Imperial College London

Short Course treatment of Subcutaneous Peptide Hydrolysate from Lolium Perenne - gp-ASIT+^{TM} - suppresses Basophil Responses and induces IgG-associated Blocking Antibodies: A RDPCT

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Conventional Allergen Immunotherapy

Subcutaneous

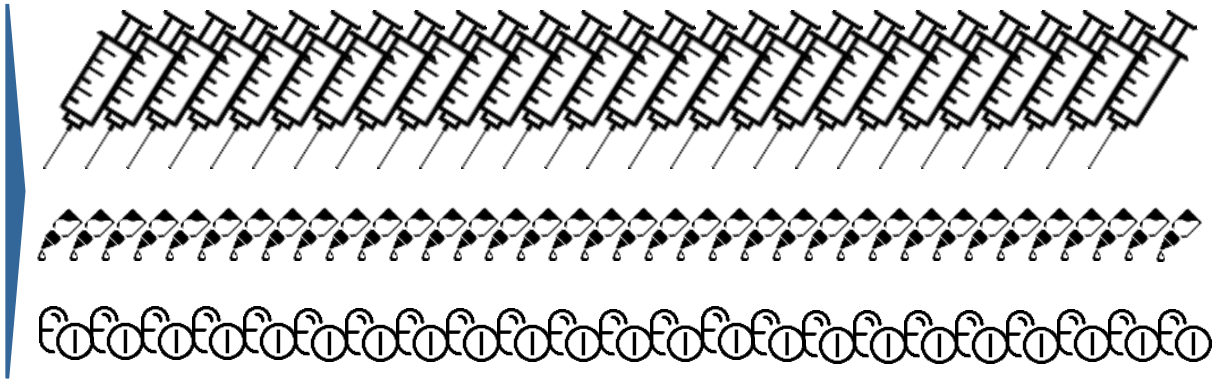
Sublingual

SCIT
Subcutaneous immunotherapy

SLIT

Sublingual immunotherapy

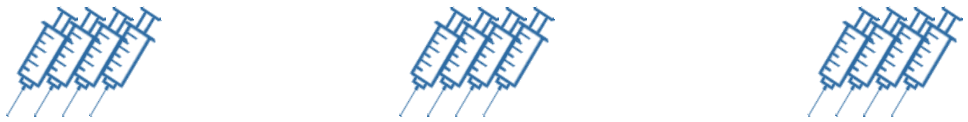
Year 1 | Year 2 | Year 3



Compliance

SCIT 40-60 doctor visits	<25%
Daily administration 180 to 365 days/year	<12.5%

Novel Approach AIT



4-5 doctor visits 3 weeks prior each pollen season

Kiel et al., J Allergy Clin Immunol 2013;132:353-60

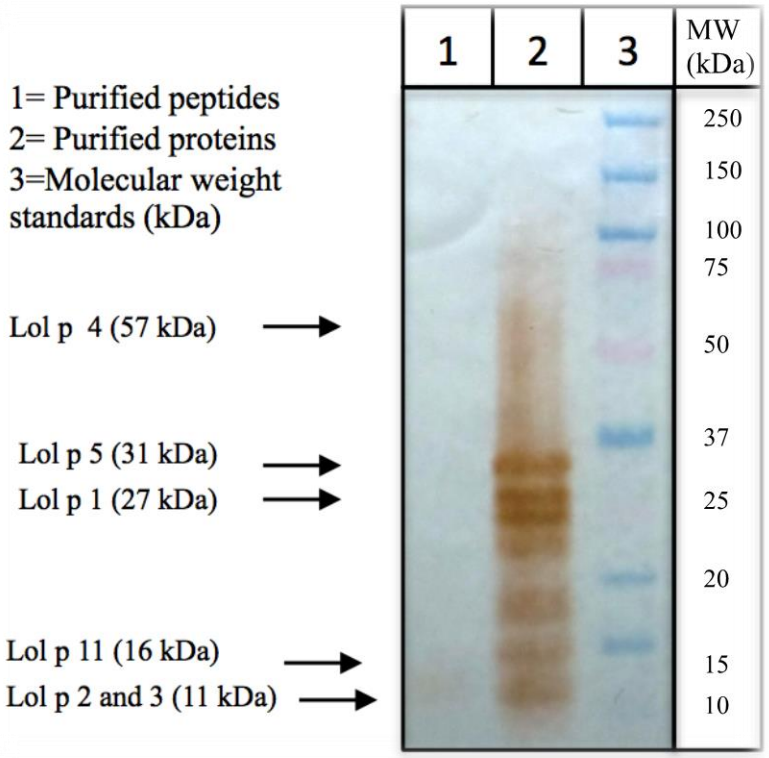
Purified *Lolium Perenne* peptides for Seasonal Allergic Rhinitis

ASIT Biotech has developed a new AIT preparations based on highly purified allergen fragments from natural source.

Broad epitope composition

- Hydrolysis of a highly purified allergen extract which results in highly purified linear peptides.
- No need of epitope screening to target all allergic patients (1.000 Da < MW < 10.000 Da).

Characterisation of Peptide Hydrolysate from *Lolium Perenne* (gpASIT+^{TM}) and its ability to bind to IgE compared to Grass Pollen extract



Shamji et al., JACI (under revision)

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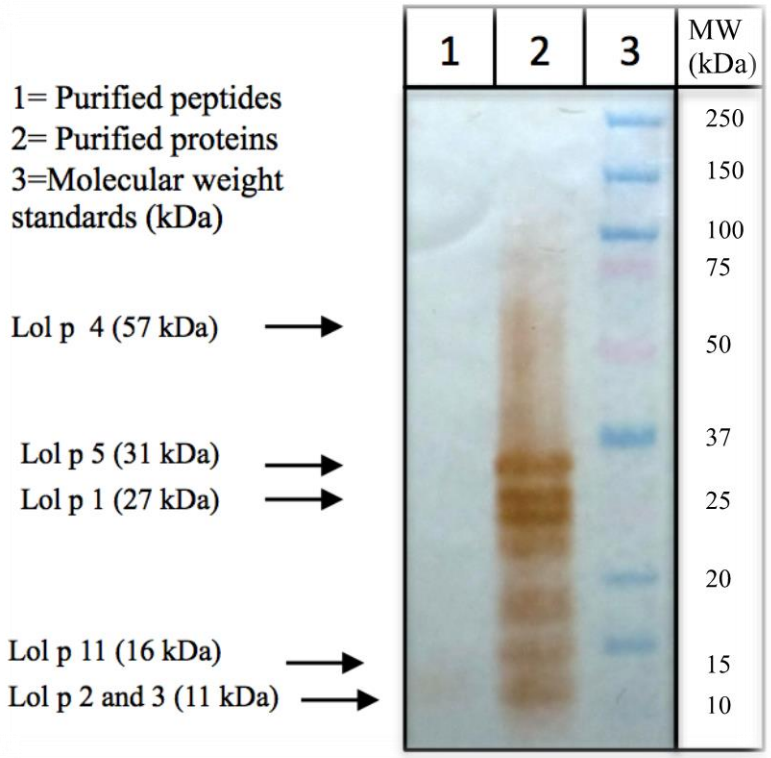
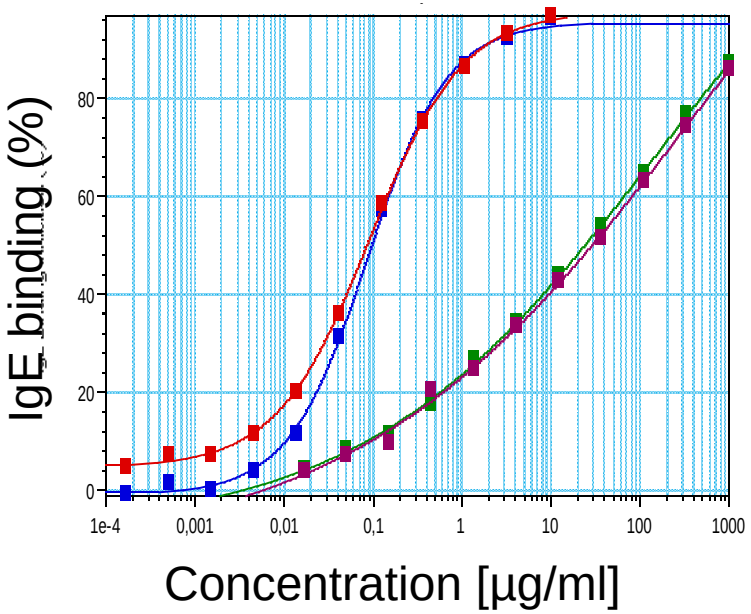


Reproducibility



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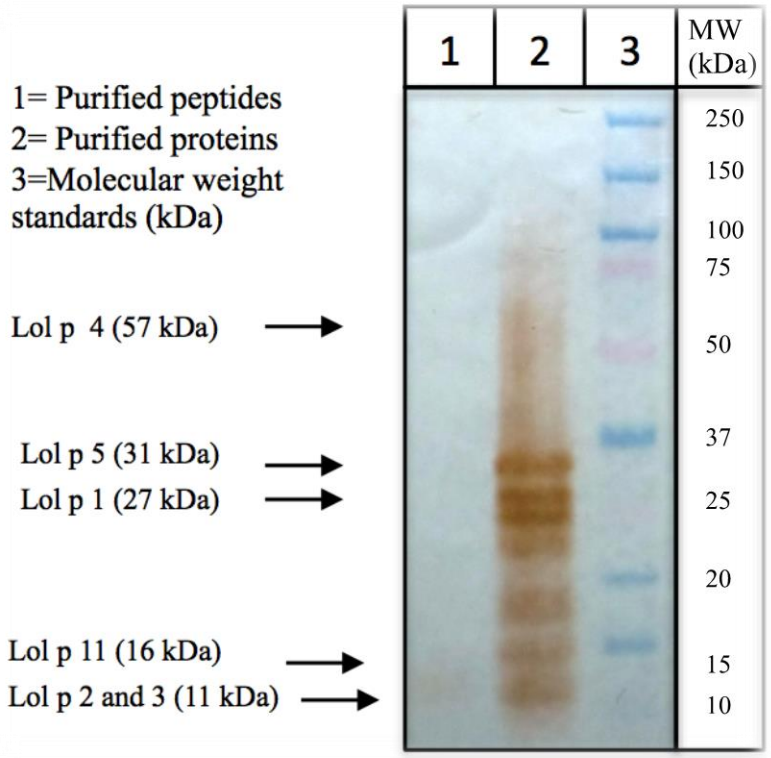

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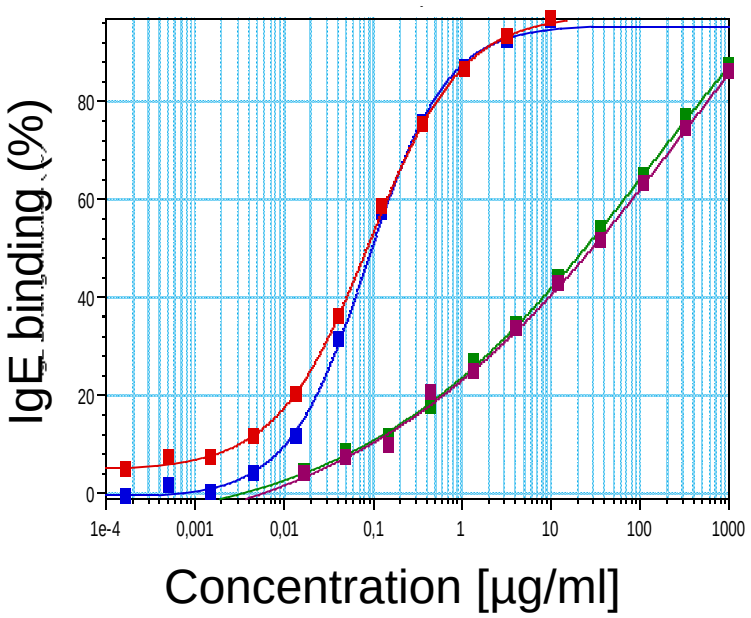
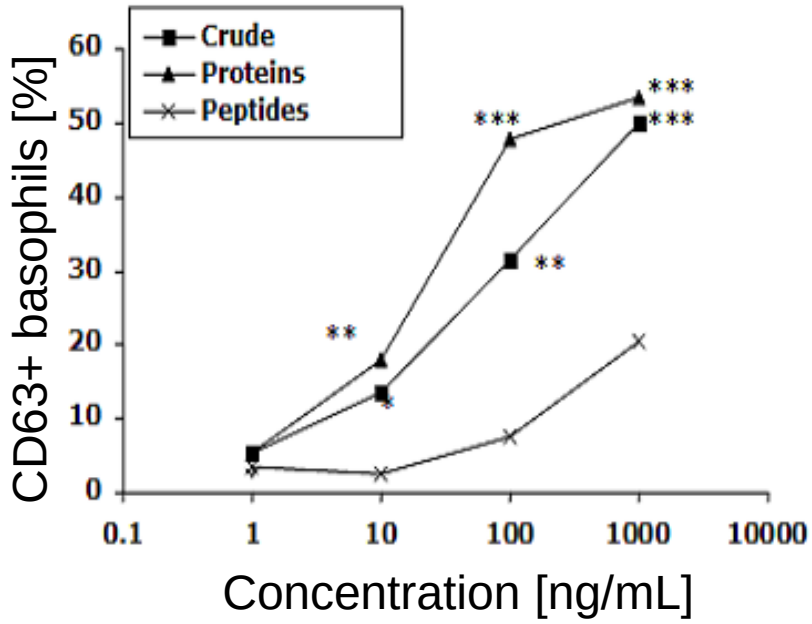


Pollen proteins - batch 1
Pollen proteins - batch 2

Pollen peptides - batch 1
Pollen peptides - batch 2

Basophil activation



*p ≤ 0.05
**p ≤ 0.05
***p ≤ 0.05

Shamji et al., JACI (under revision)

Hypotheses

- 3-week treatment with subcutaneous peptide hydrolysates from *Lolium perenne* (LPP, gpASIT+^{TM}) is associated with reduction in CSMS and RTSS during the peak and throughout the entire pollen season.

- gpASIT+^{TM} immunotherapy but not placebo blunts the seasonal increases of sIgE

- gpASIT+^{TM} immunotherapy but not placebo treatment suppresses grass pollen-induced basophil hyperesponsivess and basophil reactivity.

- A short-course of gpASIT+^{TM} immunotherapy induces IgG4-associated blocking antibodies that conferred clinical benefit during the pollen season.

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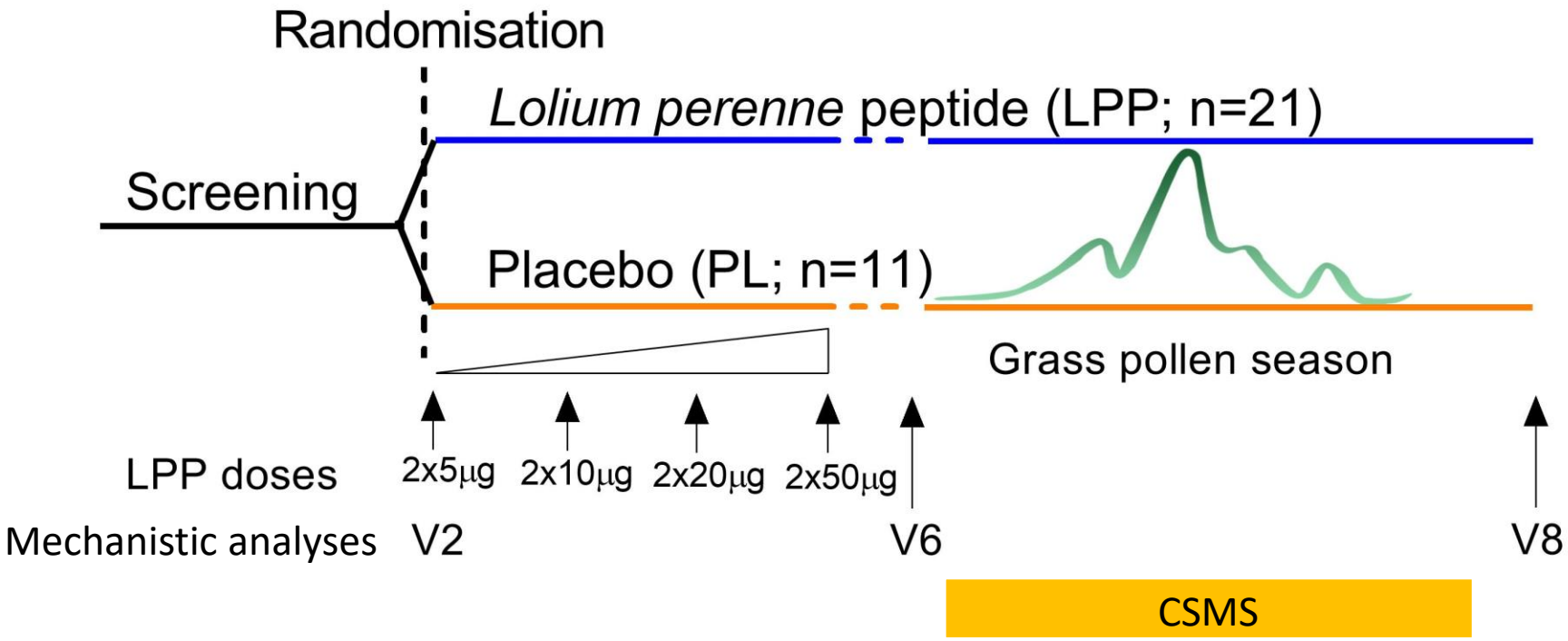
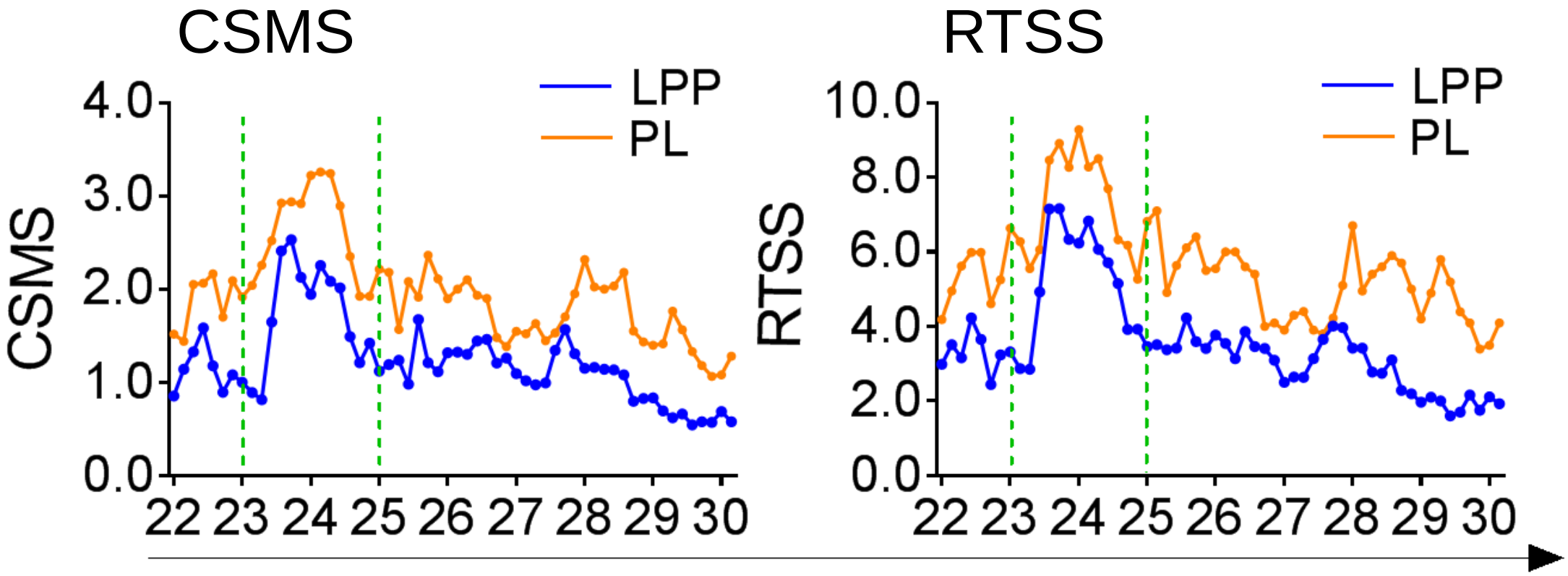
Study design – RDBCT

Immune mechanisms analyses on participant from a single site - (Ghent, Belgium).



3-week treatment with subcutaneous peptide hydrolysates from *Lolium perenne* (LPP, gpASIT+™) supresses CSMS and RTSS



CSMS reduction in Belgium
Peak period : **-35.1%;** *P*=0.03.
Entire pollen season : -**53,7%;** *P*=0.03

RTSS reduction in Belgium
Peak period: **-27.4%, *P*=0.04**
Entire pollen season: **-56.9%, *P*=0.01**

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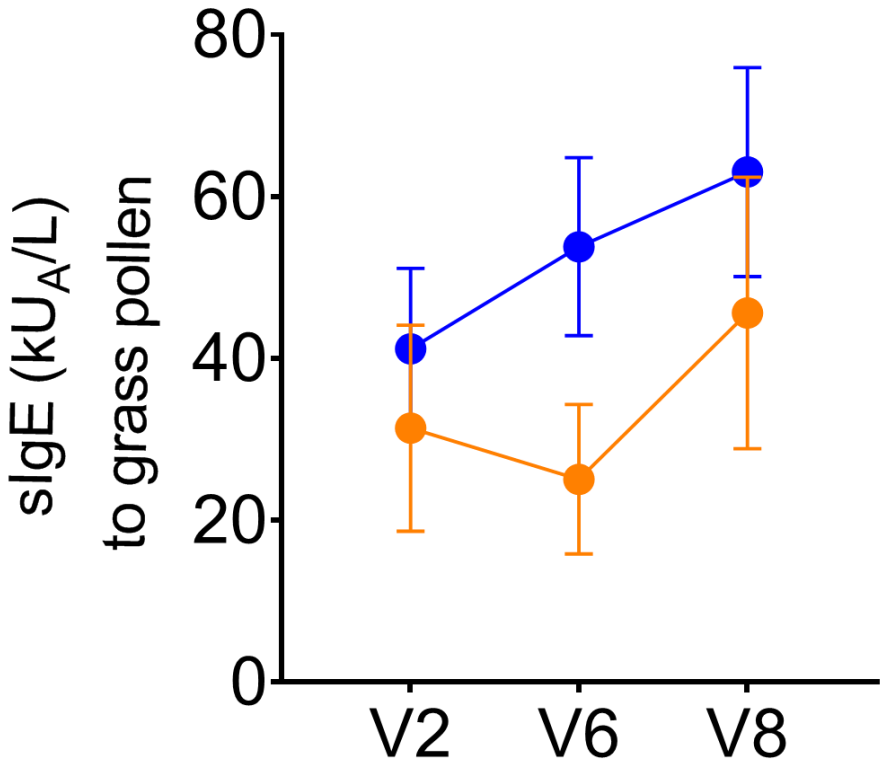
Effect of LPP immunotherapy on sIgE levels

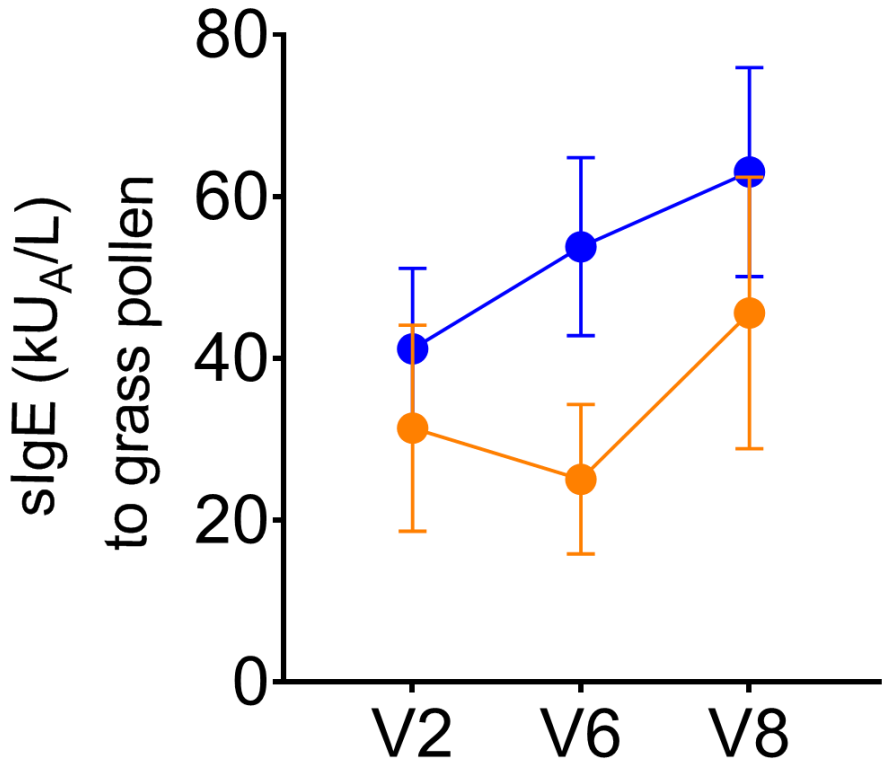


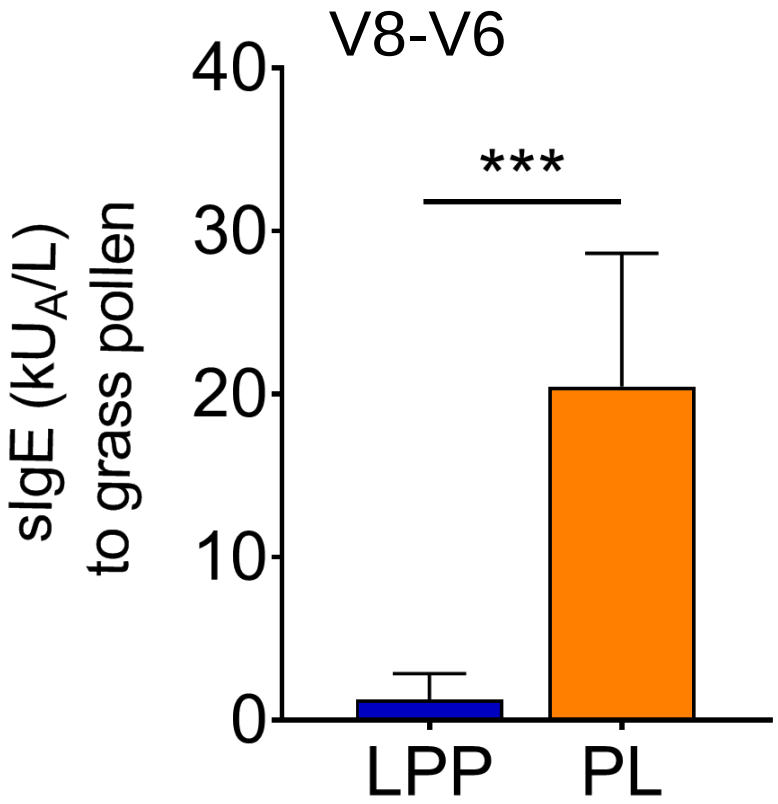
V2 = Before treatment

V6 = After treatment

V8 = After the grass pollen season

Effect of LPP (gpASIT+^{TM}) immunotherapy on sIgE levels





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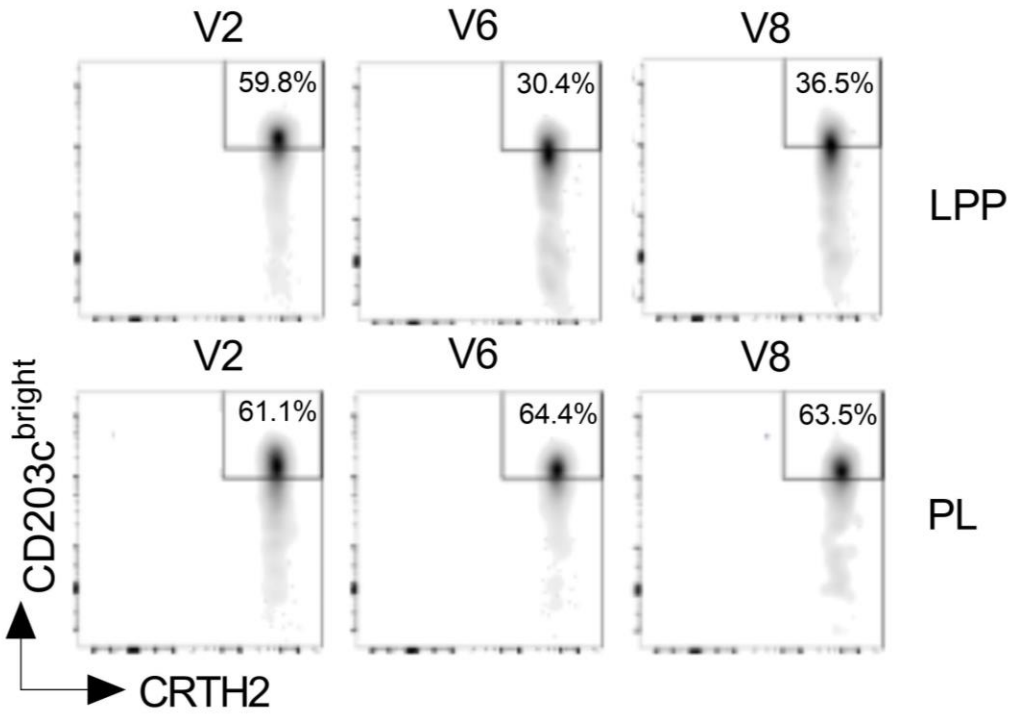
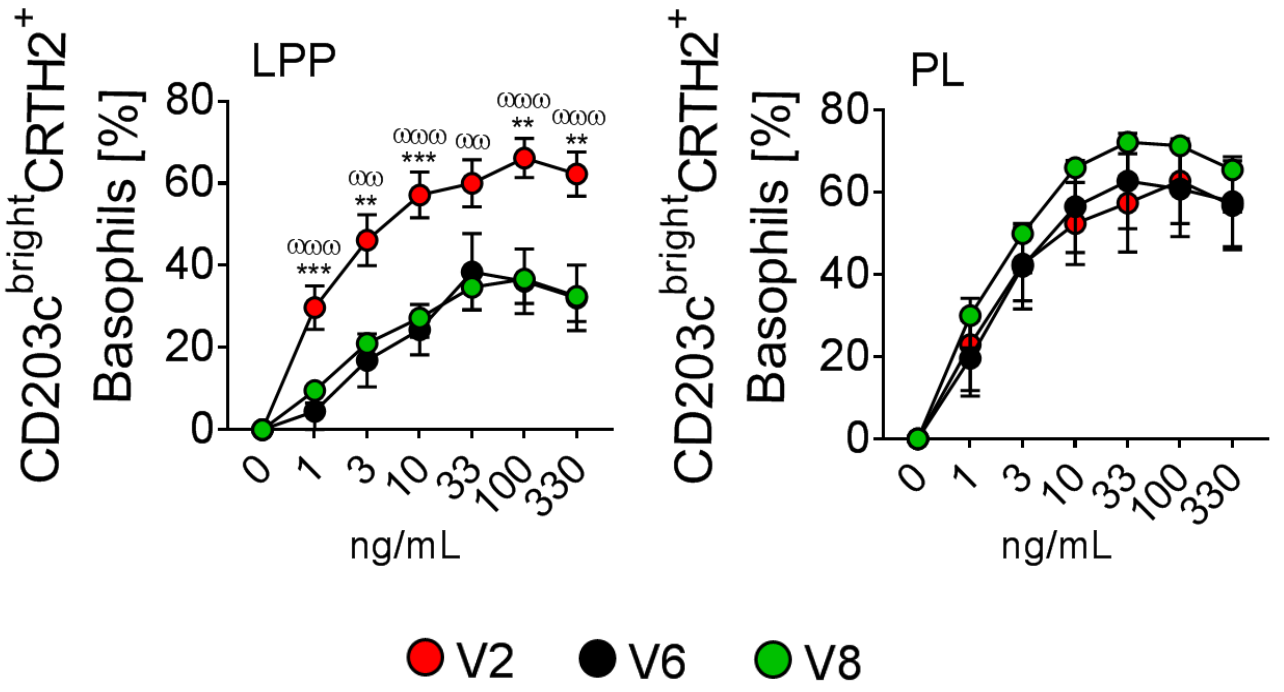
Effect of LPP (gpASIT+^{TM}) immunotherapy on CD203c^{bright}CRTh2^{+} Basophils





33 ng/mL of grass pollen allergen

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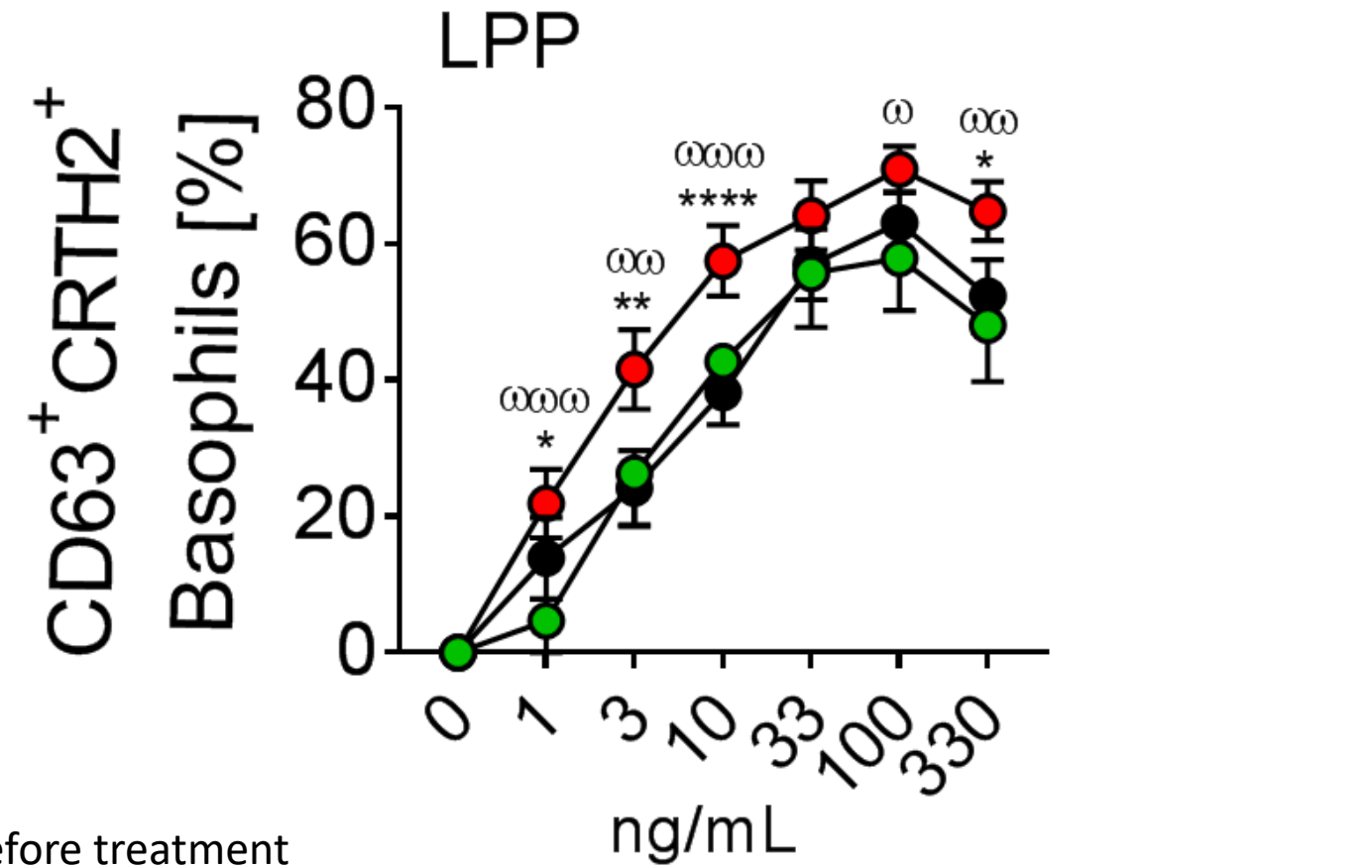
Effect of LPP (gpASIT+™) immunotherapy on CD63+CRTh2+ Basophils



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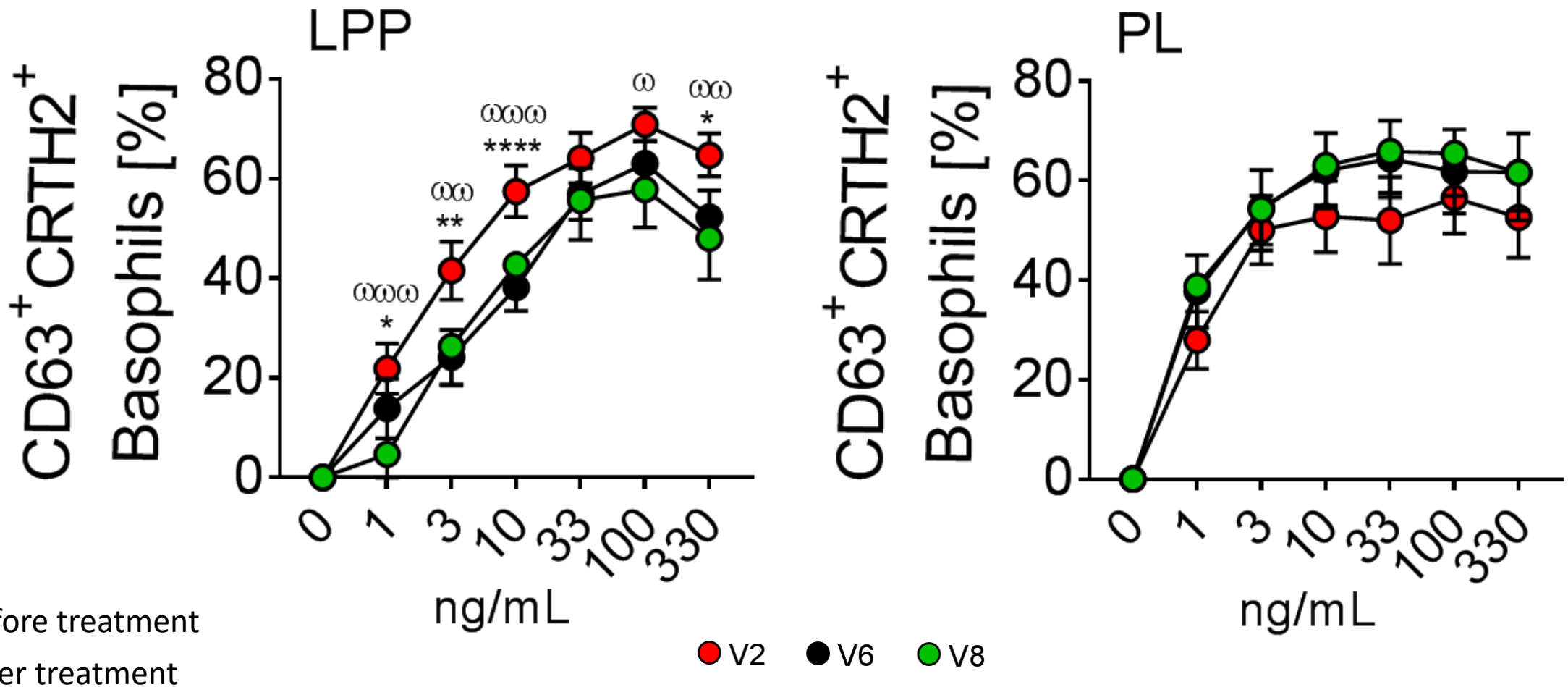

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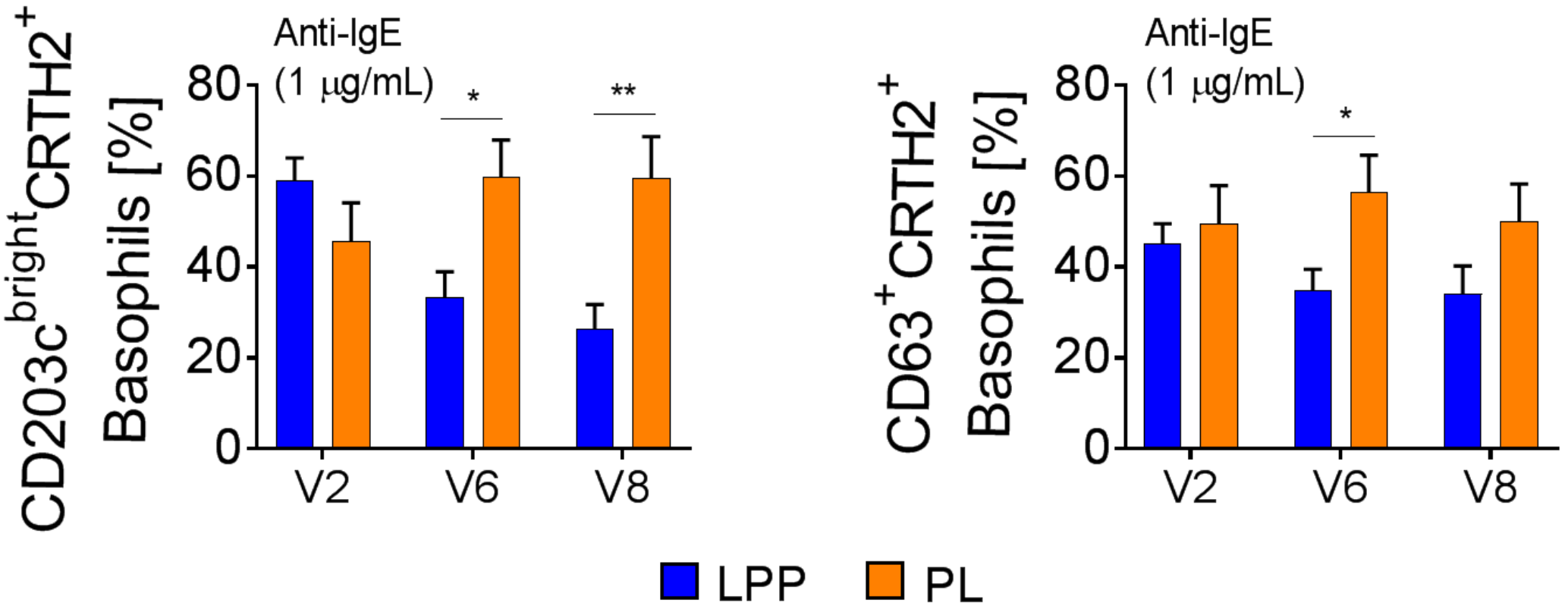
Effect of LPP (gpASIT+^{TM}) immunotherapy on Basophil Reactivity



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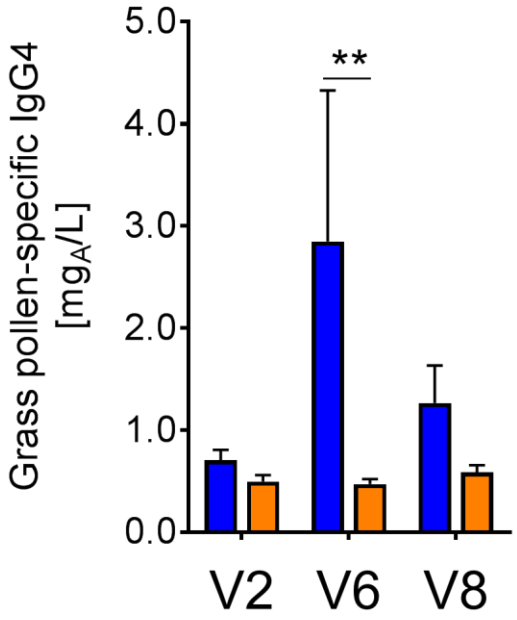
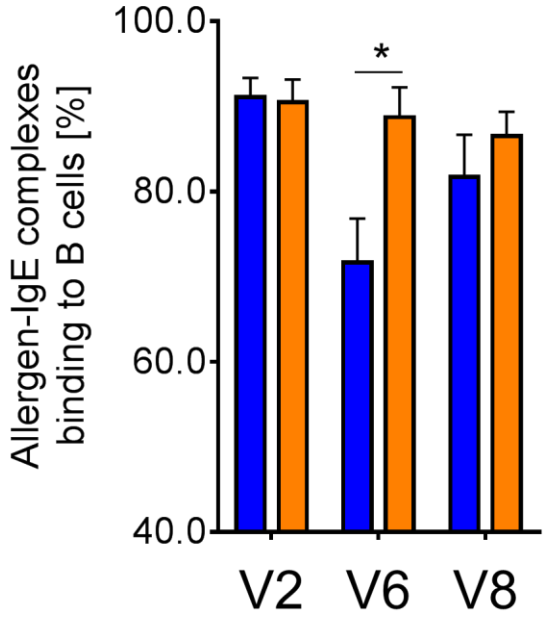
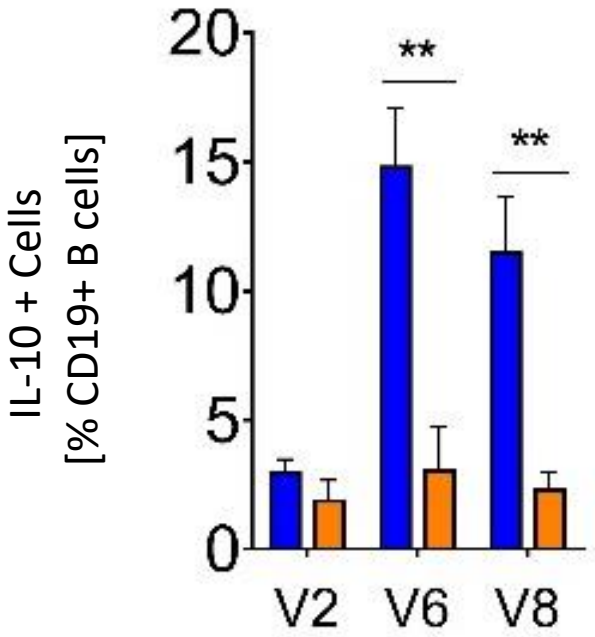
Effect of LPP (gpASIT+^{TM}) immunotherapy on serum IgG4 and /allergen neutralising blocking antibodies







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LPP PL

Summary/Conclusions

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