

Cryo-EM SPA for Structural Understanding of A-to-I RNA Editing: Human Adenosine Deaminase Acting on RNA 2 (ADAR2) Complexed with dsRNA

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Adenosine deaminases acting on RNA (ADARs) are enzymes which convert adenosine to inosine in the double-stranded RNA of humans and other animals. Double-stranded RNA-binding domains (dsRBDs) are present in all ADARs and are the main determinants of how many bases on a given RNA are edited. A healthy level of A-to-I RNA editing is necessary to produce mature RNA, but under- or over-editing leads to autoimmune and neurological diseases.

The goal of this work is to give insight into the structural basis of differential editing of RNAs by elucidating the binding sites of each dsRBD in a human ADAR:dsRNA complex. Despite the challenges inherent to small, asymmetric particles, 2D class averages with nominal resolutions as high as 5Å have been obtained. Work is ongoing to progress from 2D class averages into meaningful 3D reconstructions.

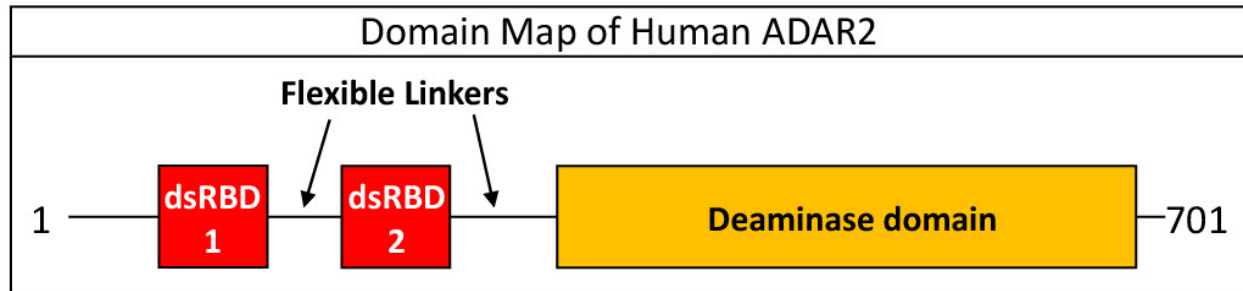


Figure 1. ADAR2 Domain Map