

Dark Matter not a Growth Factor

Galaxy bulges determine the mass of central black holes

At the center of most galaxies is a massive black hole. The heaviest are found in the largest galaxies, which, in turn, are surrounded by pronounced halos of dark matter. Scientists thus suspect that there could be a direct association between dark matter and black holes. A study by researchers from the Max Planck Institute for Extraterrestrial Physics, the University Observatory Munich and the University of Texas in



Named after its appearance: The Sombrero Galaxy (M104, NGC 4594) is an example of a galaxy system that is dominated by a large bulge. It contains a commensurately large black hole of around 1,000 million solar masses.

Austin contradicts this view: it is the bulge, the dense central area of a galactic system, that determines the mass of the central black hole. The team examined galaxies that

are embedded in massive halos of dark matter and therefore rotate at high speed, but have no or only small bulges. Their investigations showed that galaxies without a bulge contained – at best – black holes with very low mass, even if they were surrounded by massive halos. Therefore, it seems plausible that a black hole is fed by the bulge and thus grows. (NATURE, January 20, 2011)

Mussel Plastic

A polymer created in a laboratory has similar properties to a mussel protein, because it is cross-linked in the same way

Materials scientists like to be inspired by mussels: they copy mother-of-pearl, the adhesive that attaches the crustacean to the ground, the byssal fibers of their feet, and now the particularly tensile, strong and self-healing protein that surrounds the byssus as well. Scientists in the US have synthesized a polymer with similar structural properties to that which scientists working with Matt Harrington at the Max Planck Institute of Colloids and Interfaces discovered earlier.

Both the mussel protein and the artificial material are crosslinked with iron atoms, from which they derive their special properties. Synthetic polymers based on mussel protein could be suitable for use as new adhesives in underwater technology and in medicine. (PNAS EARLY EDITION, January 28, 2011)

I Spy with my Little Eye Something ... Green

Thyroid hormones regulate visual pigments in the eye throughout life

The thyroid gland uses hormones to determine how mice and rats see color. Thyroid hormones suppress the creation of UV/blue pigment in the color-sensitive cells in the retina and activate the production of green pigment. According to scientists at the Max Planck Institute for Brain Research in Frankfurt am Main, this is a lifelong effect. If the thyroid regulates the visual pigments in humans in a similar way, a low level of hormones caused by insufficient iodine in the diet or removal of the thyroid would affect the pigments in the cones and cause problems with color vision. As thyroid deficiency is usually treated before it can cause changes to vision, these dysfunctions have not been noticed before now. (JOURNAL OF NEUROSCIENCE, March 30, 2011)