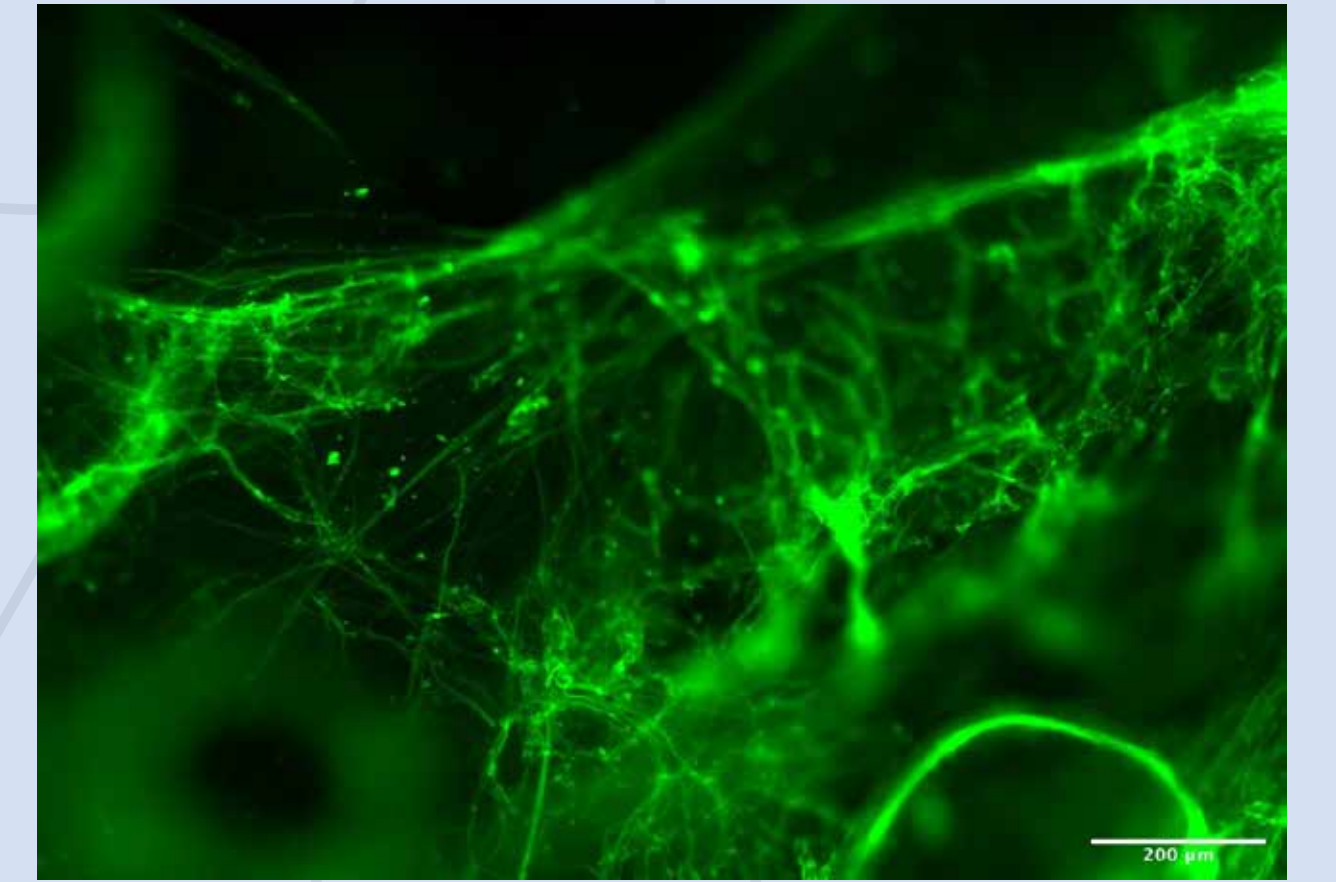


## 1. Aim of the study

Design of a 3D spider silk scaffold (BioSilk) to mimic the extracellular matrix (ECM) to support functional maturation of pancreatic aggregates derived from human embryonic stem cells for transplantation to diabetic patients or high-throughput drug screening.

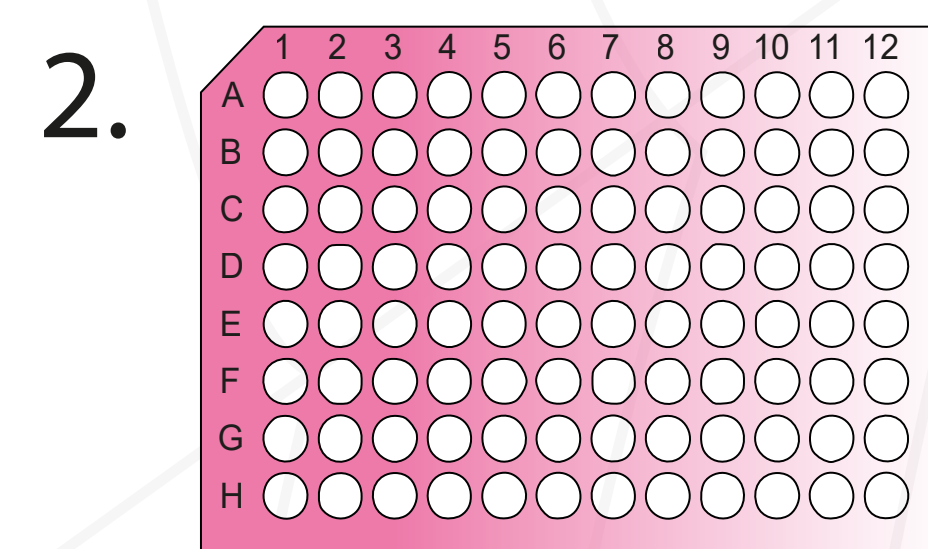
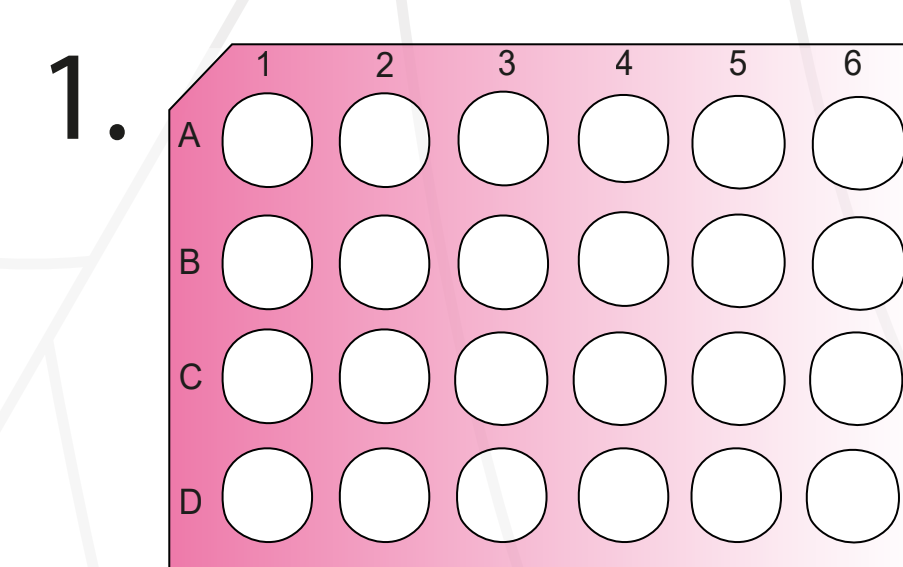
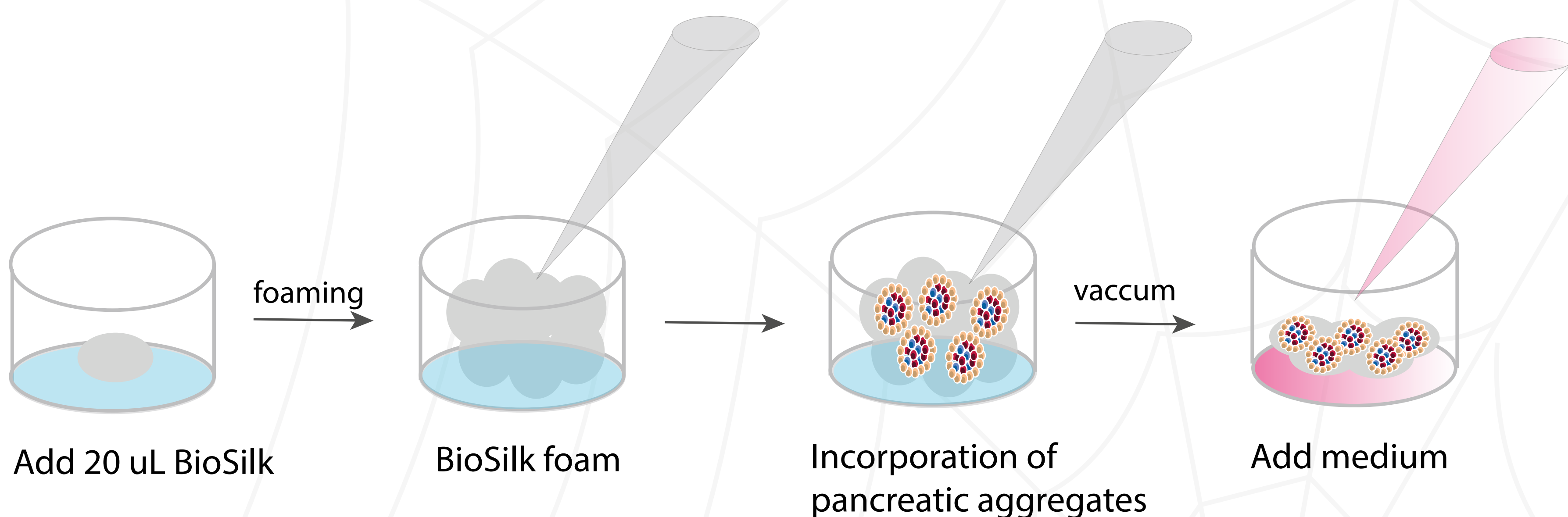
### Why use BioSilk?

BioSilk is a silk protein recombinantly produced in *E.coli* and functionalized with a fibronectin derived RGD motif to improve cell adhesion. It self-assembles into a stable 3D network to support pancreatic aggregates during maturation.



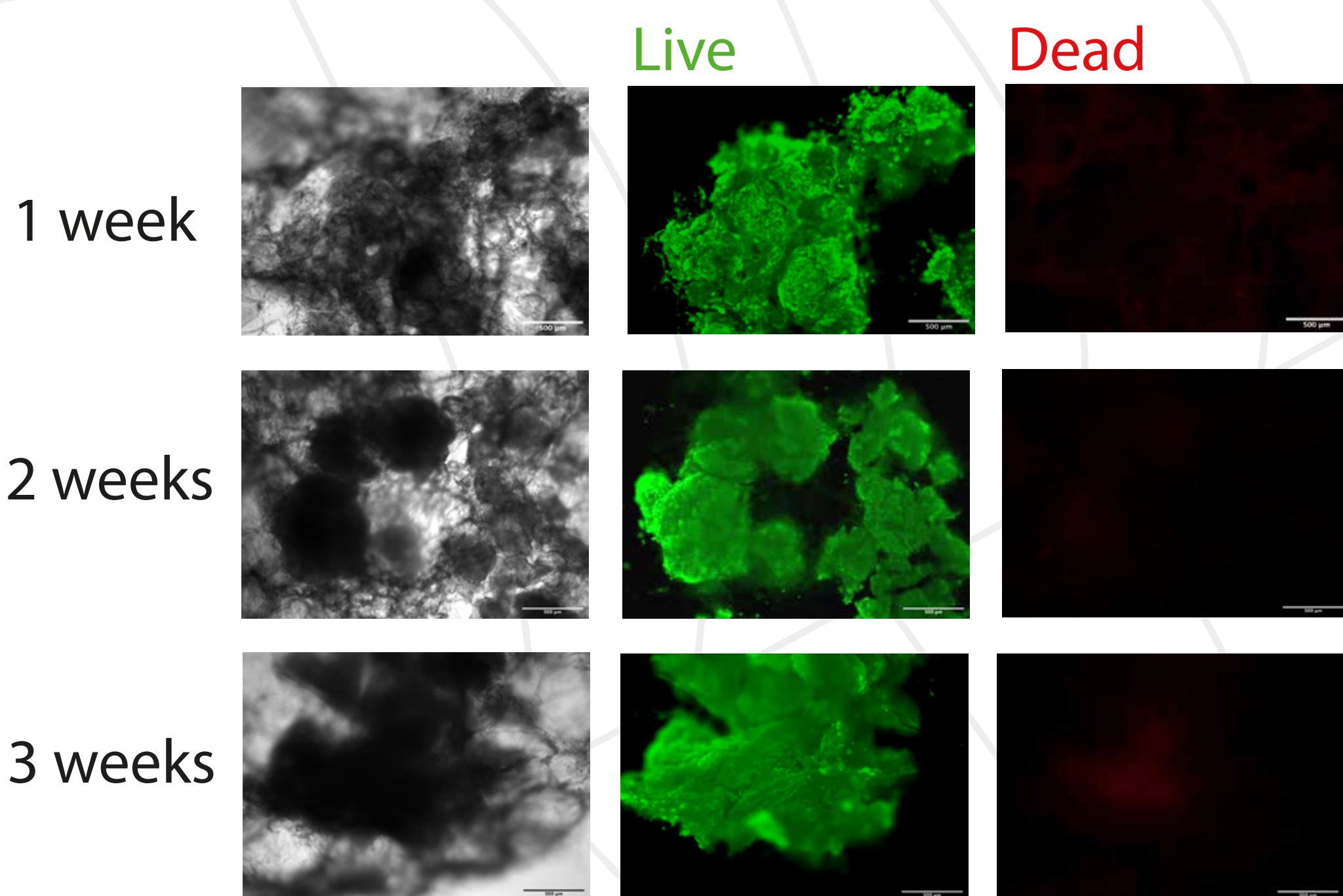
Foam network created with BioSilk labelled with Alexa-Fluor 488

## 2. Methods

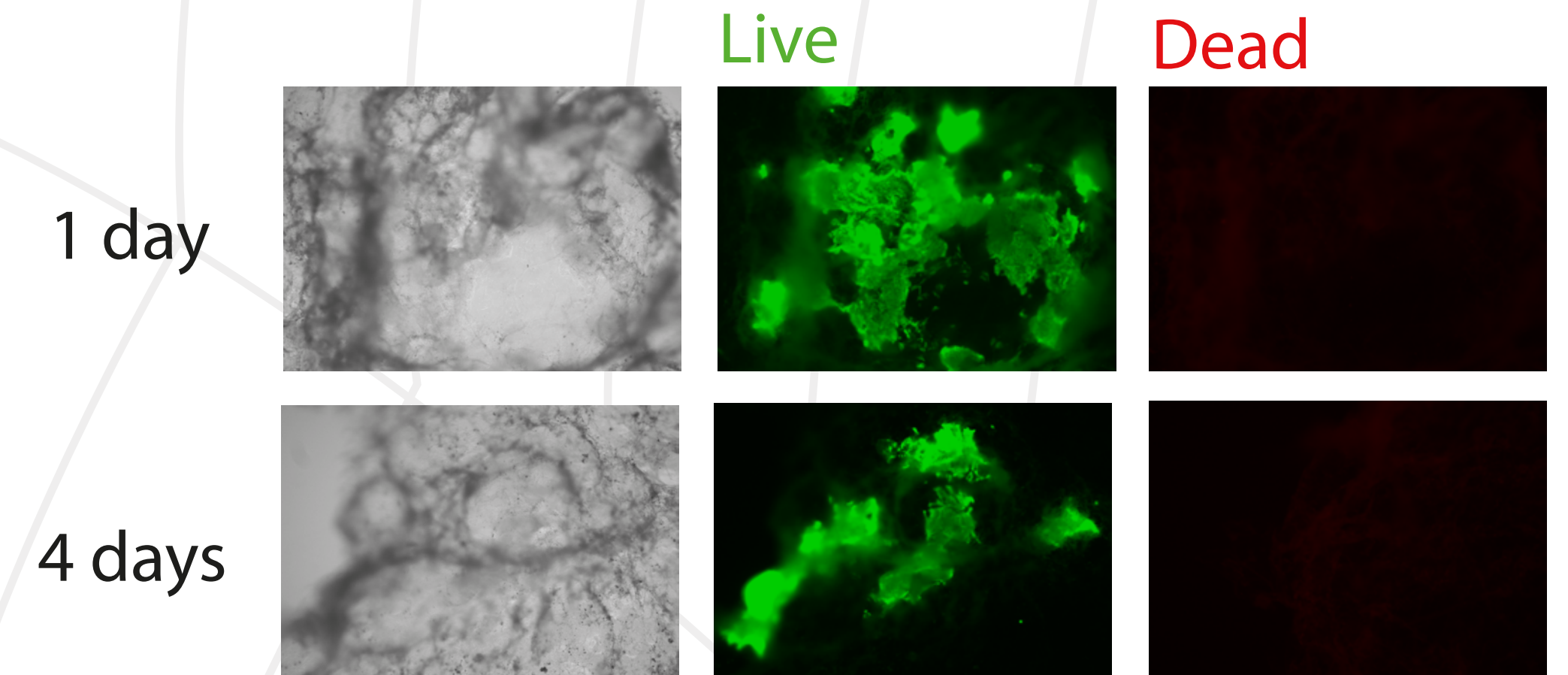


## 3. Results

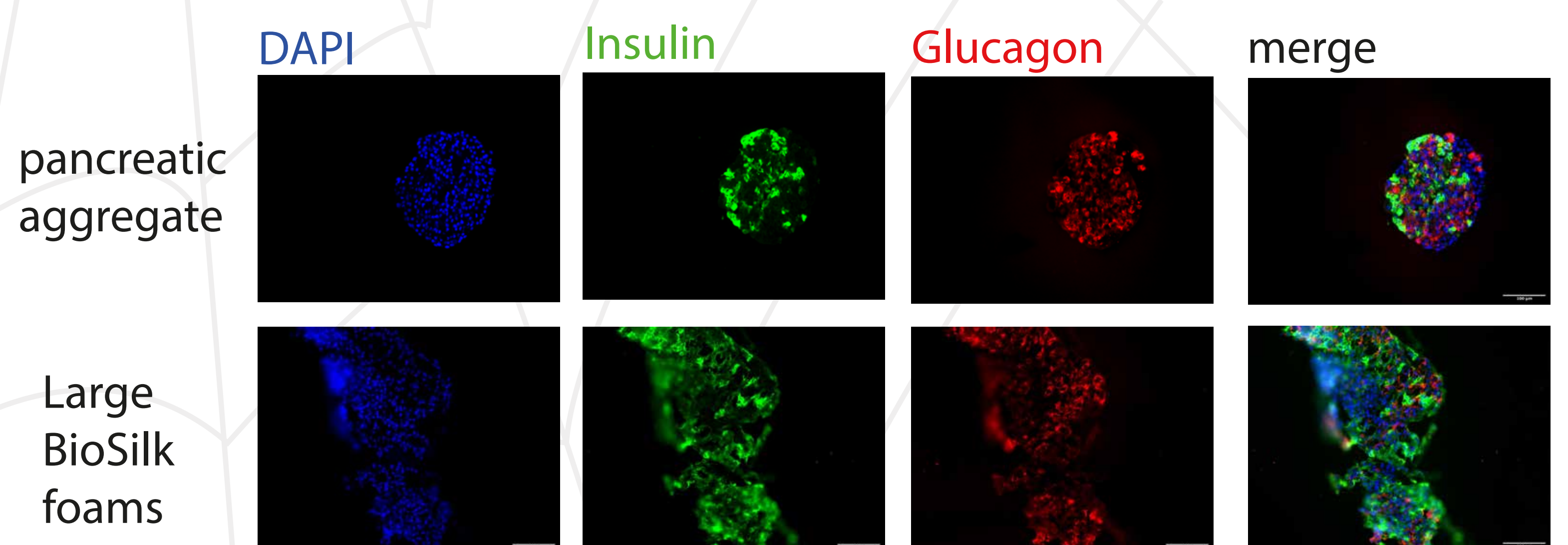
### Viability of large BioSilk networks



### Viability of small BioSilk networks



### Functionality in large BioSilk networks after 3 weeks



### Viability of pancreatic aggregates



## 4. Conclusions

Pancreatic aggregates incorporated in BioSilk networks remain viable and produce insulin and glucagon over 3 weeks of cultivation. Both foam sizes could be used for multiple applications e.g. the large BioSilk format for transplantation to diabetic patients and the small BioSilk format (96 well) for high-throughput drug testing.