any of their pregnancies, it was only 5.5% for women who had no heartburn during pregnancy. After adjustment for confounders (including age, educational status and BMI), the risk of GERD was found to be independently associated with the presence of heartburn during pregnancy.

The authors suggest that the association between heartburn during pregnancy and subsequent GERD observed in their study should be confirmed in prospective studies.

Original article Bor S *et al.* (2007) Association of heartburn during pregnancy with the risk of gastroesophageal reflux disease. *Clin Gastroenterol Hepatol* **5:** 1035–1039

Moderate alcohol consumption has a protective effect on the liver

There is considerable evidence that moderate alcohol consumption helps to protect against cardiovascular disease, diabetes mellitus, and insulin resistance, but its effect on the liver remains controversial. A study by a joint US and Japanese team now suggests that light-to-moderate alcohol consumption has a protective effect on liver function.

Suzuki *et al.* examined the health-care records of 1,177 male employees in a Japanese government office to determine the effect of alcohol consumption on serum aminotransferase levels. Female employees were excluded from the study because most were nondrinkers. Information about alcohol consumption was collected from questionnaires completed at annual health check-ups. Light-to-moderate alcohol consumption (defined as 70–139 g and 140–279 g/week, respectively) was associated with a decreased risk of hypertransaminasemia compared with no or minimal consumption. When participants were stratified by age, moderate consumption was associated with least risk in those aged younger than 41 years (the median age), whereas light consumption produced the lowest risk in older participants. Excess alcohol consumption (defined as ≥280 g/week) correlated with a 1.4-fold excess risk of hypertransaminasemia. After 5 years of follow-up, moderate, but not light, alcohol consumption was associated with a lower incidence of hypertransaminasemia compared with no or minimal consumption in the youngest 326 participants (aged <40 years).

The authors conclude that light-to-moderate alcohol consumption might protect against hypertransaminasemia in healthy males.

Original article Suzuki A *et al.* (2007) Light to moderate alcohol consumption is associated with lower frequency of hypertransaminasemia. *Am J Gastroenterol* **102:** 1912–1919

A treatment that abolishes the immunotoxicity of gluten in celiac disease

The development by an Italian research team of a method to reduce the immunogenicity of gluten could be of great benefit to people with celiac disease. Celiac disease is caused by an immune reaction to digestive products of gluten in people expressing human leukocyte antigen (HLA) DQ2 and DQ8 heterodimers. Binding of certain gluten-derived peptides to DQ2 or DQ8 molecules results in an inflammatory response mediated by interferon-γ. In particular, deamidation of certain glutamine residues to glutamate by intestinal tissue transglutaminase enzyme results in more-acidic peptides with greater affinity for DQ2 and DQ8, and consequently a more severe T-cell-mediated inflammatory response. Gianfrani *et al.* found that blocking these glutamine residues with lysine methyl ester (Lys-CH_3) strongly inhibited the immune response to immunotoxic peptides in T cells from patients with celiac disease.

A transamidation reaction attached Lys or Lys-CH_3 to a glutamine residue of α-gliadin p56–68, an immunotoxic derivative of gluten. The modified peptide had greatly reduced affinity for the DQ2 heterodimer, and significantly reduced interferon-γ release (indistinguishable from a negative control) from T cells of patients with celiac disease compared with native or deamidated peptides.

Treating wheat flour with microbial transglutaminase in the presence of Lys-CH_3 neutralized the immunotoxicity of the digested products. Gluten extracts from treated flour produced minimal interferon-γ release from celiac disease T cells; by contrast, untreated extracts evoked a strong response.

The results suggest that wheat products can be enzymatically modified to eliminate immunotoxic effects in individuals with celiac disease.

Original article Gianfrani C *et al.* (2007) Transamidation of wheat flour inhibits the response to gliadin of intestinal T cells in celiac disease. *Gastroenterology* **133:** 780–789