



**Figure S3:** RAG1/2-mediated coupled cleavage of  $pTCR\beta^{wt}$  and  $pTCR\beta^{DMF}$  substrates.

12- and 23-RSS are respectively represented by black and white triangles. Dotted triangles correspond to D $\beta$ 1 12- and 23-RSS. In the  $pTCR\beta^{DMF}$  the 3'D $\beta$ 1 23RSS is replaced by the V $\beta$ 14 23RSS (3'D $\beta$ 1<sup>V $\beta$ 14</sup>) and the J $\beta$ 1.2 12RSS is replaced by the 5'D $\beta$ 1 12RSS (J $\beta$ 1.2<sup>5'D $\beta$ 1</sup>). The localization of probes A and B used to detect signal ends products are indicated. The coupled cleavage assays were performed as described in Fig. 5B and in the Materials and Methods section. For  $pTCR\beta^{wt}$  the 3'D $\beta$ 1-J $\beta$ 1.1 is detected. For  $pTCR\beta^{DMF}$ , the products of the various possible coupled cleavages are detected: V $\beta$ -J $\beta$ 1.2<sup>5'D $\beta$ 1</sup>, the V $\beta$ -5'D $\beta$ 1 and the 3'D $\beta$ 1<sup>V $\beta$ 14</sup>-J $\beta$ 1.2<sup>5'D $\beta$ 1</sup>. The 3'D $\beta$ 1<sup>V $\beta$ 14</sup>-J $\beta$ 1.2<sup>5'D $\beta$ 1</sup> coupled cleavage is at least as efficient than the 3'D $\beta$ 1-J $\beta$ 1.1 coupled cleavage of the  $pTCR\beta^{wt}$  substrate and therefore does not appear to be considerably slowed down. In  $pTCR\beta^{DMF}$  the V $\beta$ -5'D $\beta$ 1 coupled cleavage is not impeded by the flanking V $\beta$ 14 23RSS and is in fact quite efficient, this is consistent with our *in vivo* results indicating that at TCR $\beta^{DMF}$  minilocus some V-D rearrangements are detected before D-J rearrangements (Figure 6).