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Discerning the life and times of T cells is central to our understanding of adaptive immunity, and in this issue we bring you several articles that deal with their development, differentiation and kinship.

The two genetically distinct T cell lineages — $\alpha\beta$ and $\gamma\delta$ T cells — arise from the same precursor cell in the thymus, but what are the factors that regulate $\alpha\beta$ versus $\gamma\delta$ T cell lineage development? Maria Ciofani and Juan Carlos Zúñiga-Pflücker discuss this question, focusing on the role of T cell receptor-derived signals and environmental cues in the development of $\gamma\delta$ T cells (page 657).

After mature T cells leave the thymus, they can differentiate into functionally distinct T cell subsets depending on the signals that they receive. The current technologies that are used to map the fate and history of T cells, and thereby determine how prior signalling affects the functions of T cells, are described on page 621. The potential value of new technologies that could determine T cell migratory patterns or prior signalling inputs is also discussed.

Nuclear factor of activated T cells (NFAT) is a transcription factor that has a central role in the activation and differentiation of certain T cell subsets and in T cell tolerance. As discussed by Martin Müller and Anjana Rao on page 645, recent findings have extended the functional importance of NFAT to other immune cells and have documented a role for aberrant NFAT signalling in tumour development and metastasis.

Finally, T cell subsets can be identified by the surface markers and transcriptional regulators that they express and the effector molecules that they produce. A Poster by Chen Dong and Gustavo Martinez that summarizes the markers of the main T cell subsets is freely available at <http://www.nature.com/nri/posters/tcellsubsets/index.html>, thanks to support from Abcam.

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