Genomic structure and inducible expression of the IL-22 receptor α chain in mice

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IL-22 is a newly identified member of the interferon/IL-10 family. In humans, IL-22 signals through a heteroduplex receptor consisting of IL-22R and CRF2-4/IL-10Rβ. To investigate the physiological function of IL-22 and IL-22R, we isolated a cDNA encoding the mouse IL-22R, which has been a missing component of the functional receptor complex for mouse IL-22. Subsequently, we identified the genomic sequence of the mouse IL-22R gene by a database search. The gene consists of about 24 kb and is split into 7 exons. Interestingly, intron 2 begins with a GC dinucleotide instead of the consensus GT, although otherwise the overall structure of the mouse IL-22R gene is strikingly similar to its human counterpart. The gene was mapped to mouse chromosome 4 in the region syntenic to the human IL-22R gene locus. In normal mice, IL-22R mRNA is detected at very low levels in restricted organs such as the kidney, liver, and lung. However, upon lipopolysaccharide stimulation, IL-22R mRNA expression is highly upregulated in the liver, in contrast to CRF2-4, which is expressed constitutively in a variety of tissues. Thus, the expression of the functional IL-22 receptor in the liver is regulated at the gene transcription level.

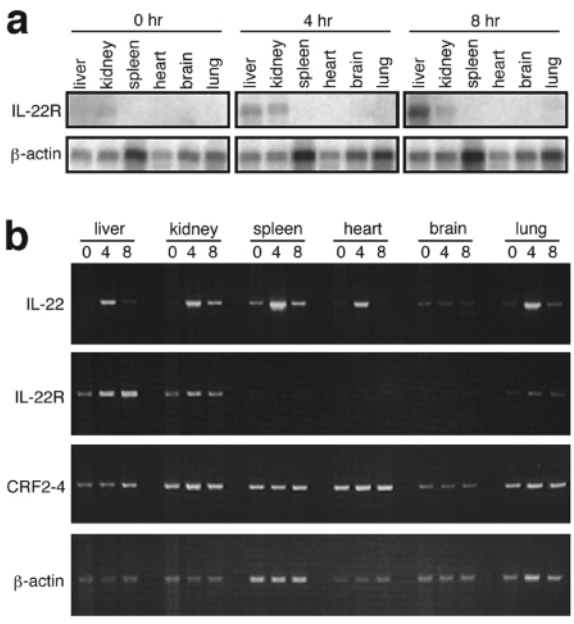

Figure. Constitutive and inducible expression of IL-22R mRNA. a. Mice were left untreated (0 hr) or intraperitoneally injected with 2 μg of LPS. Four or eight hours later, these mice were sacrificed and poly(A)$^+$ RNA was prepared from the indicated organs. IL-22R mRNA (upper panels) and β-actin mRNA as an internal control (lower panels) were then visualized by Northern blotting. b. Poly(A)$^+$ RNA was prepared from mice untreated (0 hr) or treated with LPS for 4 or 8hr as described above. Expression of the mRNAs for IL-22, IL-22R, CRF-2-4, and β-actin was visualized by semi-quantitative RT-PCR.

Reference: Genes Immun. (2003) in press.