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# The global and local stellar mass assembly histories of galaxies from



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September, 23th 2016, Hobart, Tasmania.

The Changing Face of Galaxies



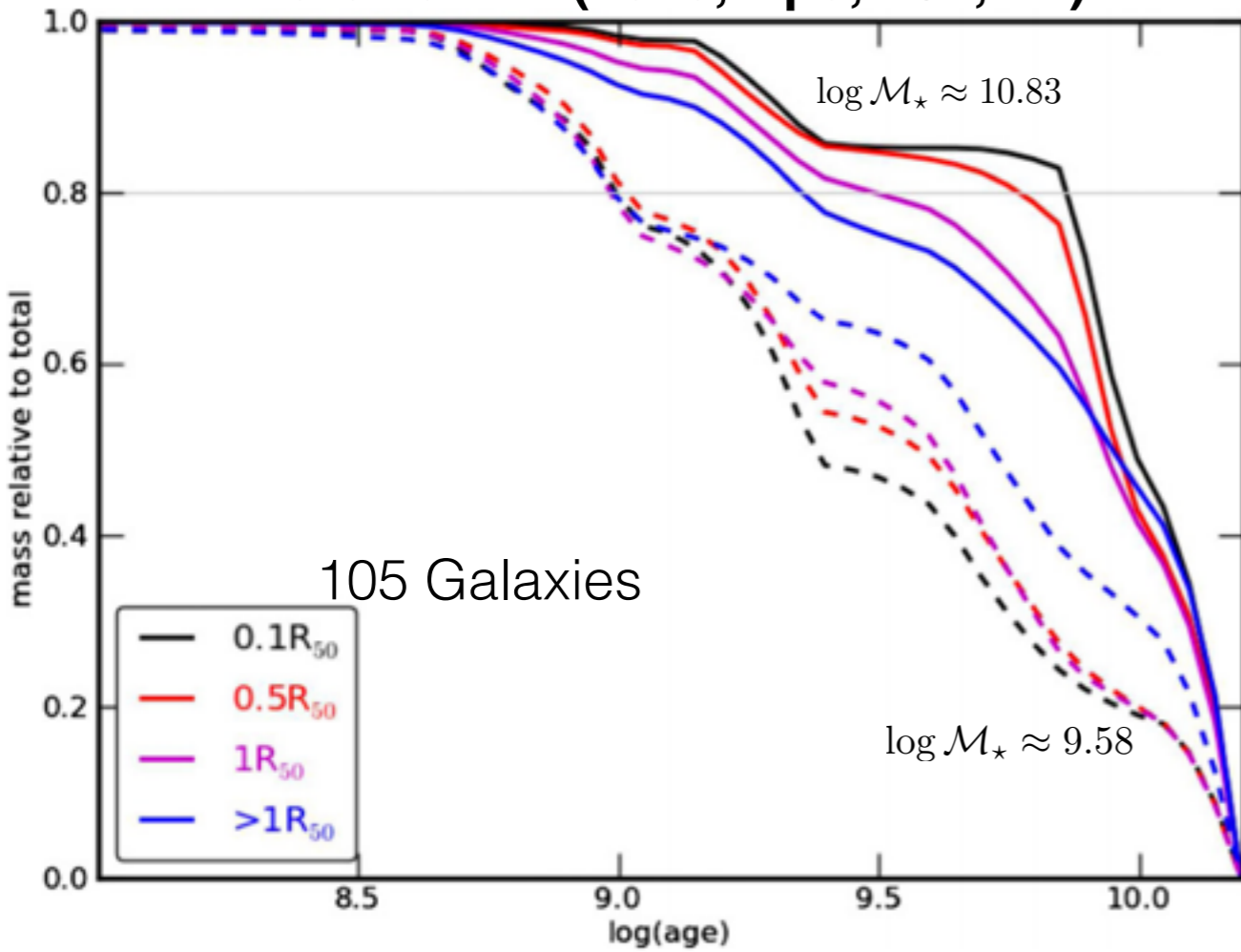


# How are the galaxies assembled?? **inside-out or outside-in**

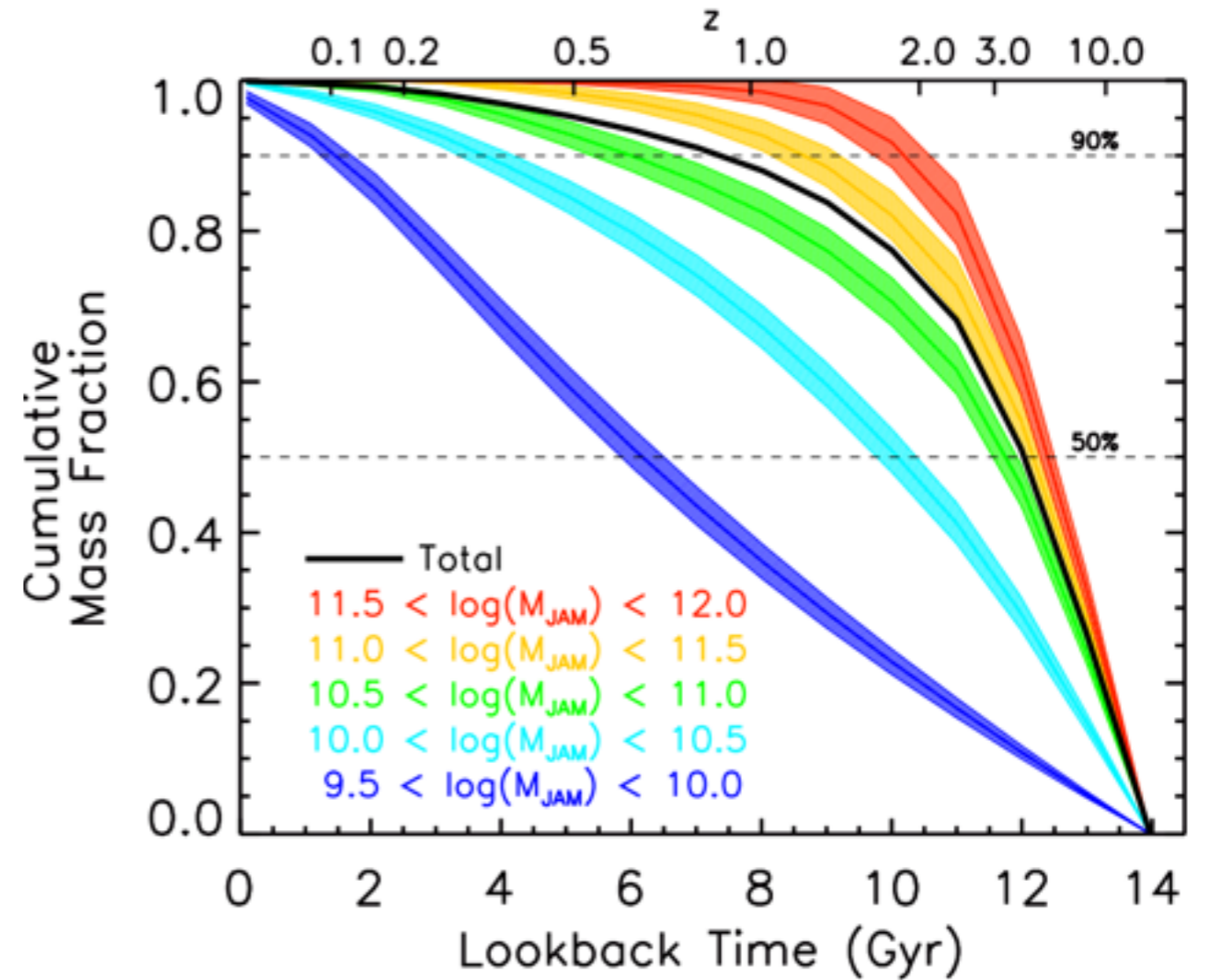


# Previous Works

Pérez et. al. (2013, ApJ, 764, L1)



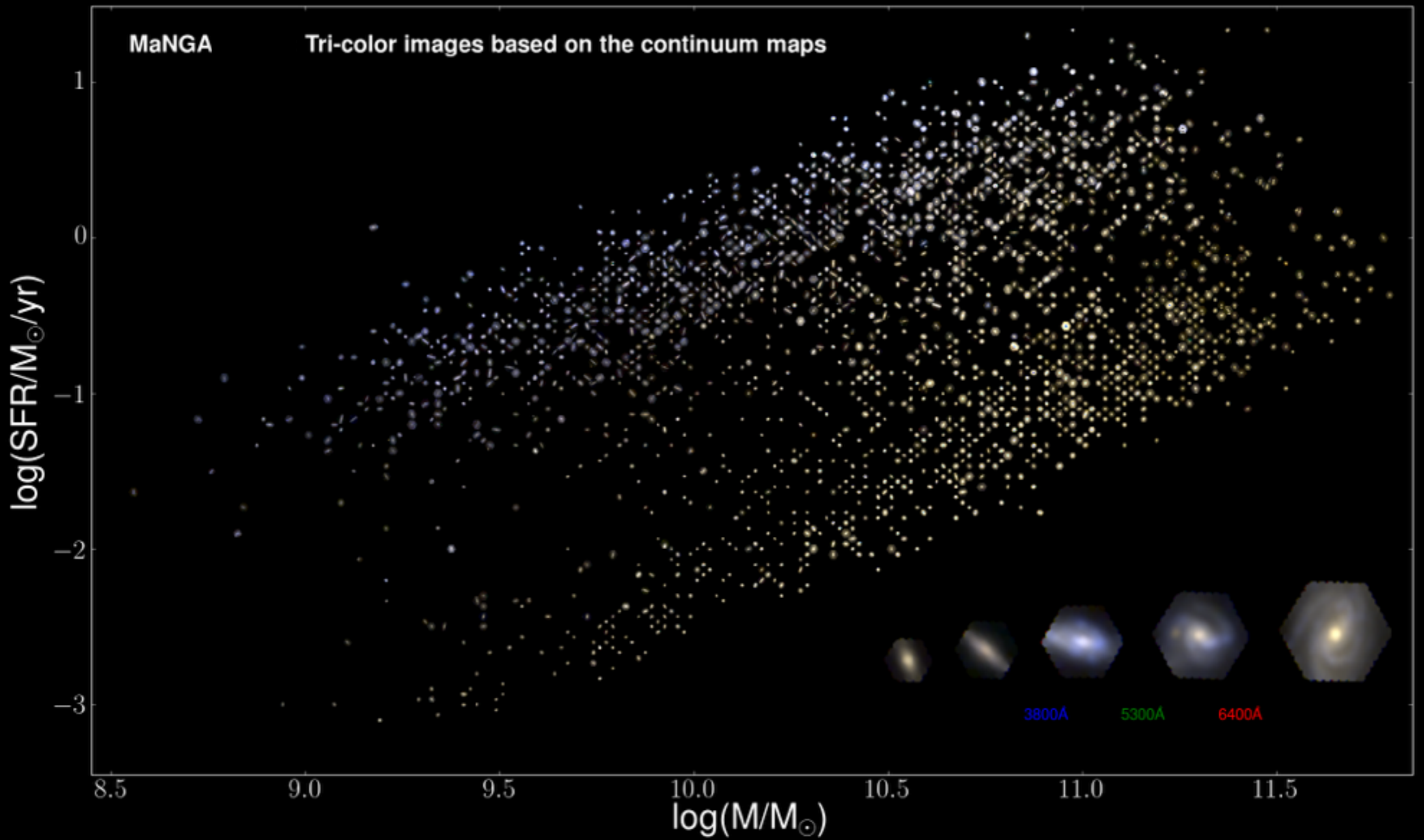
MacDermid et. al. (2015, MNRAS, 448, 3484M)

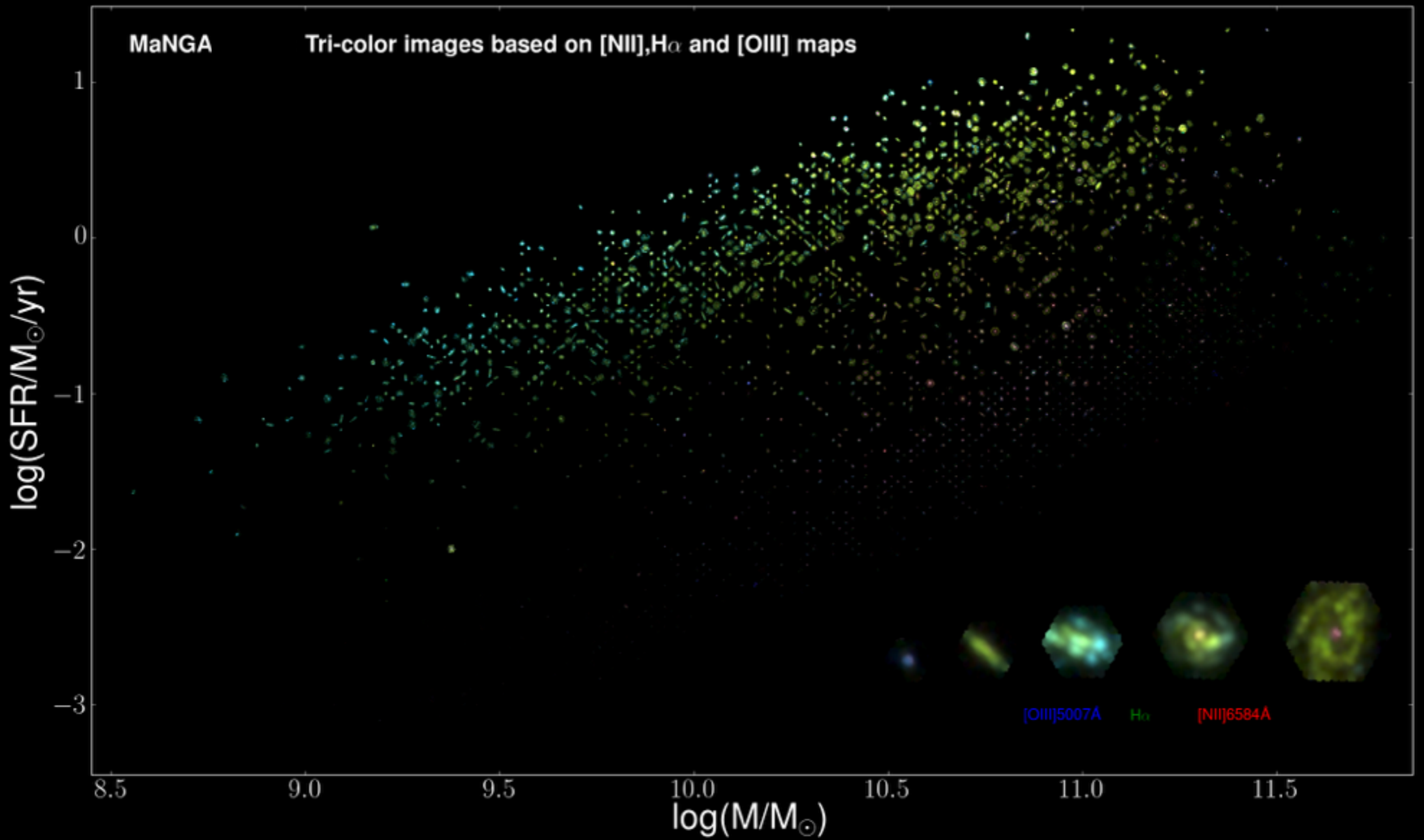


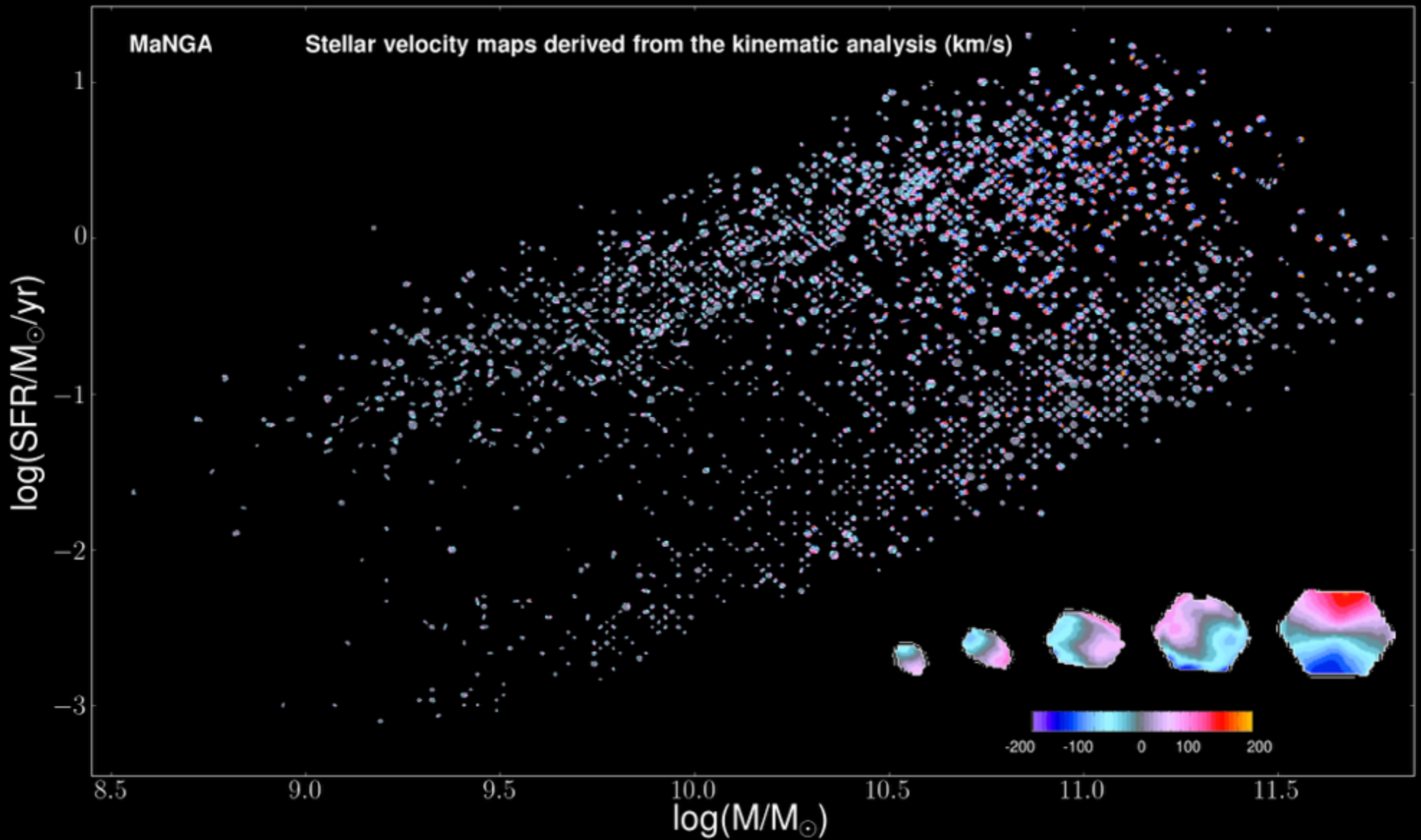


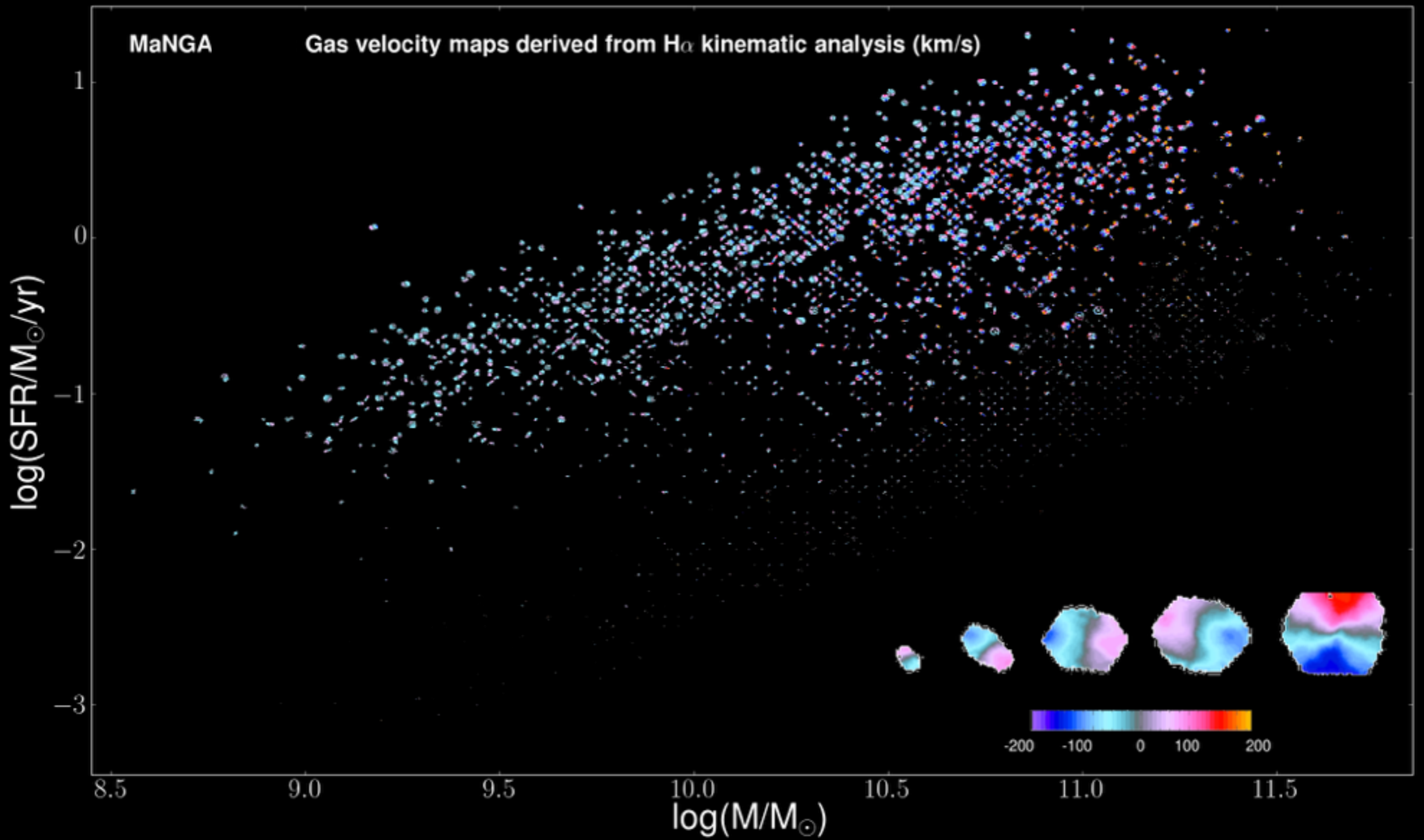
# The Mapping Nearby Galaxies at the Apache Point Observatory.



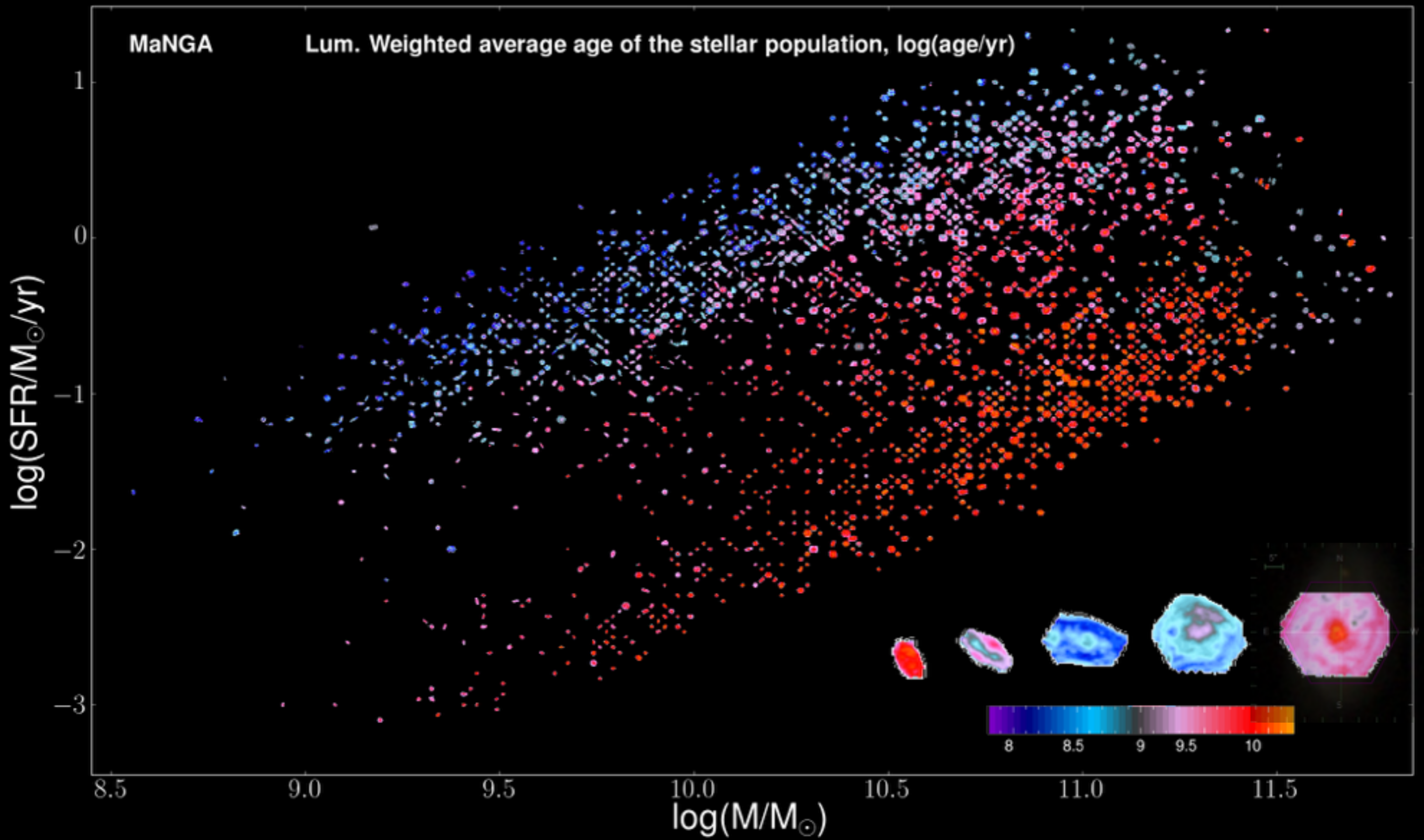












# The Archeological Methods

$$\mathcal{L}_g(\lambda/(1+z)) = \int_0^t \int \sigma(\lambda') L_{ssp}(\lambda' + \lambda, t, \mathbf{z}(t)) \psi(t) d\lambda' dt 10^{Av(\lambda)} + G(\lambda'')$$

## We use Pipe3D

(Sánchez et. al. 2015a,b)

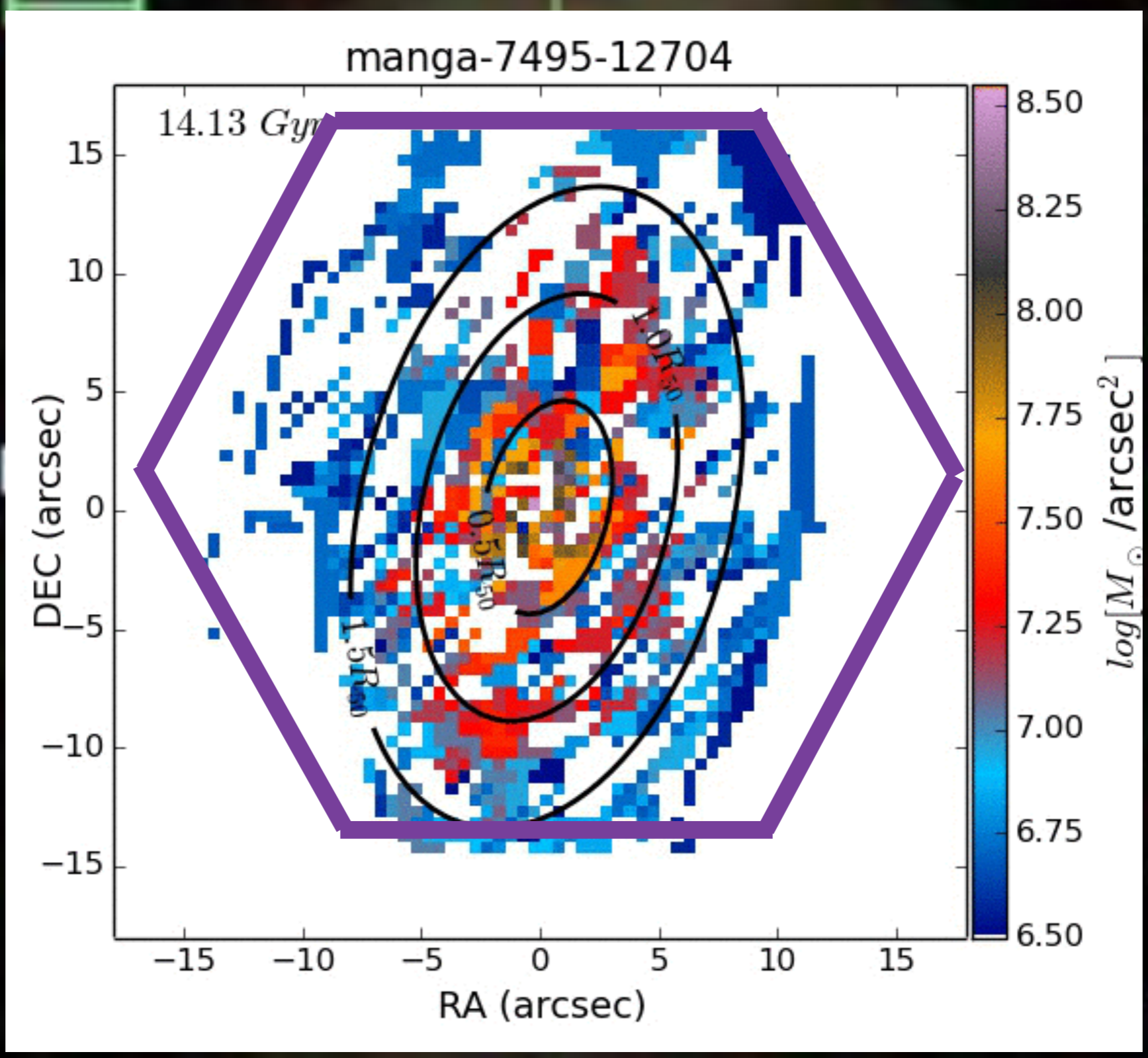
$$\mathcal{M}_{\star,obs} = \int_0^{T_{obs}} \psi(t) dt$$

$$\mathcal{M}_{\star}(t) = \int_0^t \psi(t) dt$$

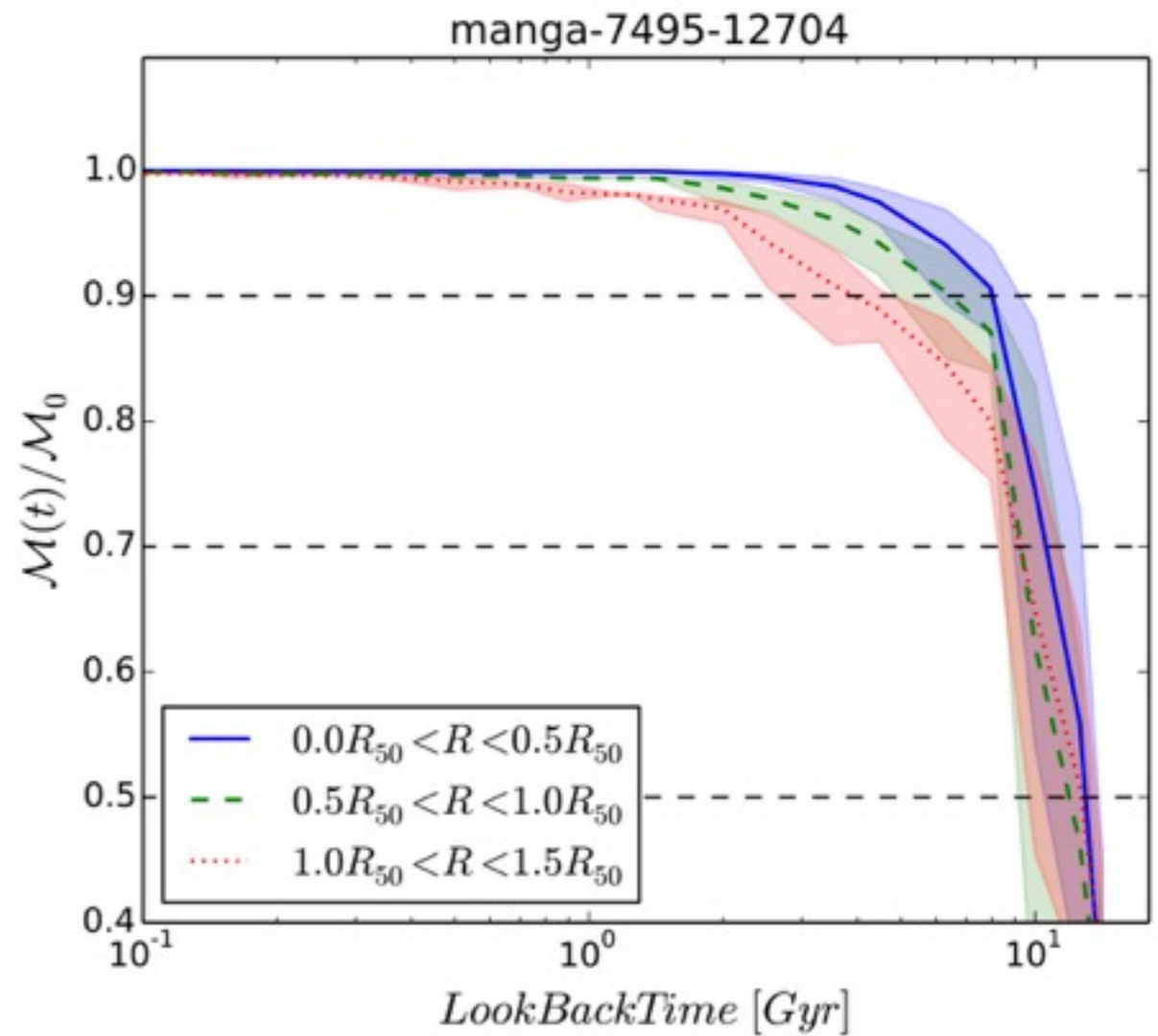
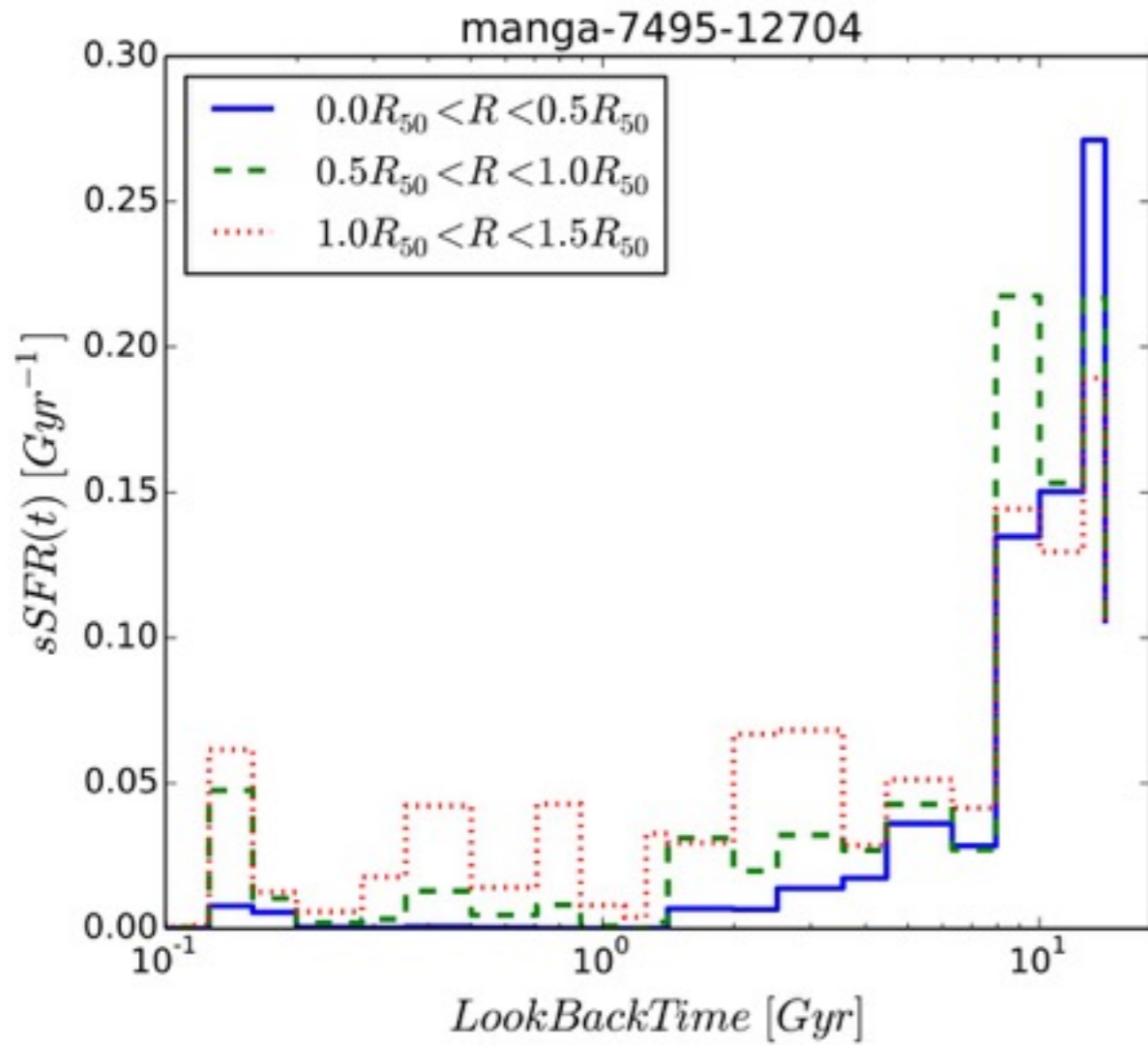
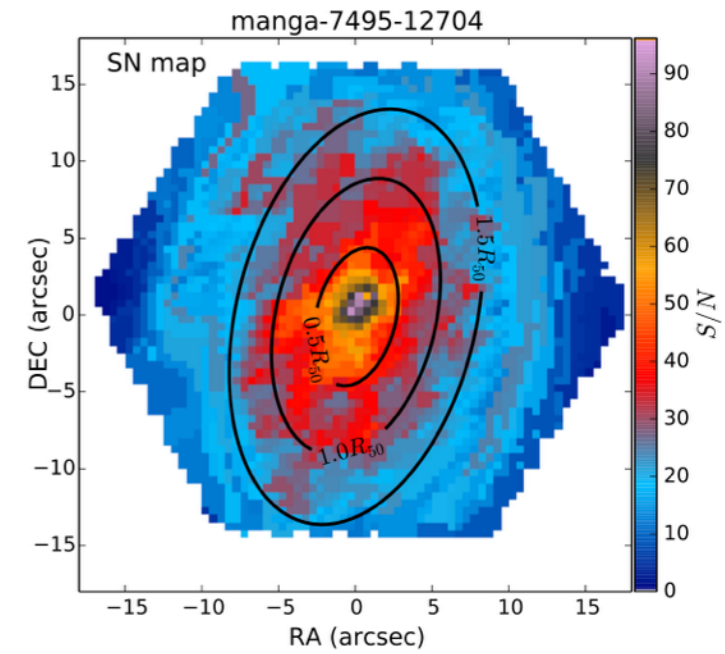
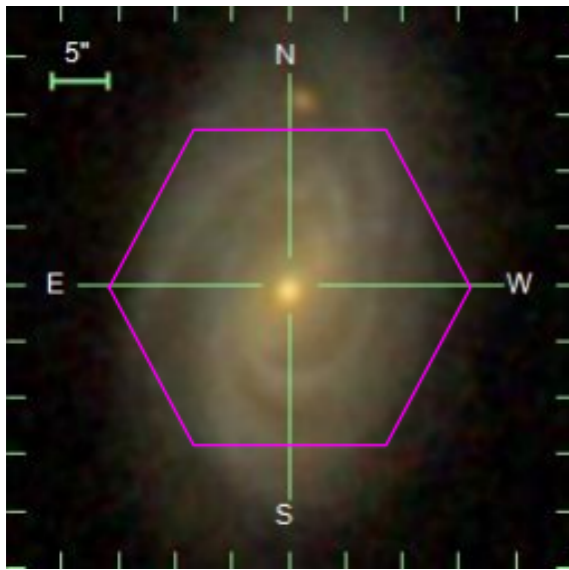


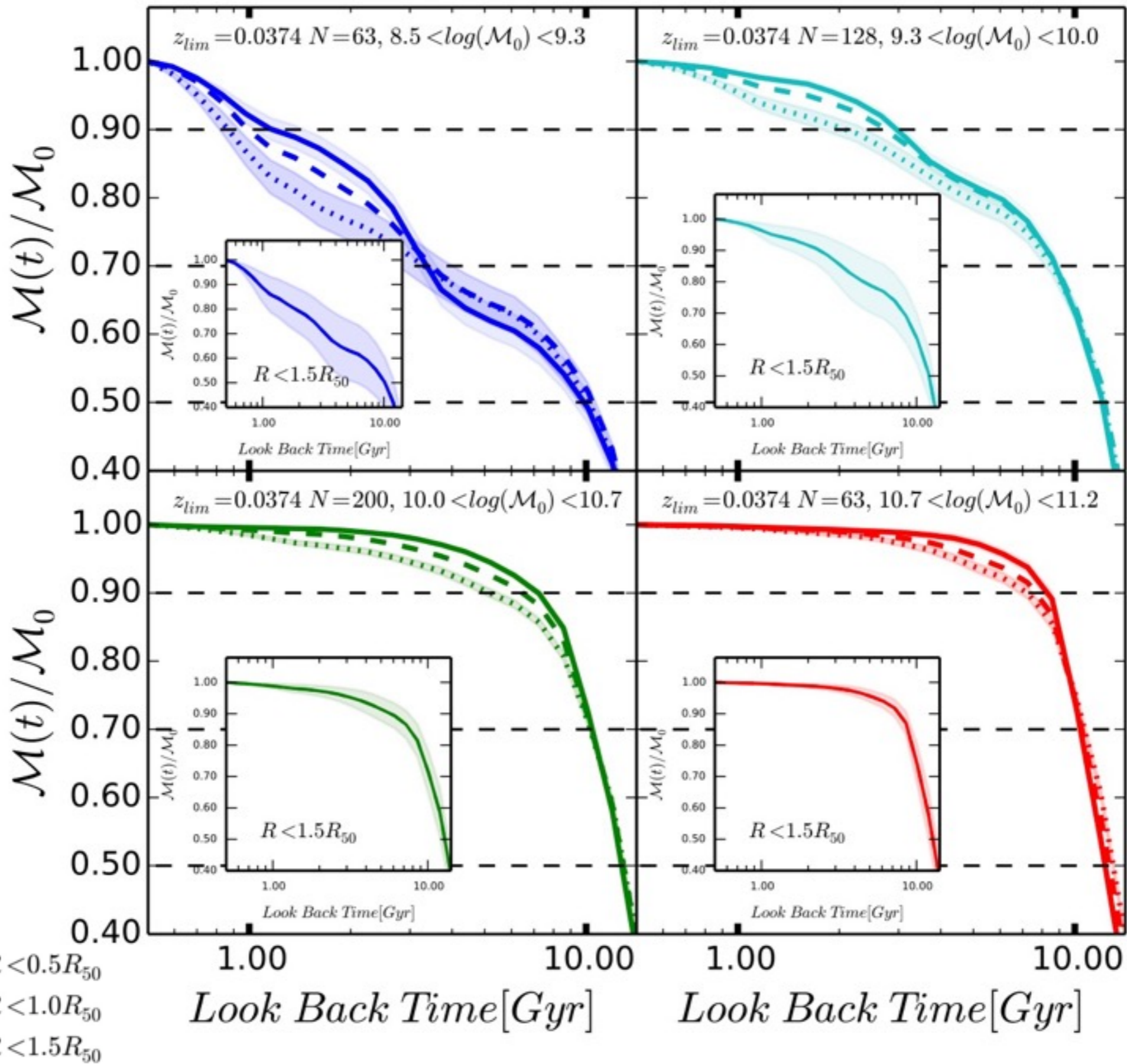
5"

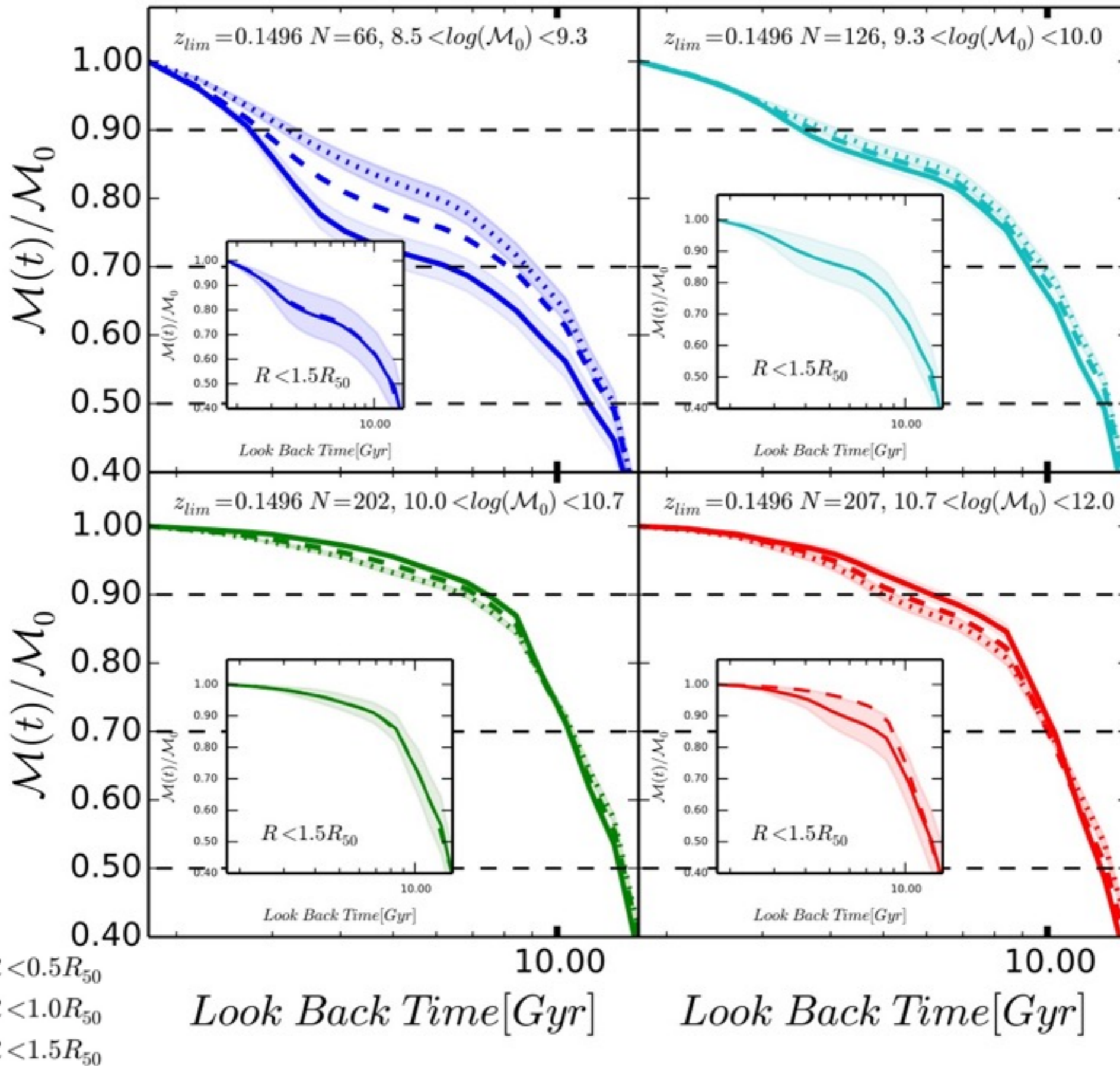
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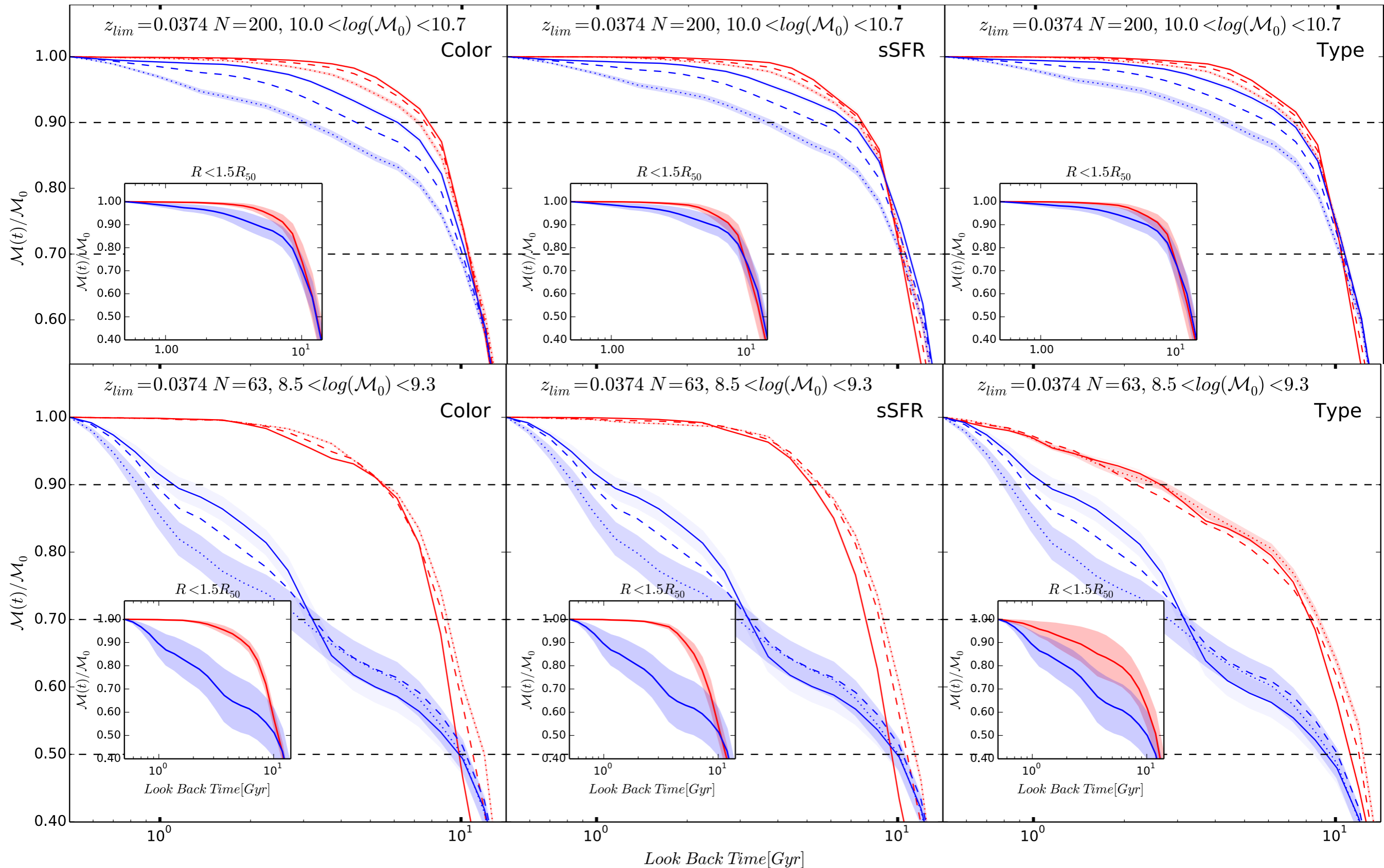
# The Mass Growth Histories

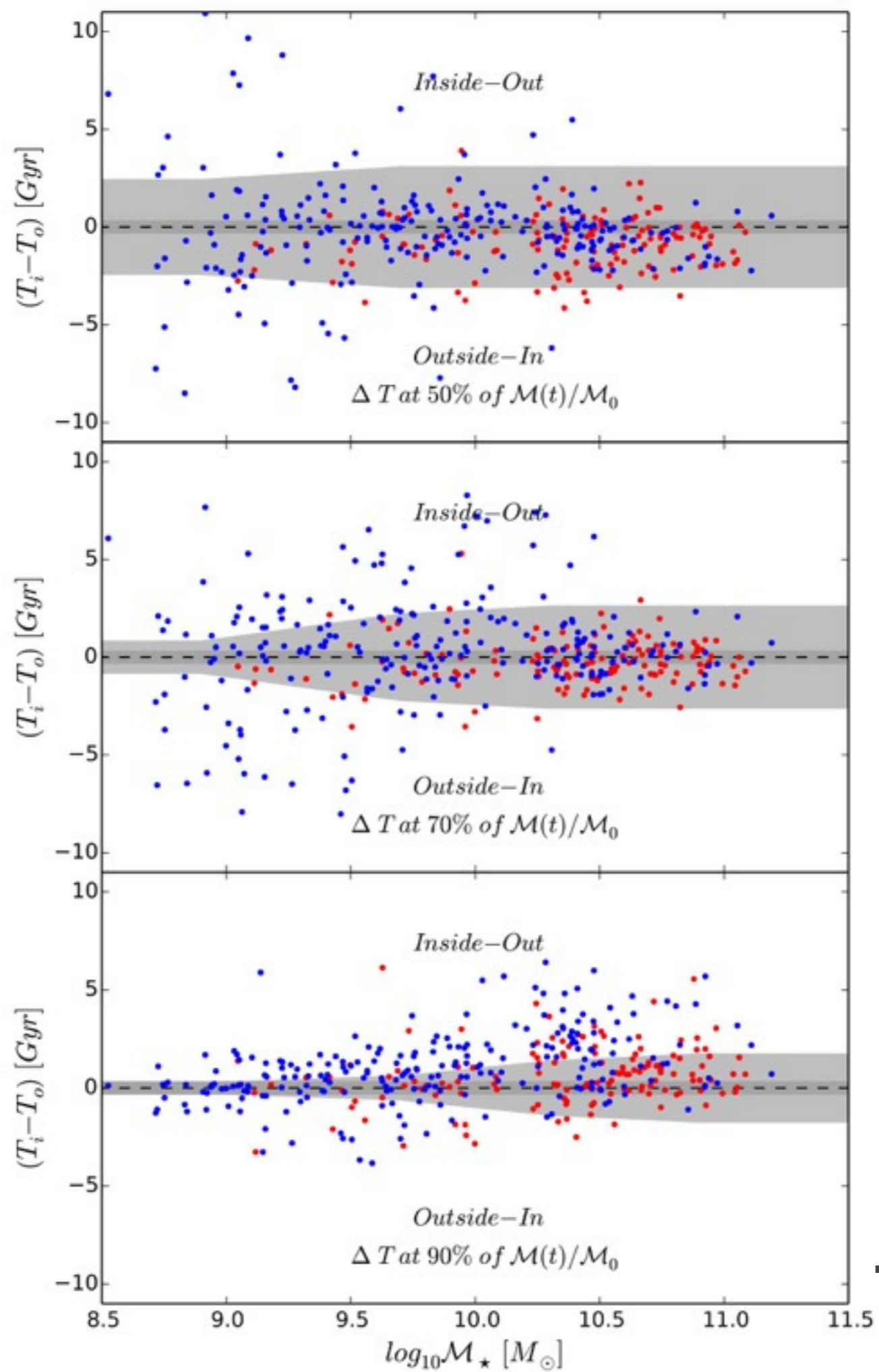




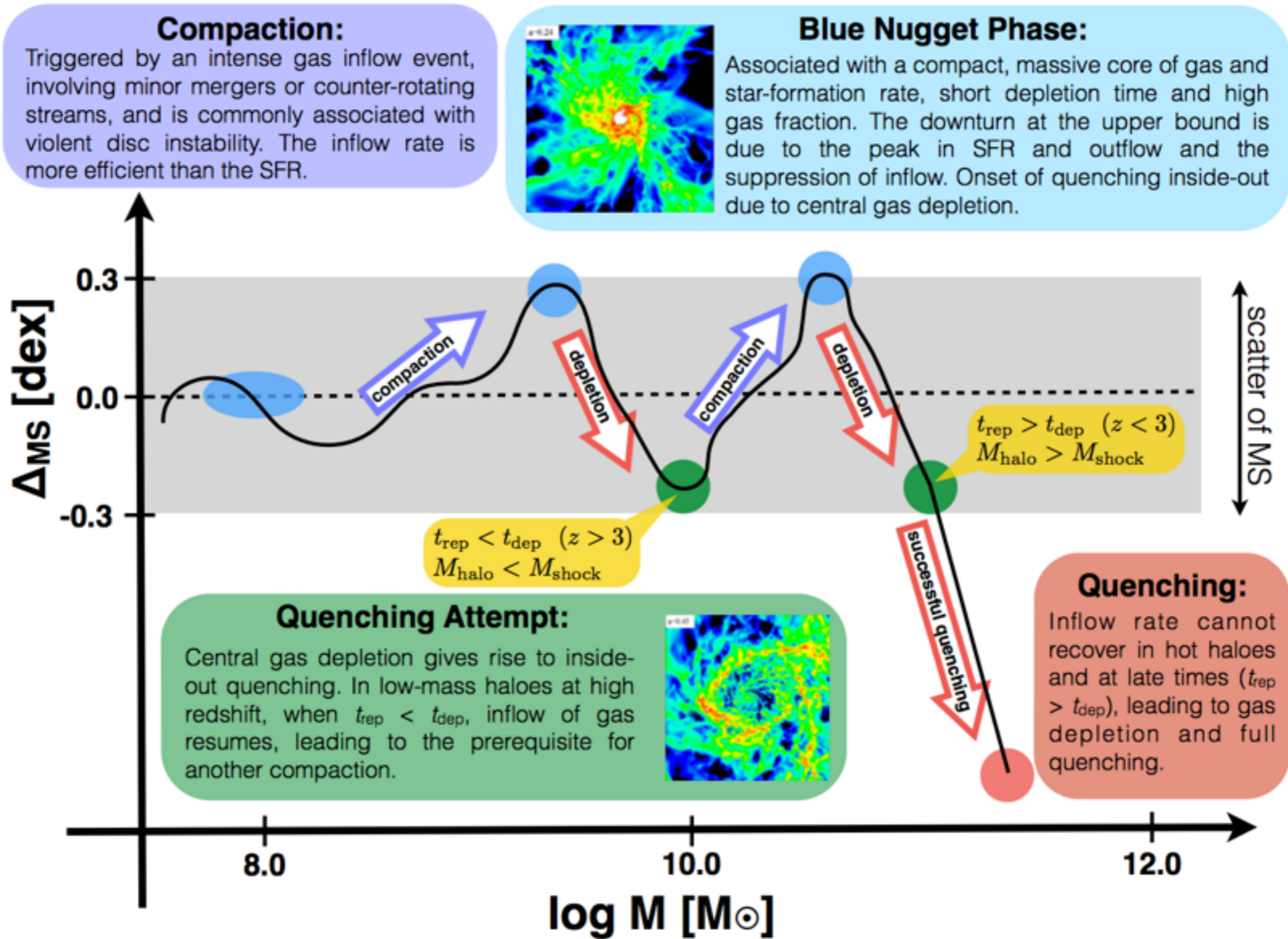


# Stellar Mass Growth Histories by galaxy properties.





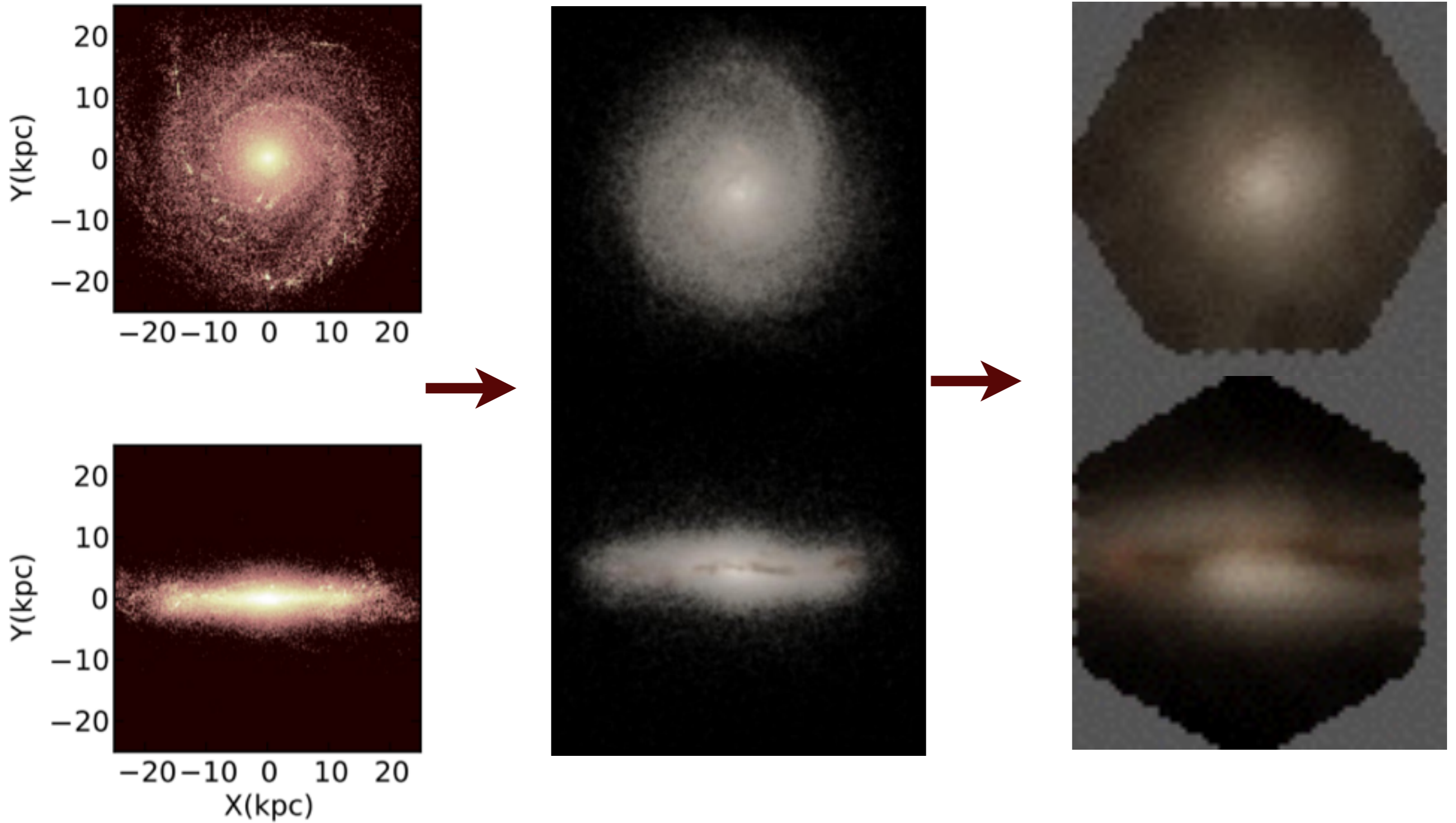




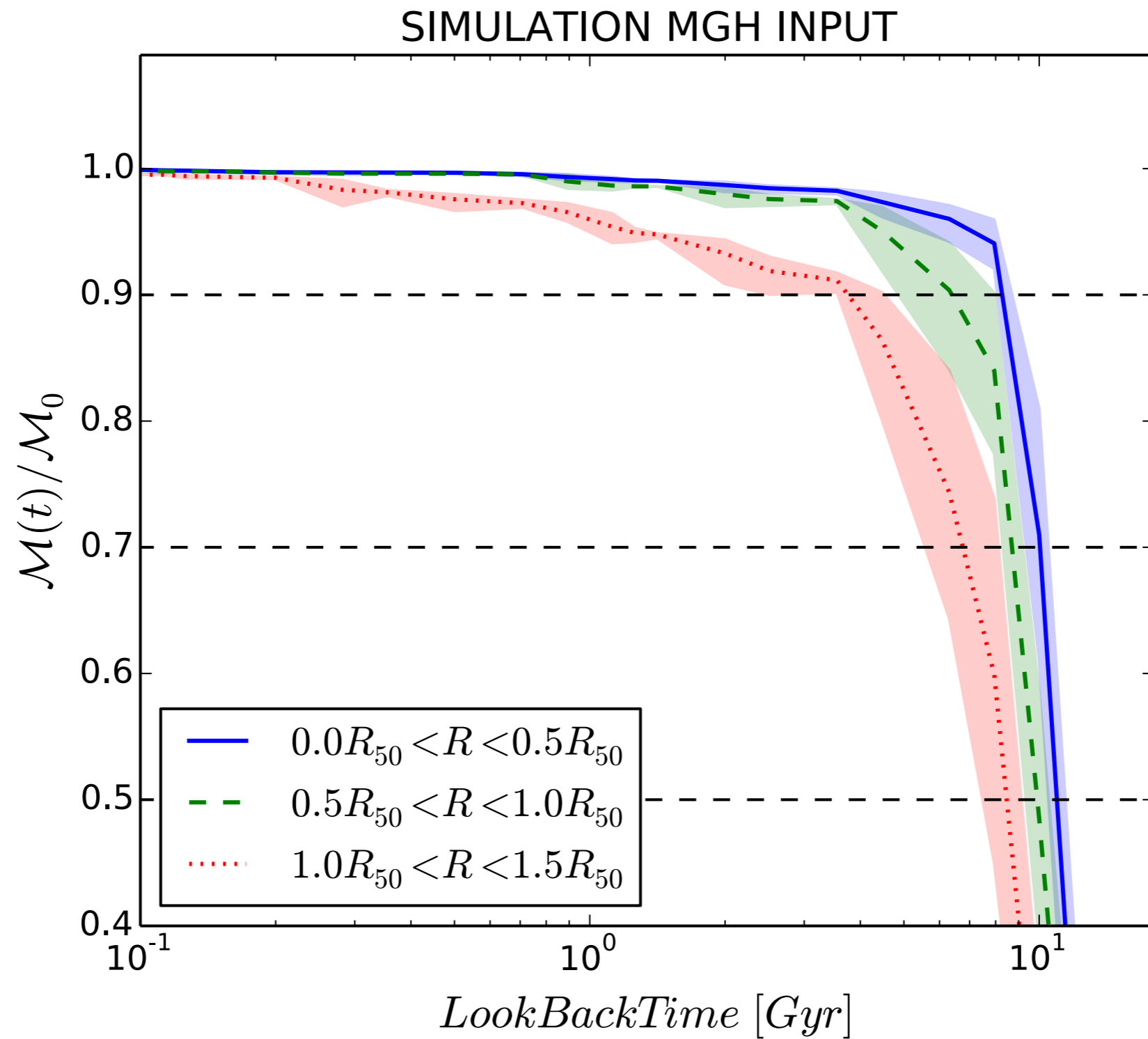
# Mock MaNGA IFS with Cosmological Hydrodynamical Simulation

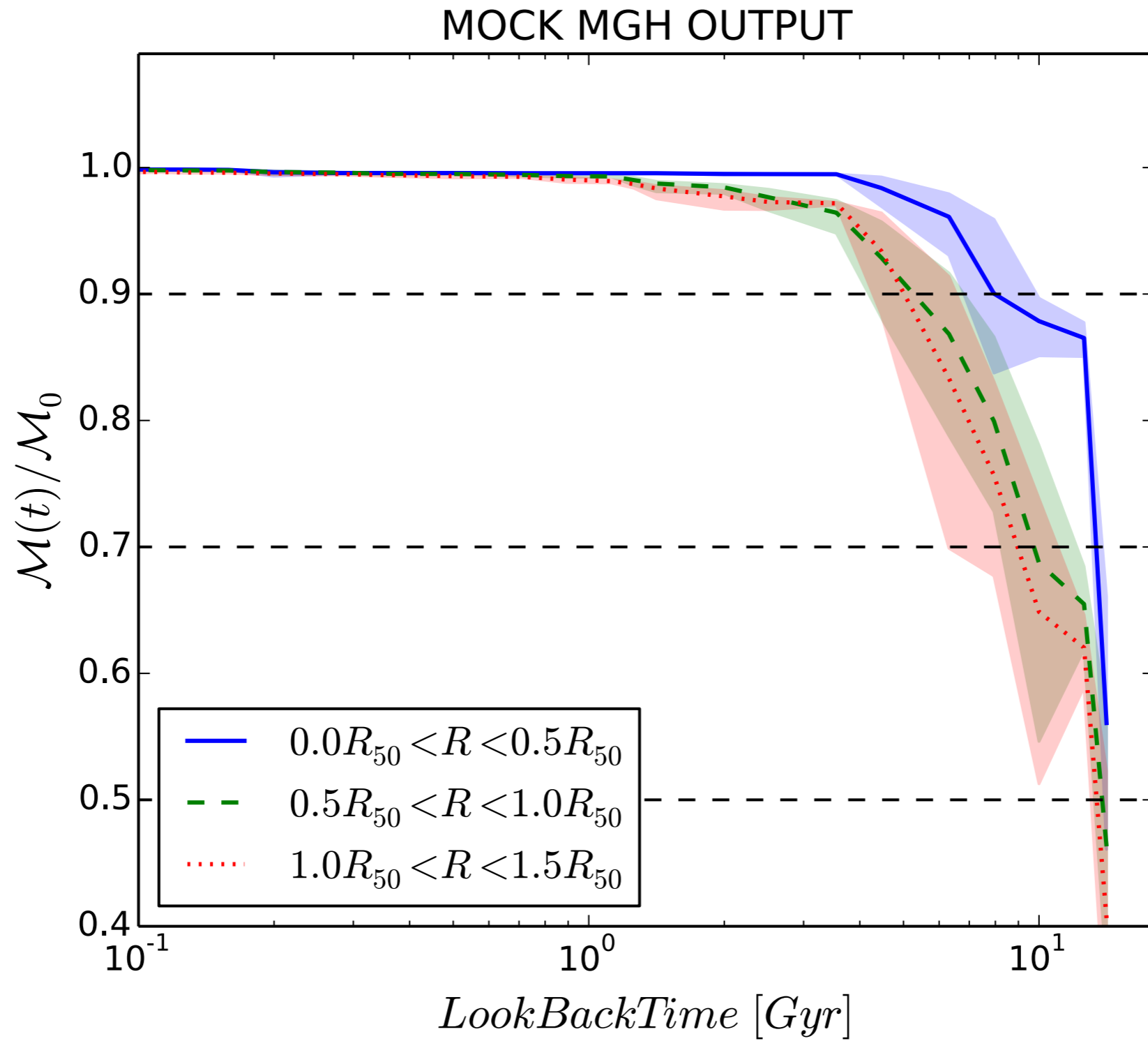
Roca-Fabregas (2016, ApJ, 824, 94R)

Sp8



# Mock MaNGA IFS with Cosmological Hydrodynamical Simulation





# Summary

- The larger the final galaxy mass, the earlier on average the galaxy was assembled. Red/quiescent/early-type galaxies assemble on average their masses earlier than blue/star forming/late-type ones.
- Most of the galaxies (most clearly for massive galaxies) show that at **high fractions of assembled mass**, they formed in an **inside-out mode**. At lower assembled mass fractions, this trend tends to disappear.
- The way galaxies assemble their masses depends more on the galaxy color/type than on its mass: **blue/star-forming/late-type** galaxies follow on average a more regular and significantly more pronounced **inside-out** mode than red/quiescent/early-type galaxies.
- For **red/quiescent/early-type galaxies**, the outermost MGHs present a large diversity of shapes, in many cases with signs of an **outside-in** formation at **low fractions of assembled mass**.





Thanks





Questions??



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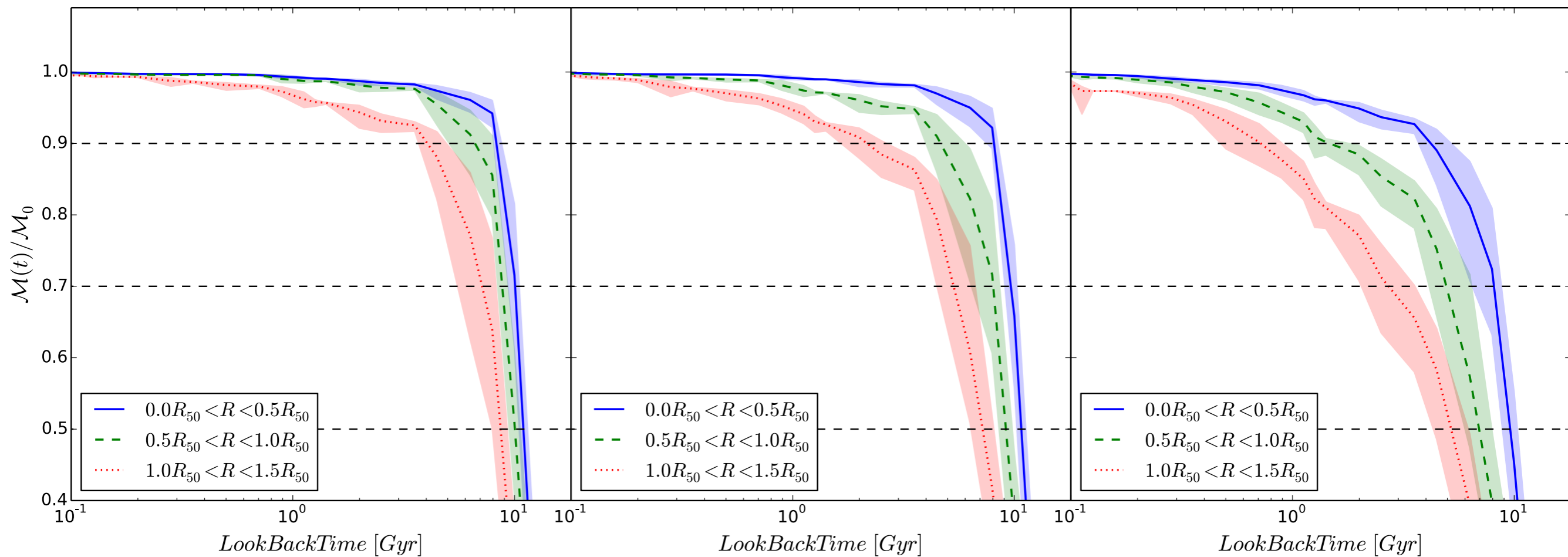


# Mock MaNGA IFS with Cosmological Hydrodynamical Simulation

20°

50°

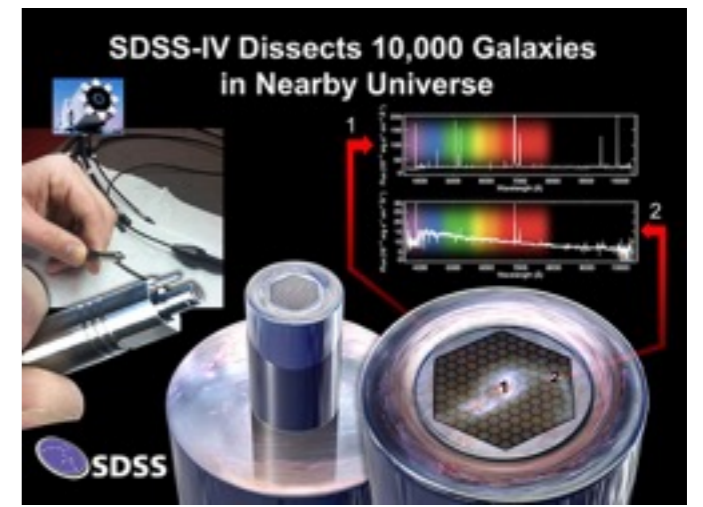
90°



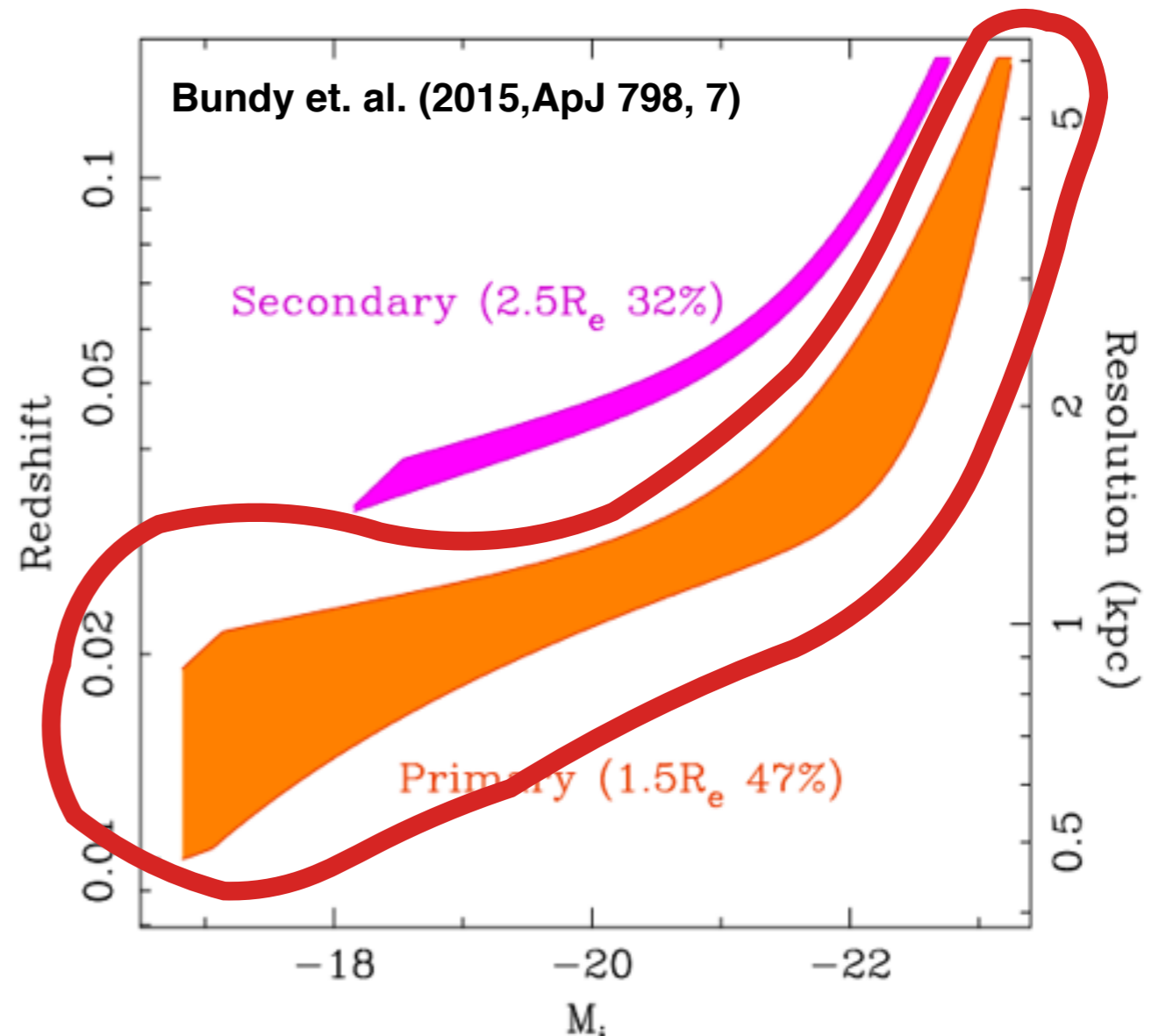


# The Sample

We use 1385 galaxies from the DR-13 (MPL-4)



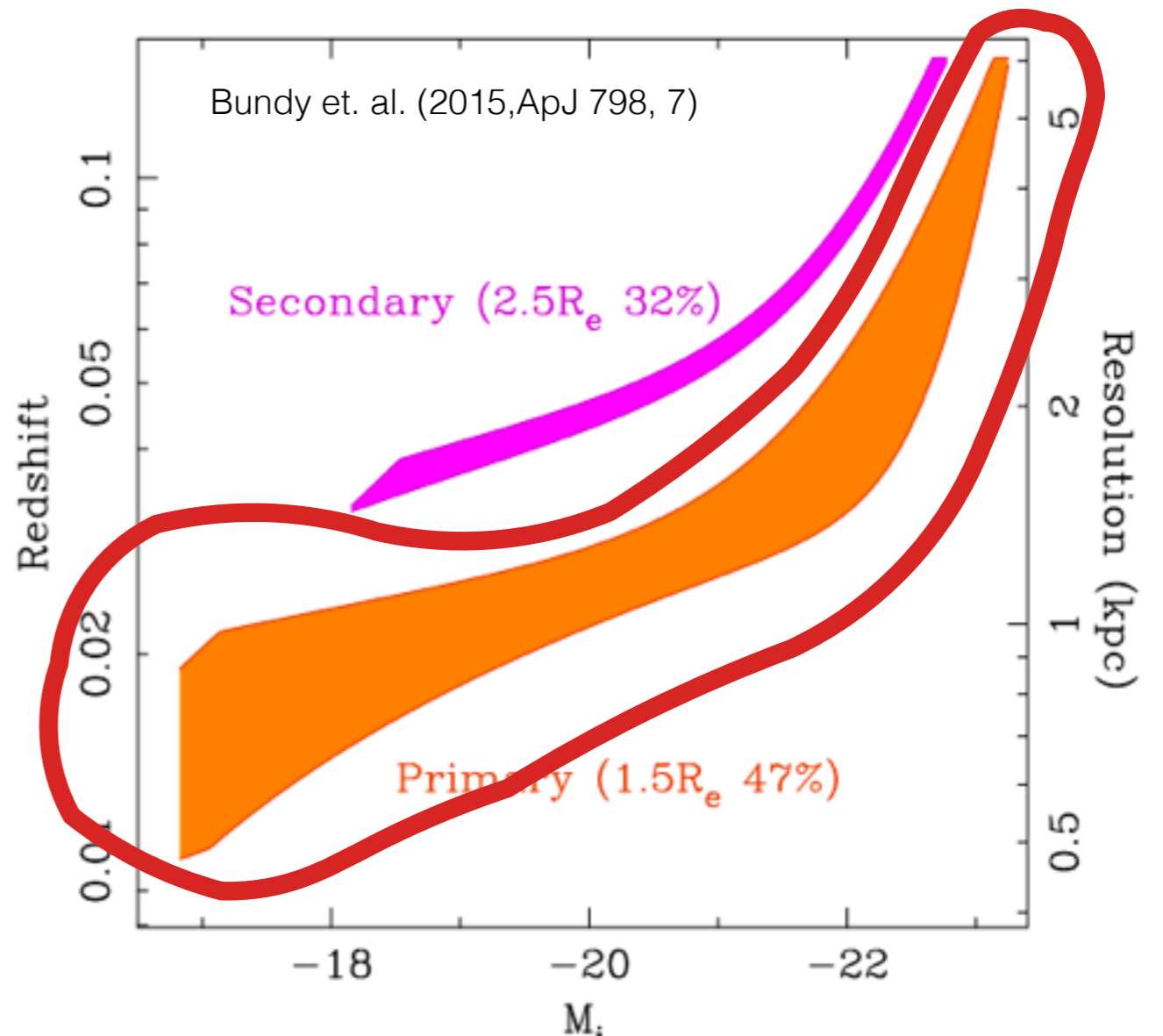
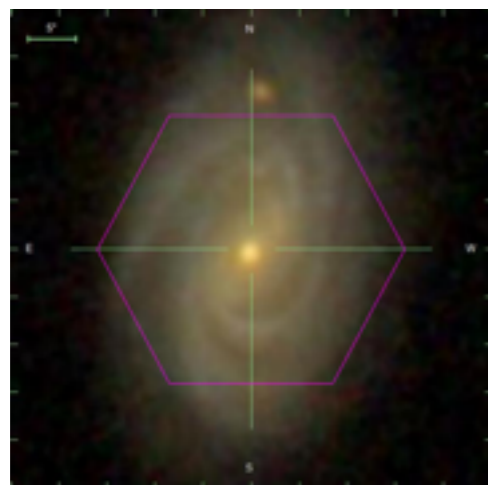
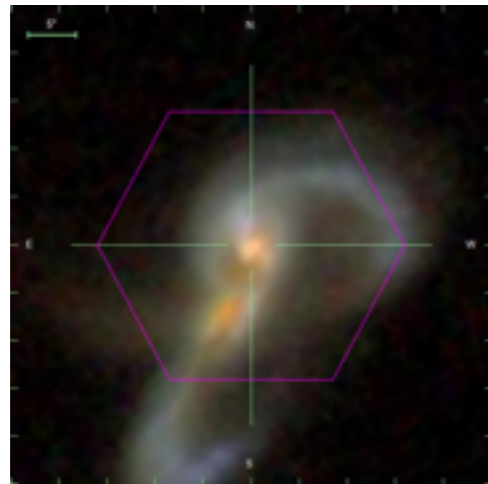
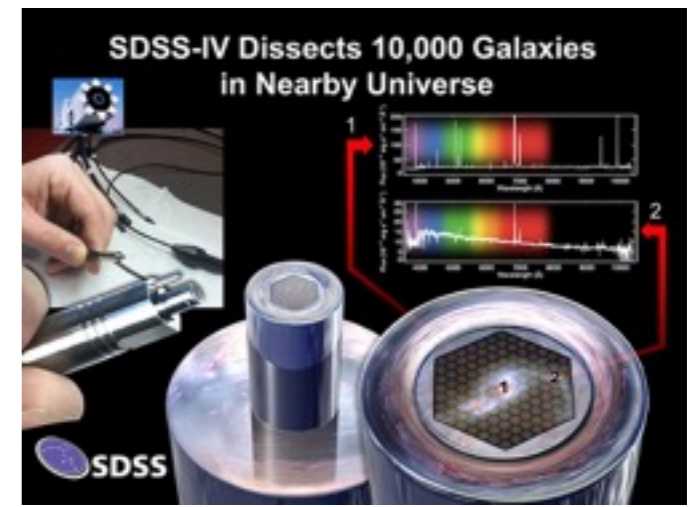
- Primary sample: spatial coverage to  $1.5 R_e$
- Secondary sample: spatial coverage to  $2.5 R_e$



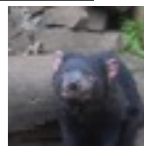
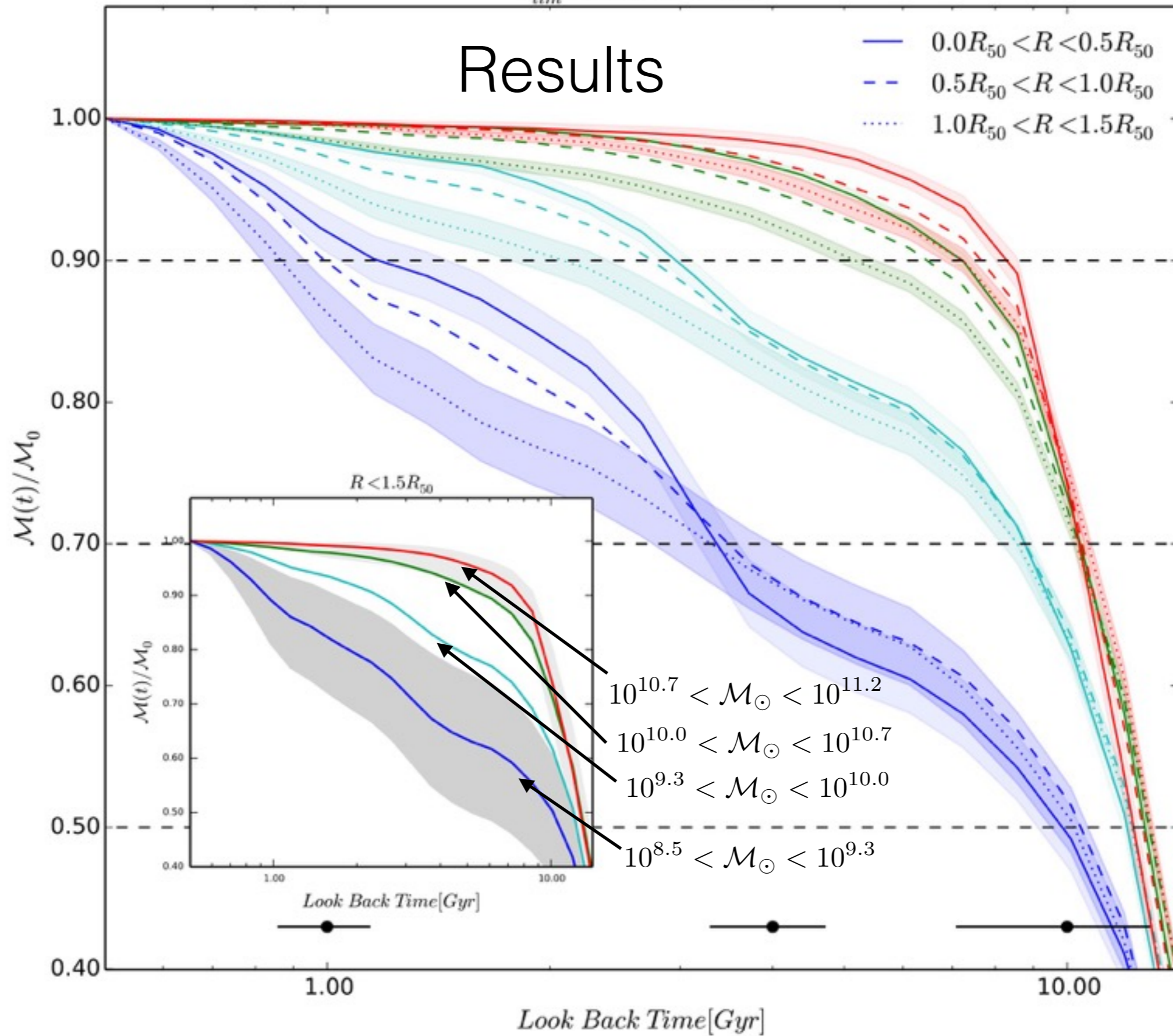


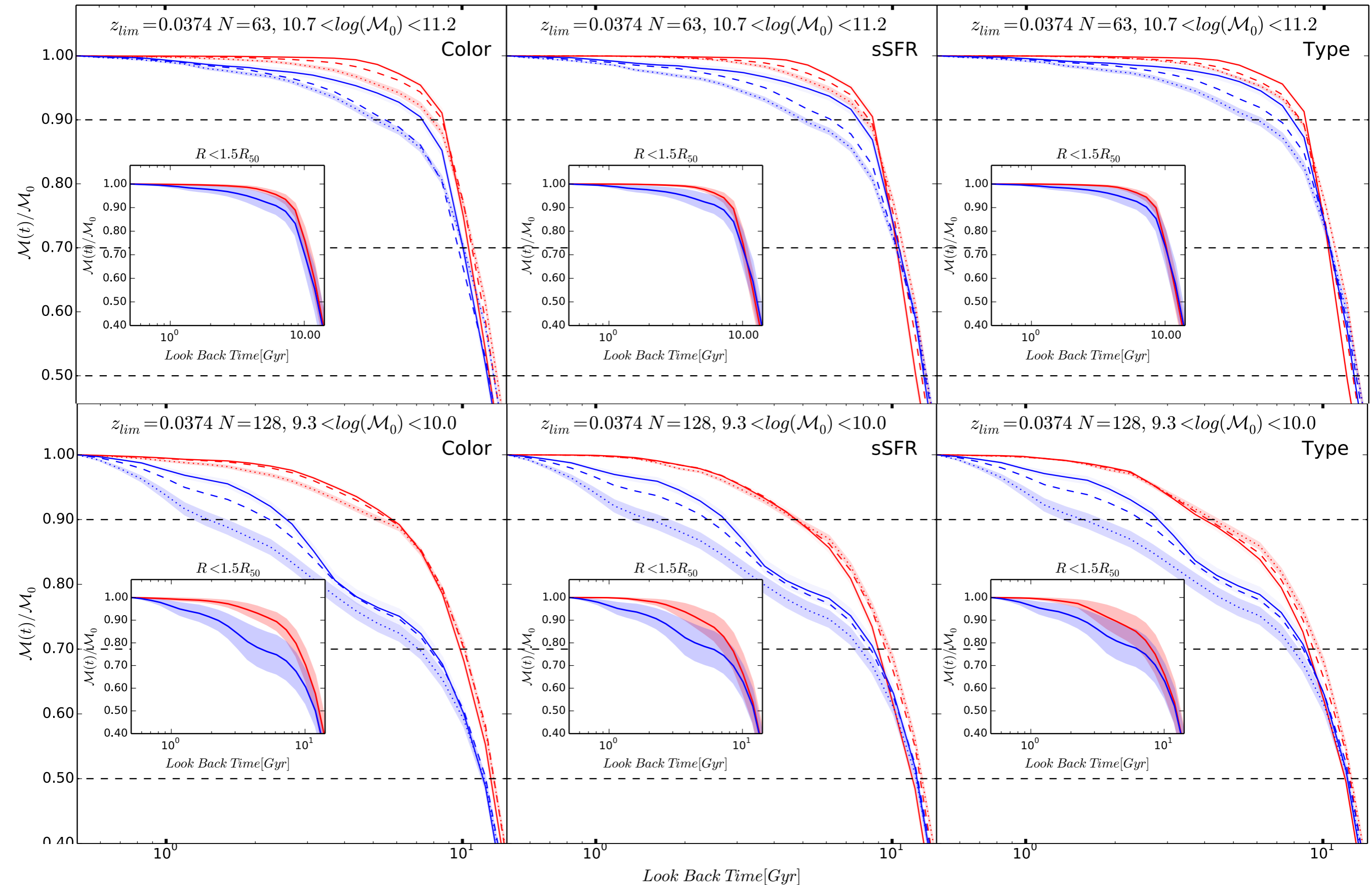
# The Sample

We finally work with 454 galaxies )



# Results





# Future Work

Mock MaNGA IFS with Cosmological Hydrodynamical Simulation

(Colin, Avila-Reese, Roca-Fabrega and Valenzuela in preparation)

