

## Opinion

## HIBERNATION ANIMAL TO SURVIVAL IN THE WINTER WITHOUT FOOD AND LOW HEART RATE

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### INTRODUCTION

Hibernation is a condition that some animal species experience that involves decreased activity and metabolic depression. The main characteristics of the seasonal heterothermy known as hibernation include low body temperature, slow breathing, a sluggish heartbeat, and a low metabolic rate. The time of year when it occurs most frequently is winter. Hibernation is a means of energy conservation when there is not enough food available. To save energy, an endothermic animal slows its metabolic rate, which in turn lowers its body temperature. Hibernation can last a few days, a few weeks, or even several months, depending on the species, the environment, the time of year, and the individual's physical health. Animals need to save enough energy before hibernating in order to survive their full latent phase, which could last all winter. Larger species develop hyperphagia, when they consume a lot of food and store the energy as fat. Food storage often takes the place of eating and fat accumulation in tiny animals.

Ectothermic creatures also experience periods of metabolic slumber, known as diapause in several invertebrates. Although the more general term hibernation is thought to be enough to refer to any winter dormancy, some researchers and members of the public use the term brumate to characterise the winter dormancy of reptiles [1]. Some mammal species hibernate while carrying their offspring, which are either born while the mother hibernates or soon after. For instance, in order to give birth to their young, female black bears hibernate during the winter. Prior to hibernating, pregnant females noticeably increase their body mass, and the offspring's weight also reflects this increase [2]. They are able to give their infants a warm and caring environment because of the fat buildup. Animals known as obligatory hibernators do so voluntarily and yearly, regardless of the weather or their access to food. Numerous ground squirrel species, other rodent species, mouse lemurs, European hedgehogs and other insectivores, monotremes, and marsupials are examples of obligatory hibernators [3]. These creatures go through a process known as hibernation. A physiological condition in which the heart and breathing rates substantially slow down and the body temperature lowers to almost ambient levels.

The fat-tailed dwarf lemur of Madagascar, which hibernates in tree holes for seven months of the year, was discovered to hibernate. Although hibernation has long been researched in rodents, no primate or tropical mammal was previously

known to hibernate. Bears that are hibernating can recycle their proteins and urine, which prevents muscle atrophy and enables them to stop peeing for months. The metabolic fat produced in sufficient amounts to meet the bear's water requirements keeps them hydrated [4]. While hibernating, they also don't consume any food or liquids; instead, they rely on their fat reserves for nutrition. Hibernating bears are thought to preserve their bone mass and avoid osteoporosis despite prolonged inactivity and reduced food intake. They also raise the amount of several critical amino acids that are present in the muscle and control the transcription of a number of genes that prevent muscle atrophy [5].

All forms of winter dormancy in vertebrate animals are often referred to as hibernation. According to this definition, a variety of fish, amphibians, and reptiles that overwinter with body temperatures close to freezing are considered hibernators, as do some bears and other mammals that spend the most of the winter hibernating in dens [6]. However, the latter aren't really regarded true hibernators because they don't significantly drop their body temperature and wake up quite easily. The animal may even seem to be dead as the actual hibernator spends the majority of the winter in a state that is very near to death. Only a few breaths are taken each minute, and the heartbeat is so slow and sluggish that it is hardly audible. The animal slowly awakens when exposed to moderate heat, taking an hour or more to become alert. Any of the multiple slow, protracted reactions an organism has to environmental changes is known as acclimatisation. Such reactions are more or less automatic and reversible should the environment return to its previous state.

### REFERENCES

1. Tsiouris, J.A., 2005. Metabolic depression in hibernation and major depression: an explanatory theory and an animal model of depression. *Med. Hypotheses.*, 65: 829-840.
2. Grandal-d'Anglade, A., Perez-Rama, M., Garcia-Vazquez, A., and Gonzalez-Fortes, G.M., 2019. The cave bear's hibernation: reconstructing the physiology and behaviour of an extinct animal. *Hist. Biol.*, 31: 429-441.
3. Sharapov, V.M., 1984. Influence of animal hibernation on the development of mycoses. *Mycopathologia.*, 84: 77-80.
4. Mateo, J.M., and Johnston, R.E., 2000. Retention of social recognition after hibernation in Belding's ground squirrels. *Anim. Behav.*, 59: 491-499.

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5. Lovegrove, B. G., and Genin, F., 2008. Torpor and hibernation in a basal placental mammal, the Lesser Hedgehog Tenrec *Echinops telfairi*. *J. Comp. Physiol. B.*, 178: 691-698.
6. Al-Attar, R., and Storey, K.B., 2020. Suspended in time: Molecular responses to hibernation also promote longevity. *Exp. Gerontol.*, 134: 110889.