



Figure 1.8 Domain structure of proteins. The core structure (amino acids approximately 130–712) shows binding of a STAT1 dimer to DNA and the location of binding sites of various proteins in various domains. The amino-terminal structure, the placement of which in the intact structure is undefined, also interacts with various partners, as does the carboxy-terminal transactivation domain, the structure of which is unknown. CBP, CREB binding protein; IRF, interferon regulatory factor; Mcm, minichromosome maintenance; Nmi, N-Myc interactor; PIAS, protein inhibitor of activated STAT; STAT, signal transducer and activator of transcription; SH2, Src-homology-2 domain; IRF9, interferon regulatory factor 9 gene; c-jun, protein encoded by JUN gene; crm1, chromosomal maintenance 1, also known as Exportin 1; pS and pY, phosphorylation site and tyrosine phosphorylation site. (From D. E. Levy and J. E. Darnell, Jr, *Nature Reviews Molecular Cell Biology* 3, 651–662, September 2002. With permission.)

One domain may appear in a variety of different proteins. Molecular evolution uses domains as building blocks, and these may be recombined in different arrangements to create proteins with different functions. Domains vary in length from between about 25 amino acids up to 500 amino acids. The shortest domains such as zinc fingers are stabilized by