

# Accepted Manuscript

Engineering innervated secretory epithelial organoids by magnetic three-dimensional bioprinting for stimulating epithelial growth in salivary glands

Christabella Adine, Kiaw K. Ng, Sasitorn Rungarunlert, Glauco R. Souza, João N. Ferreira



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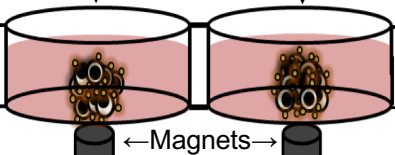
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## Magnetic 3D Bioprinting



Cell tagging with magnetic NPs

Dissociation  
+ Forced  
aggregation



Bioprinting in 37°C for 2h

3D spheroids

FGF10

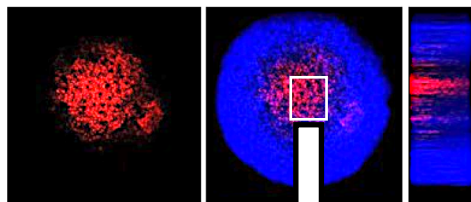
SG-like organoids

3D Spheroid Formation

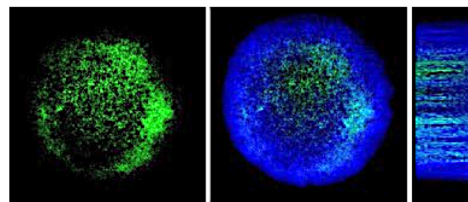
SG  
Differentiation

## SG-like organoids

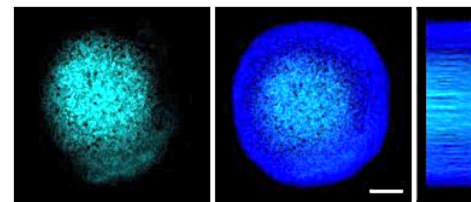
Secretory epithelia



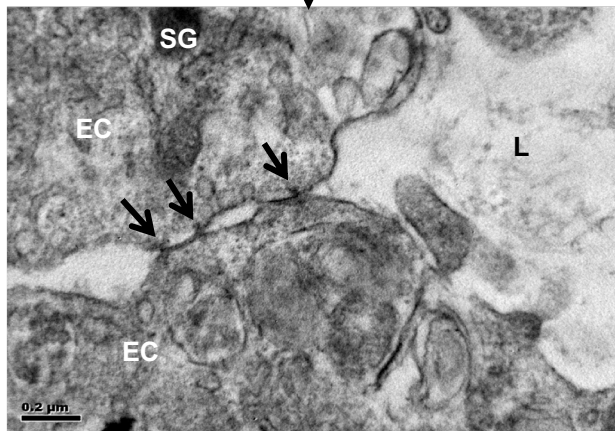
Myoepithelia



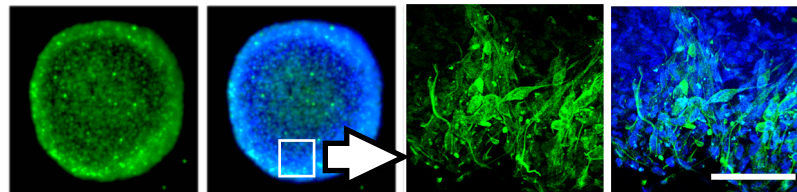
Ductal epithelia



50,000X



Nerves

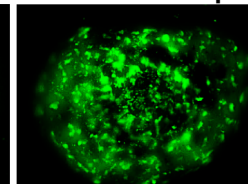
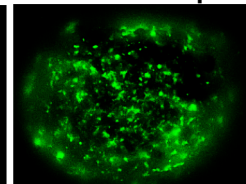
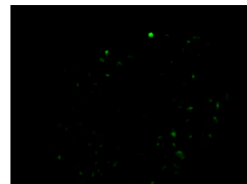


Calcium influx

Unstimulated

Carbachol 10μM

Carbachol 1000μM



t = 0 sec

t = 25 sec

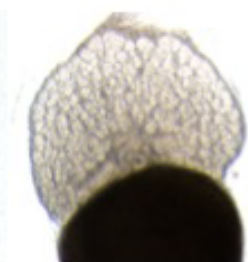
t = 300 sec

## Epithelial & neuronal growth upon organoid transplantation

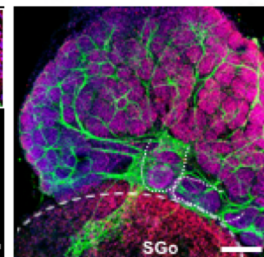
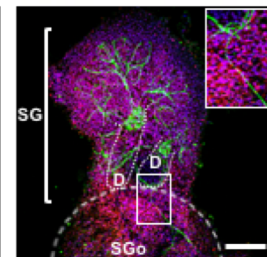
IR SG model

nonIR SG model

Bright field



Ki67 TUBB3 nuclei



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