

EFFECT OF DIETARY SUGARS ON BACTERIAL-FUNGAL CROSS-KINGDOM INTERACTIONS AND BIOFILM FORMATION

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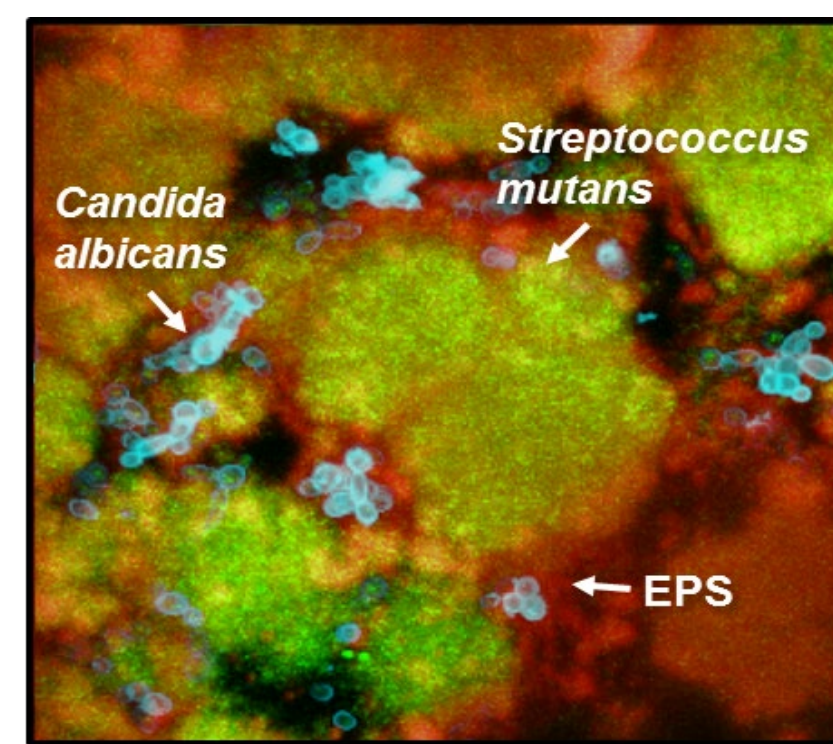
INTRODUCTION

- Early childhood caries (ECC): an aggressive form of dental caries that affects 1 in 4 children worldwide
- ECC is characterized by a heavy coinfection of *Streptococcus mutans* and *Candida albicans* that promotes plaque-biofilm growth and virulence
- Dietary sugars fuel the cariogenic biofilm formation but how they modulate the cross-kingdom interactions is unknown

Hypothesis: Dietary sugars modulate cross-kingdom biofilms formation by inducing bacterial-fungal co-aggregation and co-colonization

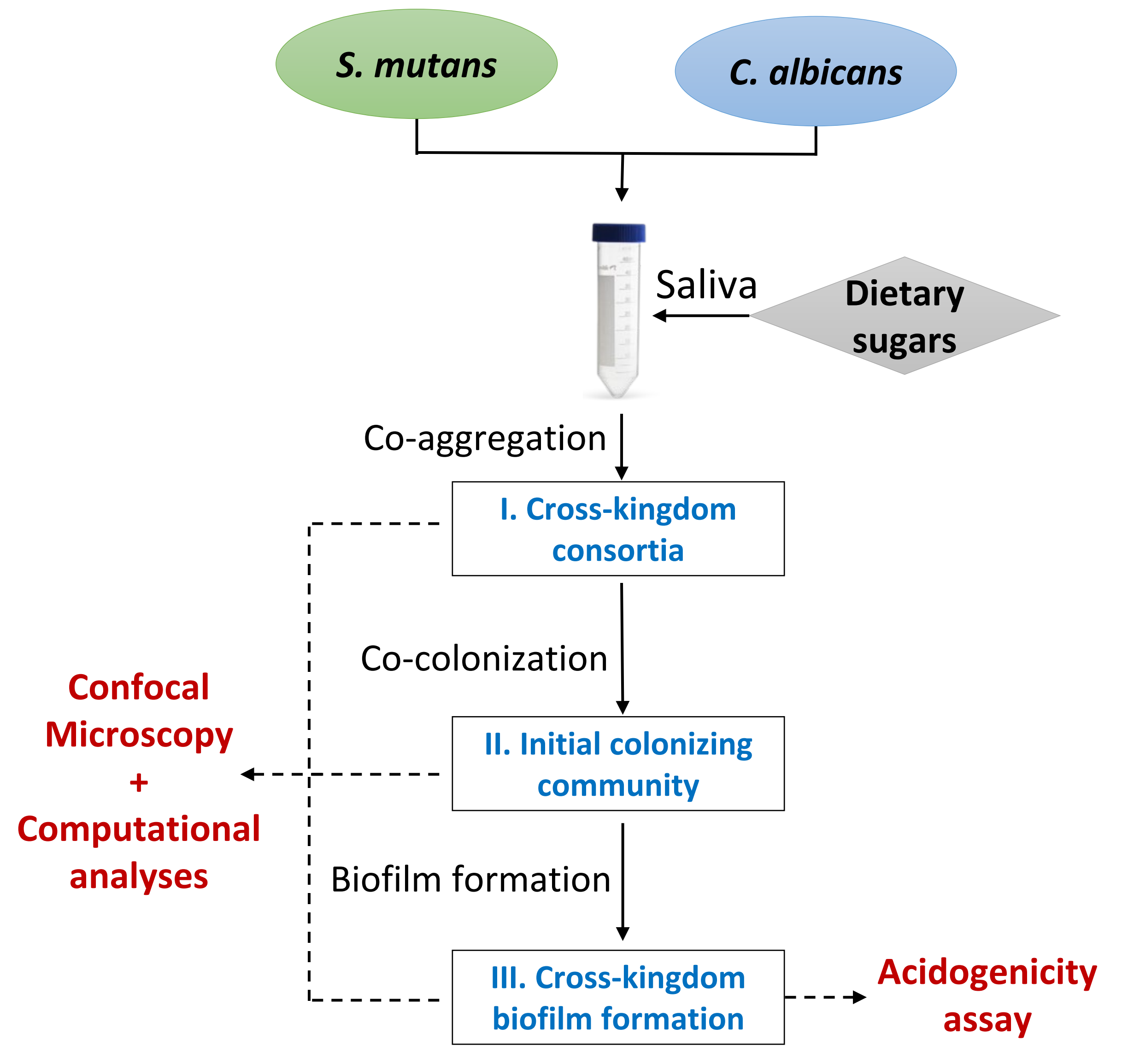


Early Childhood Caries (ECC)



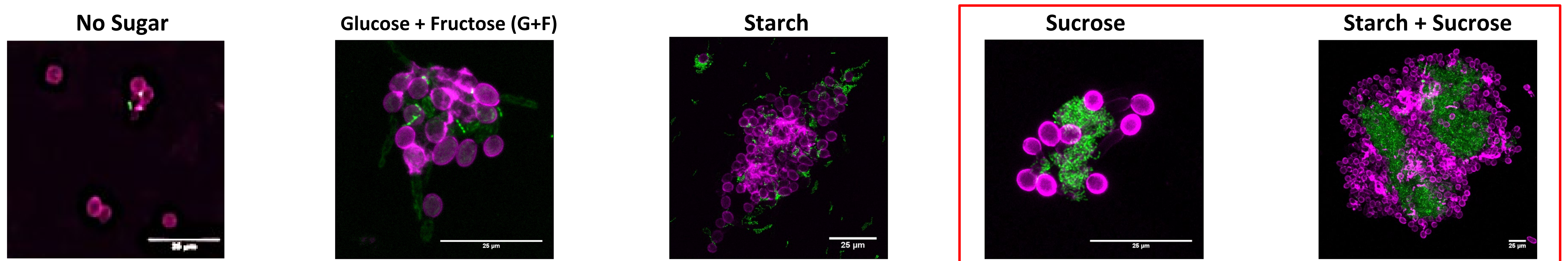
Cross-kingdom biofilm in ECC

METHODS & MATERIAL

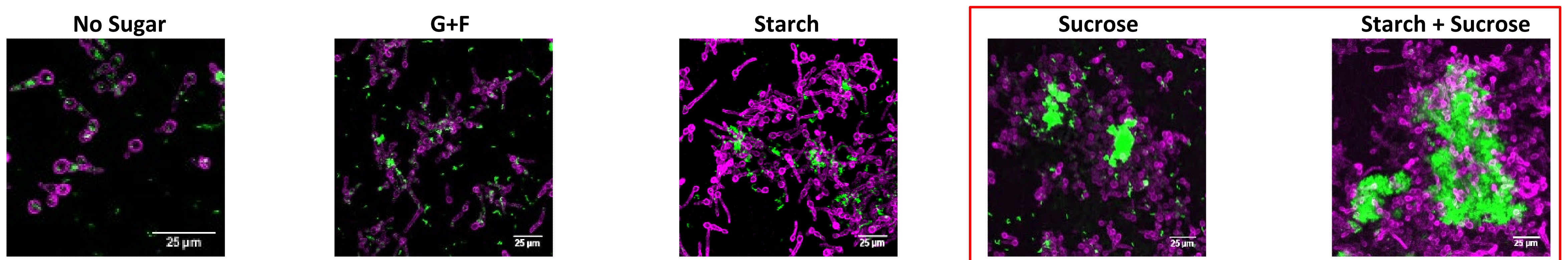


RESULTS

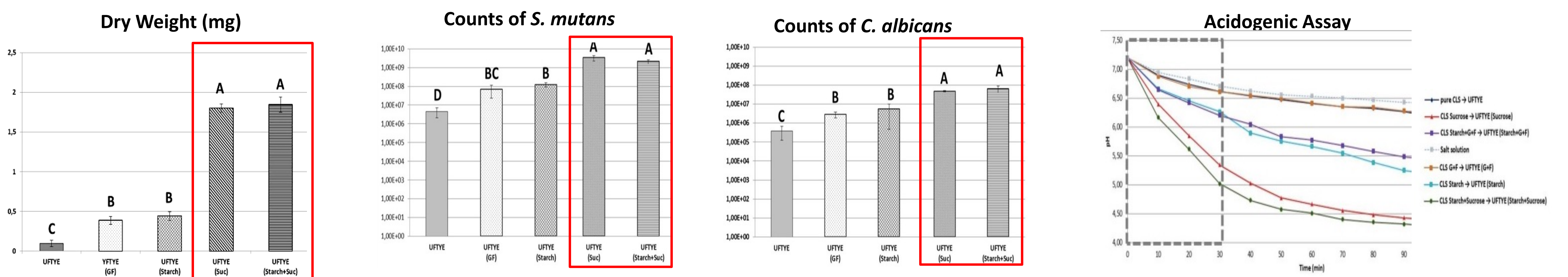
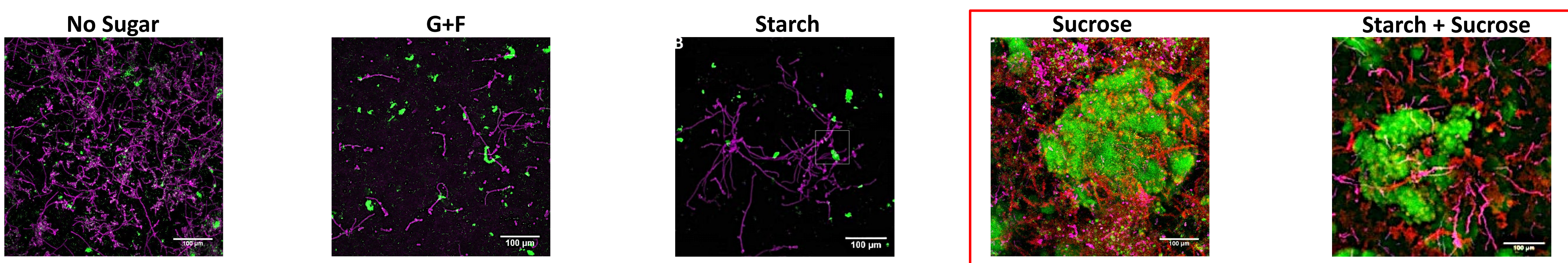
I. Cross-kingdom consortia: dietary sugars induce *S. mutans*-*C. albicans* co-aggregation



II. Initial colonizing community: dietary sugars facilitate co-aggregated colonization on tooth-mimetic surface



III. Cross-kingdom biofilm formation: dietary sugars modulate biofilm structure and biomass



CONCLUSION

1. Dietary sugars induce *S. mutans*-*C. albicans* coaggregate formation.
2. Sucrose enhances structural complexity and binding affinity of cross-kingdom coaggregates.
3. Sucrose promotes coaggregate derived biofilm accumulation and high acidogenic potential.

REFERENCES

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We thank Penn Dental Medicine and Koo Lab for the support of this project
 This research was funded by NIDCR Grant (DE025220) to H.K.