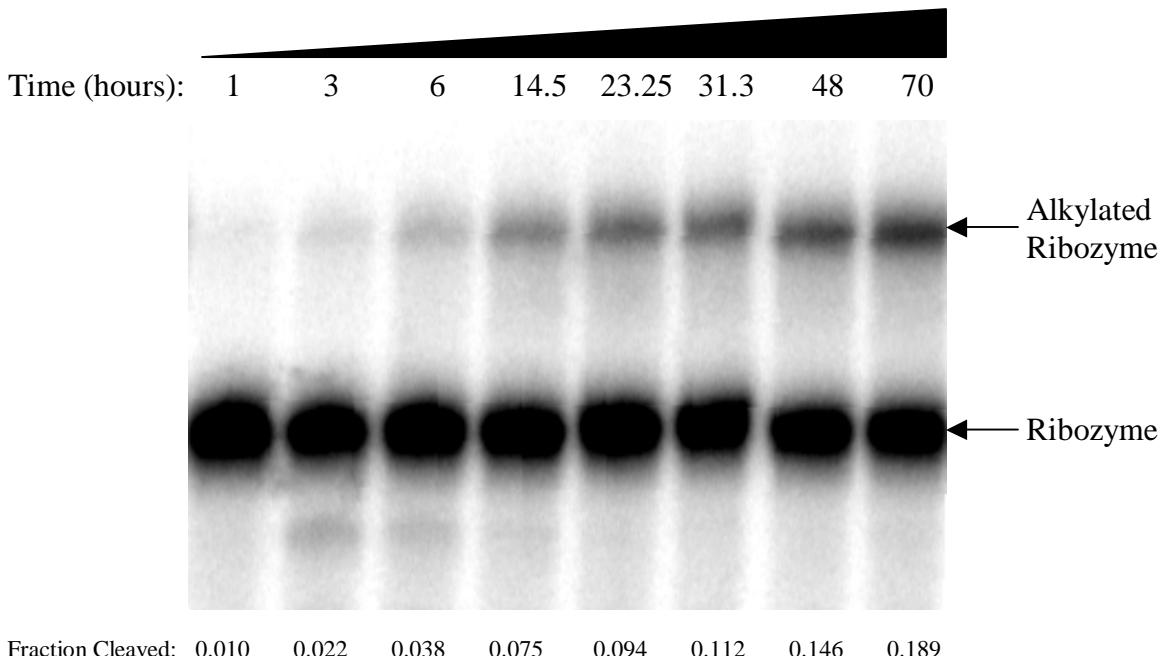


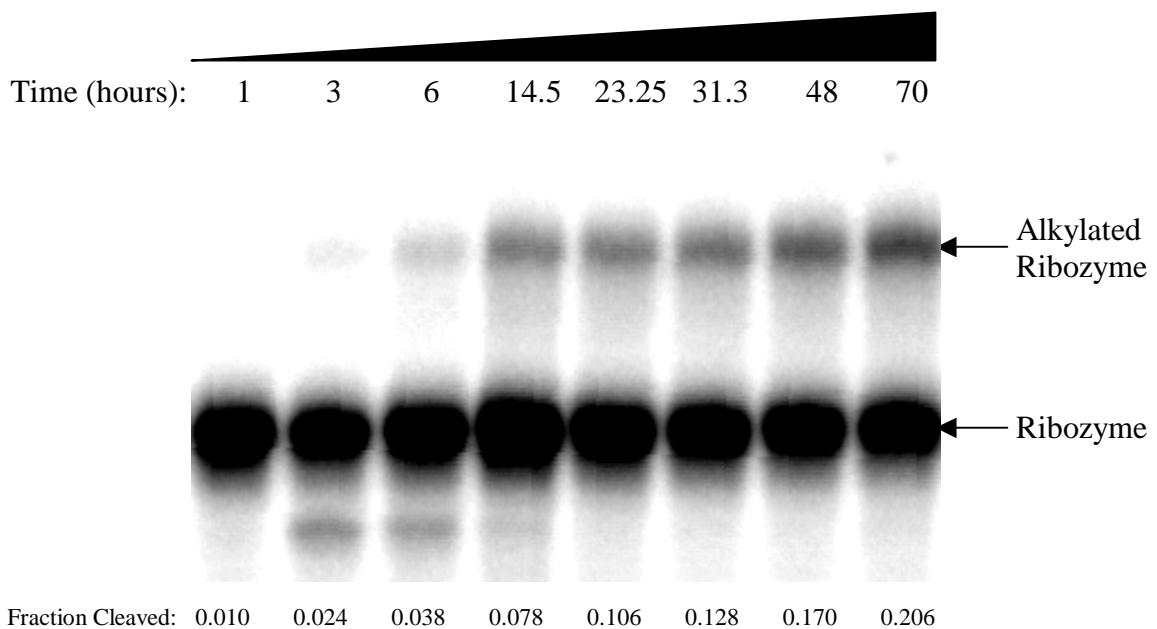
## SUPPORTING INFORMATION:

Figure S1: (A-D) Autoradiography images for the alkylation of the bodylabeled wild type hairpin ribozyme under various conditions, as well as (E & F) alkylation of mutant hairpin ribozymes under standard conditions.

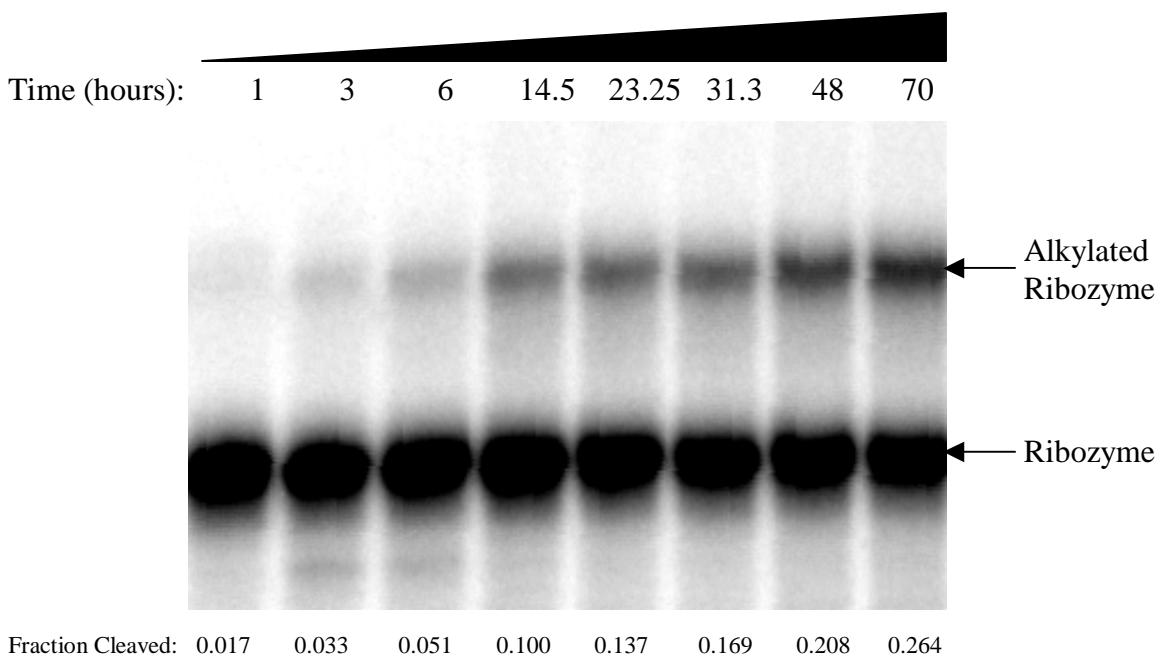
A. Wild Type pH 7.5



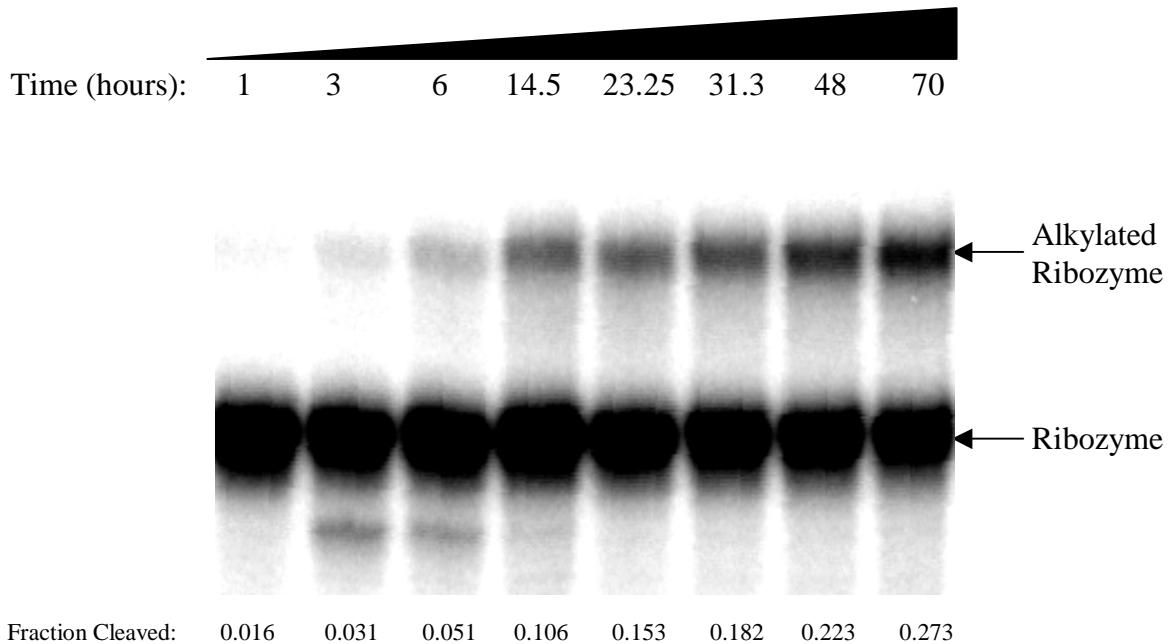
B. Wild Type pH 8



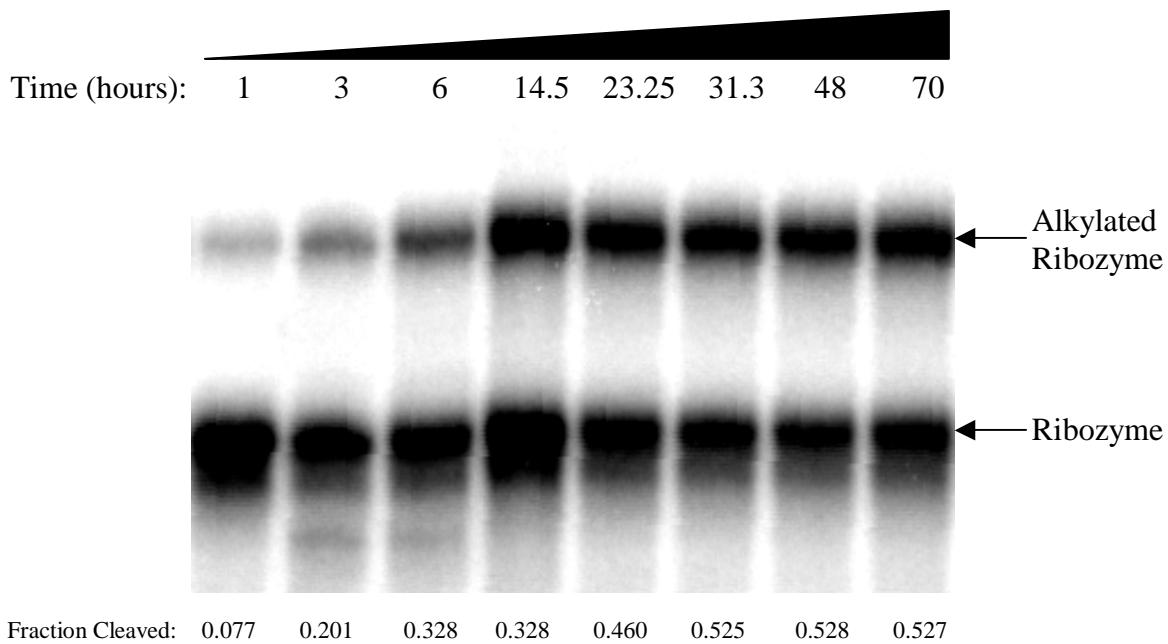
C. Wild Type pH 8.5



D. Wild Type pH 9



E. G8A Mutant Ribozyme pH 7.5



F. G8(7-deazadeoxyguanosine) Mutant Ribozyme pH 7.5

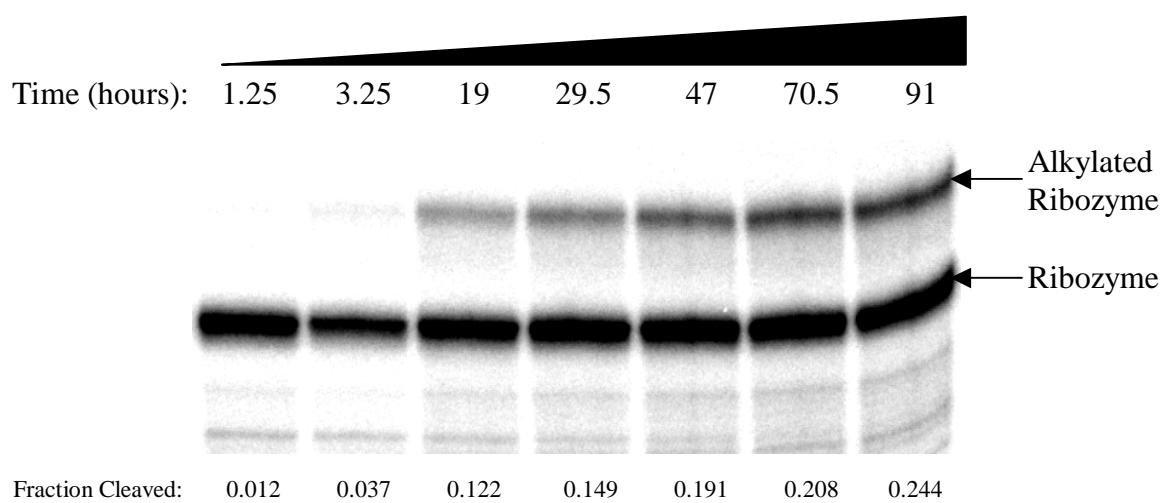


Figure S2: Full MALDI-TOF spectrum of RNase T<sub>1</sub>/I digest of the alkylated catalyst.

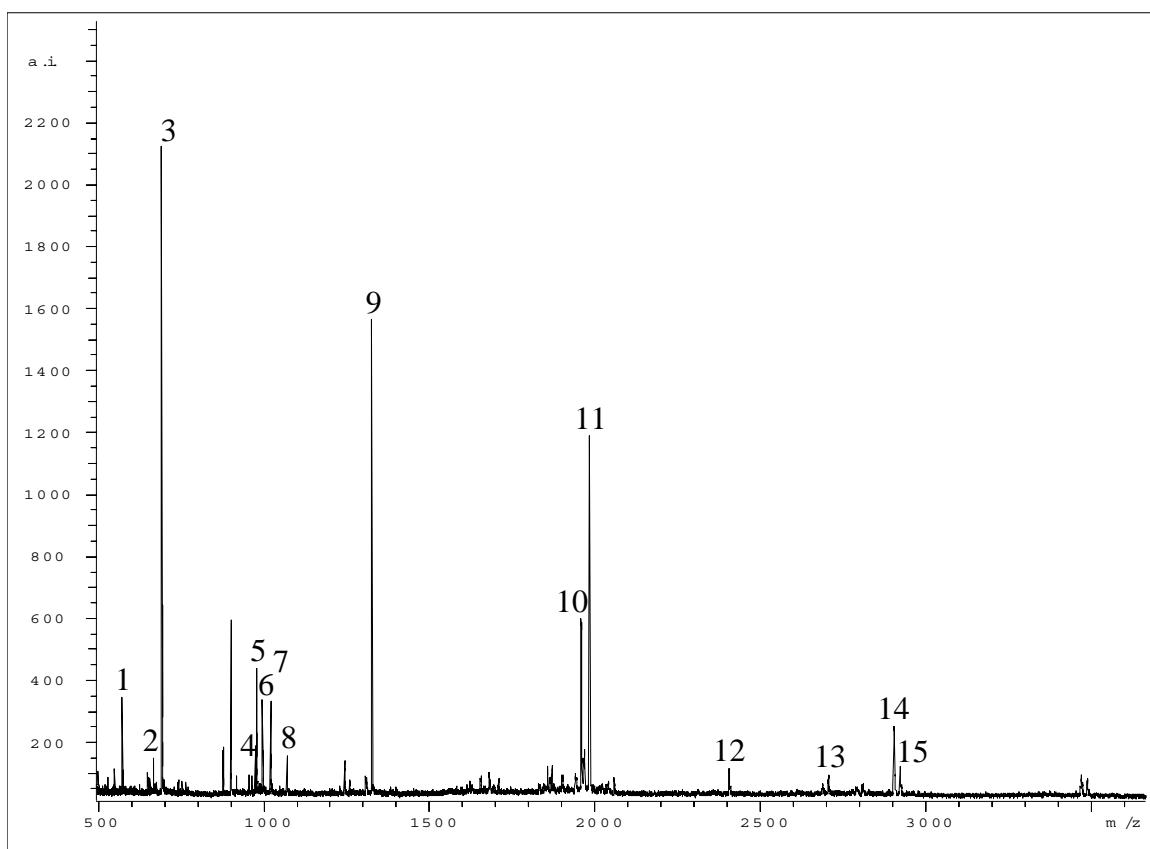


Table S1: MALDI-TOF Peak Assignments for Figure S2 (negative ion mode):

Peak Number	Observed m/z	Predicted m/z	Assignment
1	572.3	572.1	UpA <sup>a</sup>
2	667.3	667.1	CpGp
3	691.2	691.1	ApGp
4	973.2	973.1	CpUpGp
5	978.1	978.1	CpApG>p <sup>b</sup>
6	996.2	996.1	CpApGp
7	1020.2	1020.2	ApApGp
8	1067.7	1069.2	See figure S3 below
9	1326.1	1326.2	UpApApGp
10	1959.5	1959.3	ApApCpCpApGp
11	1984.4	1984.3	ApApApUpApGp
12	2406.5	2406.3	UpCpCpUpApUpUpU <sup>c</sup>
13	2706.5	2706.4	See figure S4 below
14	2905.0	2904.4	ApApApCpApCpApCpG>p <sup>b</sup>
15	2922.4	2922.4	ApApApCpApCpApCpGp

Notes: a: This fragment represents the 3' terminus of the ribozyme and therefore lacks a 3' phosphate. b: >p refers to the 3' cyclic phosphate. c: This fragment represents the 3' terminus of the substrate analogue and therefore lacks a 3' phosphate.

Figure S3: Peak 8 digestion fragment:

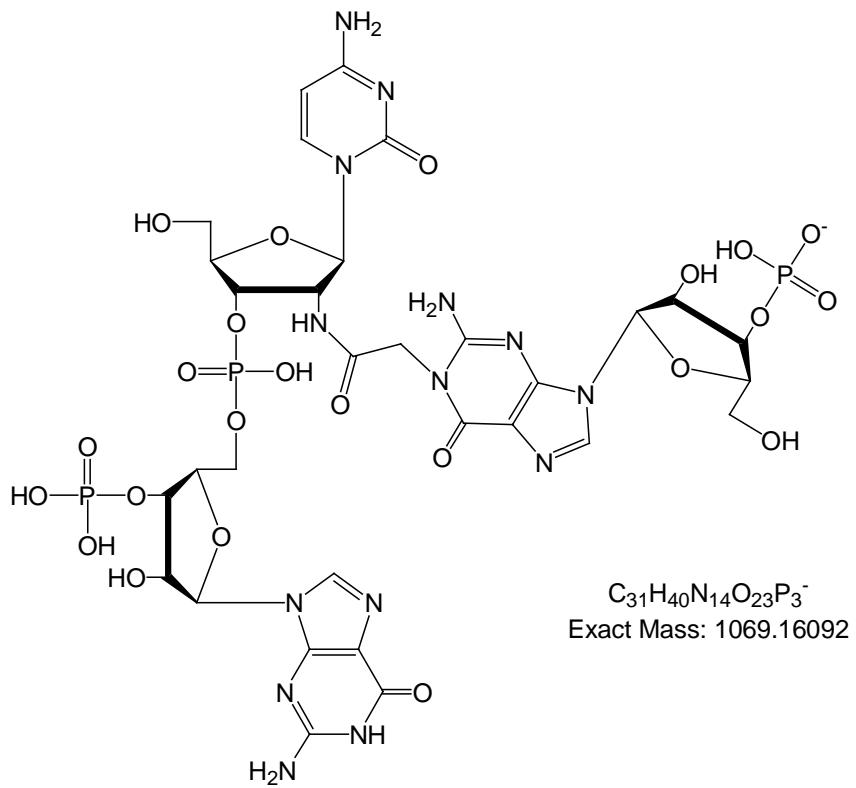


Figure S4: Peak 13 digestion fragment:

