

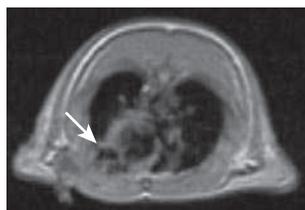
CARDIOVASCULAR BIOLOGY

Fooling the heart into repair

After a heart attack, a type of immune cell can lessen the damaging inflammatory response in the organ by recognizing cells undergoing apoptosis, or programmed cell death. To mimic this protective effect, Smadar Cohen at Ben-Gurion University of the Negev in Beer-Sheva, Israel, and her group designed a liposome — a lipid-based bubble — with the molecule phosphatidylserine on its surface. This is abundant on apoptotic cells, and prompts the immune system's macrophage cells to secrete anti-inflammatory factors.

The authors showed that mouse macrophages took up the liposomes and shifted to an anti-inflammatory mode. Rats injected with liposomes after an induced heart attack showed an accumulation of macrophages in the damaged area after four days (pictured with arrow). After four weeks, the rats also had a greater density of heart blood vessels than untreated animals and less remodelling of their left ventricle, a common after-effect of a heart attack.

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NATL ACAD. SCI.

IMMUNOLOGY

TB vaccine with a long view

Tuberculosis (TB) infection can enter an asymptomatic 'latent' phase and re-emerge later. The only approved TB vaccine,



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ECOLOGY

Mussel mix boosts erosion

Changes in biodiversity can alter not only the interactions between species in ecosystems, but also the physical habitat.

Daniel Allen and Caryn Vaughn at the University of Oklahoma in Norman hypothesized that changes in mussel biodiversity might influence the erosion of riverbed sediments because of species differences in burrowing behaviour and ability to cause water

turbulence. Using a series of artificial streams, they demonstrated that an increase in mussel species richness is associated with a rise in gravel erosion when population density is high — a result of interactions between species. This shows that biodiversity, and even changes in species abundance, can influence physical processes such as sediment transport.

Ecology doi:10.1890/10-0219.1 (2011)

BCG, targets just the disease's early, active stage. A vaccine candidate, H56, that contains an antigen from the latent phase affords mice longer-lasting protection against the disease than does BCG, report Claus Aagaard and Peter Andersen at the Statens Serum Institute in Copenhagen and their co-workers.

The H56 vaccine contains three antigens, including one, Rv2660c, that is expressed during TB's latent stage. When given to mice before infection, H56 generated more diverse T-cell responses than the BCG vaccine, and also yielded a lower bacterial load by 24 weeks post-infection. When administered after the mice

had been infected and treated with antibiotics, H56 protected the animals against developing reactivated infections. The team hopes to test the vaccine in humans.

Nature Med. doi:10.1038/nm.2285 (2011)

METABOLISM

Bitter aperitifs to aid digestion

The Roman tradition of drinking wine infused with bitter herbs before meals may have been wise: a study in mice reveals that bitter foods can temporarily aid digestion.

Bitter-taste receptors are found in the gut, as well as

the mouth. Inge Depoortere and her co-workers at the Catholic University of Leuven in Belgium treated mice with compounds that activate these receptors, and found a rise in a hunger hormone called ghrelin. Over the next half-hour, treated mice ate and digested more food than mice that started out with water. After that, digestion and feeding slowed.

These effects were reduced in mice lacking a protein called α -gustducin, which is also involved in taste. Tweaking this pathway could provide a new approach to tackling obesity and some digestive disorders.

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