

Research on RNA Editor ADAR1

The Adenosine Deaminase Acting on RNA (ADAR) enzymes edit adenosine to inosine (A-to-I) on double-stranded RNA loops and play major roles in viral defense and innate immunity through regulation of the interferon response. They also regulate RNA and miRNA processing. ADAR proteins are involved in inflammation, in several genetic and auto-immune diseases, and in cancer, and therefore are promising therapeutic targets. ADAR1 is also used as a tool for RNA and DNA editing.

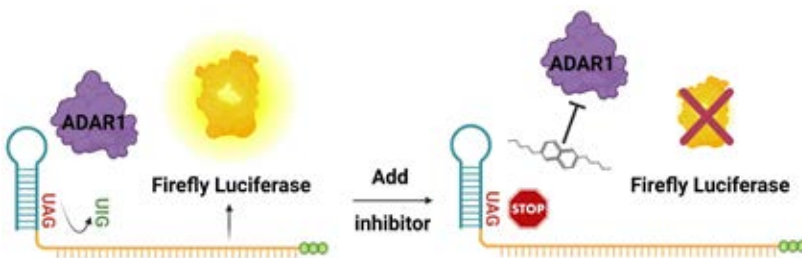
BPS Bioscience has developed three unique ADAR1 cell lines. We describe sensitive and robust assays using these cell lines, which provide well-validated resources to study ADAR1 in a cellular context. The three cell lines support different aspects of ADAR1 research:

ADAR1 Responsive Luciferase Reporter HEK293 Cell Line



Ideal for transfecting your own ADAR1 protein. Compare the effect of ADAR1 mutations to study structure/function relationships, or to optimize ADAR1 variants for editing.

ADAR1 Activity Luciferase Reporter HEK293 Cell Line



Expresses ADAR1, ideal for assessing the efficacy of ADAR1 modulators such as small molecule inhibitors. Amenable to high-throughput screening.

ADAR1 Activity TWO-Luciferase Reporter HEK293 Cell Line



Expresses ADAR1, contains an ADAR-inducible firefly luciferase reporter and a constitutive renilla luciferase reporter.

Ideal for multiplexing measurements of efficacy and toxicity of ADAR1-directed compounds.

Illustrations created with BioRender.com.

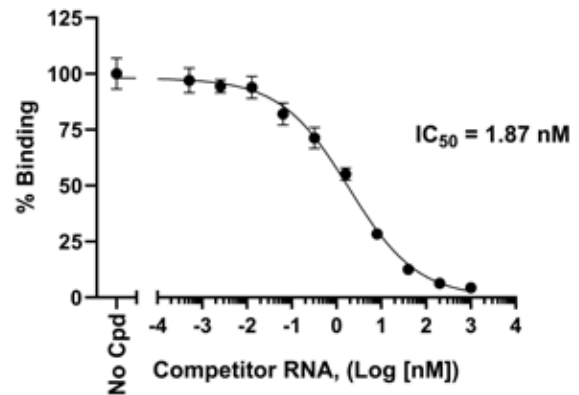
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ADAR1:RNA TR-FRET Assay Kit

This homogeneous, 384-well assay (#82252) measures the binding of ADAR1 to a biotin-conjugated RNA loop and is provided with a competitor RNA as internal control.

Applications:

- Screen or titrate compounds that block ADAR1 binding to RNA such as small molecules or aptamers.
- Study RNA binding kinetics in real-time.



Left: Assay principle. The Terbium-labeled anti-FLAG antibody donor binds to FLAG-tagged ADAR1, while the dye-labeled streptavidin acceptor binds to the biotinylated RNA substrate. When ADAR1 forms a complex with its RNA substrate, energy transfer (FRET) occurs. The TR-FRET signal is proportional to ADAR1:RNA binding. **Right: ADAR:RNA binding is inhibited by Competitor RNA.** ADAR1 binding to RNA was measured in the presence of increasing concentrations of Competitor RNA (Inhibitor Control). TR-FRET signal was measured using a Tecan microplate reader.

Purified Proteins

- Recombinant ADAR1 protein, human, full length, containing an N-terminal FLAG-tag (#100472).
- Recombinant ADAR2 protein, human, full length, containing an N-terminal FLAG-tag (#101164).



Learn more about ADAR1 in our Tech Note: [Role of ADAR1 in biology and disease.](#)

View our poster (presented at AACR 2024): [Development of a genetically validated, cell-based reporter assay for ADAR1 editing activity.](#)

Watch Dr. Valerie Sapp's Webinar: [Development of a Cell-Based Reporter Assay for Measuring ADAR1 Editing Activity for Drug Discovery and Cell Biology Research.](#)

Trust our Quality: we are ISO 9001:2015 certified