

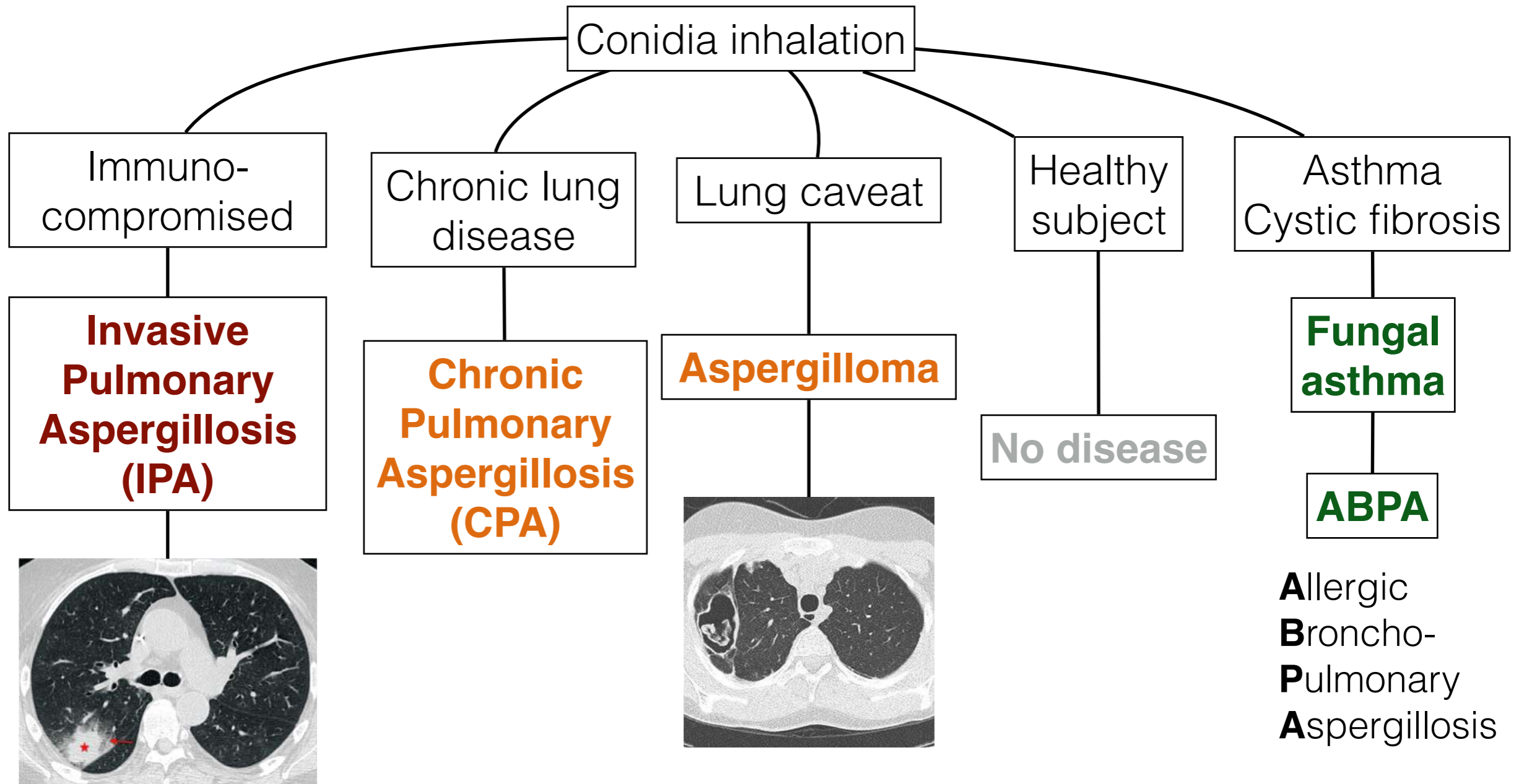


Surfactant protein D

A breath of fresh air in the battle against *Aspergillus fumigatus* ?

Sarah Dellière
January 26th 2024

Aspergillosis spectrum



Immune dysfunction - lung damage

Immune hyperactivity



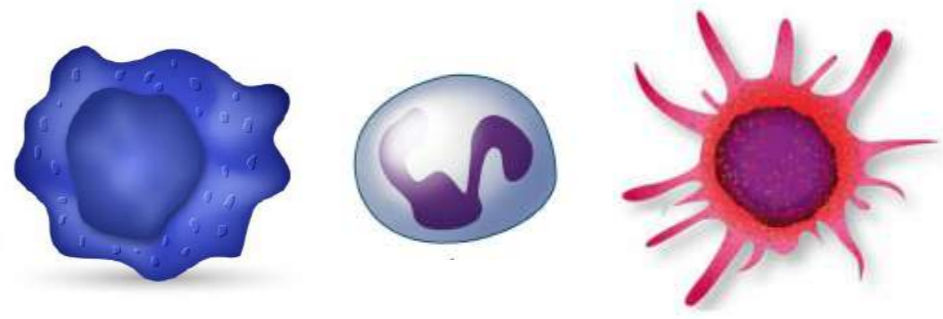
Innate immune response



Humoral

Cellular

- Inflammation proteins
- Complement
- Antimicrobial peptides
- Immunoglobulines





Multiple functions

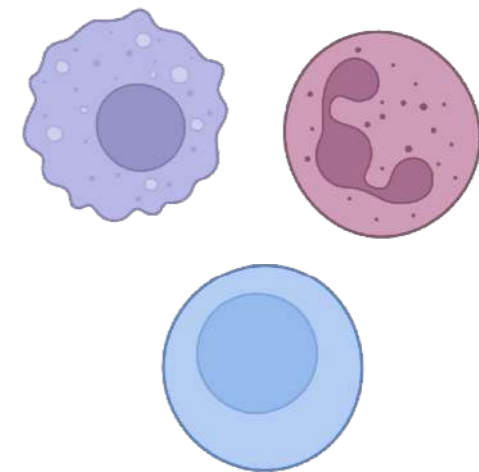
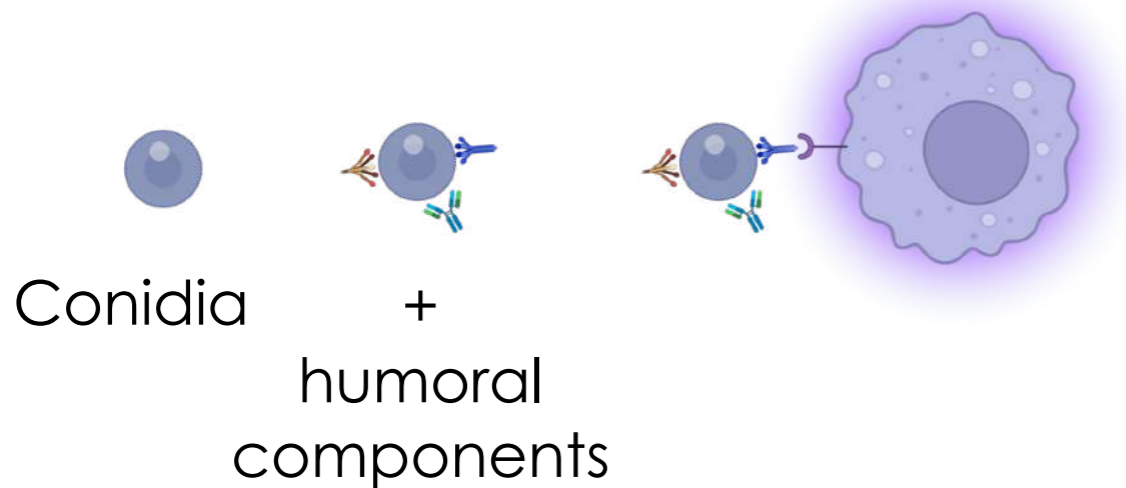
Direct interaction



Liking pathogens and immune cells

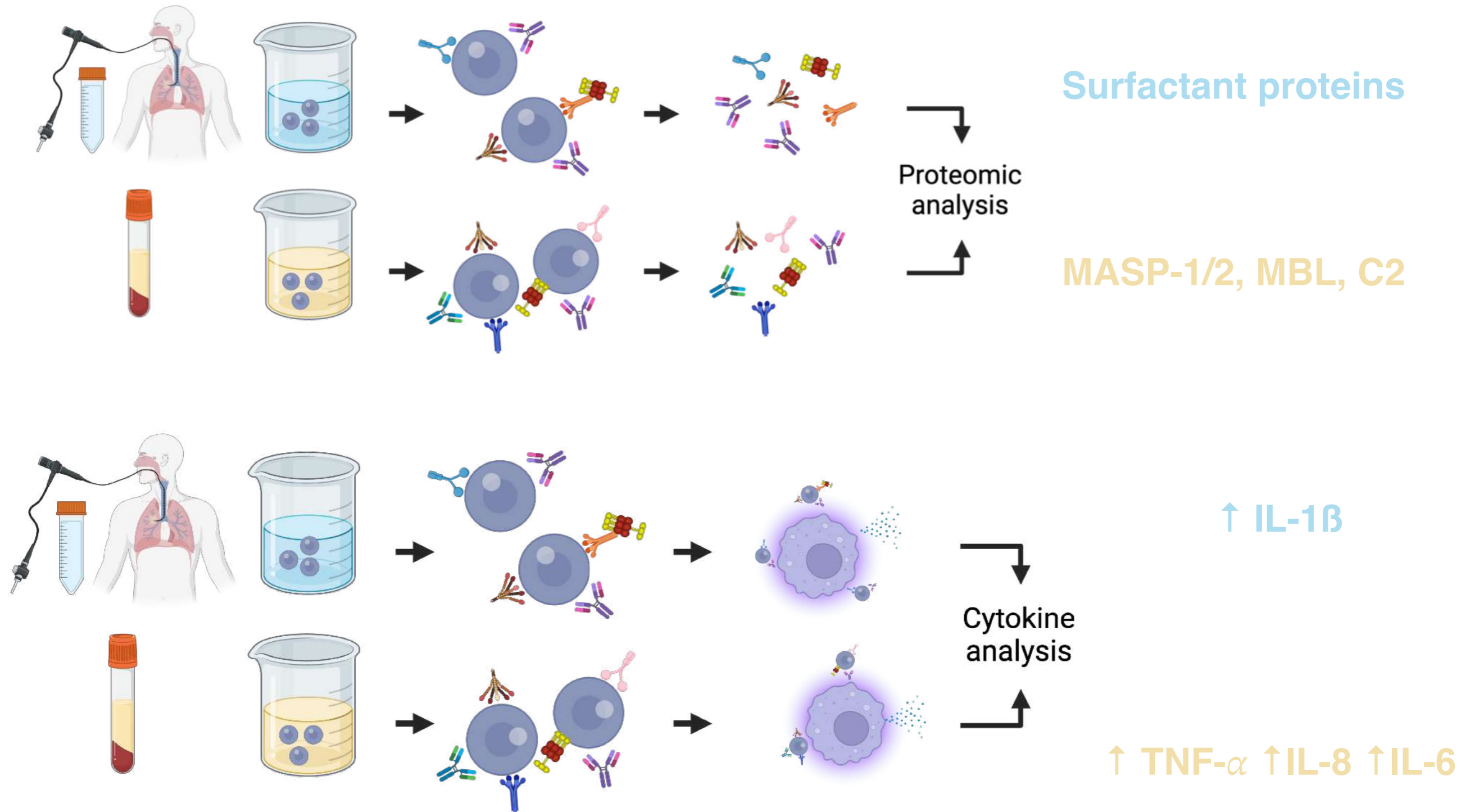
Anaphylotoxins

Opsonisation and soluble mediators



Recruitment

Serum or alveolar fluid ? That should have been the question...





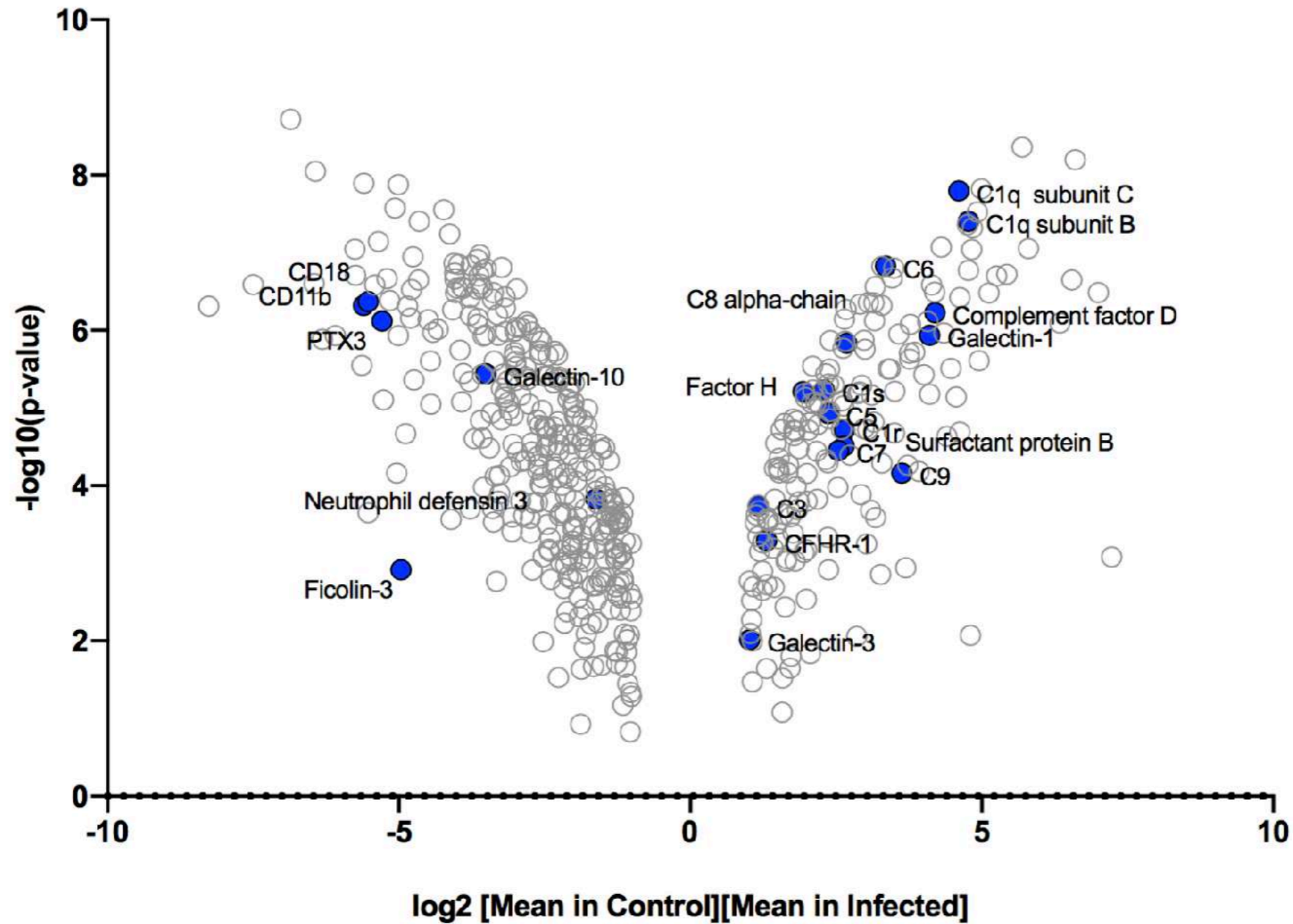
BAL

Aspergillus+ versus **control**

- 3 Invasive PA
- 3 Chronic PA
- 4 colonization



Proteomic analysis

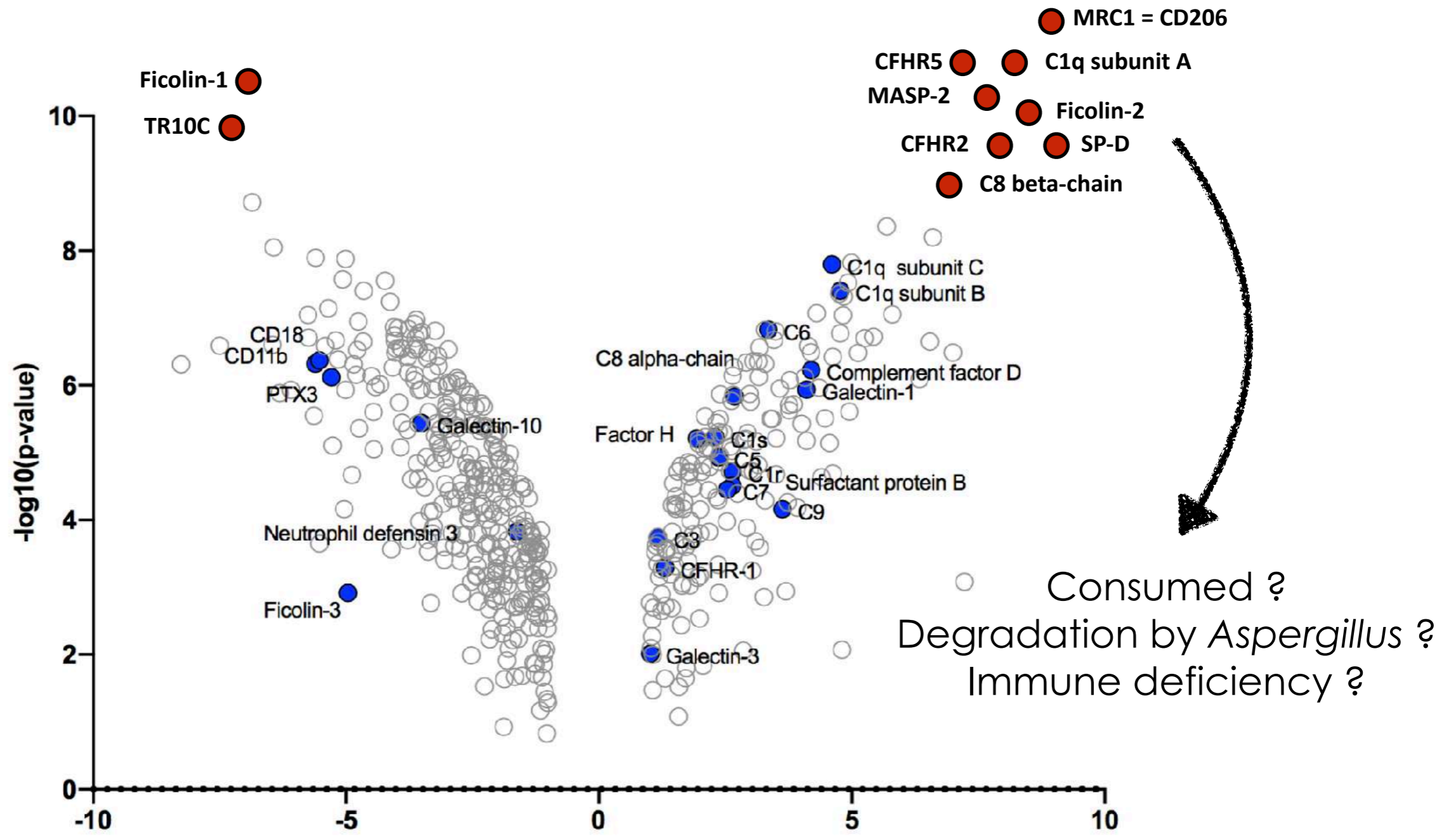


Increased in **Asp+** BAL

6



Decreased in **Asp+** BAL

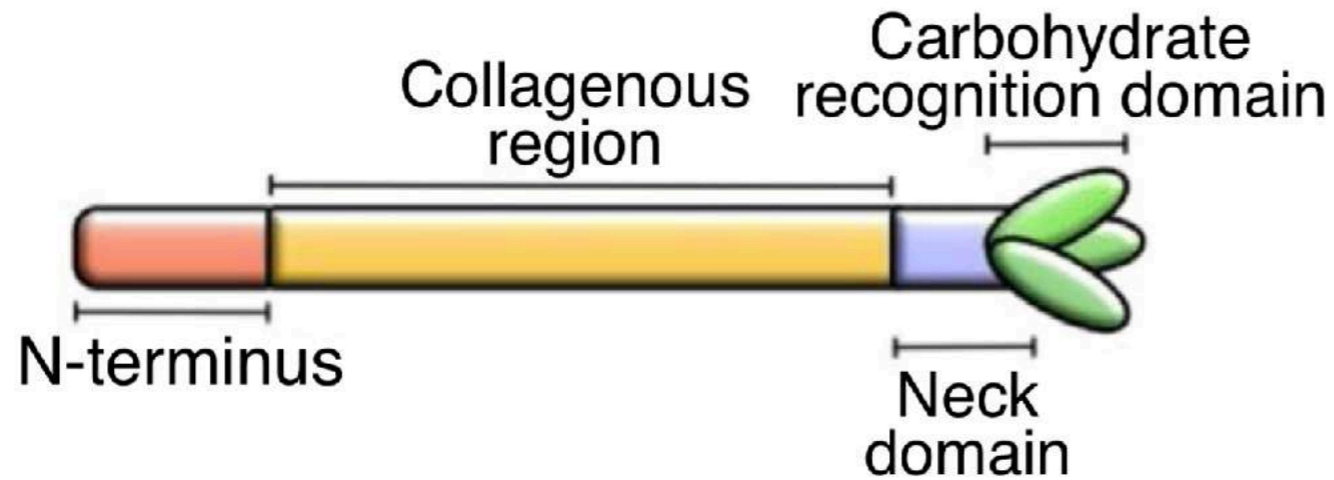


← Increased in Asp+ BAL

7

→ Decreased in Asp+ BAL

Trimeric structure of collectins



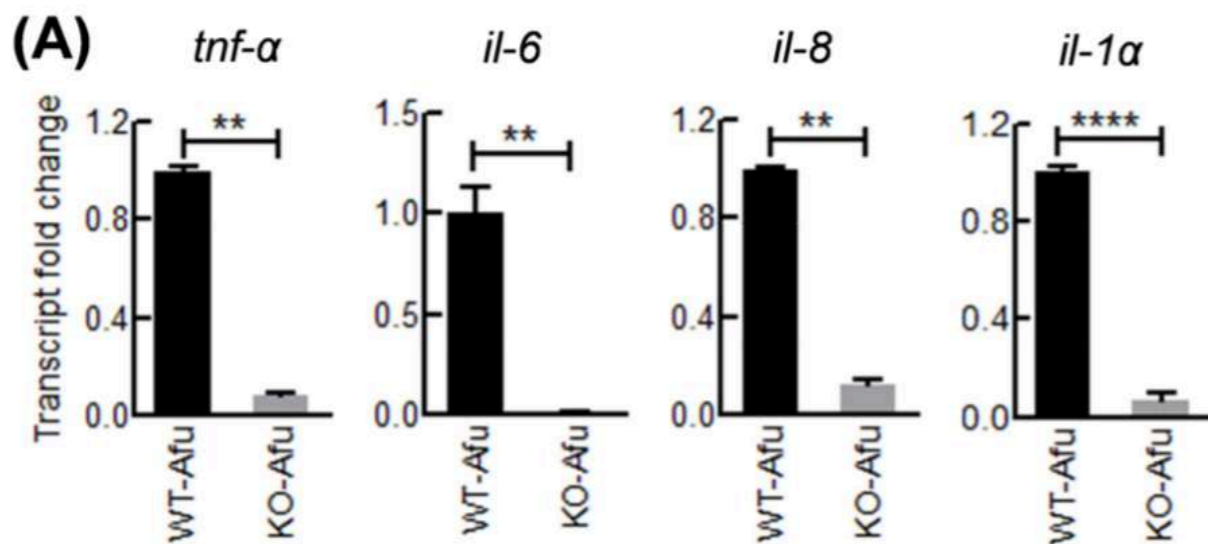
- C1q subunit A
- Ficolin-2
- SP-D

binds GM, GAG, melanin
 pro-inflammatory effect
 ↑ conidial phagocytosis
In vivo data confirmation



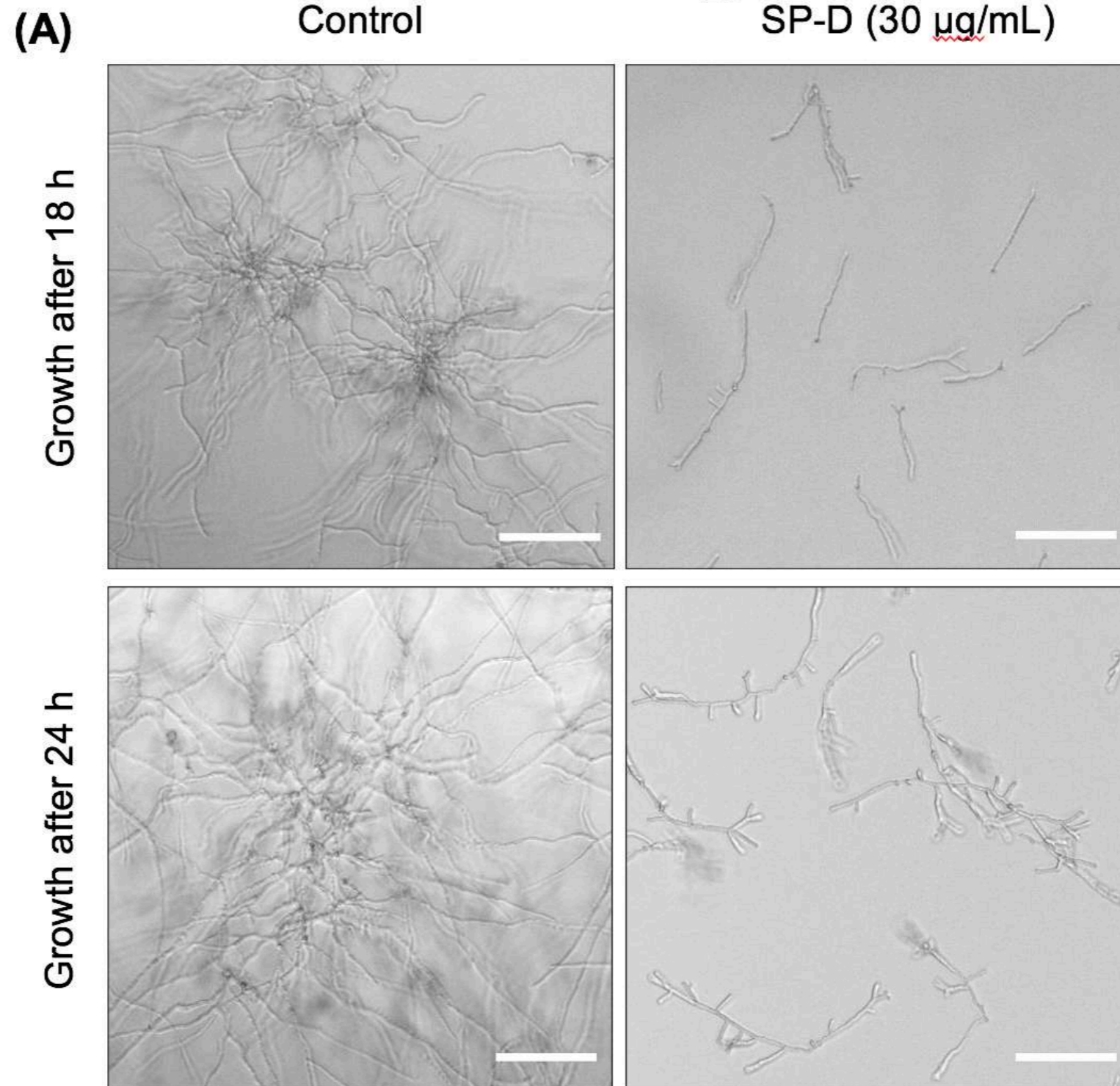
Surfactant protein D

Type II alveolar cells
 Reduces surface tension
 Known PRR





SP-D inhibits the growth of *A. fumigatus*



[SP-D] = 30 $\mu\text{g}/\text{mL}$



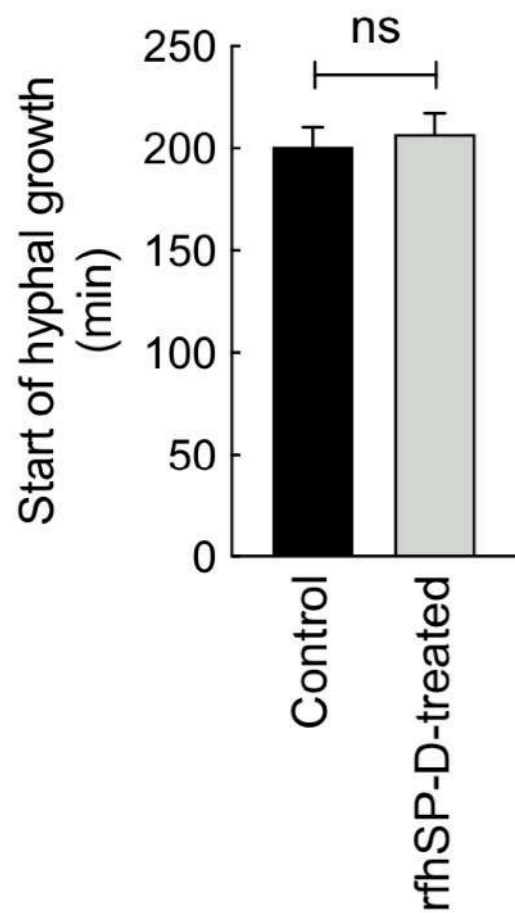
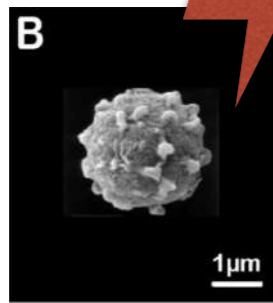
[SP-D] = 50-90 $\mu\text{g}/\text{mL}$



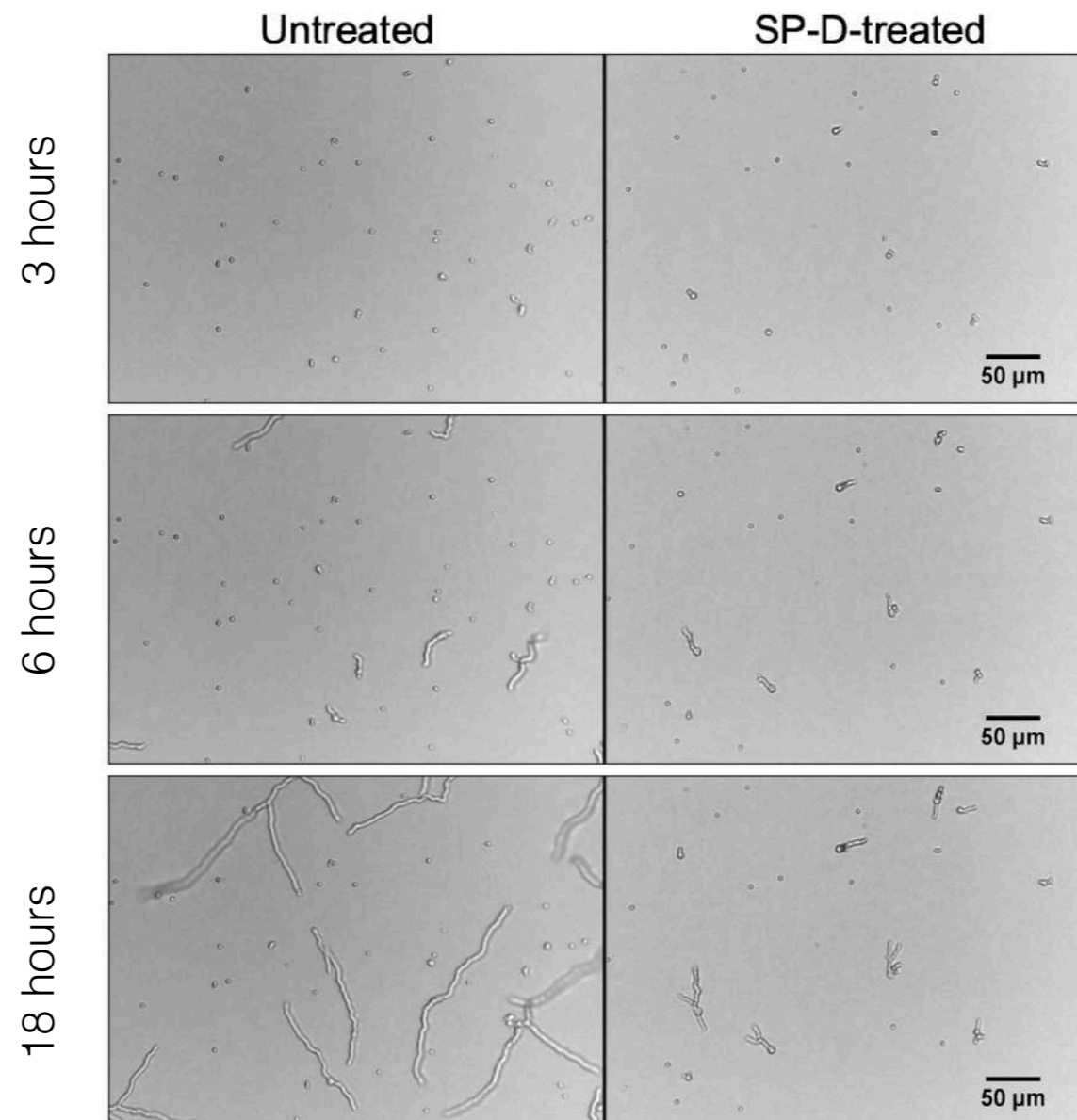
Sarah Wong



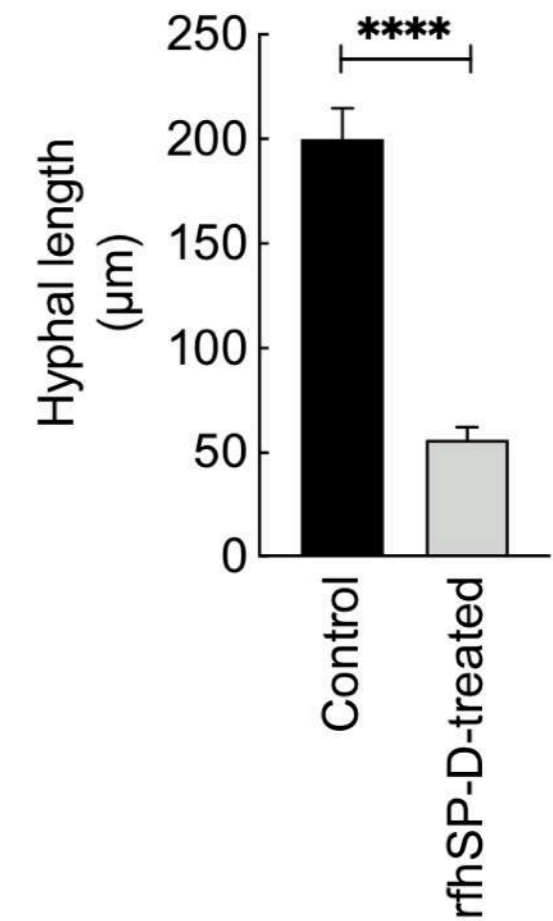
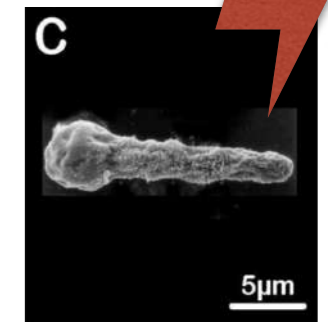
Germination
delay ?



SP-D inhibits the growth of Af by restricting hyphal length



Hyphal extension
inhibition ?

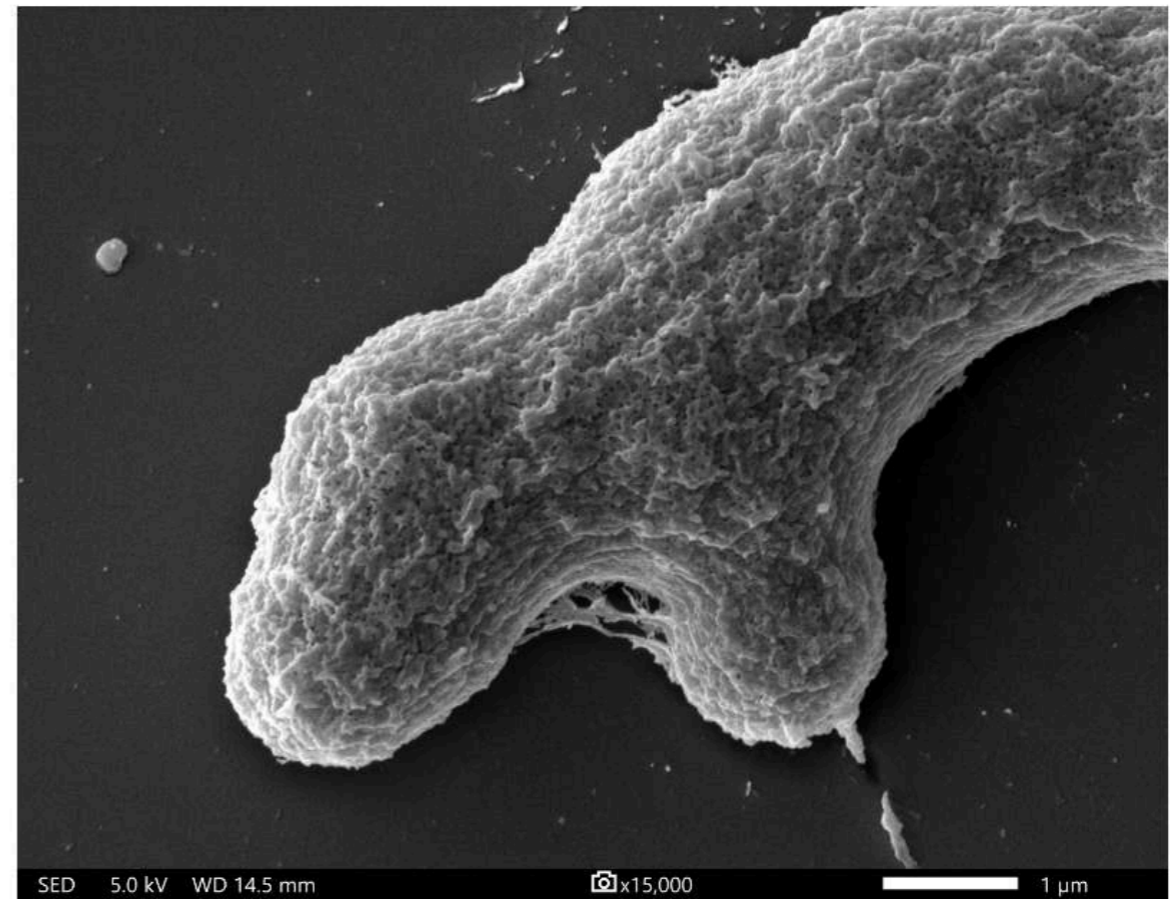
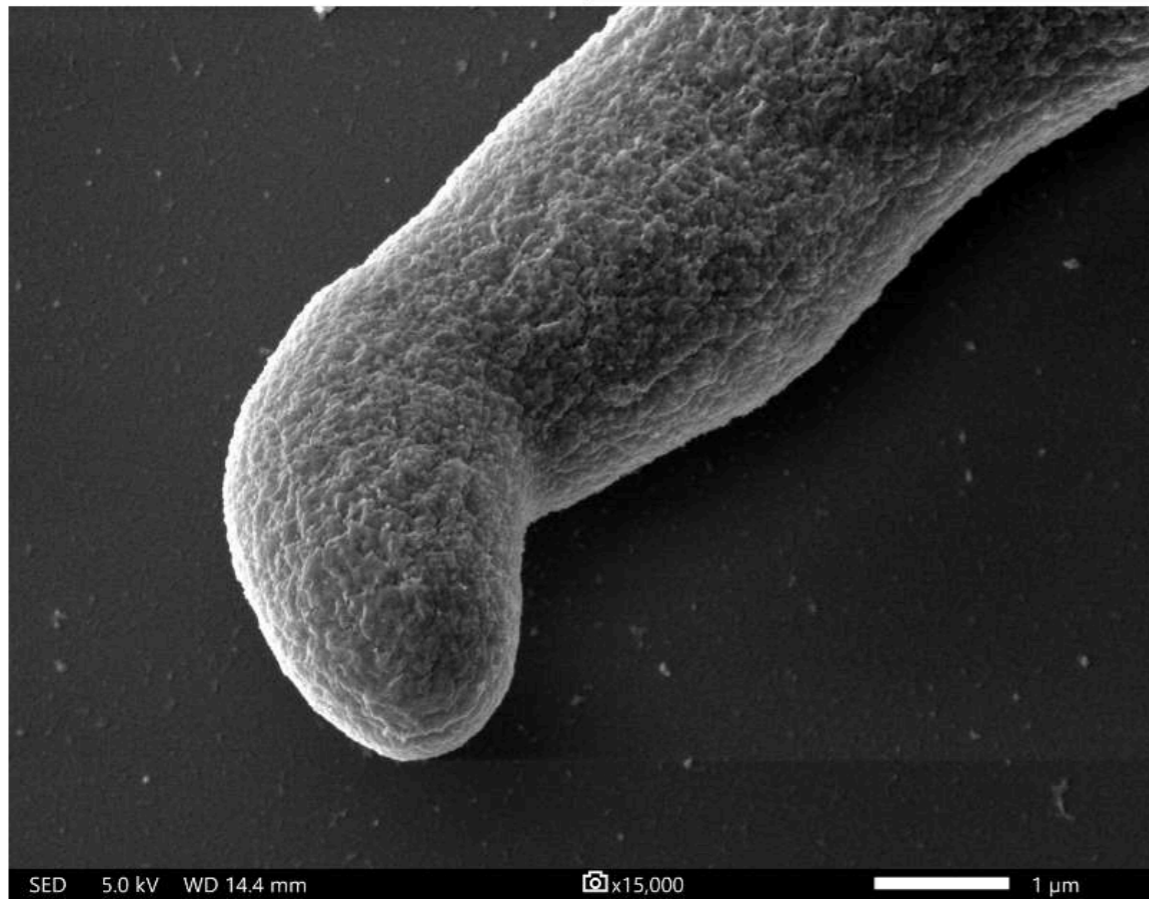
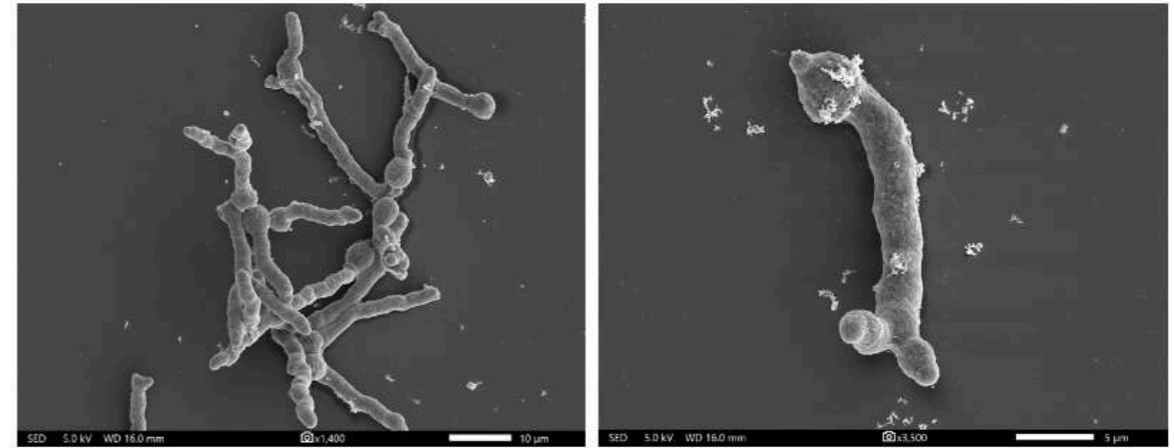
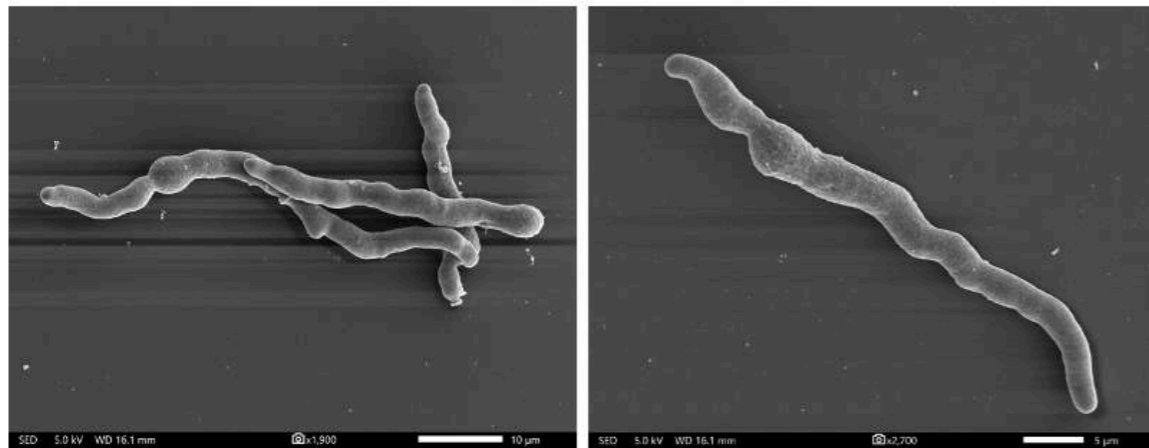




SP-D alters germ tube surface morphology

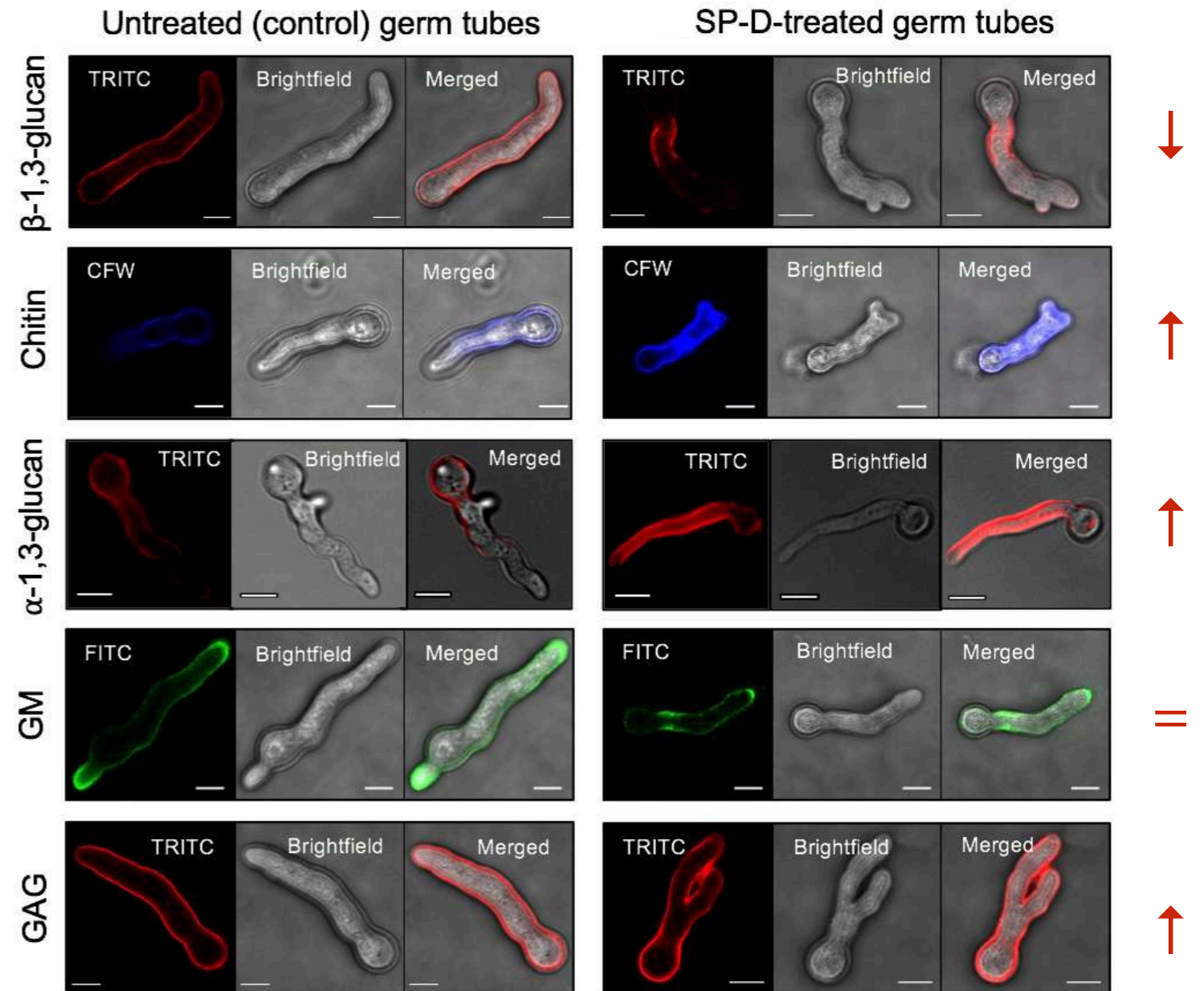
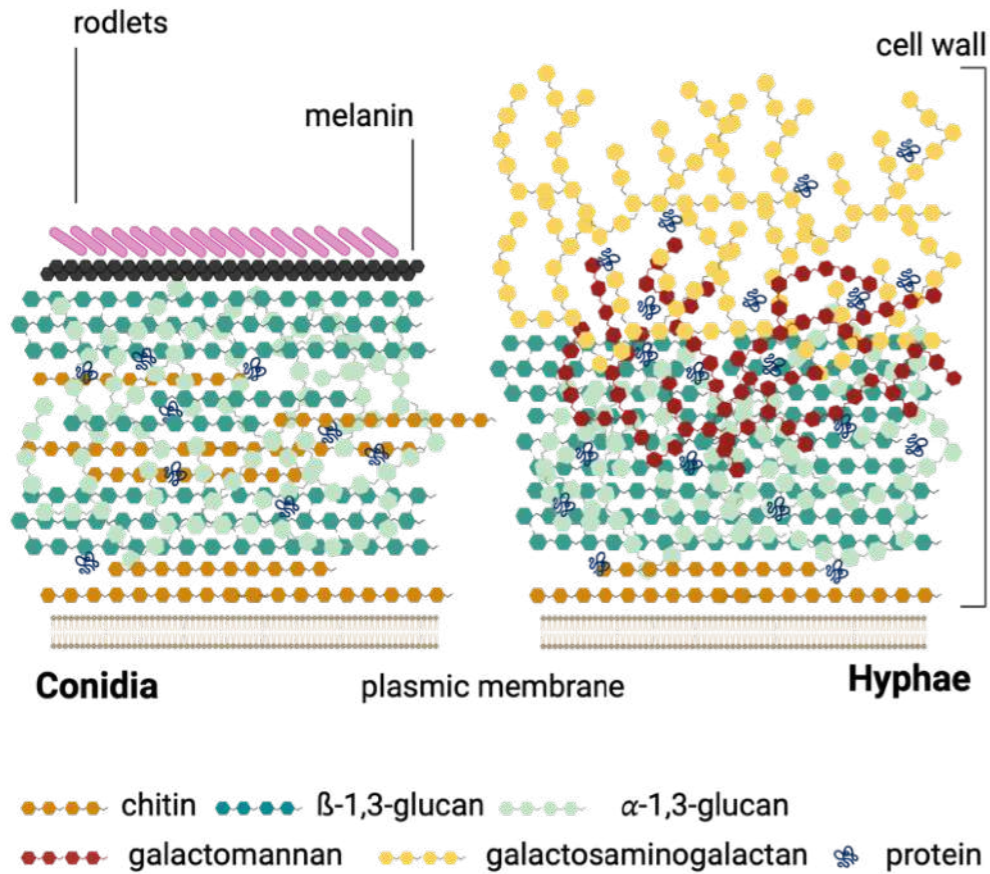
Untreated (control) germ tubes

SP-D-treated germ tubes

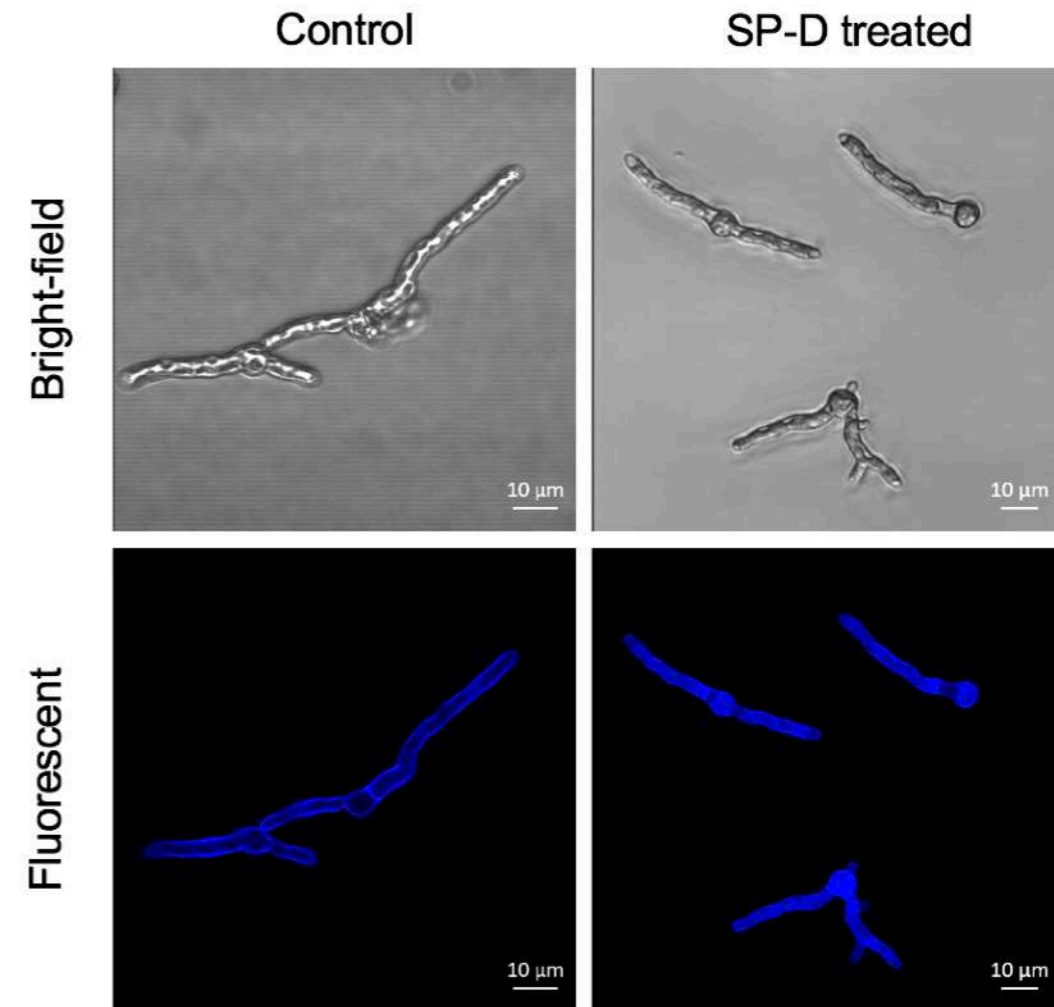
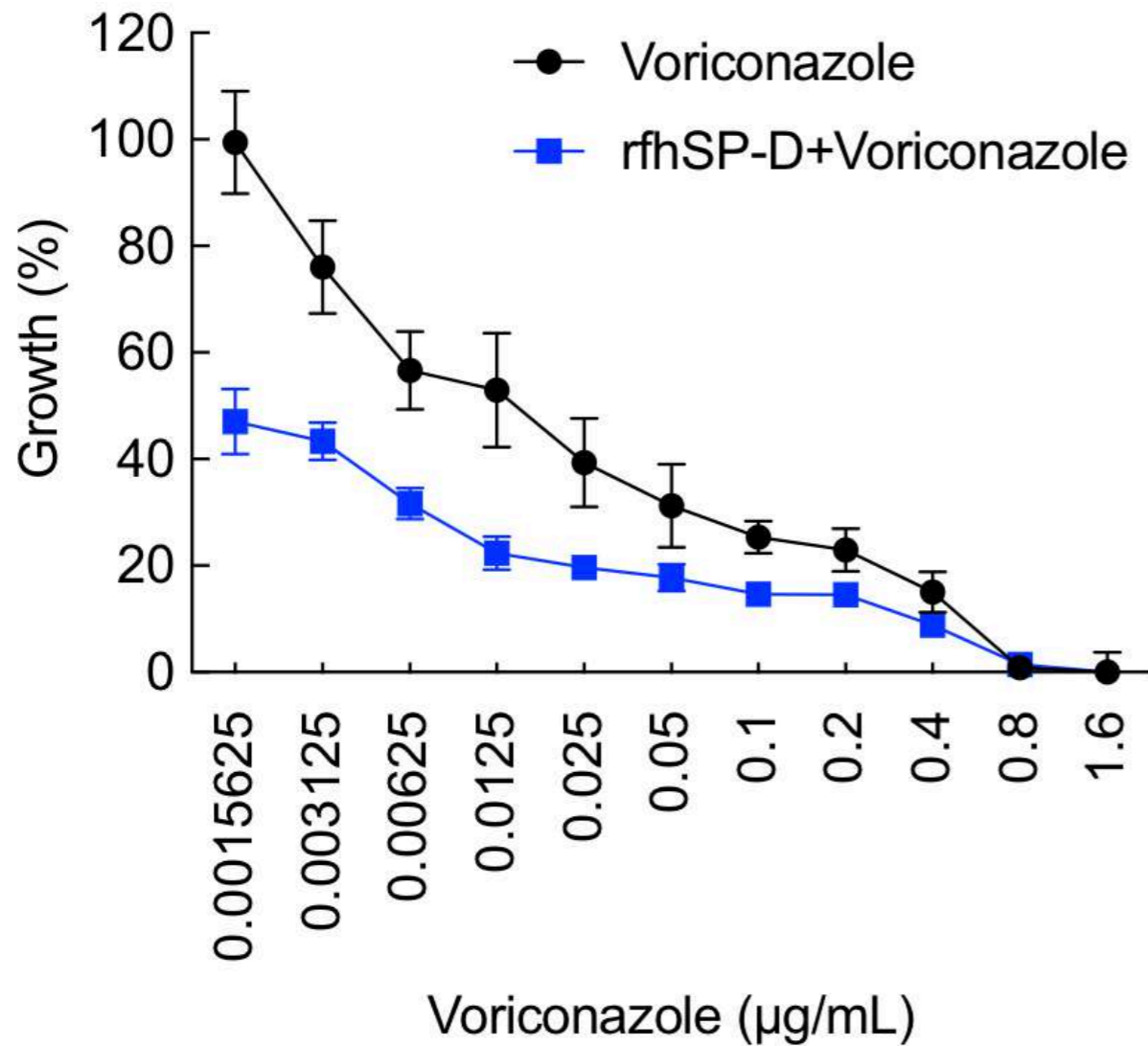




SP-D alters germ tube surface morphology and polysaccharide exposure



SP-D treated germlings are more susceptible to antifungal treatment



Calcofluor white penetrance

Thank you for your attention

Immunobiology of *Aspergillus*

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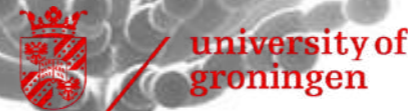
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