

AGING

DNA mutations do not age yeast

The molecular basis of aging—just what it is that wears out and causes the functional decline of an aged cell or organism—remains unclear. In hope of better understanding this, Kaya *et al.* monitored individual yeast cells and sequenced their DNA to test whether accumulated DNA mutations are a cause of replicative aging in yeast. The number of daughter cells produced before a mother yeast cell dies defines the replicative life span of the mother cell. But the cells accumulated only 0.4 mutations over the life span of an average cell. Thus, at least in yeast, DNA mutations do not seem to cause aging. — LBR

Aging Cell 10.1111/ace.12290 (2015).

CLIMATE CHANGE

An underground route to the atmosphere

As climate changes and temperatures rise, so do concerns that methane emissions from



Arctic lakes, like this one in eastern Greenland, could emit more methane due to climate warming

the Arctic may increase, because methane is a powerful greenhouse gas. Arctic lakes are known to be an important source of methane, but the origins of their emissions are not well understood. Paytan *et al.* investigated Toolik Lake, Alaska, in order to determine what fraction of the methane it emits is from microbial activity within the lake versus how much is transported into the lake by groundwater. They find that groundwater supplies a major fraction of the lake's methane, which implies that if

Arctic warming causes this type of groundwater flow to increase, then the methane flux from lakes to the atmosphere could grow as well. — HJS

Proc. Natl. Acad. Sci. U.S.A. 10.1073/pnas.1417392112 (2015)

NONCODING RNA

Circular RNA transcriptional circuits

Scientists first observed circular RNAs, a type of noncoding RNA, in mammalian cells over 30 years

ago but are only now beginning to elucidate their functions. Circular RNAs generally contain either exclusively gene exon or gene intron sequences. Li *et al.* now describe an unusual class of circular RNAs in human cells that contain both exon and intron sequences. These RNAs localized to the nucleus, where they bound to protein components of the transcription machinery and RNA components of the splicing machinery. By binding to the promoters of their own genes, they fine-tuned transcriptional activation of these genes. — GR

Nat. Struct. Mol. Biol. 10.1038/nsmb.2959 (2015).

INFECTIOUS DISEASE

A virulence factor comes under scrutiny

The human pathogen *Streptococcus pyogenes* produces streptolysin S (SLS), a virulence factor that helps the pathogen to invade host cells and to evade recognition by the host immune system. Maxson *et al.* show that the HIV protease inhibitor nelfinavir blocks a key step during SLS biosynthesis. The authors synthesize and test nelfinavir analogs to study the role of the SagE protein in the SLS biosynthesis pathway. Use of these analogs to inhibit SLS production will help to elucidate how SLS contributes to *S. pyogenes* virulence and may even lead to novel treatment strategies. — JFU

ACS Chem. Biol. 10.1021/cb500843r (2015)



Pre-term infants are especially susceptible to necrotizing enterocolitis