M. G. COSTALES, H. AIKAWA, Y. LI, J. L. CHILDS-DISNEY, D. ABEGG, D. G. HOCH, S. P. VELAGAPUDI, Y. NAKAI, T. KHAN, K. W. WANG, I. YILDIRIM, A. ADIBEKIAN, E. T. WANG, M. D. DISNEY* (THE SCRIPPS RESEARCH INSTITUTE, JUPITER, USA)
Small-Molecule Targeted Recruitment of a Nuclease to Cleave an Oncogenic RNA in a Mouse Model of Metastatic Cancer
Proc. Natl. Acad. Sci. U.S.A. **2020**, 117, 2406–2411.

RIBOTACs – Targeted Degradation of RNA

Category

Chemistry in
Medicine and
Biology

Key words

RIBOTAC

targeted
degradation

RNase

miR-21

Synfact
of the
Month

Synthesis of the RIBOTAC:

Mediated degradation of RNA:

Significance: Oncogenic micro RNAs are important components of cancer cells since they heavily regulate the expression levels of various proteins. Selective degradation of these miRNAs could be of great potential for cancer therapies. Here, the authors expanded the concept of RIBOTACs, which enables the selective small-molecule targeted degradation of RNA. Mouse models showed inhibition of metastasis progression following administration of miR-21 RIBOTAC.

Comment: The RNA-binding domains and the RNase recruiting fragment were linked to the backbone via copper-catalyzed ‘click’ reactions and a peptide coupling, respectively. The final RIBOTAC was demonstrated to bind the cancer-causing pre-miR-21 with great selectivity over other RNA transcripts and was effective in RNase recruitment and target degradation.

SYNFACTS Contributors: Dirk Trauner, Klaus-Peter Ruehmann
Synfacts 2020, 16(04), 0463 Published online: 18.03.2020
DOI: 10.1055/s-0040-1707575; Reg-No.: T02320SF

© 2020, Thieme. All rights reserved.
Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany