



## IN VIVO-LIKE MORPHOLOGY OF ADIPOCYTES

### INTRODUCTION

Adipocytes have a characteristic round morphology *in vivo*, due to the production of one large lipid vesicles, created by lipogenesis (1). In conventional cell culture, adipocytes cannot acquire this physiological morphology.

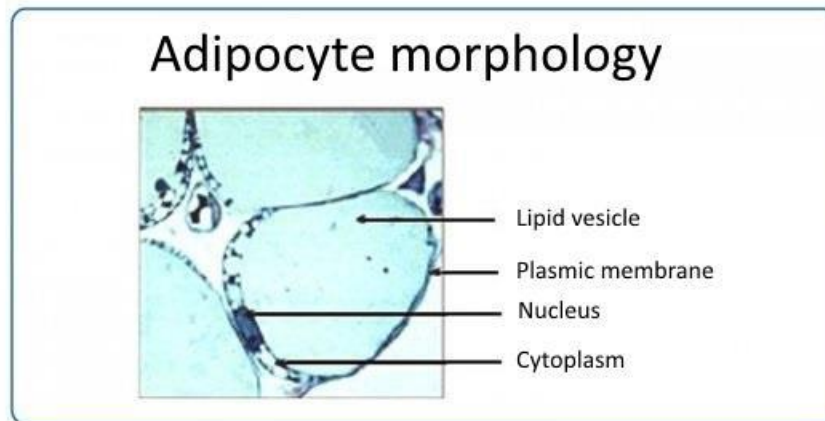


Figure 1: *In vivo* adipocyte morphology (Source: <http://biologiedelapeau.fr/spip.php?article28>)

### Materials required

- Preadipocytes 3T3-L1 are derived from mouse embryos and are a widely used model for adipocyte study
- HWP are subcutaneous cryopreserved cells, isolated from different healthy adult tissues.
- Brightfield microscopy

### Hydrosccaffold properties

Translucent and porous

### Method

- Pictures were taken by phase contrast microscopy and scanning electron microscopy
- Image analysis to quantify the size of cell aggregates



## RESULTS

The morphology of adipocytes grown over time in BIOMIMESYS® *Adipose tissue* and traditional culture has been studied.

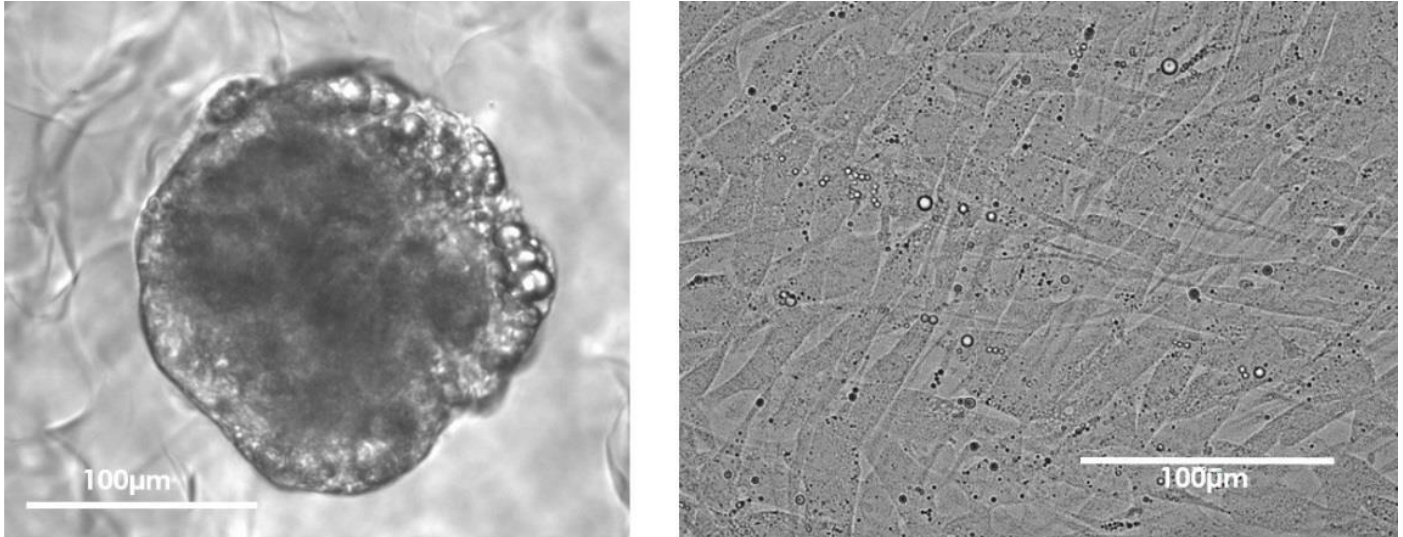


Figure 2: Preadipocyte culture in BIOMIMESYS® *Adipose tissue* (left panel) and in 2D (right panel) at day 7

Preadipocytes cultured in BIOMIMESYS® *Adipose tissue* are morphologically closer to mature adipocytes *in vivo*, whereas adipocytes in 2D culture exhibit a fibroblastic appearance. This morphological characteristic of adipocytes shows the establishment of their principal function - fat accumulation - resulting in the presence of vesicles.

In BIOMIMESYS® Hydro scaffold™, adipocytes form aggregates which increase in size over time.

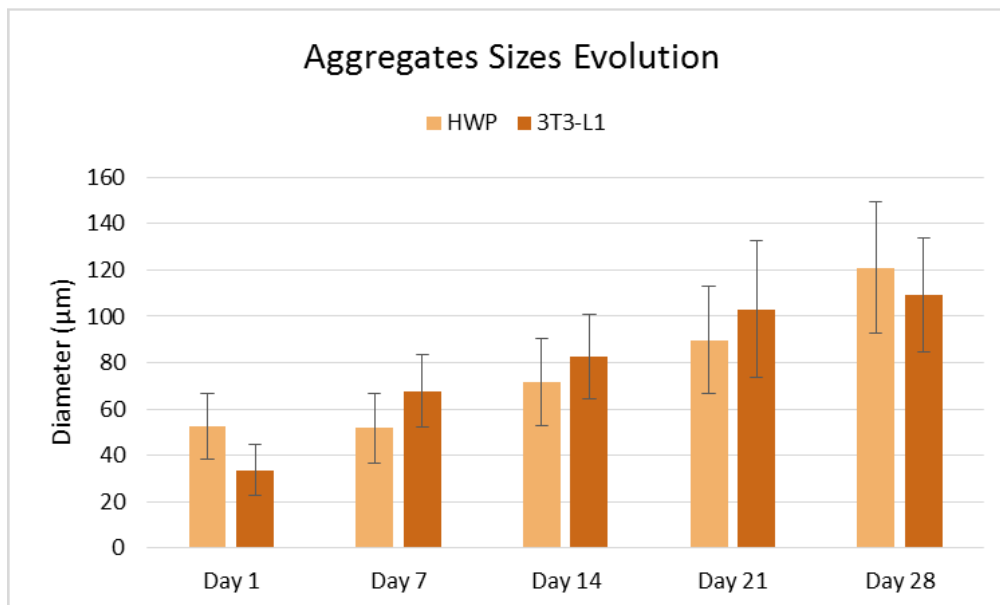


Figure 3 : Aggregates sizes of 3T3-L1 and HPW in BIOMIMESYS® *Adipose tissue*

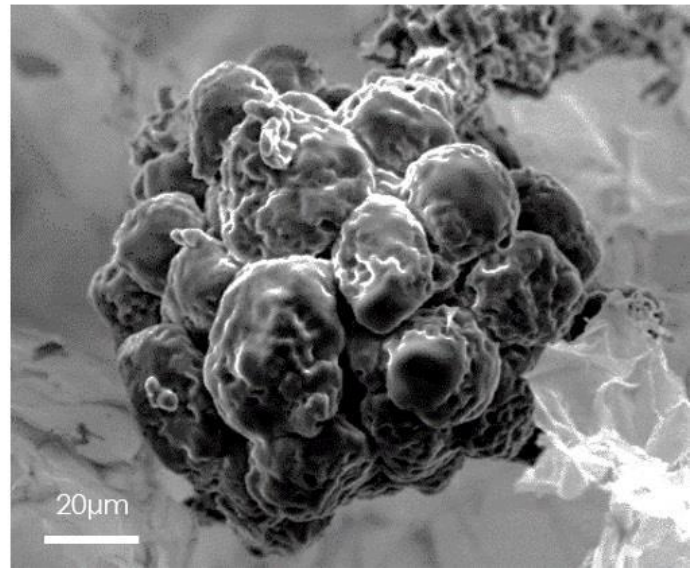
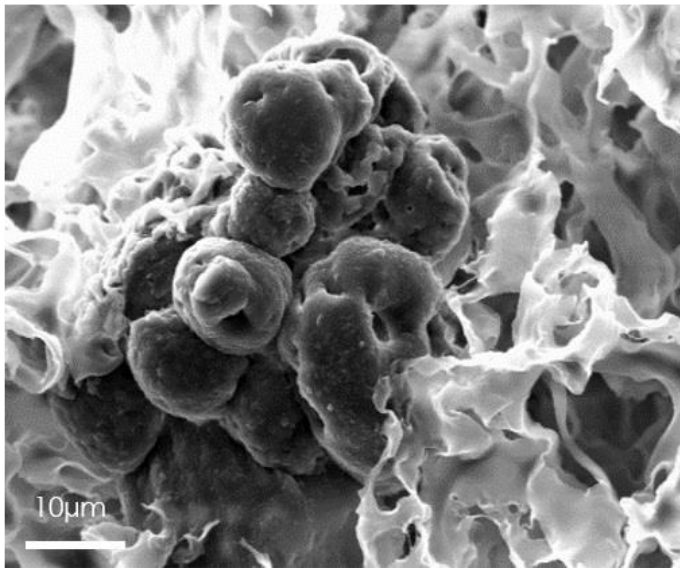


Figure 4: Scanning electron microscopy pictures of 3T3-L1 (left : day 7) and HWP (right : day 14) cultured in BIOMIMESYS® Adipose tissue

## CONCLUSIONS

BIOMIMESYS® Adipose tissue allows continued growth of multicellular aggregates during at least 4 weeks in culture.

## REFERENCES

- (1) Understanding: adipocyte differentiation Gregoire F., Smas C., Sul HS. Physiological reviews, 199

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