Wakabayashi *et al.* showed previously that mutations in *Bcl11b* could result in thymic lymphoma in mice. Here, they generated *Bcl11b*$^{-/-}$ mice, which also died soon after birth, and examined lymphocyte development in embryos lacking this protein. Thymic cellularity was reduced in the absence of Bcl11b, and αβ T-cell development was severely, although not entirely, blocked in the double-negative compartment at the CD25^{+}CD44^{-} to CD25^{-}CD44^{-} transition.

Reconstitution of irradiated recipient mice with *Bcl11b*$^{-/-}$ fetal liver cells resulted in normal development of γδ T cells and B cells, but αβ T-cell development, as in the knockout mice, was blocked at an early stage. In addition, further experiments indicated that *Bcl11b*$^{-/-}$ thymocytes were highly susceptible to apoptosis, although the downstream targets in this pathway remain unknown. Taken together, these results show that Bcl11b has an important role in regulating the differentiation and survival of thymocytes.

Jenny Buckland

References and links

ORIGINAL RESEARCH PAPERS Liu, P. *et al.* Bcl11a is essential for normal lymphoid development. *Nature Immunol*. 28 April 2003 (DOI: 10.1038/nri925) | Wakabayashi, Y. *et al.* Bcl11b is required for differentiation and survival of αβ T lymphocytes. *Nature Immunol.* 28 April 2003 (DOI: 10.1038/nri927)

FURTHER READING Satterwhite, E. *et al.* The BCL11 gene family: involvement of BCL11A in lymphoid malignancies. *Blood* **98**, 3413–3420 (2001) | Wakabayashi, Y. *et al.* Homozygous deletions and point mutations of the *Rit1/Bcl11b* gene in γ-ray induced mouse thymic lymphomas. *Biochem. Biophys. Res. Commun.* **301**, 598–603 (2003)

the selective destruction of malignant B-cell populations in autoimmune diseases, such as systemic lupus erythematosus, and cancers, such as lymphoma and leukaemia.

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References and links

ORIGINAL RESEARCH PAPER Goodyear, C. S. & Silverman, G. J. Death by a B-cell superantigen: *in vivo* V_H-targeted apoptotic supraclonal B-cell deletion by a Staphylococcal toxin. *J. Exp. Med*. **197**, 1125–1139 (2003)

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IN BRIEF

HIV

Perturbations in B cell responses to CD4^{+} T cell help in HIV-infected individuals.

Moir, S. *et al. Proc. Natl Acad. Sci. USA* **100**, 6057–6062 (2003)

Infection with HIV results in defective B-cell responses, which have been investigated previously using *in vitro* surrogates of antigen stimulation. In this study, Moir *et al.* used a more physiological system to investigate the effects of HIV infection on B-cell responses to T-cell help. Co-culture of B cells and CD4^{+} T cells from HIV-infected individuals resulted in poor B-cell proliferation despite normal expression of CD154 by the activated T cells. Further experiments showed that this was due to reduced B-cell expression of CD25 (the IL-2 receptor), resulting in a reduced ability of the B cells to proliferate in response to IL-2. This study helps to explain why humoral responses against HIV are ineffective.

B-CELL RESPONSE

E-proteins directly regulate expression of activation-induced deaminase in mature B cells.

Sayegh, C. E. *et al. Nature Immunol.* 28 April 2003 (DOI: 10.1038/ni923)

Previous work indicated that the E-protein transcription factors might have a role in B-cell activation and class-switch recombination (CSR) and this new study provides a molecular mechanism to explain how. The authors show that expression of *Aicda* — the gene that encodes activation-induced cytidine deaminase, the only B-cell-specific factor that is crucial for CSR — can be induced by overexpression of the E-protein E47, whereas overexpression of the E-protein inhibitor Id3 can suppress *Aicda* expression. By comparison of mouse and human *AICDA* loci, they identified a highly conserved regulatory sequence that contains two E-box sites. E-protein binding to these sites was shown to activate transcription of the *Aicda* locus.

IMMUNE EVASION

Steroid hormone synthesis by vaccinia virus suppresses the inflammatory response to infection.

Reading, P. C. *et al. J. Exp. Med.* **197**, 1269–1278 (2003)

The mammalian enzyme 3β-hydroxysteroid dehydrogenase (3β-HSD) is central to the synthesis of all steroid hormones, including anti-inflammatory glucocorticoids. Vaccinia virus (the smallpox vaccine virus) seems to exploit the immunosuppressive properties of steriods by encoding its own 3β-HSD, known as the A44L protein. *A44L* has been shown previously to contribute to virulence in a mouse-infection model; this study investigates the potential immune mechanisms behind this observation. Early in infection, *A44L*-mutant virus induced lower levels of the glucocorticoid corticosterone than the wild-type virus. Although the initial inflammatory responses induced by both viruses were similar, the recruitment and activity of CD4^{+} and CD8^{+} T cells was greater with the mutant virus. This indicates that *A44L* promotion of corticosterone synthesis leads to the suppression of the host response to vaccinia.