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IN BRIEF

CANCER PREDISPOSITION

Searching for early events

Zhang *et al.* examined genetic predisposition to cancer by carrying out whole-exome and whole-genome sequencing of 1,120 patients with cancer who were less than 20 years old. They analysed the sequences of 565 genes that are known to be associated with cancer and were able to identify mutations that were considered to be at least 'probably pathogenic' in only 8.5% of the cohort. It is surprising that the genetic alteration that predisposed these patients to cancer at such a young age could be identified in so few, demonstrating that we have much more to learn.

ORIGINAL ARTICLE Zhang, J. *et al.* Germline mutations in predisposition genes in pediatric cancer. *N. Engl. J. Med.* http://dx.doi.org/10.1056/NEJMoa1508054 (2015)

AGEING

(In)flaming susceptibility

Cancer incidence increases with age, but the mechanisms underlying this effect remain unclear. Henry *et al.* showed that B cell progenitor cells had defective signalling and metabolism, as well as altered gene expression. These defects were recapitulated in B cell progenitors derived from young mice when they were transplanted into old mice. The reduced fitness that resulted from these changes was reversed by expression of oncogenes such as *Myc*, leading to leukaemogenesis. Ageing was associated with bone marrow inflammation, and when this was reduced through expression of α1-antitrypsin or interleukin-37 (IL-37), B cell progenitors were functional and resisted $NRAS^{G12V}$-mediated transformation. Thus, inflammation-exposed B cell progenitors are more liable to undergo transformation than those from young mice that are not situated in an inflammatory microenvironment.

ORIGINAL ARTICLE Henry, C. J. *et al.* Aging-associated inflammation promotes selection for adaptive oncogenic events in B cell progenitors. *J. Clin. Invest.* **125**, 4666–4680 (2015)

NANOTECHNOLOGY

Improving drug delivery with algae

Nanoporous silica-based materials can be used to package drugs that are poorly water soluble. But production of these materials is expensive, so Delalat *et al.* used the diatom microalga *Thalassiosira pseudonana* to produce nanoporous biosilica on which is attached an immunoglobulin G (IgG)-binding domain of protein G. Thus, these molecules could be attached to antibodies that target certain tumour cells. Treatment of mice bearing neuroblastoma xenografts with drug-loaded, antibody-targeted biosilica nanoparticles induced tumour regression.

ORIGINAL ARTICLE Delalat, B. *et al.* Targeted drug delivery using genetically engineerd diatom biosilica. *Nat. Commun.* **6**, 8791 (2015)

NEUROBLASTOMA

Enhancing risk

Single nucleotide polymorphisms (SNPs) in LIM domain only 1 (*LMO1*) are known to be associated with increased risk of neuroblastoma. Oldridge *et al.* have now found that the SNP rs2168101G>T is most highly associated with neuroblastoma and is found within a super-enhancer in intron 1 of *LMO1*. The T allele is associated with reduced neuroblastoma risk and ablates binding of the GATA3 transcription factor to the super-enhancer. Therefore, differential GATA transcription factor activity may underlie neuroblastoma risk.

ORIGINAL ARTICLE Oldridge, D. A., Wood, A. C. *et al.* Genetic predisposition to neuroblastoma mediated by a *LMO1* super-enhancer polymorphism. *Nature* http://dx.doi.org/10.1038/nature15540 (2015)