IN BRIEF

IMMUNOTHERAPY

Killer combo

Cytotoxic T lymphocyte-associated antigen 4 (CTLA4) and programmed cell death 1 (PD1) receptor inhibit antitumour immunity through complementary and non-redundant mechanisms. A new trial assessed the combination of ipilimumab (a CTLA4-specific monoclonal antibody) and nivolumab (a PD1-specific monoclonal antibody) in 142 patients with metastatic melanoma who had not previously received treatment. The patients were randomly assigned to receive either ipilimumab and nivolumab or ipilimumab alone. The primary end point of this study specifically addressed patients with BRAF wild-type melanoma, as no high responses to BRAF inhibitors have been reported in these patients, and therefore their options are limited. Among these patients, objective response was 61% in the combination group versus 11% in the ipilimumab-monotherapy group ($P < 0.001$), and response in patients with BRAF mutations was similar (52% versus 10%). Progression-free survival was not reached in patients receiving the combination therapy and was 4.4 months in patients receiving only ipilimumab. More toxic effects were reported in the combination group (54% versus 24% of patients). In addition, as melanoma commonly metastasizes to the myocardium, overly vigorous responses in that area could cause myocardial damage with grave consequences.

ORIGINAL RESEARCH PAPER Postow, M. A. *et al.* Nivolumab and ipilimumab versus ipilimumab in untreated melanoma. *N. Engl. J. Med.* http://dx.doi.org/10.1056/NEJMoa1414428 (2015) | Chapman, P. B. *et al.* Rapid eradication of a bulky melanoma mass with one dose of immunotherapy. *N. Engl. J. Med.* http://dx.doi.org/10.1056/NEJMc1501894 (2015)

TUMOUR IMMUNOLOGY

Eosinophils — T cells' little helpers

Eosinophilia is frequently observed in cancer and eosinophils are attracted to tumours but it is still unknown whether they play an active part in tumour rejection. Carretero *et al.* have shown that, in the presence of tumour-specific $CD8^+$ T cells, eosinophils secreted chemokines that guided T cells to melanoma tumours grown in C57BL/6N mice, which resulted in tumour eradication and survival. Conversely, depletion of eosinophils resulted in impaired infiltration of T cells into the tumour. Activation of eosinophils also triggered substantial changes in the tumour microenvironment, including macrophage polarization and normalization of the tumour vasculature, which facilitates T cell infiltration and tumour rejection.

ORIGINAL RESEARCH PAPER Carretero, R. *et al.* Eosinophils orchestrate cancer rejection by normalizing tumor vessels and enhancing infiltration of $CD8^+$ T cells. *Nature Immunol.* http://dx.doi.org/10.1038/ni.3159 (2015)

METABOLISM

Bacterial biofilms may feed colon cancer

The tissue in and around tumours of the ascending colon frequently harbours bacterial conglomerations called biofilms. Johnson *et al.* studied the role of biofilms in colon cancer metabolism by analysing the metabolome of patient-matched colon cancers and normal tissues, with or without biofilms. They observed upregulation of polyamine metabolites, in particular N^1,N^{12}-diacetylspermine, in biofilm-positive cancer tissues. As bacteria require polyamines for growth and biofilm formation, the authors hypothesize that a vicious cycle exists, in which the cancerous cells and the biofilms both seem to be contributing to N^1,N^{12}-diacetylspermine overproduction.

ORIGINAL RESEARCH PAPER Johnson, C. H. *et al.* Metabolism links bacterial biofilms and colon carcinogenesis. *Cell Metab.* http://dx.doi.org/10.1016/j.cmet.2015.04.011 (2015)