SUPPLEMENTAL FIGURE LEGENDS

Supp. Fig. 1. Conservation of CCR4 and CAF1 homologs. Shown is the percent similarity and identity of the *Xenopus* CCR4 and CAF1 proteins to their cognate proteins in the indicated species. The percent similarity and identity designated is across the whole protein.

Supp. Fig. 2. Quantification of deadenylation by CCR4 and CAF1. *(Top)* The blot shown is the same as in figure 3b. Lanes 1 and 3 show the ^{32}P RNA without a poly(A) before and after injection into oocytes, respectively. Lanes 2 and 4 show the ^{32}P RNA with a poly(A) tail before and after injection into oocytes, respectively. Lanes 5-10 indicate poly(A) tail length of the ^{32}P RNA when tethered to the indicated MS2 fusion protein. The portion of adenylated and deadenylated RNA is indicated and was determined arbitrarily. *(Bottom)* A graph shows the ratio of deadenylated to adenylated product.

Supp. Fig. 3. XlCAF1 required the 7-methyl GpppG cap for translational repression. (A) The relative translation of firefly luciferase activity for the indicated reporter mRNAs. The luciferase mRNAs used contained a 7-methyl GpppG cap, a ApppG cap or a 7-methyl GpppG cap and stemloop in the 5'UTR. All of the reporter RNAs contained a poly(A) tail of 39 adenosines. Normalization and error bars were determined as in Fig 1b. (B) The relative translation of firefly luciferase activity in response to each protein is shown. The luciferase mRNAs used contained a ApppG cap and no poly(A) tail. Normalization and error bars were determined as in Fig 1b.

X. laevis CCR4a

	% Identity	% Similarity
H. spaiens	95%	96%
M. musculus	98%	98%
D. melanogaster	56%	72%
S. pombe	38%	55%

X. laevis CCR4b

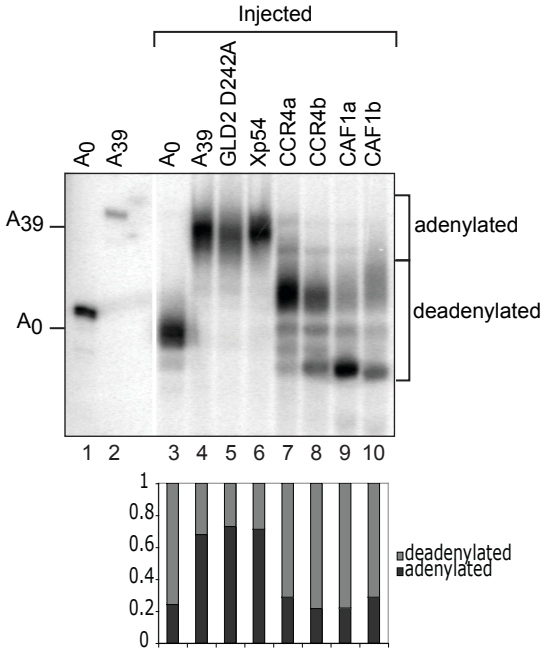
	% Identity	% Similarity
H. spaiens	88%	96%
M. musculus	87%	95%
D. melanogaster	57%	73%
S. pombe	38%	56%

X. laevis CAF1a

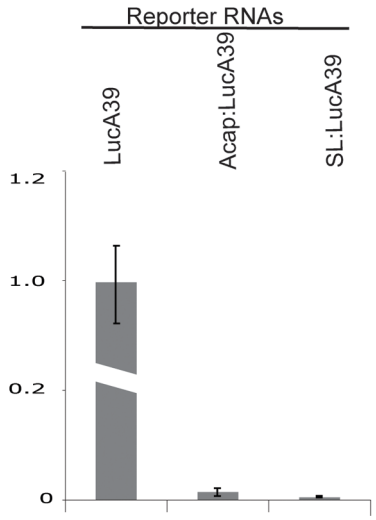
	% Identity	% Similarity
H. spaiens	97%	98%
M. musculus	97%	98%
D. melanogaster	73%	88%
S. pombe	54%	69%

X. laevis CAF1b

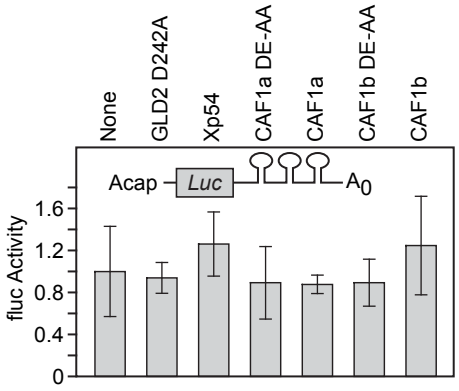
	% Identity	% Similarity
H. spaiens	91%	95%
M. musculus	91%	95%
D. melanogaster	73%	88%
S. pombe	50%	67%


Injected
A0
A39
A0
A39
GLD2 D242A
Xp54
CCR4a
CCR4b
CAF1a
CAF1b
A39
A0
adenylated
deadenylated
1 2 3 4 5 6 7 8 9 10
1
0.8
0.6
0.4
0.2
0
deadenylated
adenylated

A


Reporter RNAs
LucA39
Acap:LucA39
SL:LucA39
1.2
1.0
0.2
0

B


None
GLD2 D242A
Xp54
CAF1a DE-AA
CAF1a
CAF1b DE-AA
CAF1b
Acap
Luc
A0
fluc Activity
1.6
1.2
0.8
0.4
0