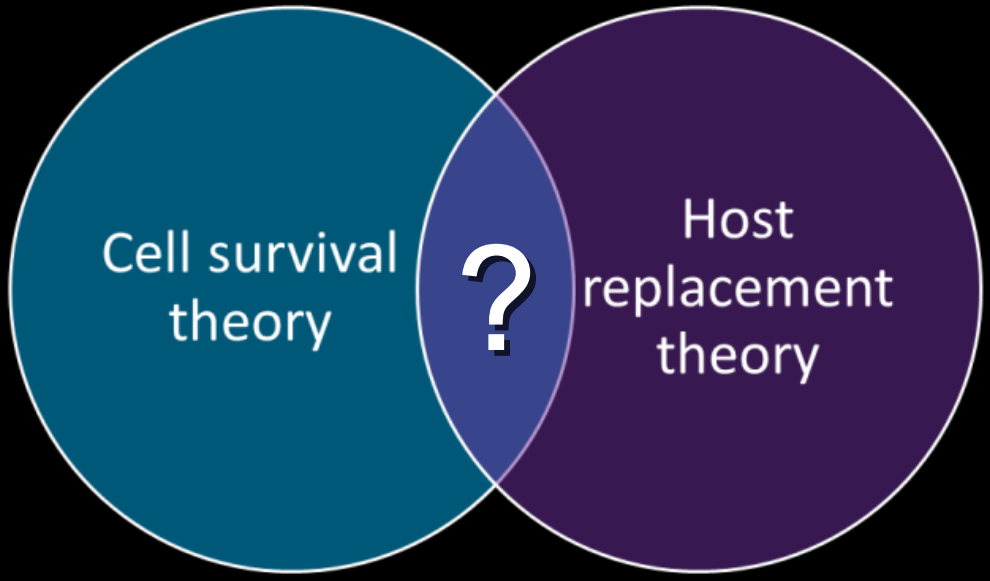
Research of the Fate of Fat Graft



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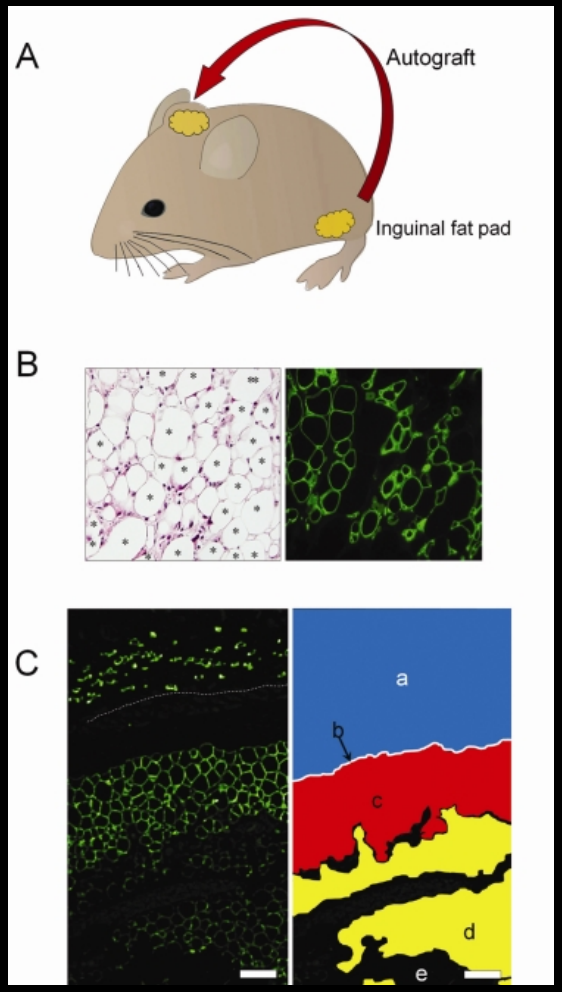
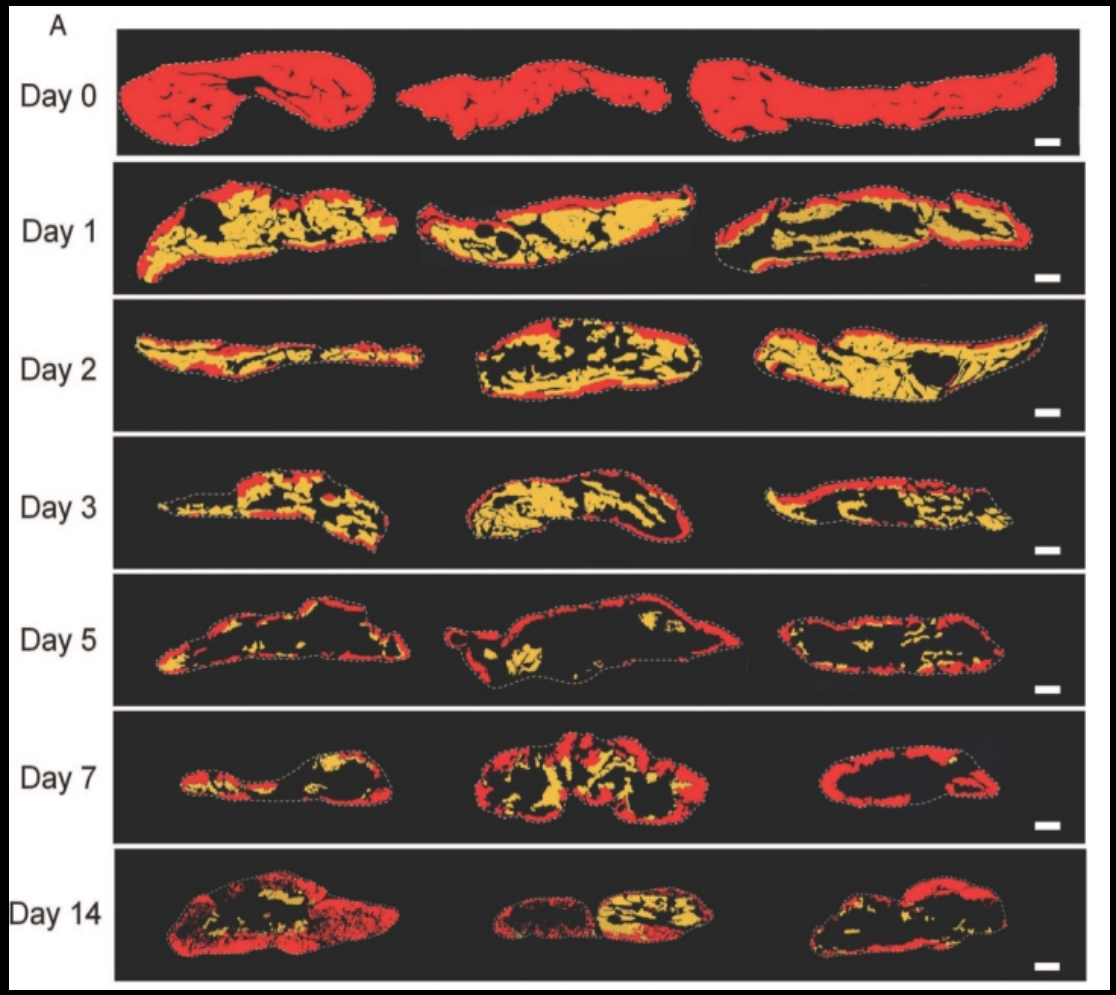
Early death and replacement of adipocytes – only survived at peripheral zone (300um)





Hitomi Eto, Kotaro Yoshimura. Plast. Reconstr. Surg. 129: 1081, 2012.

Objective of the study

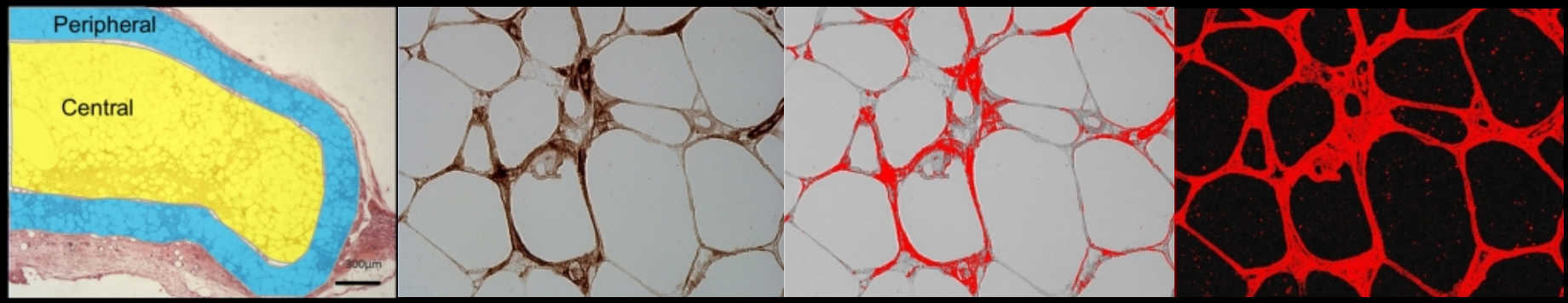
- Investigate the fate of fat graft and the role of adipose derived stem cell
- Aspirated fat graft (our model) VS resected fat pad (Yoshimura's model)

Materials and methods

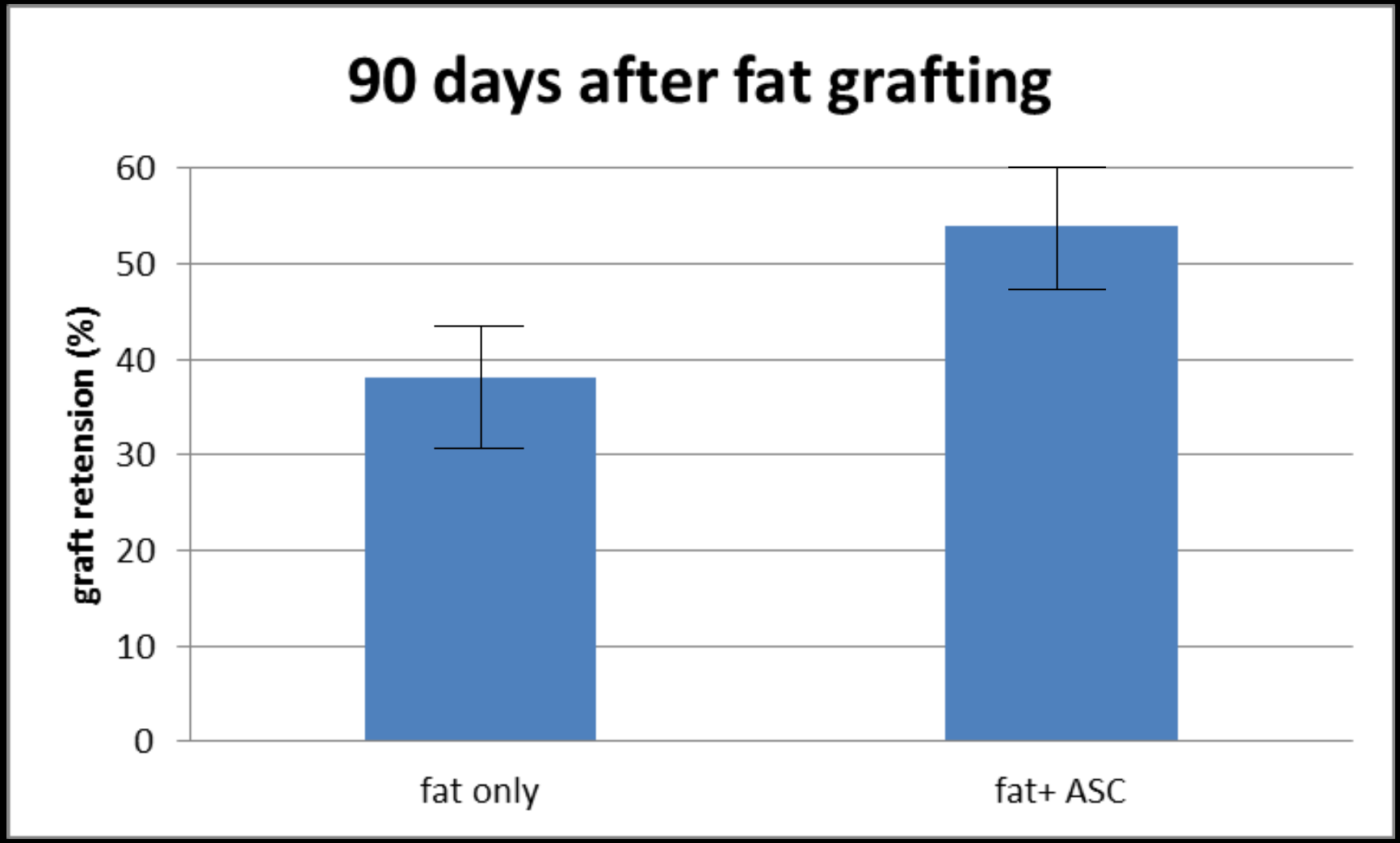
- Liposuction from 3 female pts (38-50 y/o)
- Cultured ASCs from a 48 y/o woman
- Female BALB/cAnN.Cg-Foxn1nu/CrlNar nude mice (8 weeks old)
- A: fresh fat + N/S (n=6)
- B: fresh fat + ASCs ($1x10^7$)
- Harvested at day 7, 14, 28, 90

Histology and Immunohistochemistry

- H&E stain
- Anti-perilipin: for lived adipocyte
- Human HLA ABC: anti-MHC class I ab
- HLA stain percentage = B (pixel) / C (pixel)
- Peripheral zone (300um) and central zone



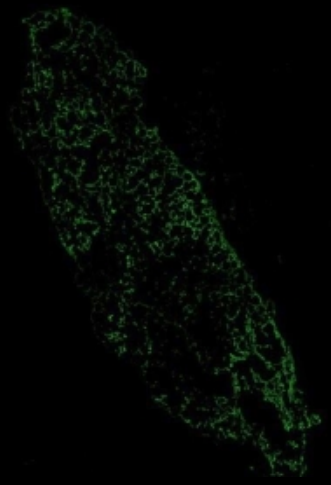
Results



P = 0.03

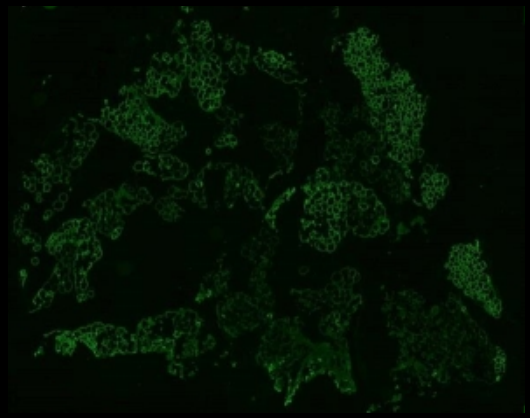
Anti-Perilipin

Control
day 7



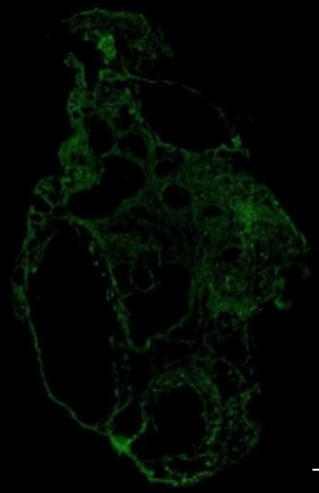
1000um

ASC
day 7



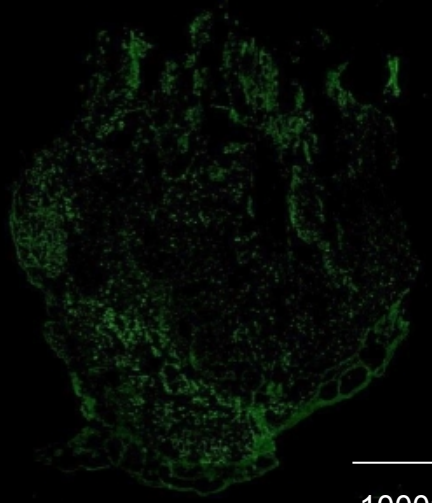
1000um

Control
day 90



1000um

ASC
day 90



1000um

HLA staining

Peripheral zone

	Day 7	Day 14	Day 28	Day 90
p-value	0.092	0.199	0.491	0.333

Central zone

	Day 7	Day 14	Day 28	Day 90
p-value	0.595	0.123	0.318	0.397

No significant difference of donor cell survival between groups (control, ASC)

Conclusion

- ASCs improved fat graft volume retention
- Anti-perilipin stain showed diverse distribution of lived adipocytes: no difference between central and peripheral zones
- ASCs didn’t improve donor cell survival as comparing with control

Significance of the findings

- The aspirated fat graft, not like resected fat pad, has diverse survival pattern
- ASCs don’t make more donor cells survive. Instead, ASCs recruited more host cells to maintain the fat graft volume.