

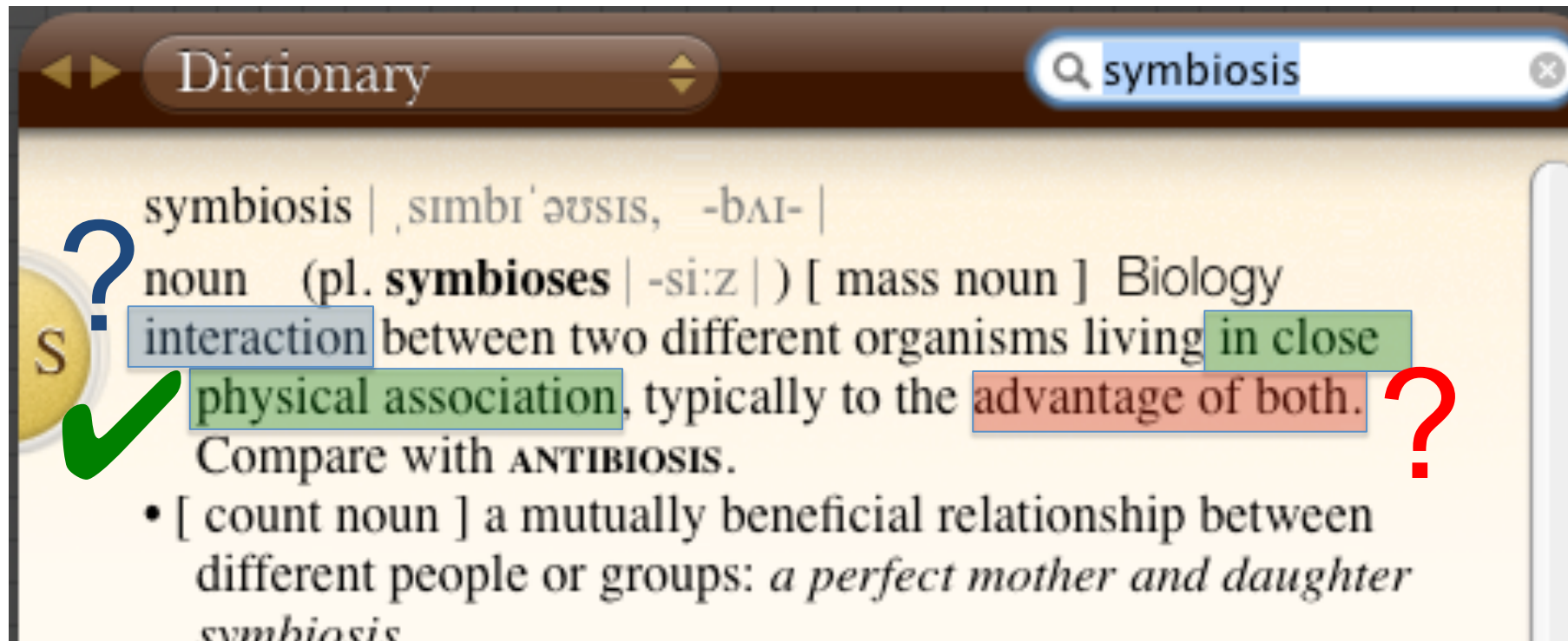
Discussion Session A: “Evidence”

What evidence is there for a
sybiotic connection between
AGN and star formation?

Chairs: James Aird and James Mullaney

Symbiosis?

- According to Dictionary on Mac (and Richard Bower)



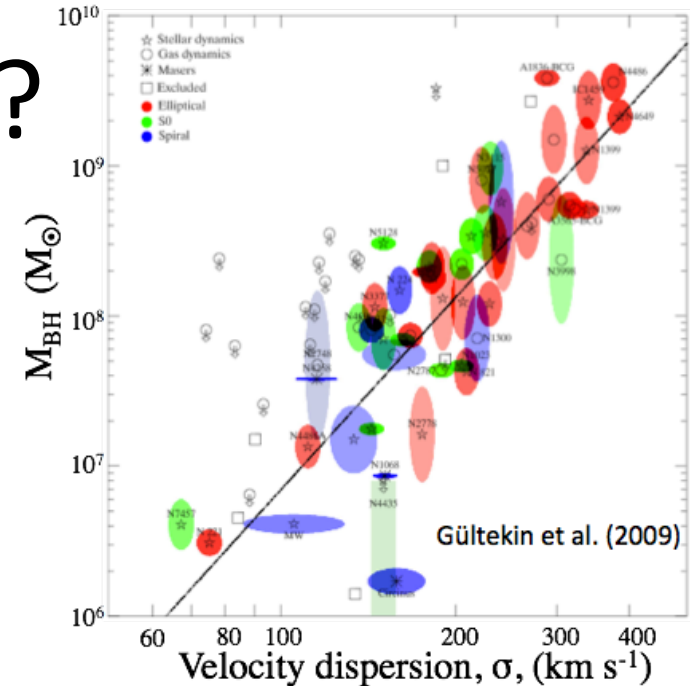
The image shows a screenshot of a Mac Dictionary application window. The title bar reads "Dictionary" and the search bar contains "symbiosis". The definition for "symbiosis" is displayed, with several words highlighted in colored boxes: "interaction" (blue), "in close" (green), "physical association" (green), and "advantage of both." (red). A blue question mark is positioned to the left of the definition, and a green checkmark is positioned below it. A red question mark is positioned to the right of the definition. The definition text is as follows:

symbiosis | ,simbi'əʊsɪs, -baɪ- |
noun (pl. **symbioses** | -si:z |) [mass noun] Biology
interaction between two different organisms living **in close**
physical association, typically to the **advantage of both.**
Compare with ANTIBIOSIS.
• [count noun] a mutually beneficial relationship between
different people or groups: *a perfect mother and daughter*
symbiosis

Symbiosis?

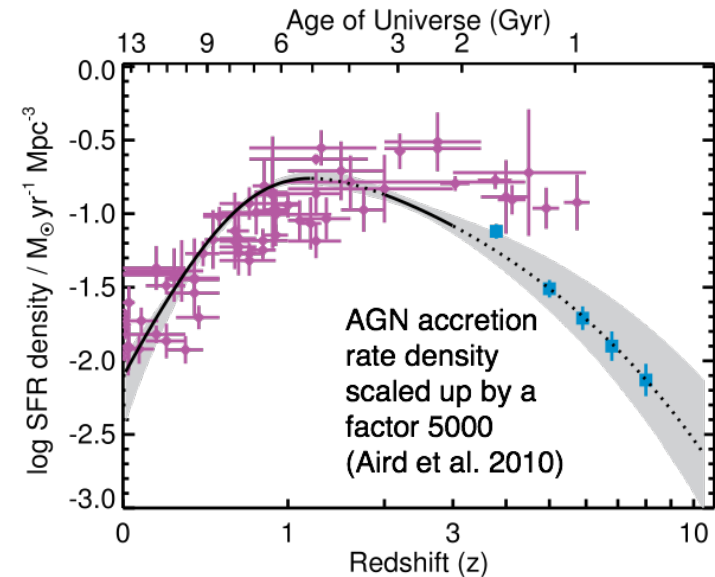
- What we asked....

A) BH-bulge relations



B) Vol-avg SFR and BH acc.

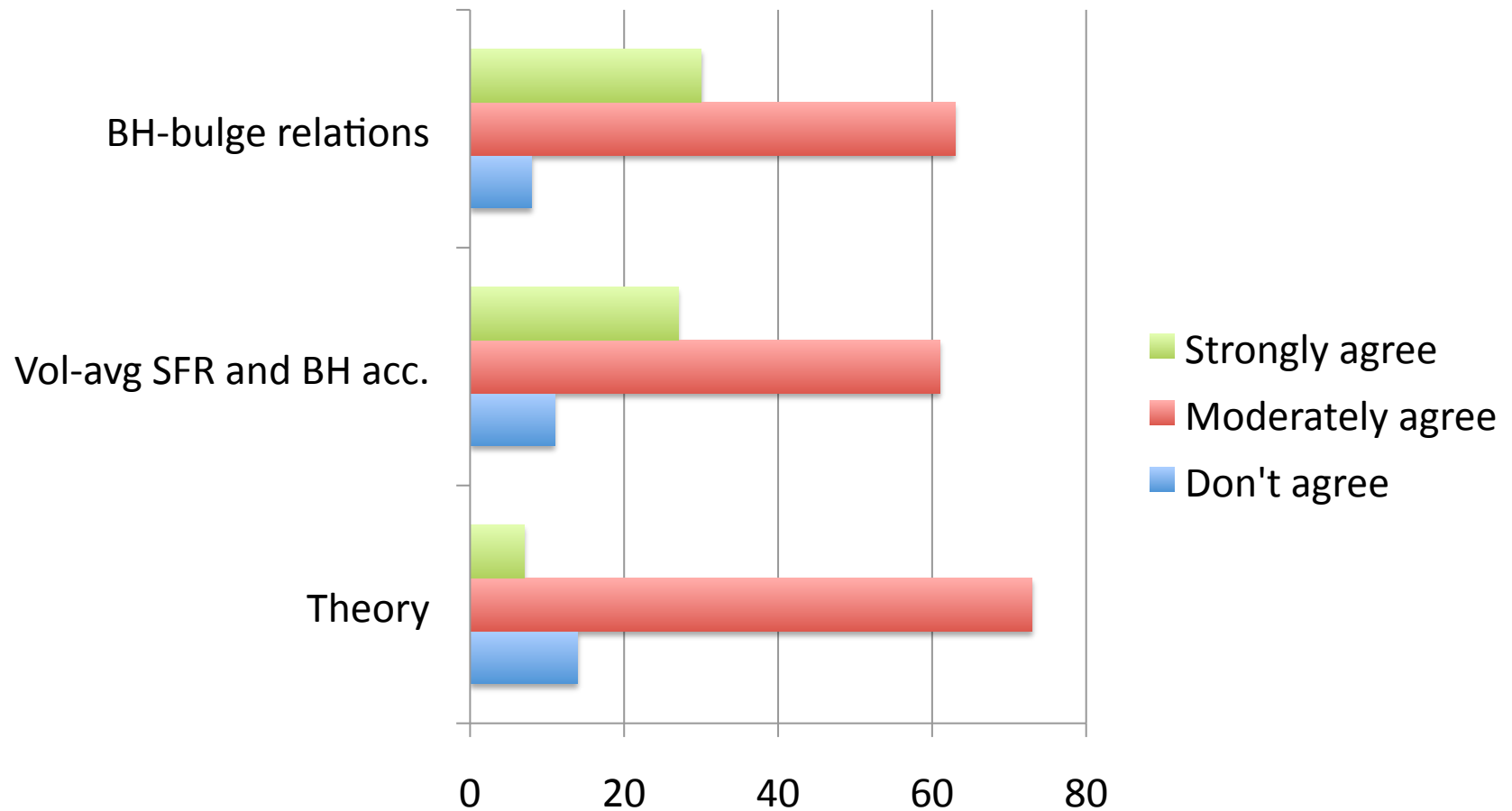
Global relations = symbiosis??



C) Theory (= evidence?)

Symbiosis

- What you said....



Correlation = interaction?

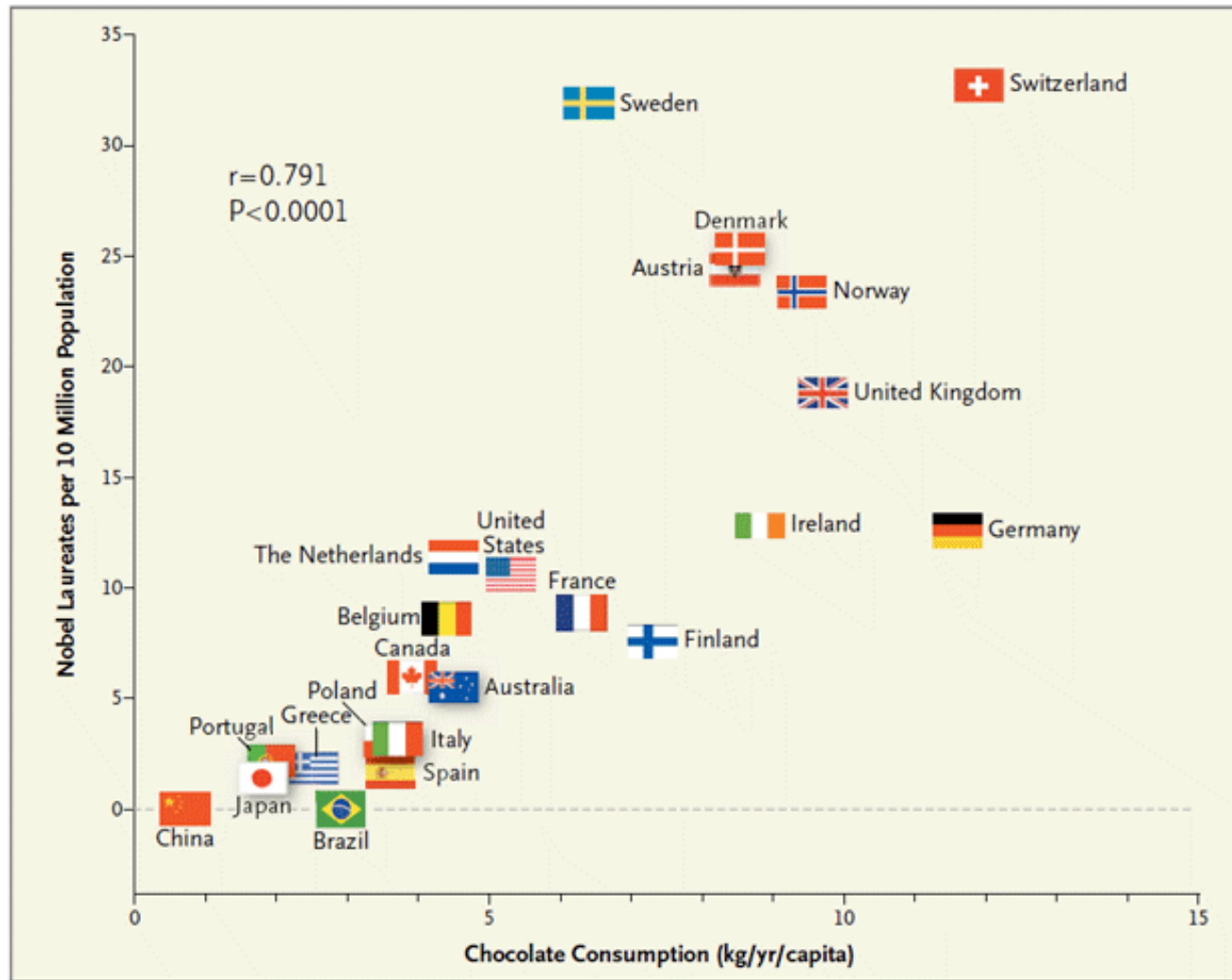


Figure 1. Correlation between Countries' Annual Per Capita Chocolate Consumption and the Number of Nobel Laureates per 10 Million Population.

Ask the audience:

Are BH-bulge relations and/or SFR-
accretion density correlation evidence
for a **symbiotic** connection?

- A) Yes
- B) No

What is (the best) evidence for a symbiotic connection?

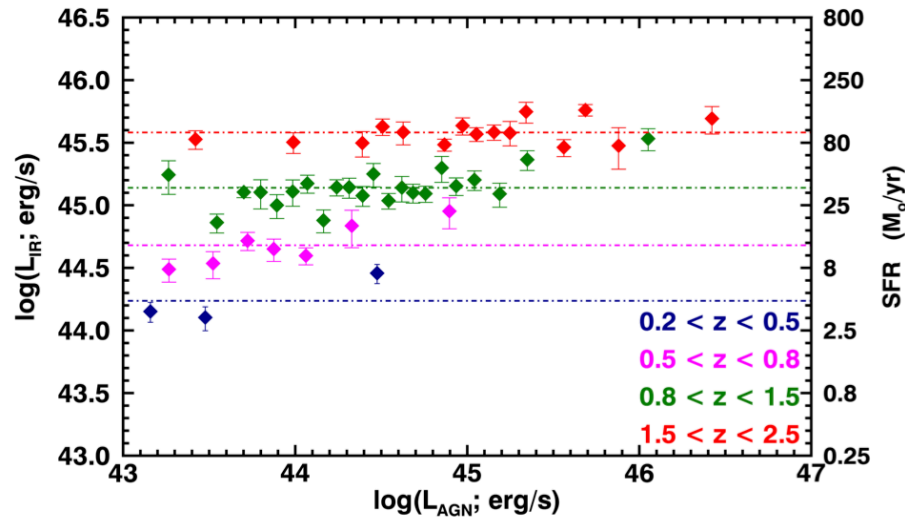
- A) Correlations between **nuclear** SFR and instantaneous L_{AGN}
- B) Correlation of SFR and **average** L_{AGN} (or BH accretion rate)
- C) Increased AGN **fraction** in SF galaxies
- D) **Radio** AGN are associated with quiescent galaxies/high mass halos/hot atmospheres
- E) None of these

What else is/would be evidence for a
symbiotic connection??

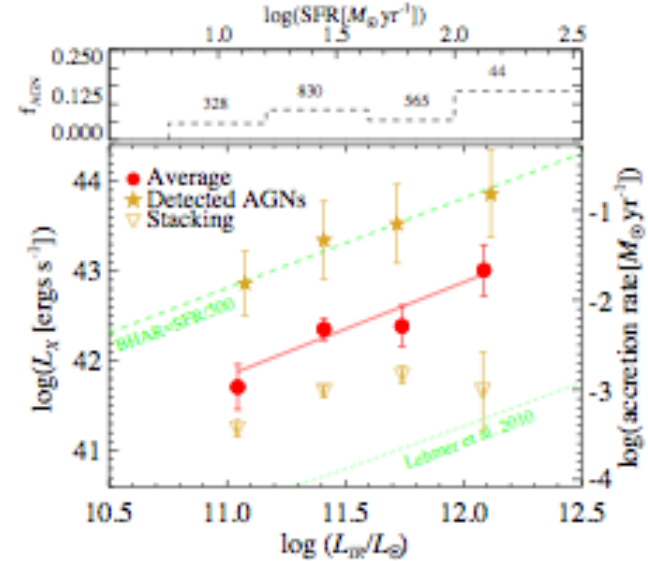
Connections between AGN luminosity and SF

- Symbiosis = mutual benefit
 - more SF = more AGN?
- Have we reached a consensus yet on SFR- L_{AGN} correlations?
- Issues = galaxy type, AGN type, luminosity range, range of SFR, redshift
- Are we plotting the right thing?
- Does short-term variability of AGN explain everything?

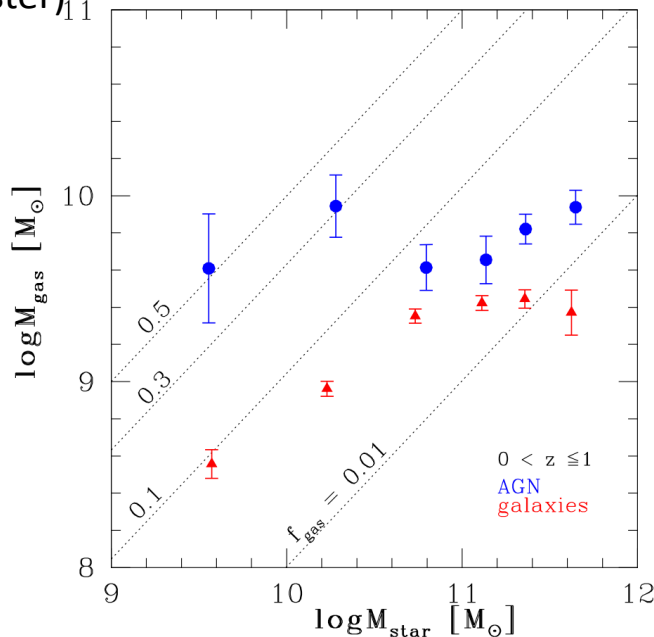
Are we plotting the right thing?



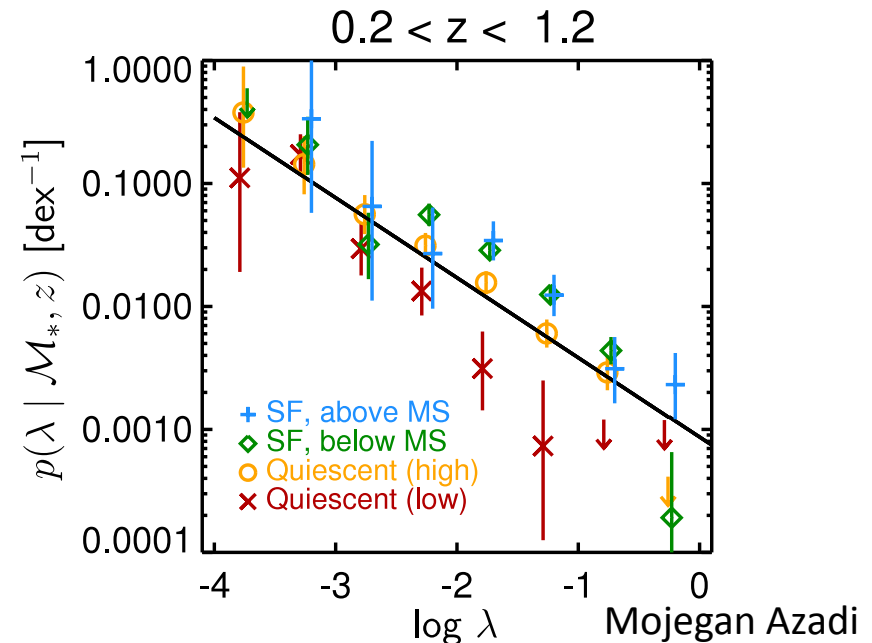
Flora Stanley (Poster A10) (+Rosario talk, Carroll poster, Uygun poster)₁₁



Chien-Ting Chen



Fabio Vito



Mojean Azadi

Ask the audience:
What type of galaxy is most likely to
host an AGN?

- A) Starburst galaxies
- B) Normal star-forming galaxies
- C) Quiescent galaxies
- D) Massive galaxies
- E) Green valley/transition galaxies
- F) All equally likely

Is there an evolution in the types of
galaxies that host AGN?

Is it just selection effects?

David Rosario / Taro Shimizu / Manuela Magliocchetti
/ Flora Stanley (poster) / Kenta Matsuoka (poster) /
Gulay Gurkan Uygun (poster)

How reliable is our evidence – how well can we measure AGN, host galaxy properties, etc.?

- What do we need to measure:
 - SFR (star formation history? IR vs opt/UV?)
 - host stellar mass (gas mass? halo mass?)
 - L_{AGN} X-ray? From SED fitting? IR? Radio?
 - BH mass, AGN accretion rate (Eddington ratio)
 - morphologies
- Laure Ciesla / Evanthia Hatziminaoglou / Chris Carroll (poster)