

GRK 1870
Bacterial Respiratory Infections

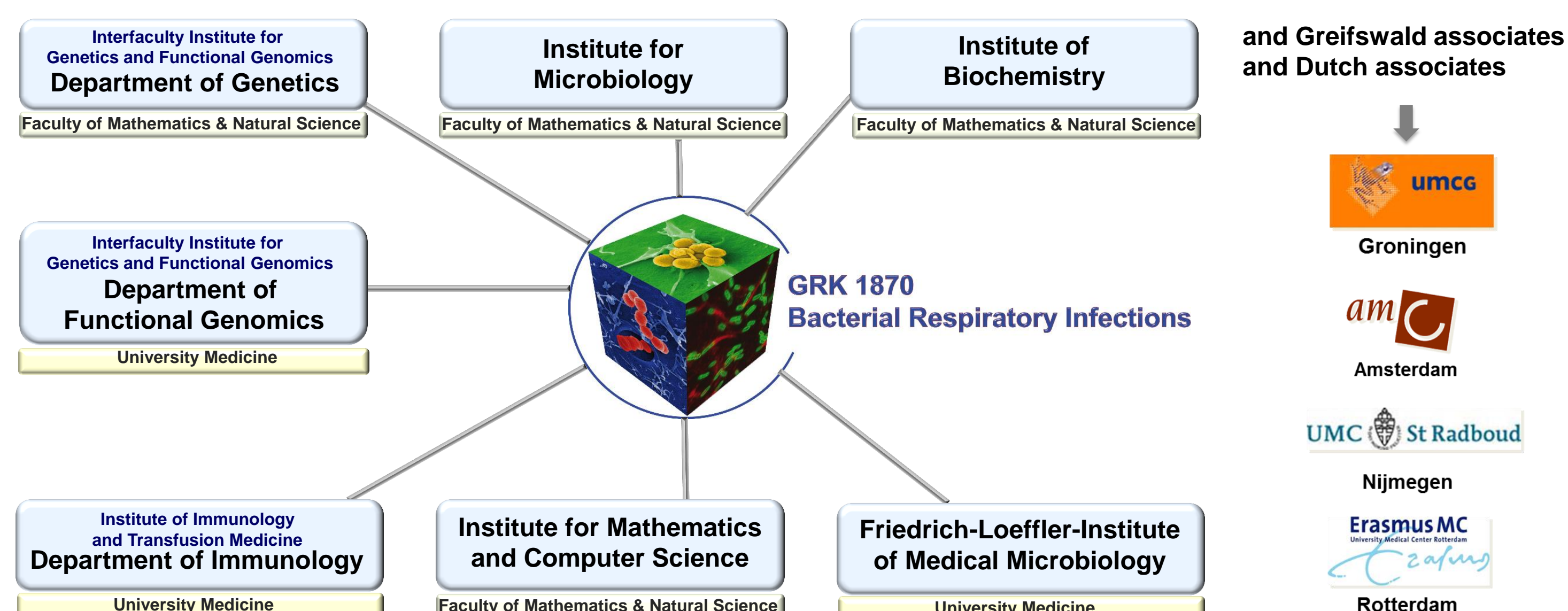
GRK 1870: „Bacterial Respiratory Infections – Common and Specific Mechanisms of Pathogen Adaptation and Immune Defence“

Spokesperson: Prof. Dr. rer. nat. Sven Hammerschmidt

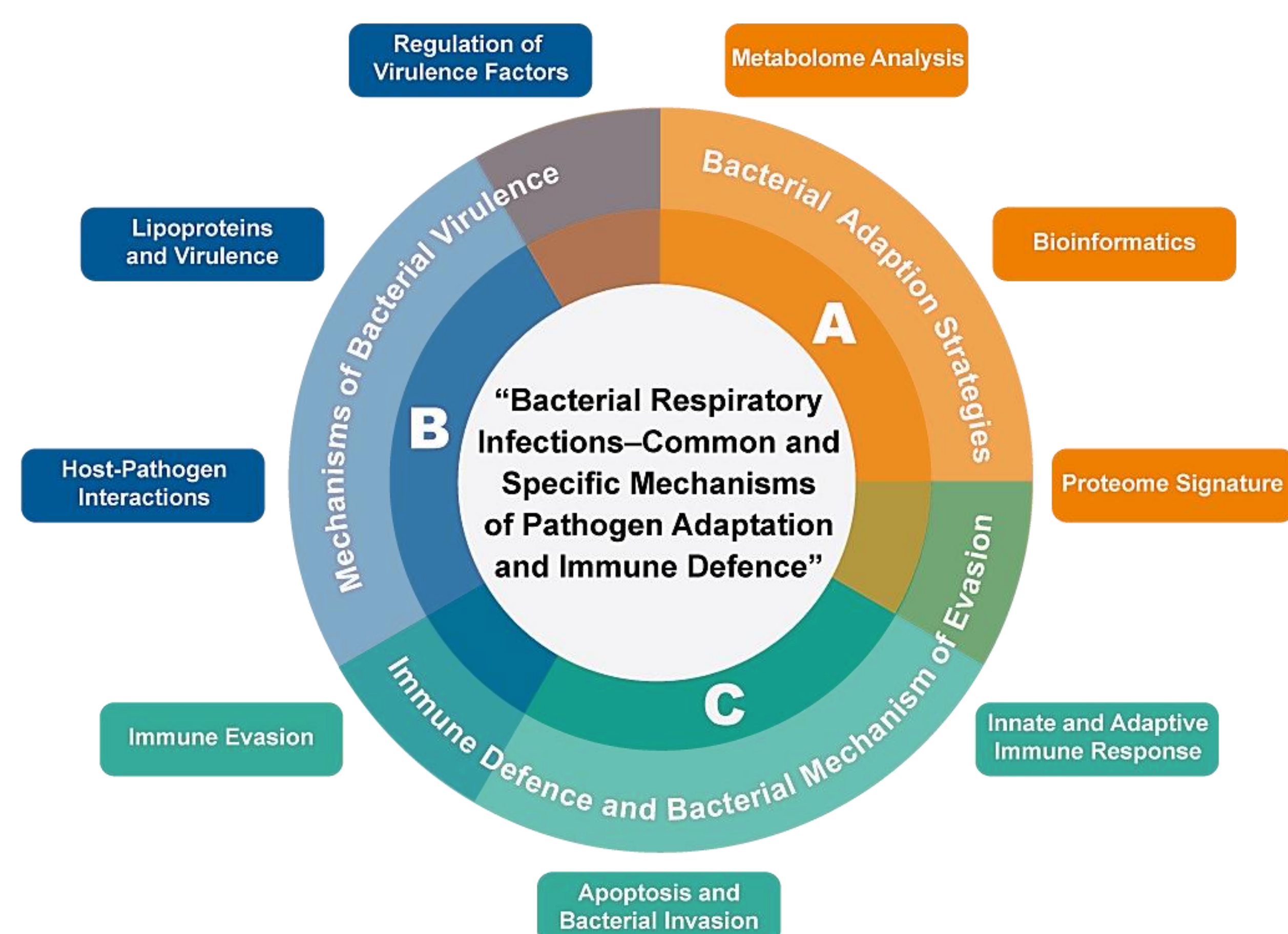
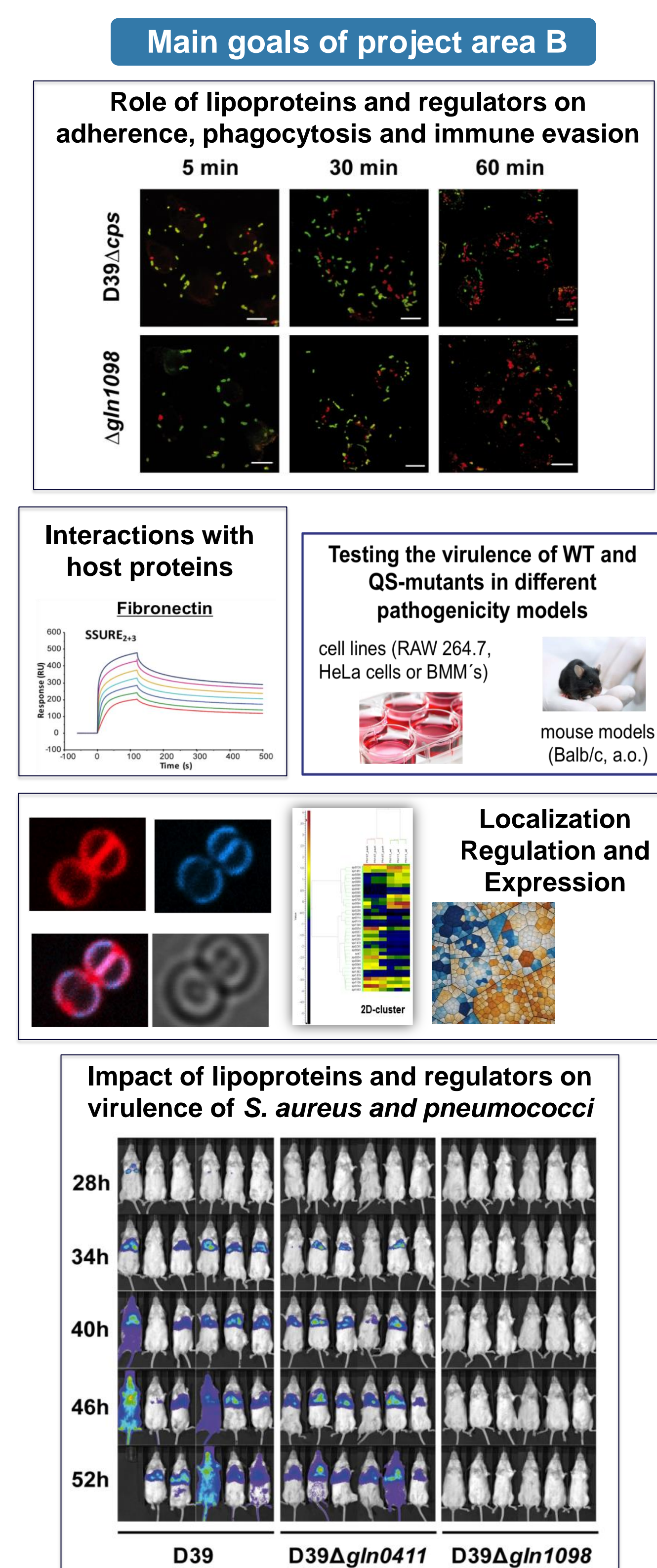
OVERVIEW

In the GRK 1870 *BacRes*, specialists in infection biology, microbiology, immunology, functional genomics and bioinformatics will study pathogenesis mechanisms of three multifaceted respiratory bacterial pathogens that pose serious treatment problems: *Burkholderia pseudomallei*, *Streptococcus pneumoniae* (pneumo-cocci) and *Staphylococcus aureus*. We assess the regulation and expression of virulence factors, explore OMICs signatures of bacteria and host cells during colonization and infection, determine structure-function relationships of surface-exposed lipoproteins and transporters, and study mechanisms of immune defence. Specific added value will be derived from comparing the three bacterial species in the same experimental systems, to identify shared or unique molecular mechanisms employed to meet the challenges of proliferating in a respiratory environment.

PARTICIPATING INSTITUTES AND DEPARTMENTS



RESEARCH PROGRAM



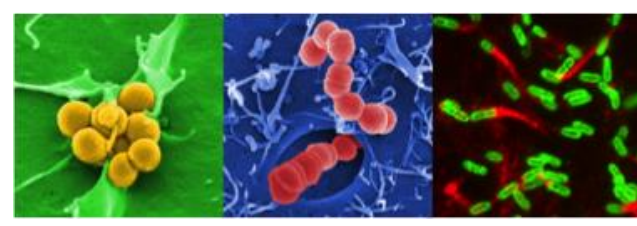
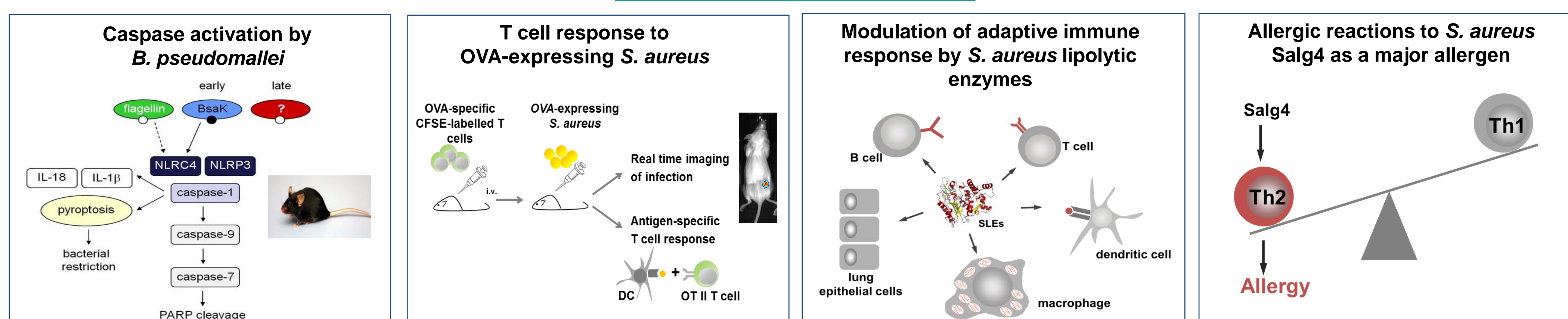
- Main goals of project area A
- Signatures of  under:
- infection-related stress conditions
 - different physiological conditions in *in vitro* liquid cultures (e.g. nutrient, iron limitations, anaerobic)
 - cell-culture based infections
 - simultaneous analysis of pathogen adaptation and host response – using primary cells and a complex *in vitro* cell culture system
 - in vivo* conditions in animal infections

Figure 1: Scheme of the three project areas of the GRK 1870 *BacRes* and their working topics.

Main goals of project area C



TEACHING PROGRAM

University of Greifswald

Graduate Academy of Greifswald



Figure 2: Organisation of the qualification concept of the GRK 1870 *BacRes*. 1GGSS: Greifswald Graduate School in Science – Fast Track PhD-program of the Faculty of Mathematics and Science.

The Research Training Group offers a structured teaching program of 100-120 hours per year including:

- Summer Schools/Retreats (annually)
- National and International Scientific Meetings
- Young Investigators Meetings
- Workshops (e.g. Good Academic Practice, Laboratory Safety (GenTG §15), Laboratory Animal Science (TierSchG §9), Statistics and Bioinformatics)
- Seminars (Colloquium of Microbiology and Infection, Journal Club, Method Seminar)
- Key Qualifications (Oral and Poster Presentations in English, Project Management, Career Planning and Networking, Courses in Standard Software Programs, One's Own Research Proposal, Academic Writing)

and optionally a participation in the Graduate Exchange Program (staying in one of the institutions of our Dutch associates) or working in the laboratories of our industrial collaboration partner bioMérieux.

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