How do Galaxies Grow their Supermassive Black Holes?

Dr. Trump will use observations from the SDSS (z~0), COSMOS (z~1), and CANDELS (z~2) to demonstrate that the growth of supermassive black holes is connected to the star formation and morphology of their host galaxies. In particular, he will reveal how the observations rule out both mergers and violent disk instabilities as dominant fueling modes. Instead, most black hole growth is secularly fueled by the same gas which drives star formation, with no evidence for the rapid quenching of star formation by quasar feedback. Dr. Trump will also discuss the “chicken or egg” question of which grows first: the galaxy bulge, or the supermassive black hole. In contrast to the well-known local Mbh-sigma relation, actively accreting black holes are common even in low-mass and bulgeless disk galaxies at higher redshift. These data suggest that the supermassive black hole “egg” may be in place before the mature “chicken” phase of evolved bulges in the host galaxy.