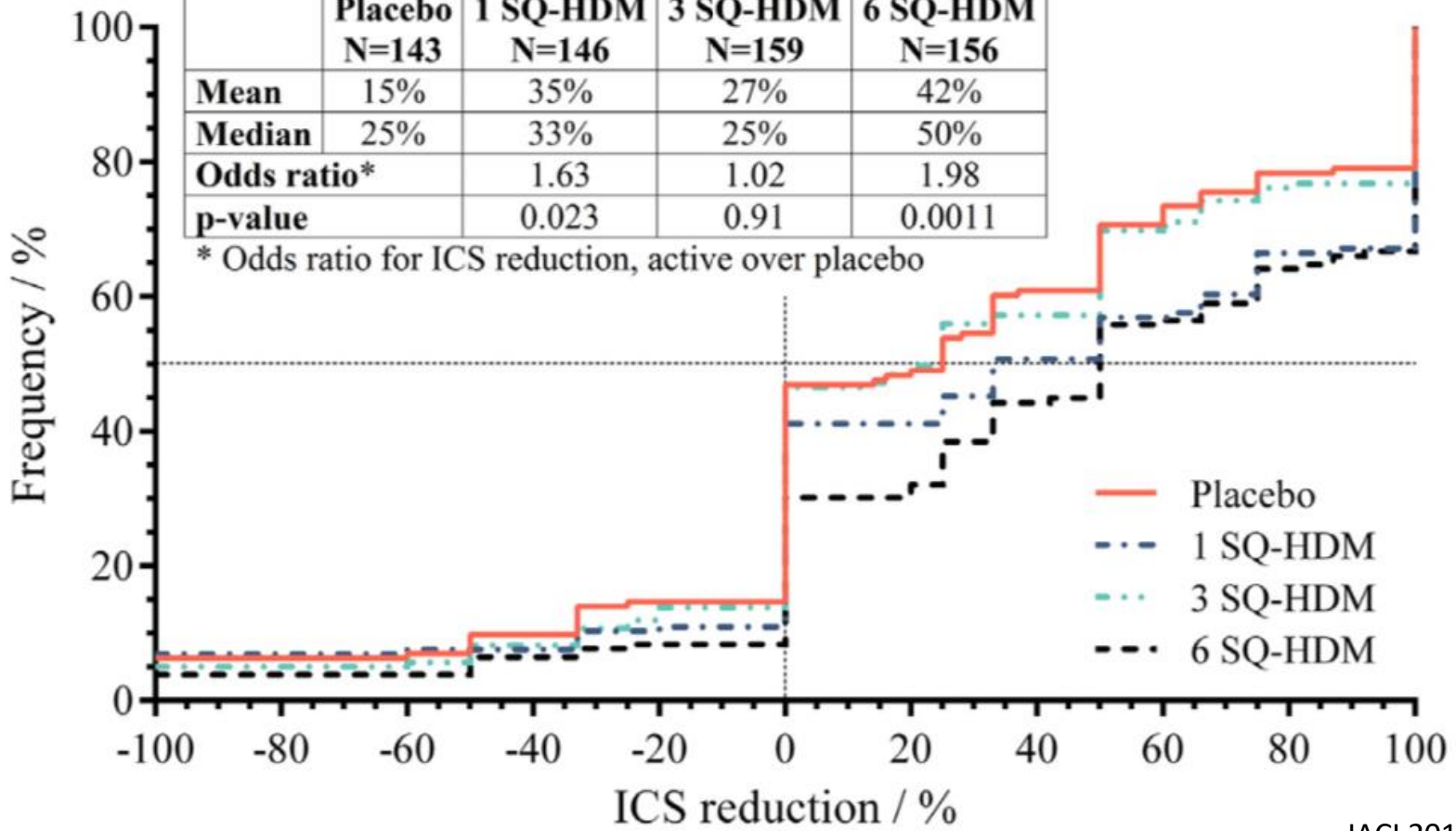
TRIAL - DO NOT COPY OR DISTRIBUTE

Standardized quality (SQ) house dust mite sublingual immunotherapy tablet (ALK) reduces inhaled corticosteroid use while maintaining asthma control: A randomized, double-blind, placebo-controlled trial

Holger Mosbech, MD,[a] Regina Deckelmann, MD,[b] Fréderic de Blay, MD,[c] Elide Anna Pastorello, MD,[d] Ewa Trebas-Pietras, MD,[e] Luis Prieto Andres, MD,[f] Inga Malcus, MD,[g] Christian Ljørring, MSc,[h] and Giorgio Walter Canonica, MD[i] *Gentofte, Denmark, Leipzig, Germany, Strasbourg, France, Milan and Genoa, Italy, Lublin, Poland, Valencia, Spain, Malmö, Sweden, and Hørsholm, Denmark*

	Placebo N=143	1 SQ-HDM N=146	3 SQ-HDM N=159	6 SQ-HDM N=156
Mean	15%	35%	27%	42%
Median	25%	33%	25%	50%
Odds ratio*		1.63	1.02	1.98
p-value		0.023	0.91	0.0011

* Odds ratio for ICS reduction, active over placebo



JACI 2014;134:568-575

Original Investigation

April 26, 2016

Efficacy of a House Dust Mite Sublingual Allergen Immunotherapy Tablet in Adults With Allergic Asthma

A Randomized Clinical Trial

J. Christian Virchow, MD[1]; Vibeke Backer, MD, DMSci[2]; Piotr Kuna, MD[3]; et al

» Author Affiliations | Article Information

JAMA. 2016;315(16):1715-1725. doi:10.1001/jama.2016.3964

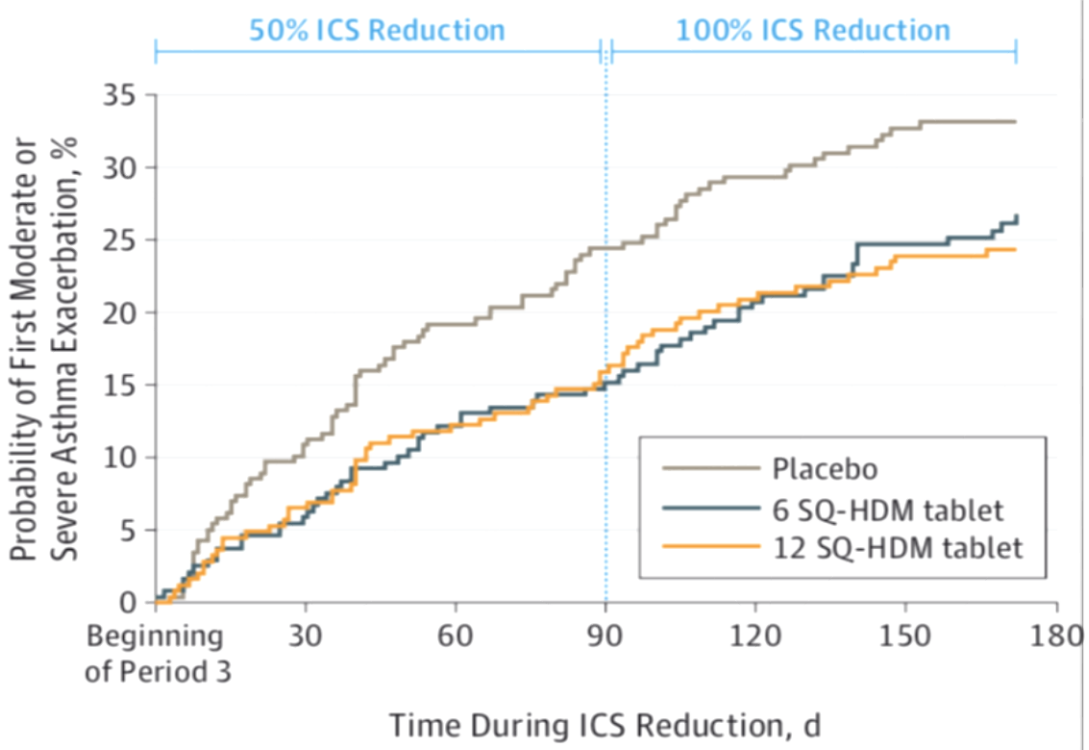
CONCLUSIONS AND RELEVANCE

Among adults with HDM allergy–related asthma **not well controlled by ICS**, the addition of HDM SLIT to maintenance medications improved time to first moderate or severe asthma exacerbation during ICS reduction, with an estimated absolute reduction at 6 months of 9 to 10 percentage points; the reduction was primarily due to an effect on moderate exacerbations.

Treatment-related adverse events were common at both active doses. Further studies are needed to assess long-term efficacy and safety

Efficacy of a House Dust Mite Sublingual Allergen Immunotherapy Tablet in Adults With Allergic Asthma
A Randomized Clinical Trial

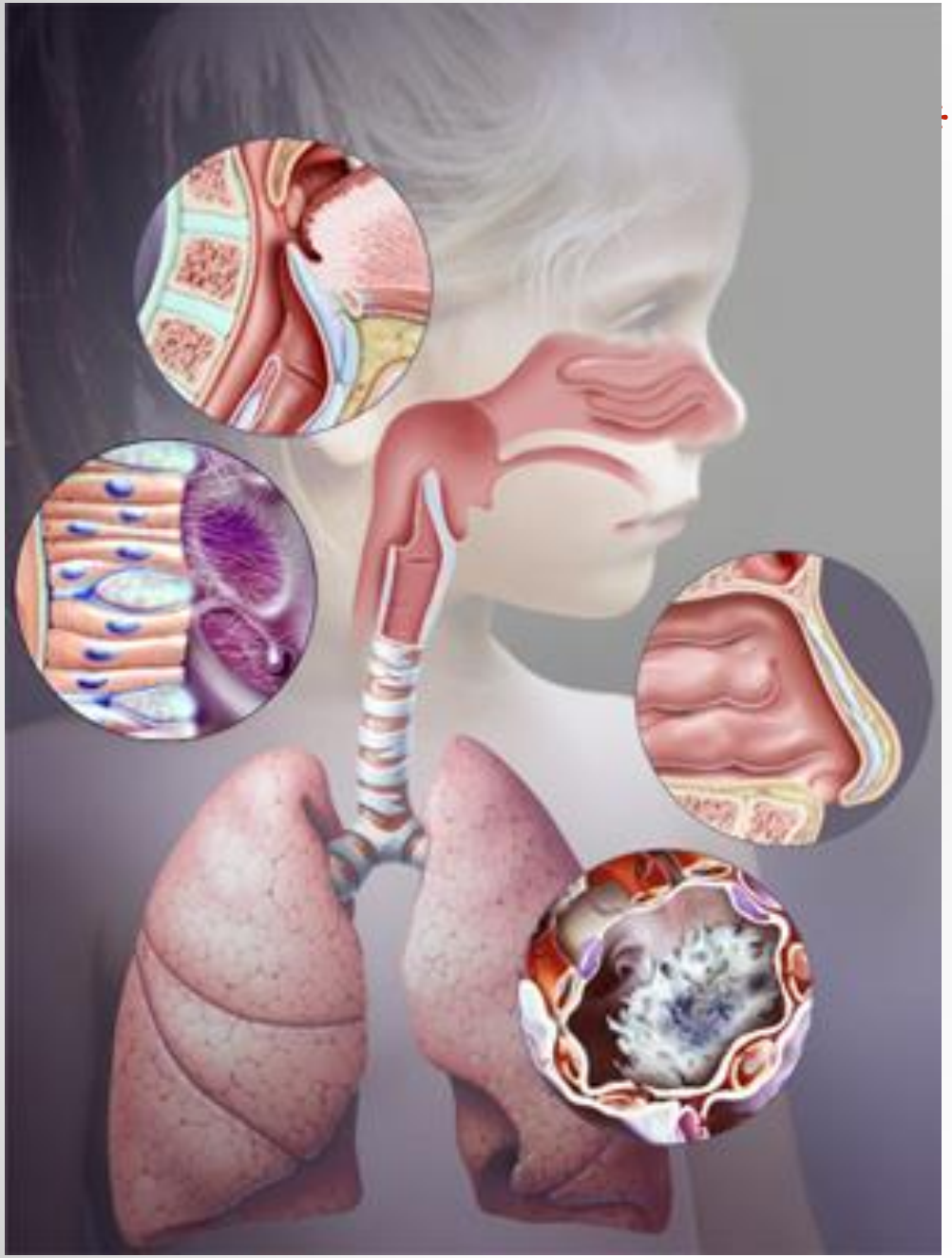
J. Christian Virchow, MD; Vibeke Backer, MD, DMSci; Piotr Kuna, MD; Luis Prieto, MD; Hendrik Nolte, MD, PhD; Hanne Hedegaard Villesen, MSc, PhD; Christian Ljørring, MSc; Bente Riis, MSc, PhD; Frederic de Blay, MD



No. at risk							
Placebo	257	228	200	188	171	163	109
6 SQ-HDM tablet	237	224	207	201	187	171	122
12 SQ-HDM tablet	248	228	214	207	189	180	121

834 pts
HDMI allergy related rhinitis με μη καλά ελεγχόμενο άσθμα με ICS

JAMA 2016;315:1715-25



Ρινίτιδα και Άσθμα

Ενιαίοι αεραγωγοί

* Η αλλεργική ρινίτιδα είναι παράγοντας ανάπτυξης αλλεργικού άσθματος
* Η ύπαρξη αλλεργικής ρινίτιδας συνδέεται με κακό έλεγχο του άσθματος
* Η αλλεργικής ρινίτιδας συνδέεται με επιτυχή έκβαση σε περιπτώσεις χορήγησης βιολογικών θεραπειών

Ειδική Ανοσοθεραπεία

… Προσδοκά να τροποποιήσει τη φυσική πορεία της νόσου προκαλώντας ανοχή

Πρόληψη νέων ευαισθητοποιήσεων

Πρόληψη ανάπτυξης άσθματος σε ασθενείς με αλλεργική ρινίτιδα

Ανοσοθεραπεία στα παιδιά

Νέες ευαισθητοποιήσεις

Immunotherapy with a standardized *Dermatophagoides pteronyssinus* extract. VI. Specific immunotherapy prevents the onset of new sensitizations in children

Anne Des Roches, MD,[a] Louis Paradis, MD,[a] Jean-Luc Menardo, MD,[a] Stéphane Bouges, MD,[b] Jean-Pierre Daurés, MD,[a] and Jean Bousquet, MD[a]
Montpellier and Nîmes, France

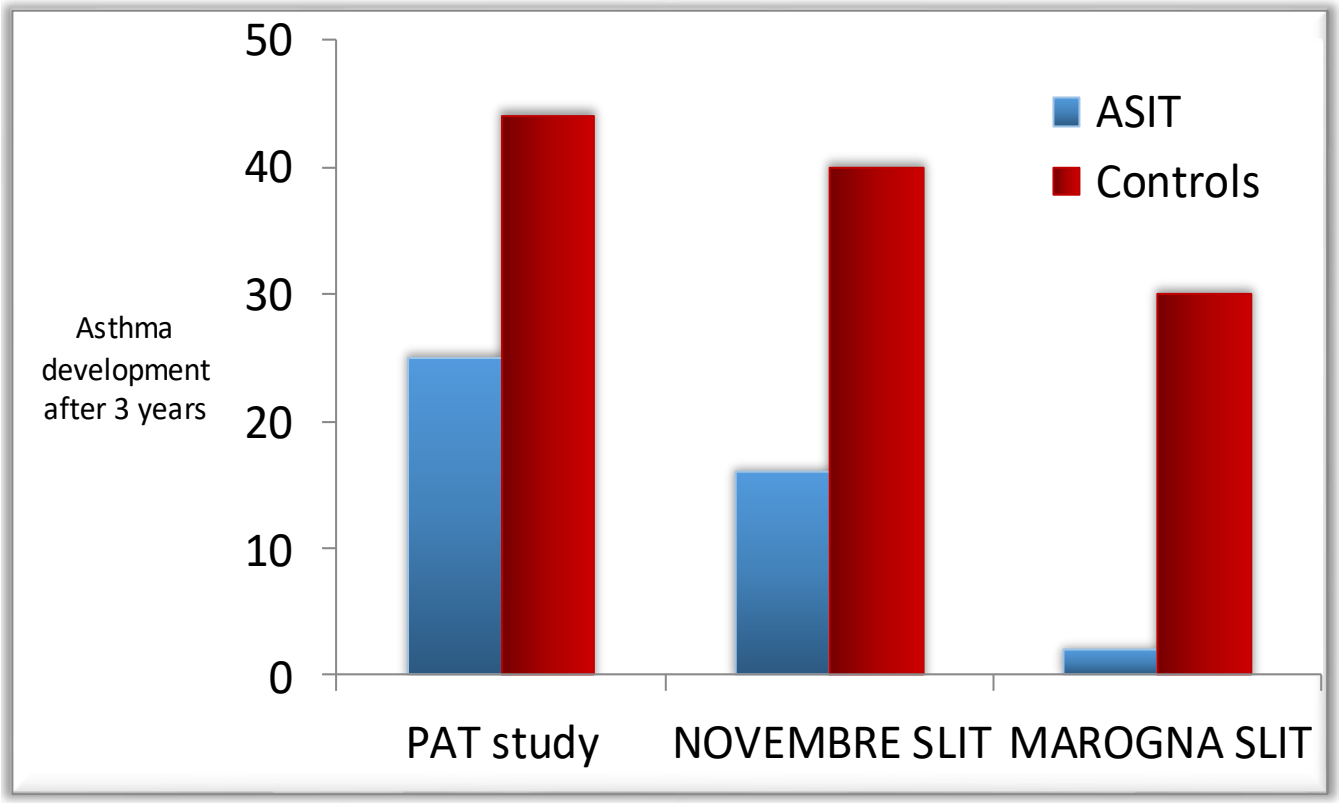
Des Roches A et al. JACI 1997; 99: 450-3

TABLE I. Development of new sensitivities

Initial sensitivity	No. of patients	New sensitivities				
		None	Cat	Dog	Alt	Grass
SIT group	22	10	6	4	2	1
Control group	22	0	12	8	6	6

Alt, Alternaria species.

Πρόληψη ανάπτυξης άσθματος σε παιδιά με αλλεργική ρινίτιδα



Jacobsen L, et al. Allergy. 2007;62:943–948.
Novembre E, et al. JACI. 2004;114:851– 857.
Marogna M et al Ann Allergy Asthma Immunol. 2008;101:206 –211.
Marogna M et al. J Allergy Clin Immunol 2010;126:969-75

Results from the 5-year SQ grass sublingual immunotherapy tablet asthma prevention (GAP) trial in children with grass pollen allergy

Erkka Valovirta, MD,[a,b] Thomas H. Petersen, MD,[c] Teresa Piotrowska, MD,[d] Mette K. Laursen, MSc,[e] Jens S. Andersen, MSc, PhD,[e] Helle F. Sørensen, MSc, PhD,[e] and Rabih Klink, MD,[f] on behalf of the GAP investigators
Turku, Finland, Kolding and Hørsholm, Denmark, Białystok, Poland, and Laon, France

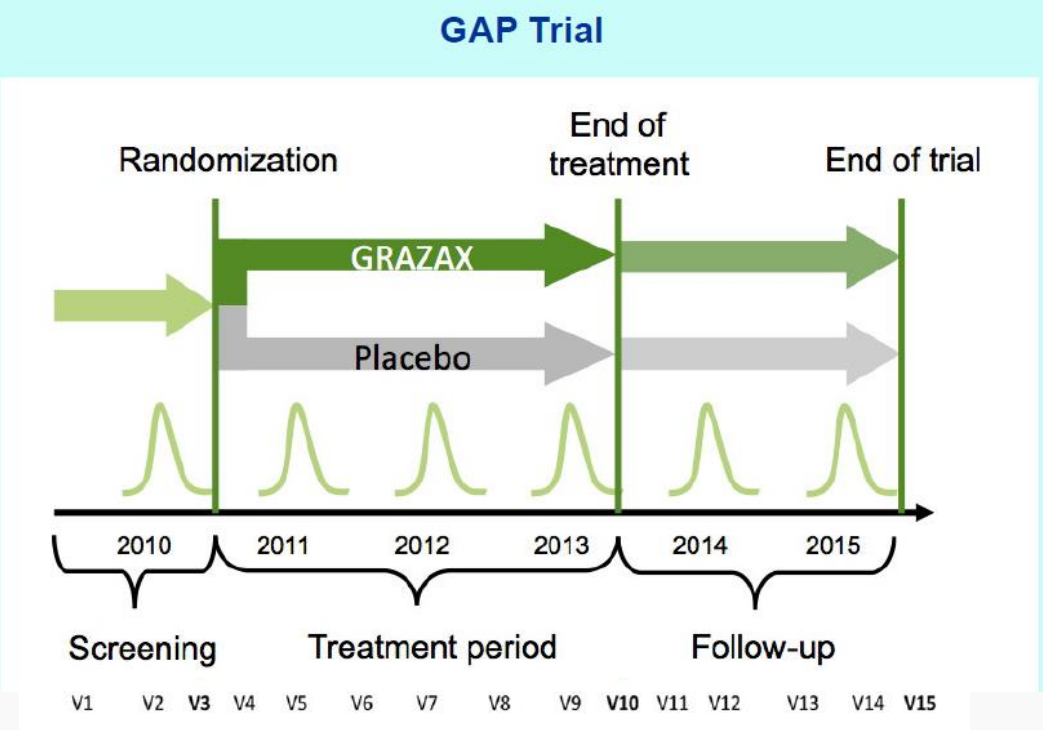
J Allergy Clin Immunol 2017

Σκοπός: SLIT με timothy επηρεάζει τον κίνδυνο εμφάνισης άσθματος
Primary endpoint: χρόνος εμφάνισης άσθματος σε μέρες από την τυχαιοποίηση

Δευτερεύοντες στόχοι

- Συμπτώματα
- Χρήση φαρμάκων
- Ανοσολογικούς δείκτες

- RDBPC, 101 κέντρα, 11 Ευρωπαϊκές χώρες
- 3 έτη SLIT και 2 έτη παρακολούθησης
- 815 παιδιά, 5-12 ετών
- Αλλεργική ρινοεπιπεφυκίτιδα από αγρωστώδη
- Απουσία άσθματος

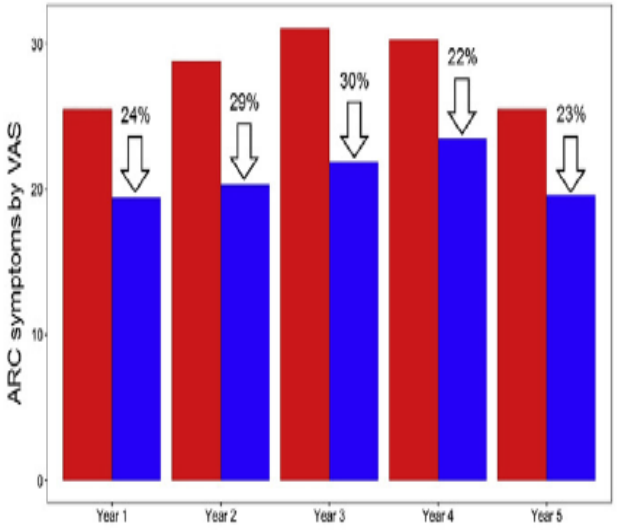


fppt.com

812 children aged 5-12 with grass allergy and no asthma randomised

3 years treatment and 2 years follow-up

SQ grass SLIT-tablet treatment reduced **allergic rhinoconjunctivitis** symptoms and medication use



Daily ARC symptoms by VAS, year 5 during GPS

-22%

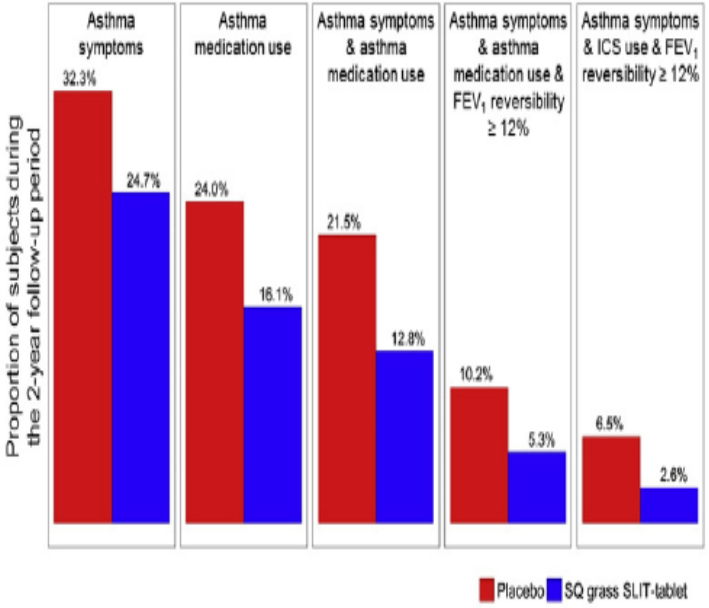
difference, SQ grass SLIT-tablet to placebo

Daily ARC medication use, year 5 during GPS

-27%

difference, SQ grass SLIT-tablet to placebo

SQ grass SLIT-tablet treatment reduced **asthma** symptoms and medication use



ARC: allergic rhinoconjunctivitis; FEV_1: forced expiratory volume in the first second; GPS: grass pollen season; ICS: inhaled corticosteroid; SLIT: sublingual immunotherapy; VAS: visual analogue scale

Ασφάλεια

Συστηματικές αντιδράσεις

Συχνότητα από 0,1% σε στάδιο συντήρησης

Bernstein DI, et al. Ann Allergy Asthma Immunol 2010;104:530-5

έως και 40% σε build up

Rodriguez D., et al, Ann Allergy Asthma Immunol 2017; 118:621-8.e

Πλειοψηφία αντιδράσεων εντός 30΄ (>85%)

Epstein TG, et al. Ann Allergy Asthma Immunol 2011;107:426-31.e1.

Συνήθως ήπιες (Grade1) (>75%), σπανιότερα απειλητικές για τη ζωή

Cox L, et al, J Allergy Clin Immunol 2010;125:569-74, e1-7

Θάνατοι: 1 per 2.5 million injections

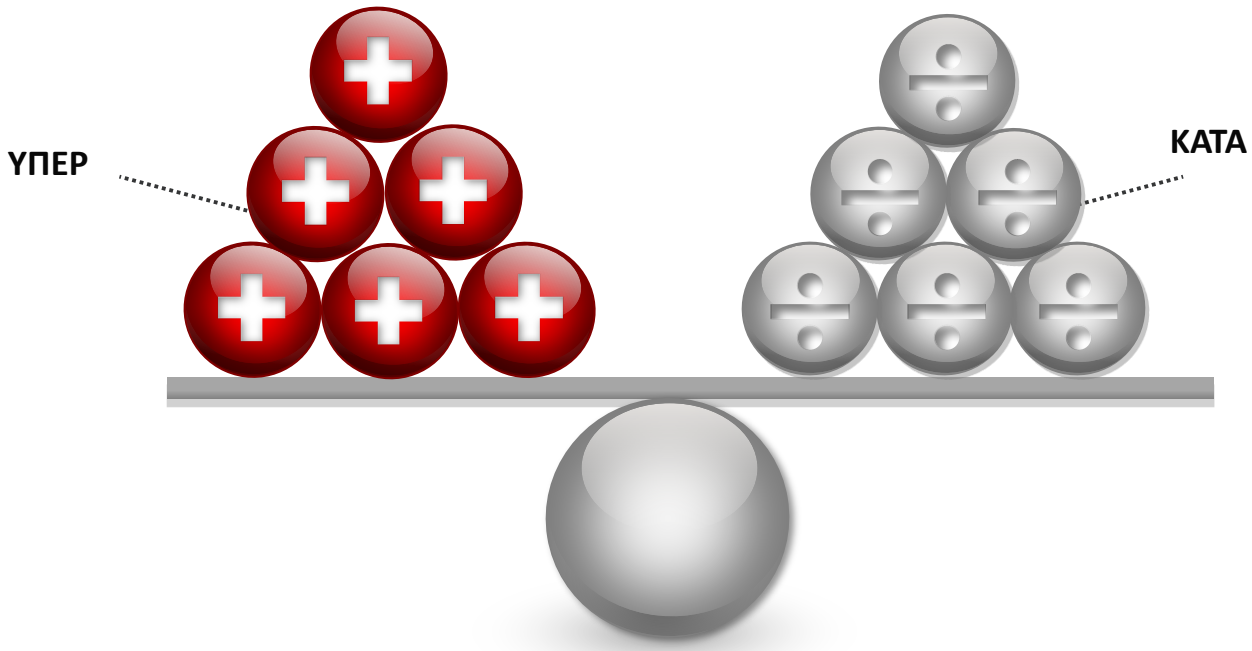
Reid MJ, et al , J Allergy Clin Immunol 1993;92:6-15.

3-year survey between 2007-2009 → no fatality, rate of systemic reactions 0,1%

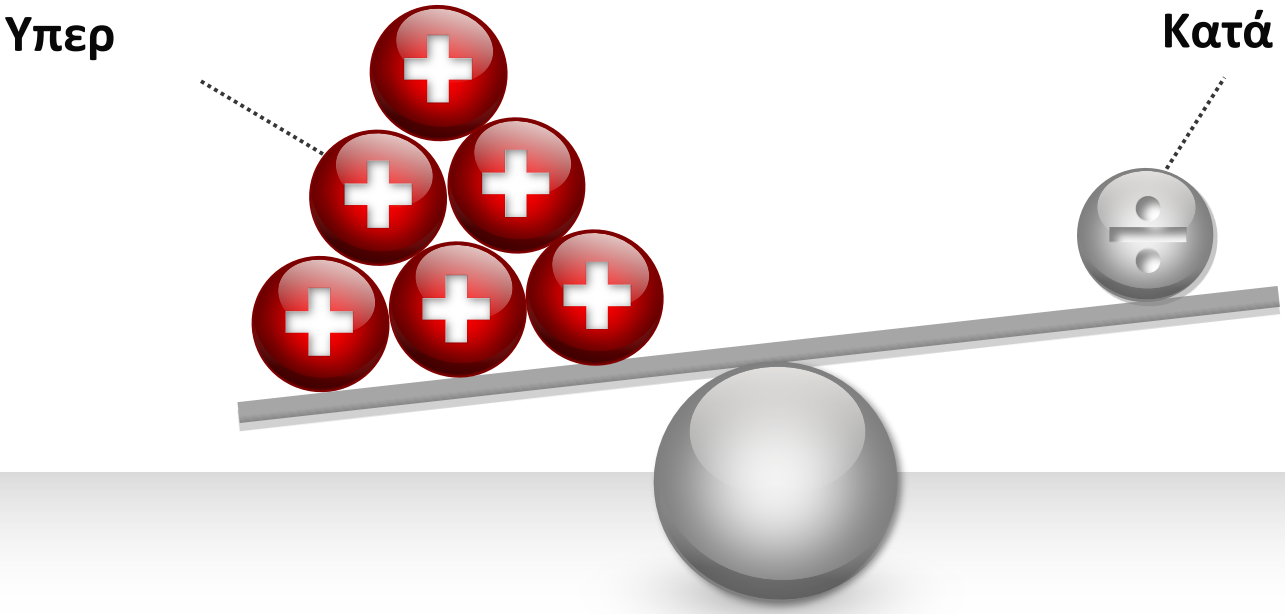
Epstein TG, et al. Ann Allergy Asthma Immunol 2011;107:426-31.e1

Τοπικές αντιδράσεις

Αντιδράσεις, που χαρακτηρίζονται από **ερύθημα**, **κνησμό** και **οίδημα** στην περιοχή χορήγησης της ΑΝΘ



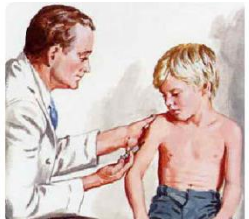
- Ανοσοθεραπεία στην <u>αντιμετώπιση</u> του άσθματος



- Ανοσοθεραπεία στην <u>αντιμετώπιση</u> του άσθματος

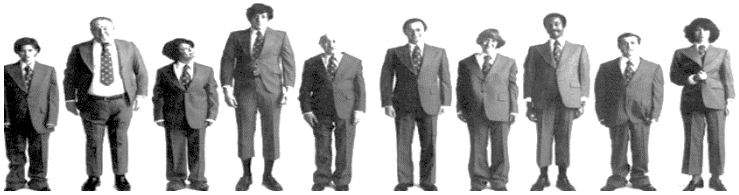
Αυξημένες πιθανότητες επιτυχίας

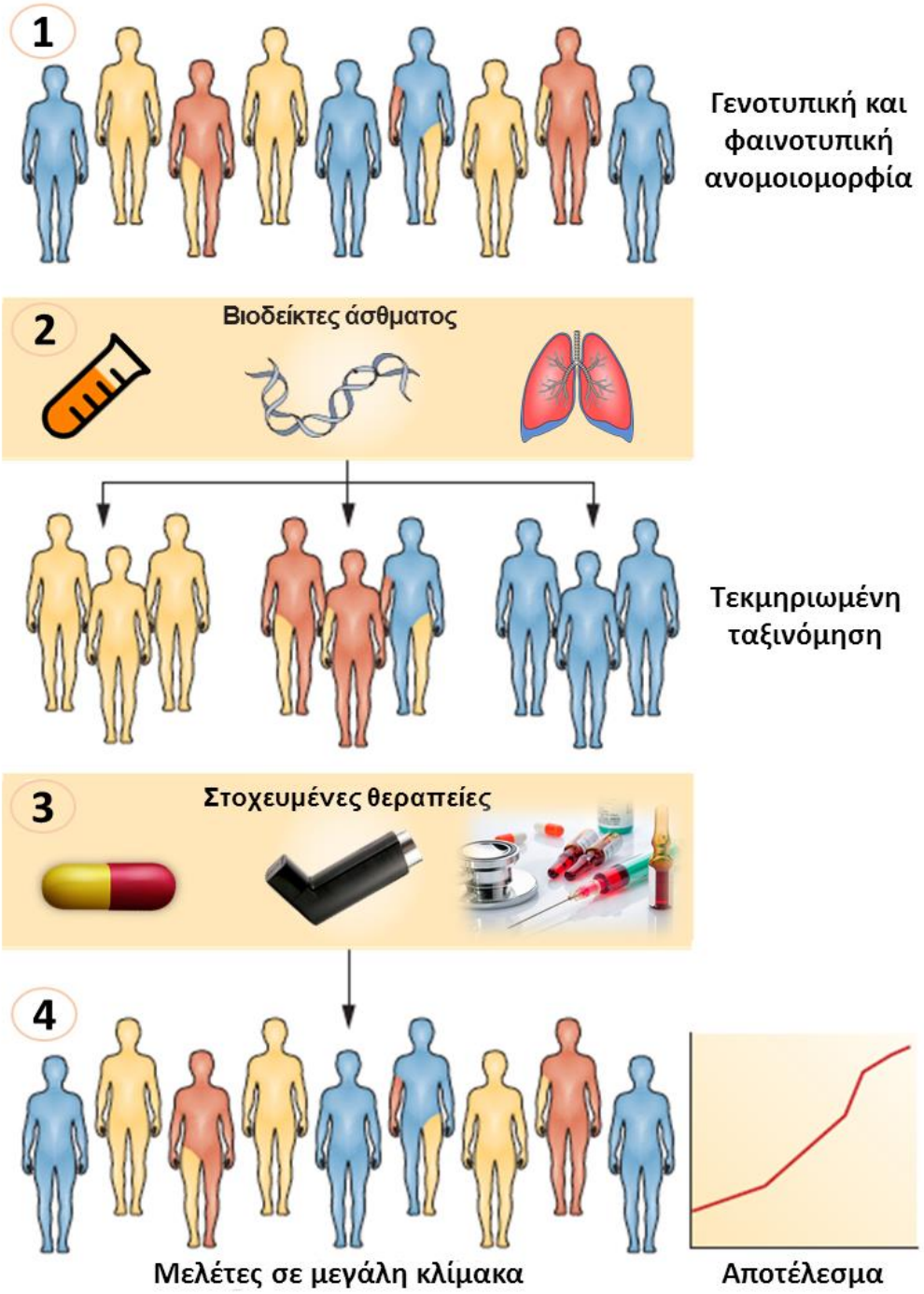
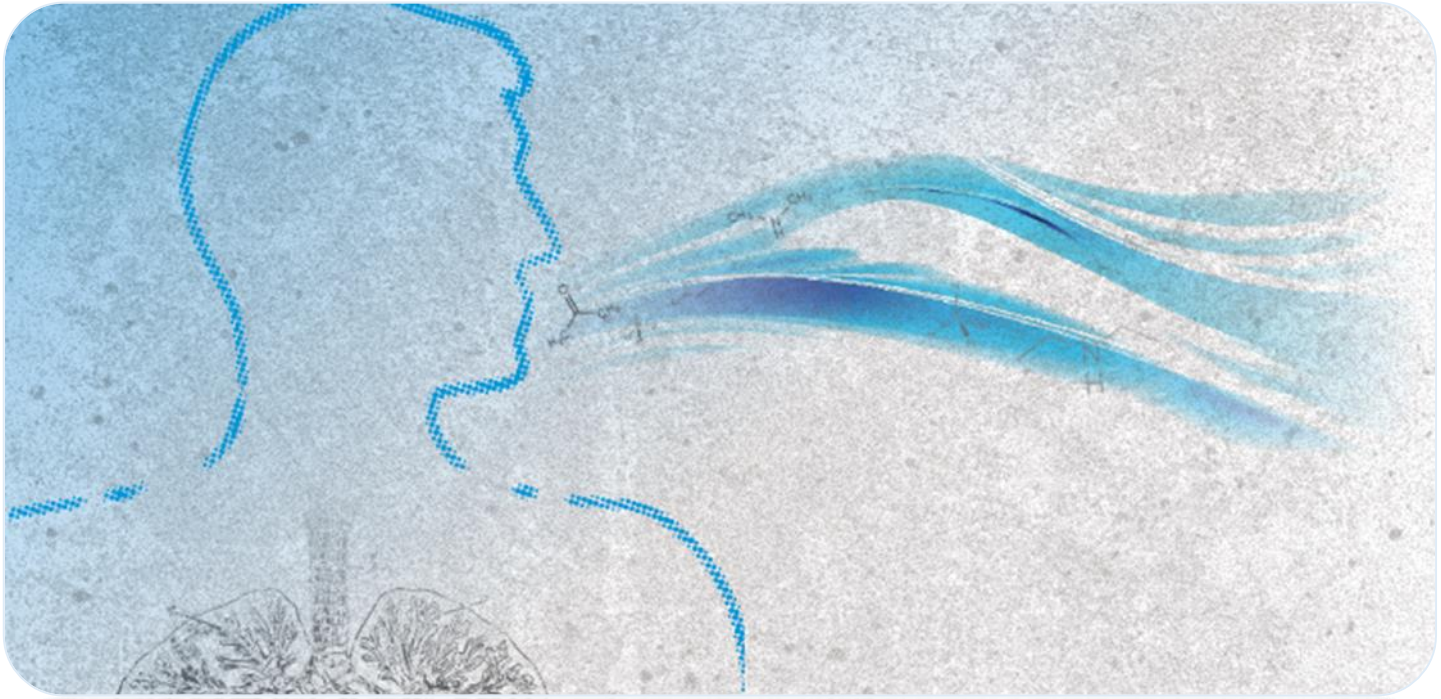
- Ασθενείς με ρινίτιδα και άσθμα (ήπιο-μέτριο) που σχετιζόμενα με αλλεργιογόνο
- Επιλογή εκχυλίσματος/αλλεργιογόνου SCIT or SLIT
- Χρόνος έναρξης/Καθορισμός της διάρκειας
- Καθορισμός της δόσης
- Ασφάλεια
- Παρακολούθηση κλινικών και ανοσολογικών παραμέτρων
- Μονοευαισθησία vs Πολυευαισθησία (Μοριακή διαγνωστική)



personalized medicine

I'm Sure He'll Fit...
"One Size Fits all"




1
Γενοτυπική και φαινοτυπική ανομοιομορφία
2
Βιοδείκτες άσθματος
Τεκμηριωμένη ταξινόμηση
3
Στοχευμένες θεραπείες
4
Μελέτες σε μεγάλη κλίμακα
Αποτέλεσμα

Ευχαριστώ πολύ