

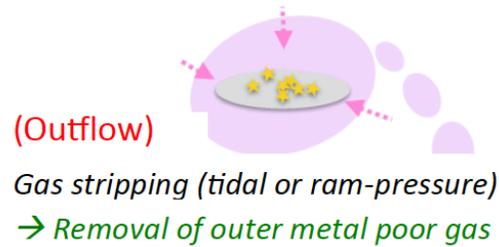
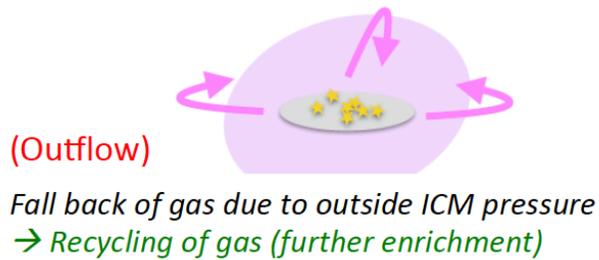
# Chemical evolution of cluster galaxies at $z=1.5$ revealed with gaseous metallicity with Keck and gas mass with ALMA

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**(Proto-)Cluster galaxies**

(Inflow)

A common halo rather than individual filamentary structures.  
Steady, but slow gas accretion from the common halo rather than cold streams.



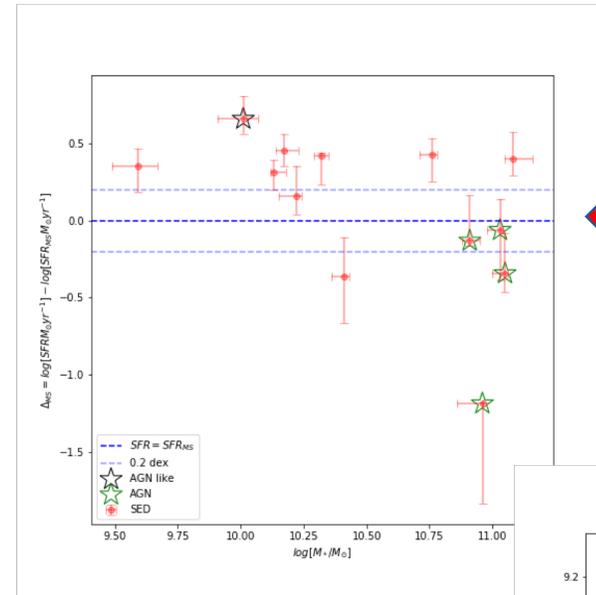
How galaxies in **dense region at high- $z$**  evolve to local early type galaxies in clusters ?



At high- $z$ , **cold-gas** largely affects galaxy evolution and **inflow/outflow, AGN feedback** regulate star-forming activity.



**What are the physical processes of inflow/outflow, and AGN feedback in dense regions at high- $z$  ?**



AGN feedback



Inflow Rate/  
Outflow Rate

