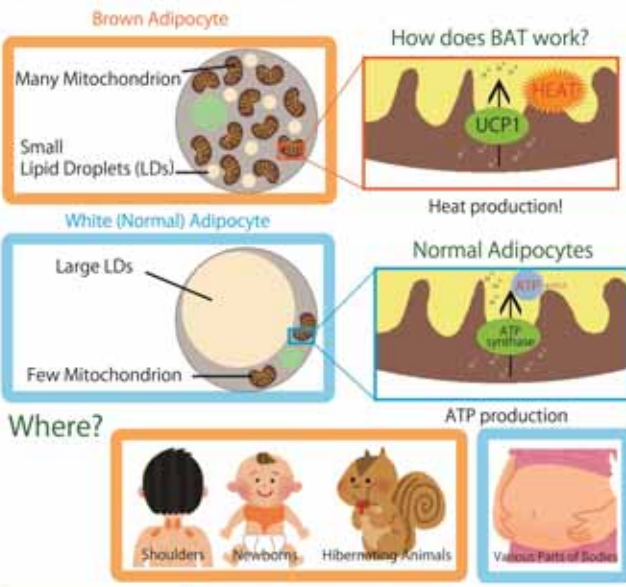


# 脂肪を燃焼する褐色脂肪細胞のラマン分光イメージング Raman spectroscopic imaging of brown adipocytes

**概要** 褐色脂肪細胞は、脂肪を燃焼し熱を産生する「善玉の脂肪細胞」として近年注目されているが、その特殊な脂質代謝過程は完全には解明されていない。そこで本研究では、coherent anti-Stokes Raman scattering (CARS)を用いることで、「そのまま」の細胞を非標識にて可視化し、細胞内脂質分布・脂質組成を明らかにした。  
We have applied coherent anti-Stokes Raman scattering (CARS) imaging to brown adipocytes in order to investigate the intracellular lipid distribution and its composition.

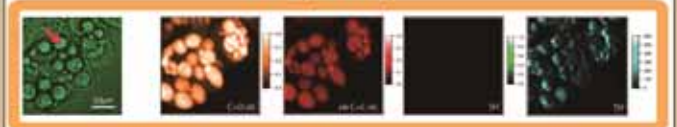
## INTRODUCTION

What is BAT (Brown Adipocyte Tissue)?

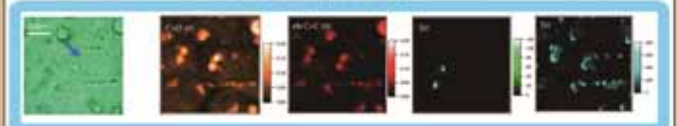


## RESULTS & DISCUSSION

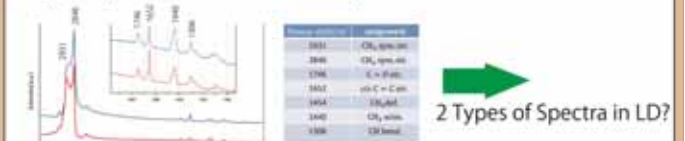
Nonlinear Multimodal Multi-photon Imaging  
HB2 (Brown)



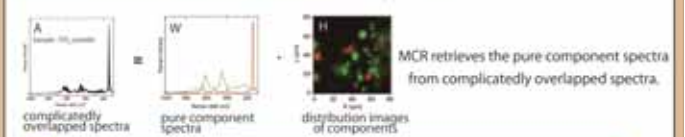
3T3-L1 (White)



Im[χ<sup>(3)</sup>] Spectra of LD Indicated by the Arrows

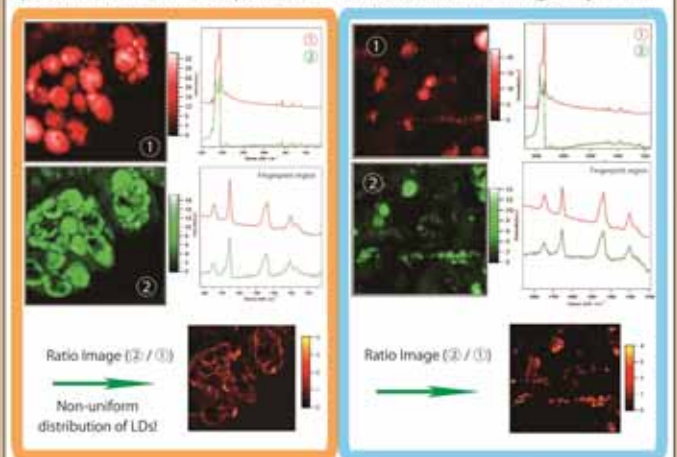


Multivariate Curve Resolution; MCR<sup>[2]</sup>

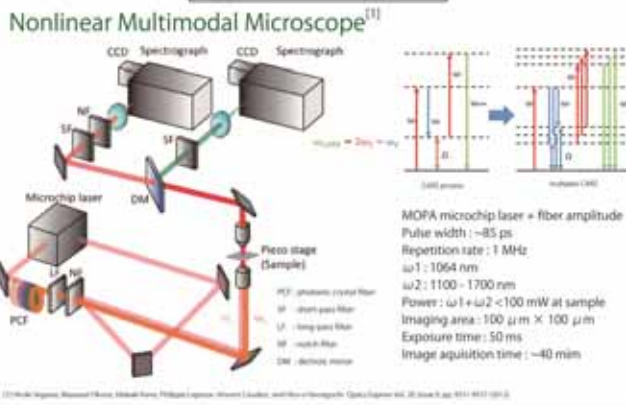


Powerful tool for studying a wide range of biomedical molecular systems!

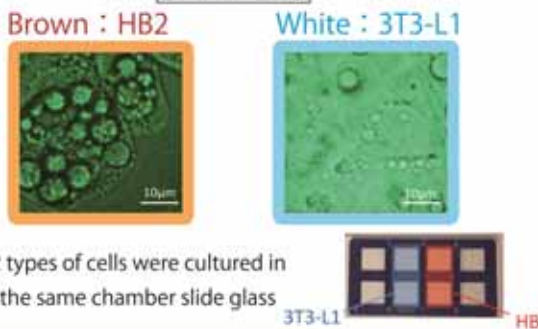
Spectral Profiles of Components and Reconstructed Images by MCR



## EXPERIMENTAL



## SAMPLES



## CONCLUSION

We performed label-free visualization and analysis of brown and white adipocytes by CARS spectroscopy.  
The non-uniform distribution of LDs were found only in brown adipocytes.