50 Years Ago

Animal Dispersion in Relation to Social Behaviour. By Prof. V. C. Wynne-Edwards — The theme of this book is that over-exploitation of food resources by an animal population will lead to dissipation of the resources and deterioration of the population; that there exists an optimum level of any food resource for allowing sustained productivity; that this needs to be matched by the maintenance of an optimum level of the animal population exploiting it; and that this optimum is attained by means of the many behaviour patterns and devices (especially social ones) found among animals. The author further postulates that this end-result of evolution has been brought about in the past not by individual natural selection, but by group selection of populations … The enormous weakness of this enormous book, so full of fascinating information, so impregnated with one particular teleological bias, is that it gives no single case-history of group selection … Whether it occurs widely at all the courageous reader had better decide for himself.
From *Nature* 16 February 1963

100 Years Ago

At the end of last month the president and fellows of Harvard College voted to establish the Harvard University Press, for the publication of works of a high scholarly character … The function of a university press should be to publish works of prime importance and distinctive merit which can rarely be profitable undertakings, but are nevertheless of high value to students in various departments of intellectual activity. This appears to be the aim of the Harvard syndics, as it is of like boards of other universities in the United States.
From *Nature* 13 February 1913

should explore how, during natural cellular processes, the inhibitory interaction between GAPR-1 and beclin-1 is overcome to induce autophagy.

These data are of therapeutic relevance, particularly with regard to microbial infections and disorders characterized by the accumulation of harmful intracellular proteins. Treatment of cells with Shoji-Kawata and colleagues' pro-autophagic peptide inhibited the replication of several viruses, including human pathogens such as HIV-1, West-Nile virus and chikungunya virus. This antiviral activity was also evident *in vivo* in mouse models of West Nile and chikungunya infections. Moreover, the peptide inhibited the replication of *Listeria monocytogenes* — the intracellular bacterium that causes the infection listeriosis. And it mediated the elimination of harmful protein aggregates associated with the neurodegenerative disorder Huntington's disease.

Thus, the beclin-1-derived peptide could potentially be used for treating diseases in which the induction of autophagy might be beneficial. Nonetheless, before this peptide or any other autophagy inducers can be used in the clinic, it is essential to determine their potential toxicity.

Shoji-Kawata and collaborators observed no significant toxicity in cells treated with therapeutically relevant concentrations of the pro-autophagy peptide, nor do they report any notable side effects of its administration in mice at concentrations that have antiviral activities. However, it remains to be determined whether the general beneficial effects of increased autophagy for treating infections and other disorders outweigh its possible harmful effects on normal cellular functions. In this respect, strategies that would induce autophagy specifically in infected or damaged cells would be preferable.

Such caveats notwithstanding, this paper clearly illustrates that a better understanding of the mechanisms by which pathogens counteract innate immune responses will make it possible not only to gain insight into the regulation of antimicrobial pathways, but also to devise broad-spectrum therapeutic strategies that potentiate innate immunity. Structural clues obtained about the synthesis of autophagosomes[7] should aid this understanding by providing a more detailed view of the biochemical processes that trigger autophagy. ■

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EARTH SCIENCE

All rise for the case of the missing magma

A detailed geological analysis of a ridge in the Indian Ocean suggests that compositional variations in Earth's mantle have a surprisingly crucial role in the uplift of a bathymetric bulge along the ridge. SEE ARTICLE P.195

JOHN MACLENNAN

Scientists have long been fascinated by the shape of the sea floor; many are curious to know what the scars and swells on Earth's solid outer skin reveal about our planet's deep interior. The mid-ocean ridges, where tectonic plates pull apart, are topped by a chain of volcanoes that circles the globe. The prevailing view among Earth scientists is that variation in the depth of these ridges is controlled by the temperature of the underlying mantle[1–5]. In places where the ridge rises into shallow water, as it does around Iceland, the mantle is thought to be unusually hot. On page 195 of this issue, however, Zhou and Dick[6] challenge this model of a purely thermal origin for such variation. Instead, they argue that these bulges along the mid-ocean ridges relate to compositional gradients in the underlying mantle, which are perhaps a relic of gigantic melting events that occurred during the break-up of supercontinents. If the authors' interpretation of their geological observations from a ridge in the Indian Ocean is correct, then their work has important implications for our understanding of the mantle*.

*This article and the paper under discussion[6] were published online on 6 February 2013.