

# Making the mega-band: Exploring how black holes become supermassive

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(Phys.org) —Rock stars live fast, die young and end their days self-destructively. University of Alberta postdoctoral fellow Jeanette Gladstone says, surprisingly, some stars live the same way.

While most live long and happy lives, just like our Sun, before dying quietly to become a white dwarf, a few others take on the rock star persona. These stars burn through their fuel rapidly, dying in a huge explosion that results in a black hole. The problem is most black holes are incredibly difficult to see because their extreme gravitational pull attracts anything that strays too close, even light! Yet with the right partner, this strong gravity can also lead to these rock stars' comebacks, allowing us to observe them long after their death. If a star strays too close, it can be slowly torn apart and eaten by the black hole.

These stellar mass black holes weigh between 3 and 100 times the mass of our Sun, but they are just garage bands compared to space's equivalent to Muse and the Rolling Stones. [Supermassive black holes](#) that live in the centers of galaxies can weigh hundreds of thousands to billions of times the [mass of the Sun](#). Gladstone says it remains a mystery how these rock stars made it so big. Supermassive black holes could have begun as indie bands that rocketed to stardom with a brand new #1 hit. To do this, the black holes would have to gorge excessively, at rates that require [new physics](#). We might also expect to see some black holes that are intermediate in mass between stellar-mass and supermassive black holes in our [nearby universe](#), like a band that is consistently releasing albums, but never making it truly big.

Gladstone, the Avadh Bhatia Fellow in the Department of Physics at the University of Alberta, spoke on May 30, 2013, at the annual meeting for Canadian astronomers to present her survey of the nearest bizarre black holes that are either rapidly gorging or intermediate in mass, and discuss how mega-band black holes make it big.

Provided by Canadian Astronomical Society

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