

DISCOVERY OF NEW THERAPEUTIC TARGETS TO PREVENT SPONTANEOUS PRETERM BIRTH

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1 INTRODUCTION

Preterm birth is the delivery before 37 weeks of gestation. It affects **8% of births** in the UK and the target from the Department of Health is to reduce rates to 6% by 2025.

The **vaginal microbial composition** can influence pregnancy outcome. **Lactobacillus** are associated with **protection**. Whereas the absence of *Lactobacillus* and high diversity has been linked to adverse pregnancy outcomes such as preterm birth.



WHAT IS THE PROBLEM?

To **reduce preterm birth rates**, new preventive strategies are required. Currently, there is no treatment to target microbial-driven (infection) phenotype.

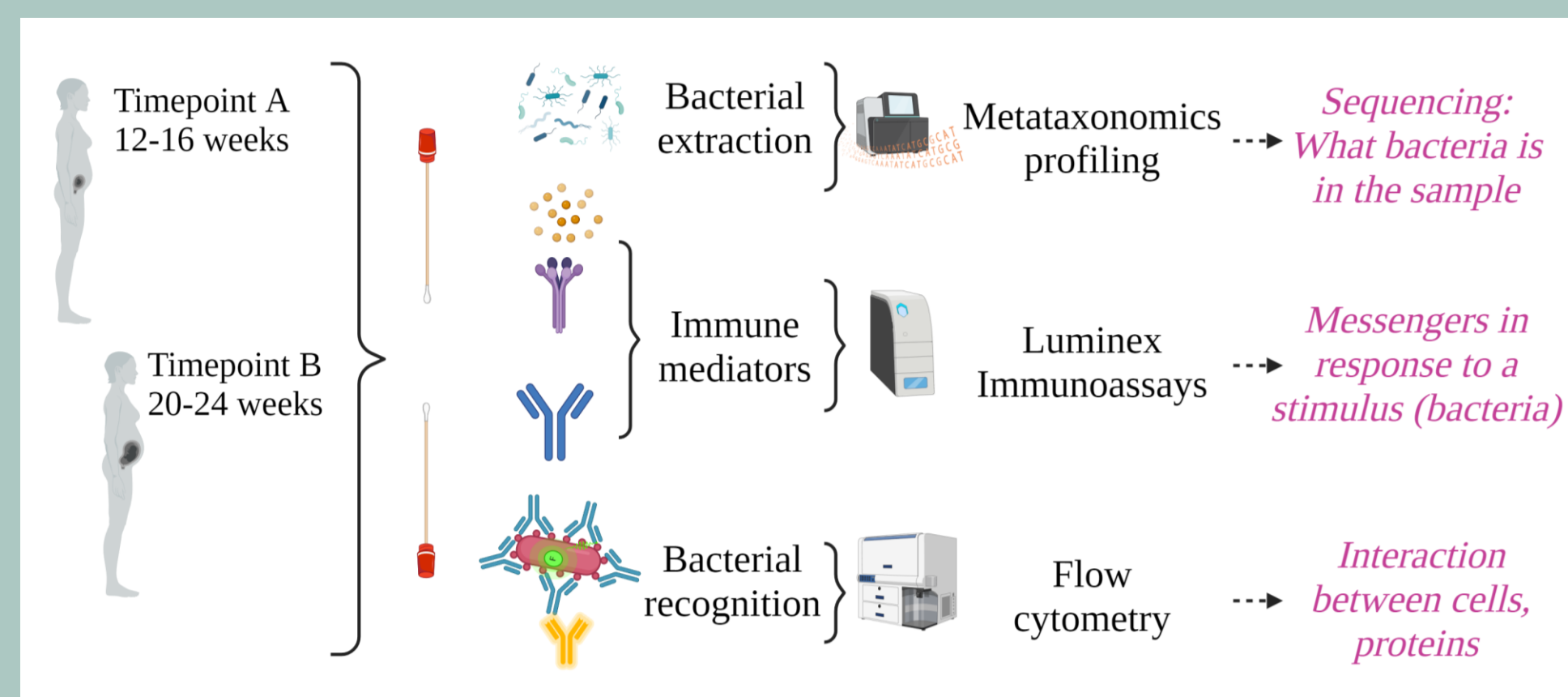
HOW ARE WE GOING TO DO IT?

This study seeks to determine the role of the **mother's immune response** in microbial-driven preterm birth in order to discover potential **new therapeutic targets**.

2 MATERIALS AND METHODS

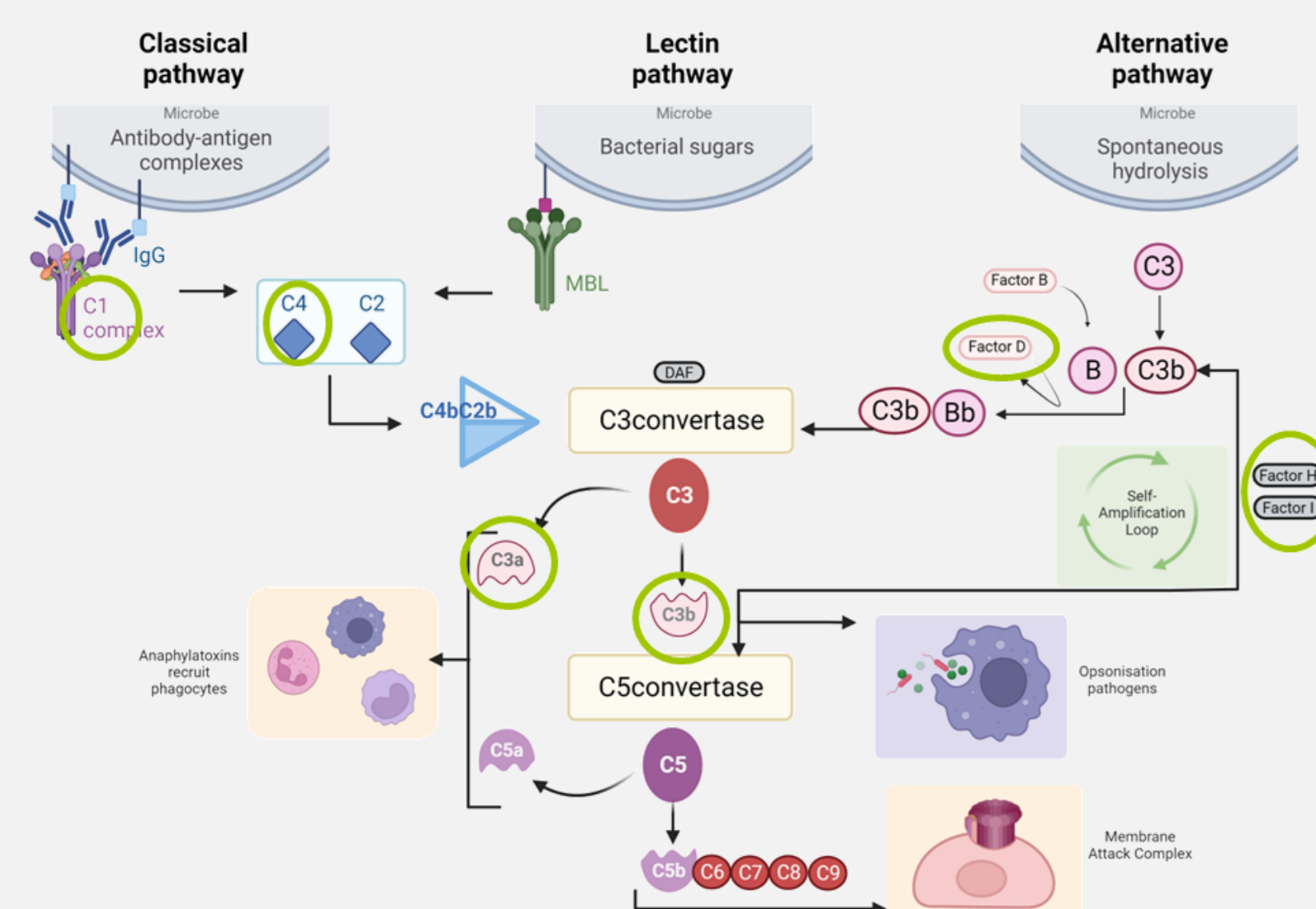
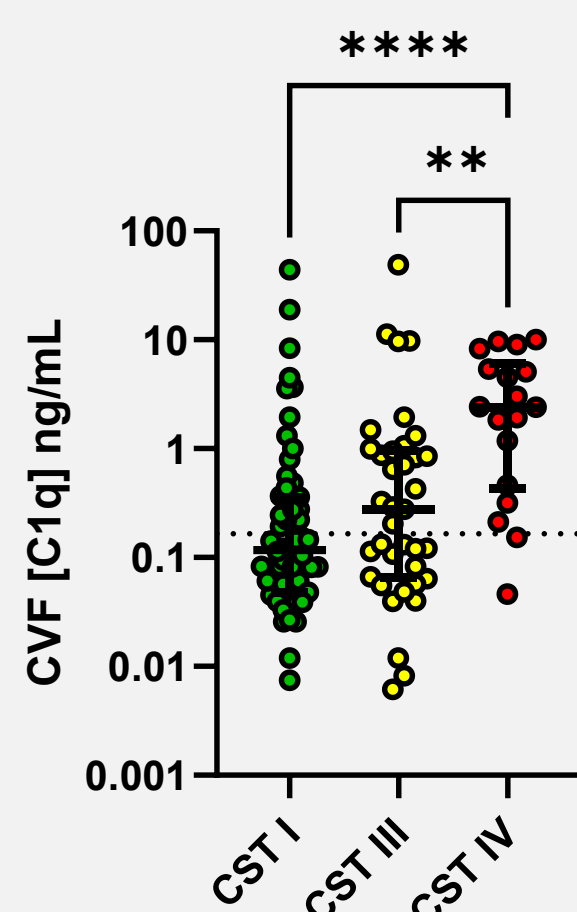
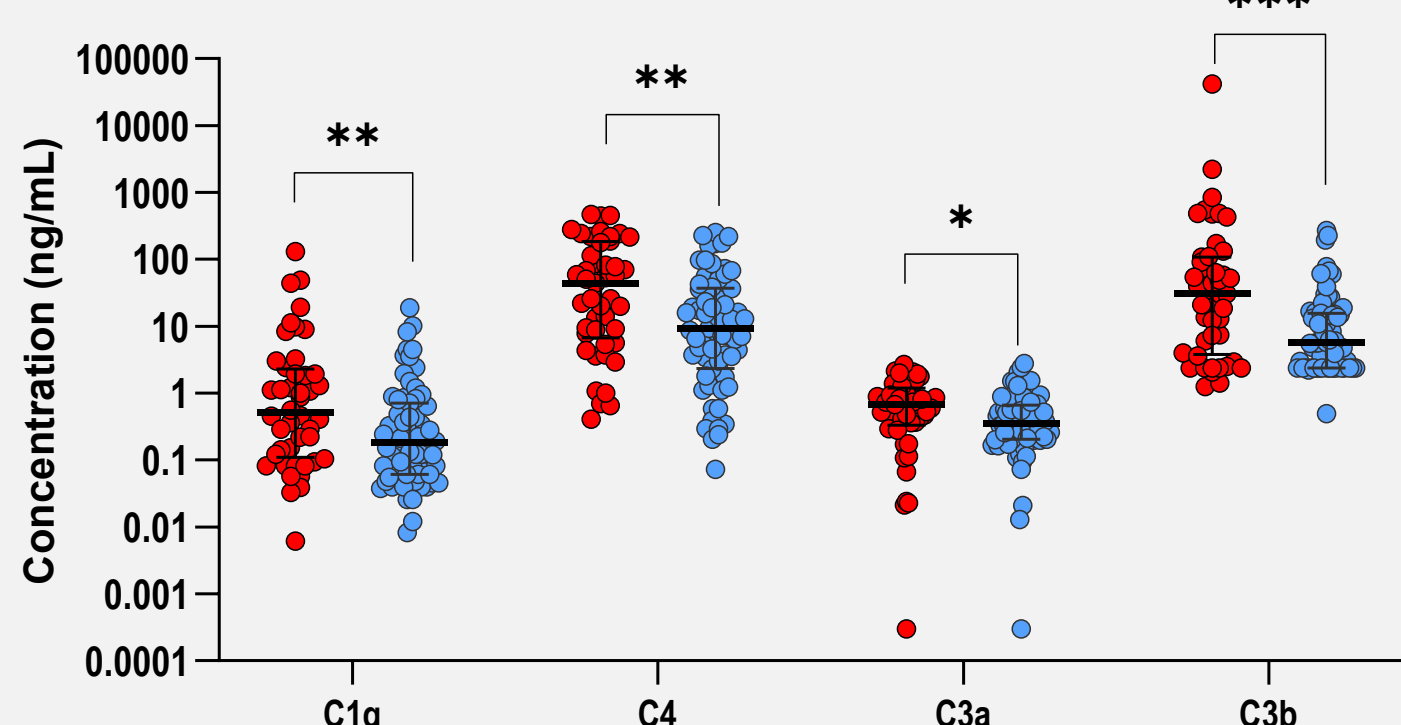
Cervicovaginal fluid was collected using swabs from pregnant women at high-risk of preterm birth attending preterm birth prevention clinics across four different London hospitals.

Samples were used to perform the experiments:

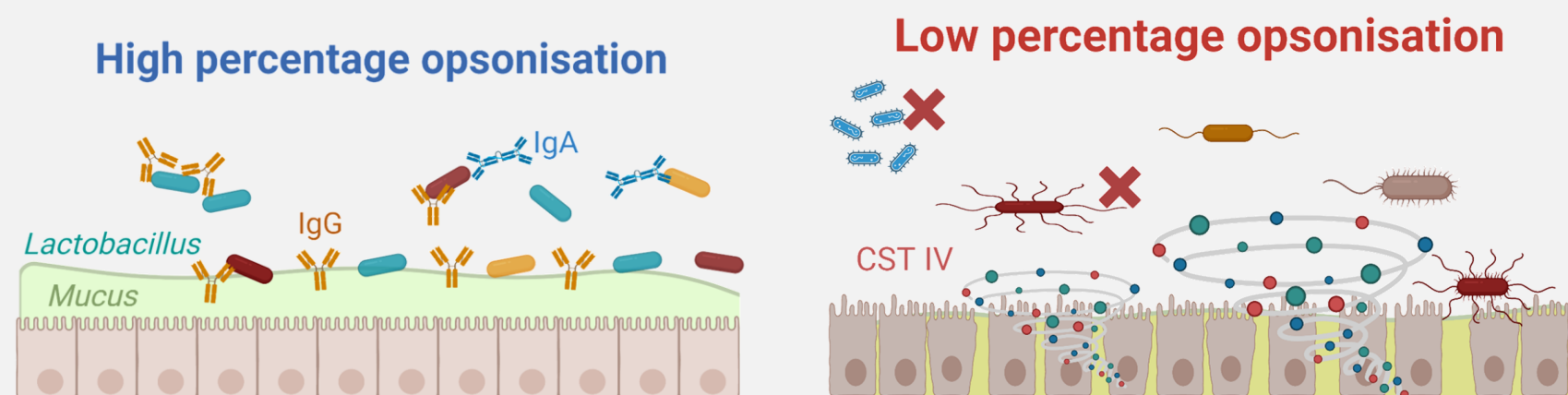
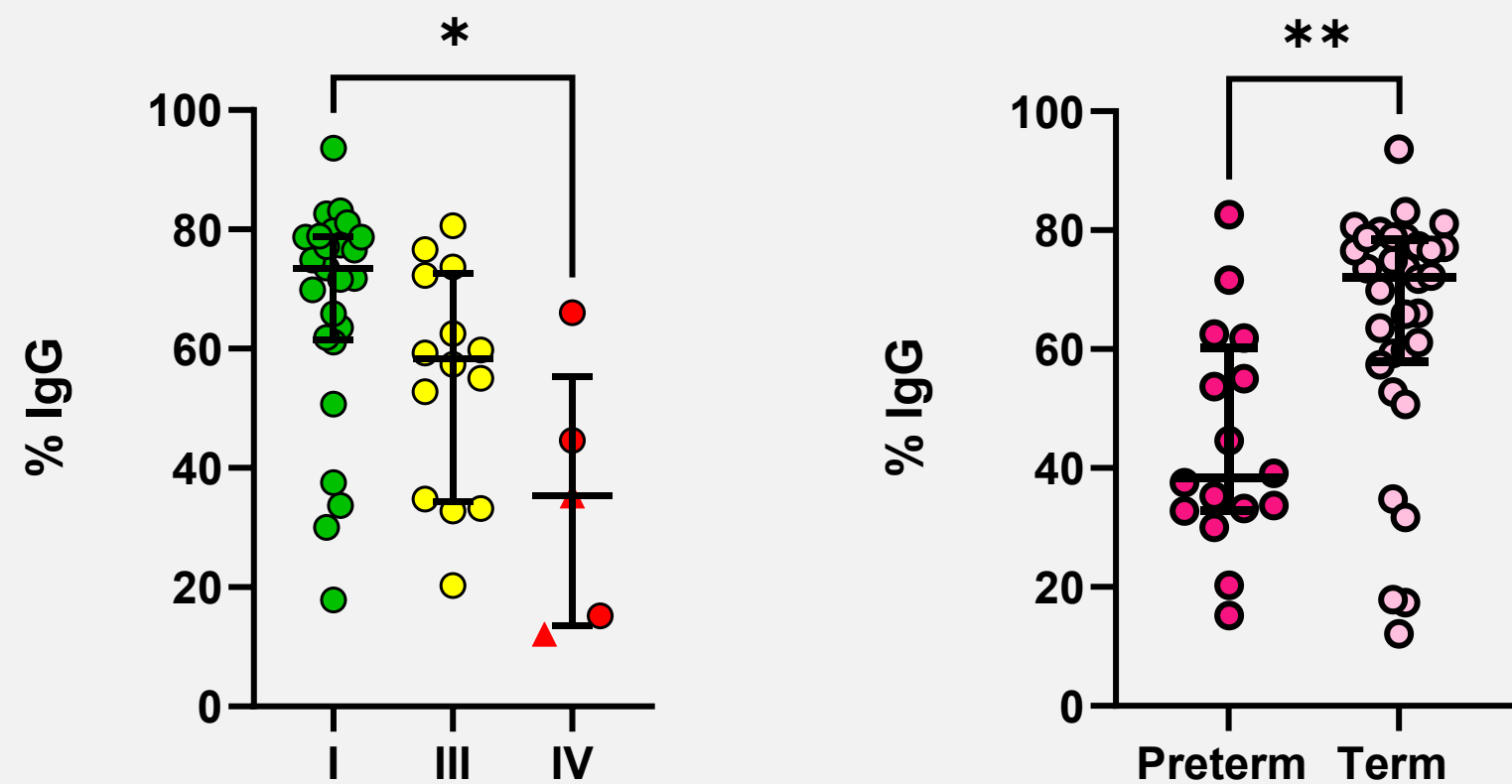


3 RESULTS

Women who experienced preterm birth and had adverse bacteria developed an **exaggerated immune response**, with activation of **complement proteins**. All the highlighted markers could be used as a **predictive test or therapeutic targets**.



Bacterial **opsonisation** (recognition of bacteria via antibodies) is decreased in women with adverse vaginal **microbial composition** and in those who delivered **preterm**.

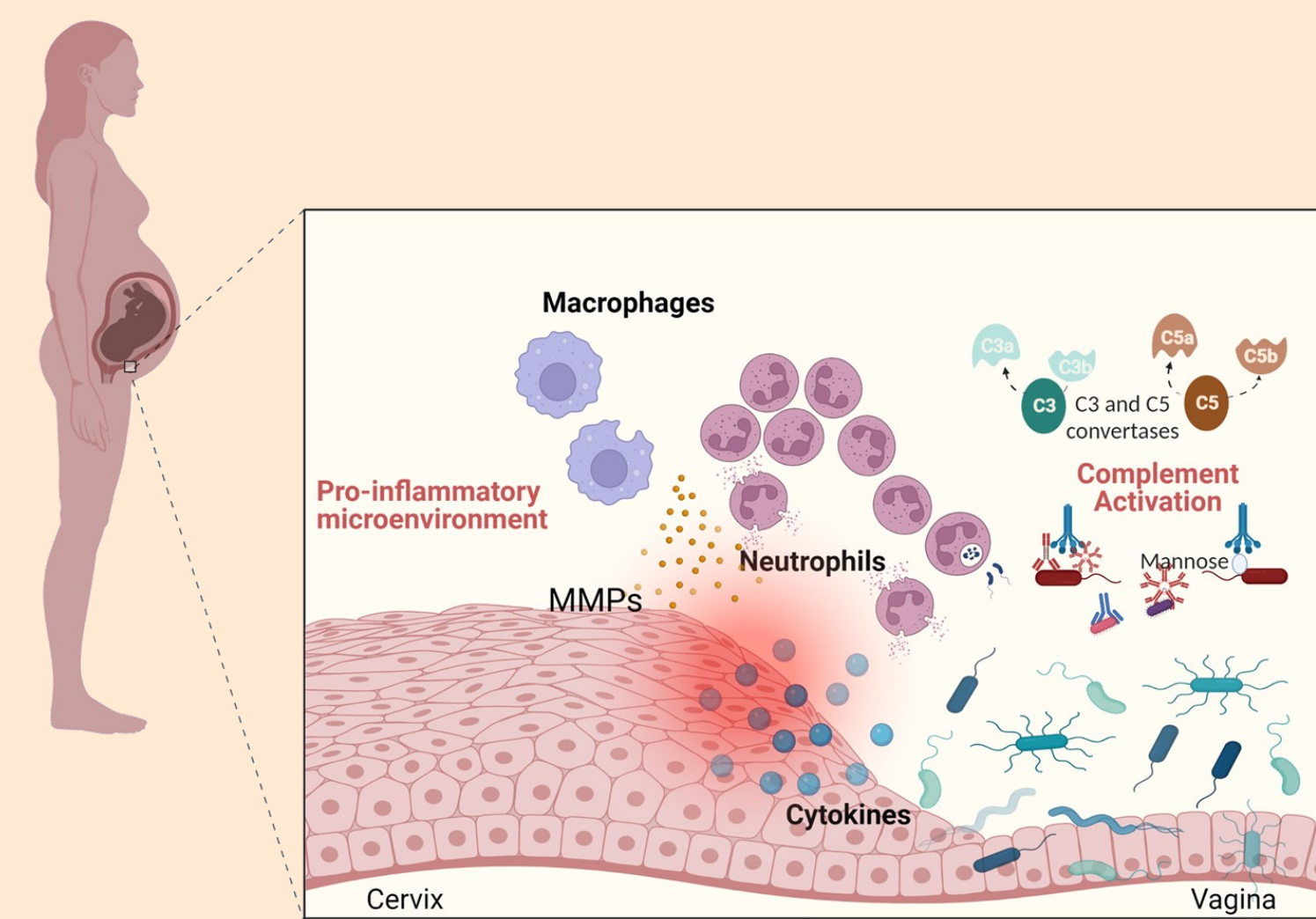


4 CONCLUSION

Microbial-driven preterm birth is associated with **activation of the complement system** immune response, and **lack of specific recognition** by antibodies.

These findings support the development of **new therapeutic strategies** for preterm birth prevention:

- live biotherapeutics (giving healthy bacteria into the vagina),
- repurposing complement therapeutics (currently in use for other health issues),
- vaccines



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