Scientists find a biological 'fountain of youth' in new world bat caves

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Scientists from Texas are batty over a new discovery which could lead to the single most important medical breakthrough in human history -- significantly longer lifespans. The discovery, featured on the cover of the July 2009 print issue of The *FASEB Journal*, shows that proper protein folding over time in long-lived bats explains why they live significantly longer than other mammals of comparable size, such as mice.

"Ultimately we are trying to discover what underlying mechanisms allow for some animal species to live a very long time with the hope that we might be able to develop therapies that allow people to age more slowly," said Asish Chaudhuri, Professor of Biochemistry, VA Medical Center, San Antonio, Texas and the senior researcher involved in the work.

Asish and colleagues made their discovery by extracting proteins from the livers of two long-lived bat species (Tadarida brasiliensis and Myotis velifer) and young adult mice and exposed them to chemicals known to cause protein misfolding. After examining the proteins, the scientists found that the bat proteins exhibited less damage than those of the mice, indicating that bats have a mechanism for maintaining proper structure under extreme stress.

"Maybe Juan Ponce De León wasn't too far off the mark when he searched Florida for the Fountain of Youth," said Gerald Weissmann, M.D., Editor-in-Chief of The FASEB Journal. "As it turns out, one of these bat species lives out its long life in Florida. Since bats are rodents

with wings, this chemical clue as to why bats beat out mice in the aging game should point scientists to the source of this elusive fountain."

More information: Adam B. Salmon, Shanique Leonard, Venkata Masamsetti, Anson Pierce, Andrej J. Podlutsky, Natalia Podlutskaya, Arlan Richardson, Steven N. Austad, and Asish R. Chaudhuri. The long lifespan of two bat species is correlated with resistance to protein oxidation and enhanced protein homeostasis *FASEB J.* 2009 23: 2317-2326. doi: 10.1096/fj.08-122523.
www.fasebj.org/cgi/content/abstract/23/7/2317

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