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Label Free BioSensor

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Affinity Measurement of Antibodies in Allergy Diagnosis

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How to improve allergy diagnosis?

- Better characterize the allergens:
 - Identification of new allergenic molecules
 - Cross-reactivities
- Better characterize the antibody response
 - Specificity
 - Isotypic diversity
 - Affinity



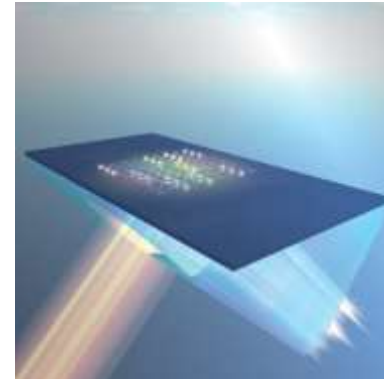
Experiment

■ Biochip

- Cow's milk allergens: aLac (Bos d4), bLG (Bos d5), Cas (Bos d8)
- Negative controls: Betv1, HSA

■ Incubation with specific antibodies

- Goat antibodies to aLac
- Rabbit serum to bLG
- Rabbit serum to Cas



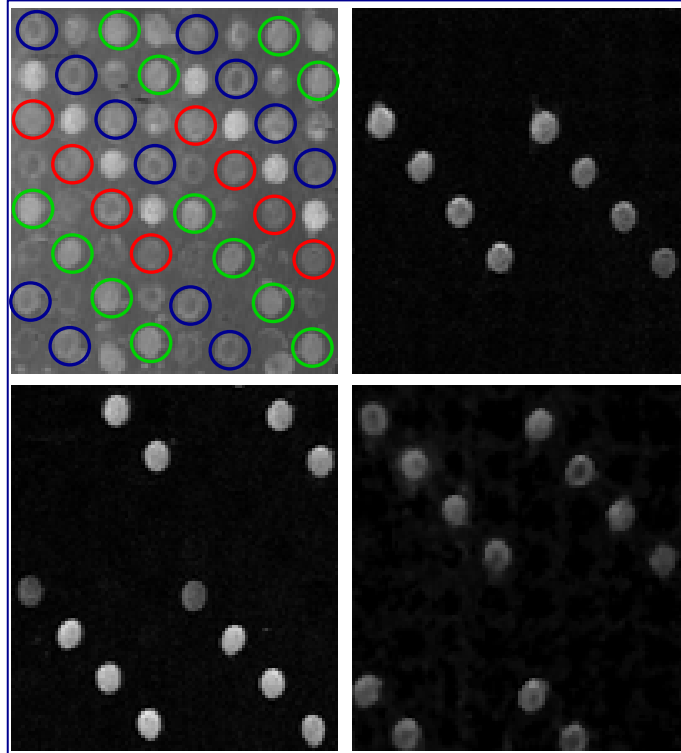
■ Comparison SPRi/ELISA

H. Chardin et al, J. Immunol. Methods, 2014 Mar; 405:23-8

Results

- The specific Ag/Ab binding may be directly observed

Image of the biochip



anti-aLac goat Ig

anti-bLG rabbit serum

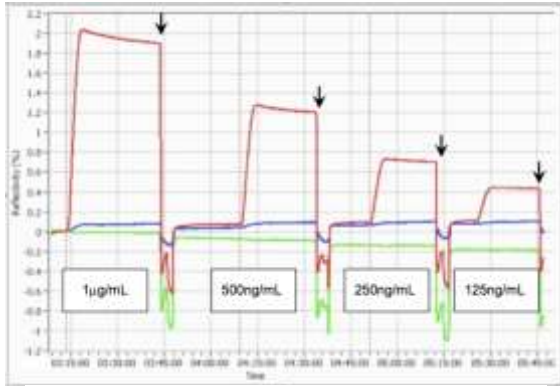
anti-Cas rabbit serum

Results

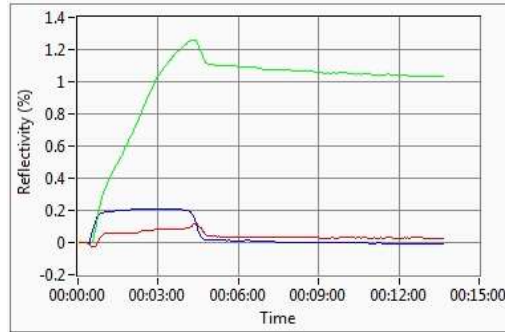
■ The reflectivity is proportional to the quantity of antibodies injected

SPRi

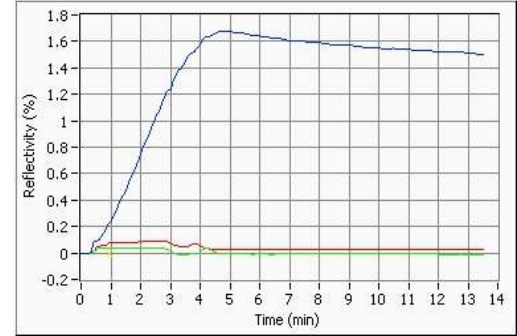
anti-aLac goat Ig



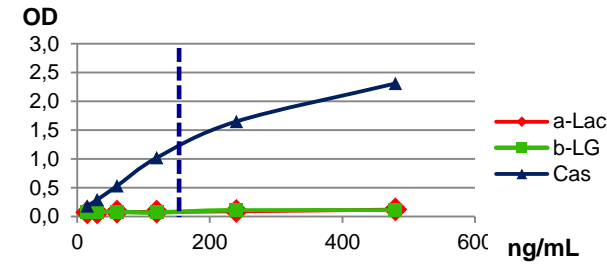
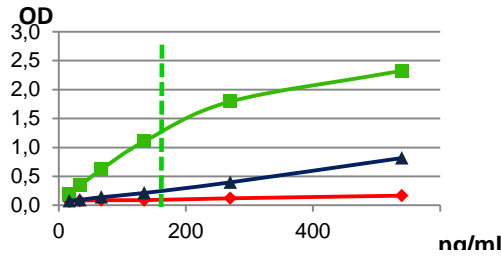
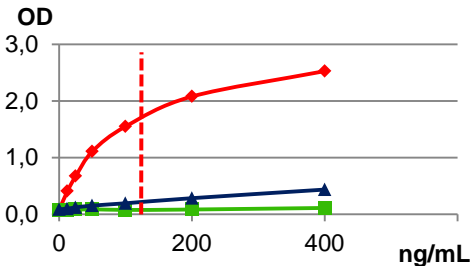
anti-bLG rabbit serum, 1,5µg/mL



anti-Cas rabbit serum, 1,3µg/mL

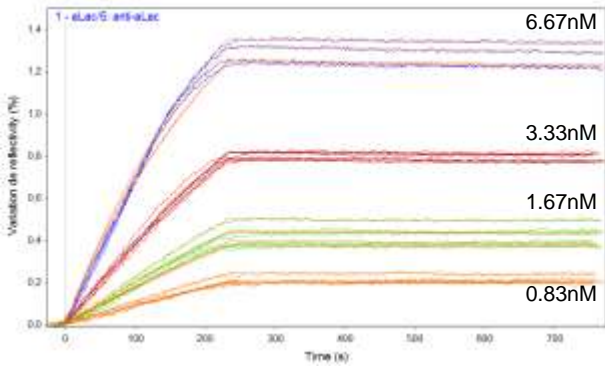


ELISA

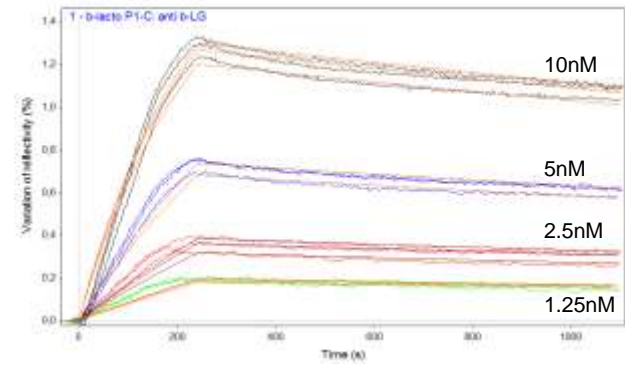


Results

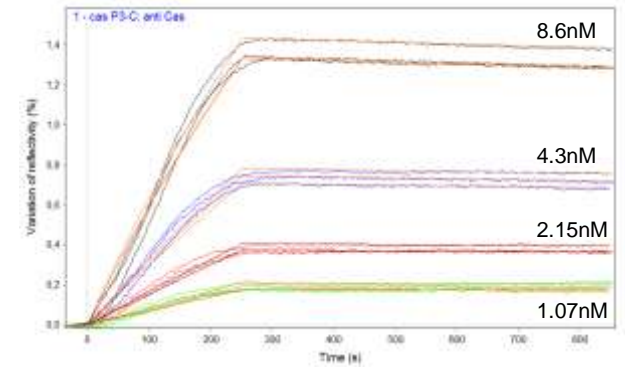
Determination of the avidity of the antibody response



aLAc/ Anti-aLac : 94pM



bLG/Anti-bLG : 417pM



Cas/Anti-Cas : 441pM

3 biochips, 3 measures/biochip

Conclusion

- SPRi allows a multiplex monitoring of the complex antibody response to the major allergens of an allergenic source
- The avidity of the antibody response can be evaluated
- SPRi monitoring is faster, label-free and more informative than ELISA, but less sensitive

A new publication in preparation (study of sera of allergic patients)

Thank you very much for your attention

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Omoshiro-okashiku
Joy and Fun

おもしろい
おかし

眞峰


Thank you

Merci

Danke

Grazie

감사합니다

Obrigado

Dziękuję

धन्यवाद

Cảm ơn

شُكْرًا

ありがとうございました

ขอขอบคุณครับ 谢谢

நன்ற

Tack ska ni ha

Σας ευχαριστούμε

Большое спасибо