

## IN BRIEF

 **ATHEROSCLEROSIS****Mitochondrial fission is crucial for efferocytosis**

Defective efferocytosis, the process of apoptotic cell clearance by macrophages, is a critical factor in the pathogenesis of atherosclerosis that leads to the accumulation of apoptotic cells and debris in atherosclerotic plaques. Uptake of multiple apoptotic cells by individual phagocytes is essential for the proper functioning of efferocytosis. Wang *et al.* now provide new insights into this process by showing that mitochondrial fission is required for continued efferocytosis. Apoptotic cell uptake by macrophages triggers mitochondrial fission induced by dynamin-related protein 1 (DRP1). Mitochondrial fission then enables efficient apoptotic cell degradation in phagolysosomes, as well as release of  $\text{Ca}^{2+}$  from the endoplasmic reticulum into the cytoplasm and  $\text{Ca}^{2+}$ -mediated vesicular trafficking, which in turn enable phagocytosis of a second apoptotic cell. Mice lacking DRP1 in myeloid cells have defective efferocytosis, which promotes the formation of advanced atherosclerotic lesions in *Ldlr*<sup>-/-</sup> mice fed a high-fat diet.

**ORIGINAL ARTICLE** Wang, Y. *et al.* Mitochondrial fission promotes the continued clearance of apoptotic cells by macrophages. *Cell* **171**, 331–345 (2017)

 **PREVENTION****Non-recreational physical activity reduces CVD risk**

Evidence that physical activity protects against cardiovascular disease (CVD) comes mostly from high-income countries, where physical activity is mainly recreational. However, in low-income and middle-income countries, physical activity is mainly non-recreational (related to transportation, occupation, and housework). Findings from the PURE study now show that both recreational and non-recreational physical activity are associated with cardiovascular benefits. The analysis included 130,843 participants from 17 countries of varying economic levels (mean follow-up of 6.9 years). Higher levels of physical activity were associated with a lower risk of CVD and death in all regions analysed, independently of economic level and type of activity. Even moderate levels (such as walking 30 min on most days of the week) were beneficial, with more pronounced benefits at high levels and no indication of a ceiling effect.

**ORIGINAL ARTICLE** Lear, S. A. *et al.* The effect of physical activity on mortality and cardiovascular disease in 130 000 people from 17 high-income, middle-income, and low-income countries: the PURE study. *Lancet* [http://dx.doi.org/10.1016/S0140-6736\(17\)31634-3](http://dx.doi.org/10.1016/S0140-6736(17)31634-3) (2017)

 **NUTRITION****Start your day with a high-energy breakfast**

Skipping breakfast is associated with an increased prevalence of atherosclerosis, according to new findings from the PESA study. For this cross-sectional study, 4,052 asymptomatic participants (aged 40–54 years) were compared on the basis of their breakfast patterns: high-energy (>20% of total daily energy intake; 27% of participants), low-energy (5–20% of total daily energy intake; 70% of participants), and no breakfast (<5% of total daily energy; 3% of participants). Regularly skipping breakfast was associated with a higher prevalence of noncoronary (OR 1.55) and generalized (OR 2.57) atherosclerosis compared with having a high-energy breakfast, independently of traditional and dietary cardiovascular risk factors. Modification of eating patterns is a low-cost approach for primary prevention with potentially large benefits for health.

**ORIGINAL ARTICLE** Uzhova, I. *et al.* The importance of breakfast in atherosclerosis disease: insights from the PESA study. *J. Am. Coll. Cardiol.* **70**, 1833–1842 (2017)