SUPPLEMENTARY INFORMATION

SUPPLEMENTARY FIGURE LEGENDS

Supplementary Figure S1. Overall expression of each miRNA in A549 cells. A549 cells were transfected with the indicated miRNA-expressing plasmids. Expression of the miRNA was assayed by qRT-PCR and normalized to vector transfected cells.

Supplementary Figure S2. MiR-107 colocalizes with let-7 in the cytoplasm. (A) Existence of Ago1 in a complex of synthesized miRNAs. Cy3-labeled miR-107 or nonspecific miR-26a was cotransfected into A549 cells with cy5-labeled let-7 mRNA and then immunoprecipitated with anti-cy3/cy5 antibodies to determine if they could recruit Ago1. **(**B) *In vivo* cellular localization of miR-107 and let-7 in A549 cells visualized by confocal microscopy.

Supplementary Figure S3. FRET between mutmiR-107 and mutlet-7. Cells with colocolization of mutmiR-107/mutlet-7a observed by confocal microscopy (Supplementary Figure S2B) were bleached repeatedly by λ= 633 nm, and the fluorescence intensity of cy3-labeled miR-107 was subsequently monitored at λ= 575-615 nm before and after

photobleaching. The FRET efficiency at each location was measured. a-d: colocalized complexes; e: complex without colocalization.

Supplementary Figure S4. Inverse correlation between miR-107 and let-7 family miRNAs in public database - NCI-60 cancer cell panel (EMBL-EBI: E-MTAB-327)

Supplementary Figure S5. Expression of let-7 precursors after depletion of miR-107. Total RNA was isolated from the indicated cells transfected with an miR-107 antagomir and than assayed by qRT-PCR.

Supplementary Figure S6. Effect of miR-107 on the degradation of let-7 precursors. An miR-107 antagomir was introduced into H1299 cells in the presence of 1 μg/ml actinomycin D. Total RNA was isolated and assayed by quantitative PCR for pri-let-7 (A), pre-let-7 (B), and (C) miR-26a.

Supplementary Figure S7. Effect of miR-107 on let-7-mediated HMGA2 inhibition. Cells were treated with the indicated antagomirs and assayed by Western blot 36 hours after transfection.

Supplementary Figure S8. MiR-107 expression did not promote soft agar growth in let-7-deficienct cells. The indicated miRNAs were stably transfected into let-7- deficient H661 cells. Soft agar assays were performed over 14 days.

Supplementary Figure S9. MiR-107 antagonized let-7-suppressed self-renewal ability in breast cancer cells. (A, B) Expression of breast cancer stem cell markers. assayed by (A) RT-PCR and (B) immunofluorescence staining. (C, D) Effect of miR-107 on mammosphere formation. Mammosphere formation was performed 16 hours after transfection, and spheres were measured after 5 days.

Supplementary Figure S10. Expression of let-7a in Normal/Tumor portions of breast cancer tissues. We isolated RNAs from paired tumor and non-tumor samples. Expression of let-7a was detected by qRT-PCR. The level of let-7a in non-tumor tissue was used as a reference (= 1) and the relative fold expression in the tumor tissue was determined.

Supplementary Figure S11. Correlation between miR-107 and let-7 levels in human lung cancer. Correlation between miR-107 and let-7 levels in human lung tumor tissues. Real-time PCR was used to detect expression of miR-107 and let-7. Each point on the graph corresponds to the relative expression level from an individual patient.

Supplementary Figure S12. Let-7a level predicts poor clinical outcome in patients with breast cancer. The log-rank test (2-sided) was used to compare differences between groups. (A) Disease-free survival of patients with different let-7a levels. (B) Overall survival of patients with different let-7a levels..

Supplementary Figure S13. Let-7 activity affected by miR-103. A549 cells were cotransfected with wild-type or mutant lin-41 and the indicated miRNAs. Firefly luciferase reporter activity was normalized to renilla luciferase. MiR-26a was included as a nonspecific miRNA.

Supplementary Figure S14. Correlation between levels of miR-103 and let-7a in human breast cancer tissues. qRT-PCR was used to detect expression of miR-103 and let-7a. Each point on the graph corresponds to the relative expression levels from an individual patient. We normalized let-7a and miR-103 levels with U6 to calculate their relative expression levels.

Supplementary Figure S15. Effects of let-7 members on miR-107 expression. T47D cells were transfected with indicated antagomirs of let-7 members. Forty-eight hours after

transfection, the level of miR-107 was measured by using qRT-PCR.

Supplementary Figure S16. Expression of let-7 family members in the livers (A) and kidneys (B) of miR-107 knockout (KO) mice. Livers and kidneys were isolated from wild-type and miR-107 KO mice (n = 3). Expression of miRNAs was determined by real-time RT-PCR using specific probes.

Supplementary Table S1. Incidence of tumor formation and metastasis by 4T1 cells in mice.

Inoculated	Tumors	Lung Metastasis
Vector	8/9	6/9
miR-107	8/9	7/9
mutmiR-107	7/9	5/9
let-7	3/9	0/9
let-7/miR-107	8/9	4/9
let-7/miR-107^{M2}	4/9	0/9
let-7/mutmiR-107	3/9	0/9

Supplementary Table S2. Clinicalpathological characteristics of breast cancer patients with associated let-7a expression.

characteristics	let-7a low (n=55)	let-7a high (n=57)	*P* value
Age	62.3	62.9	*N.S.*
Stage, no of patients			
I-II	20	42	*<0.001
III-IV	35	15	
Tumor status, no of patients			
T1	19	31	*0.035
T2-T4	36	26	
Node status, no of patients			
N0	23	44	*<0.001
N1-N3	32	13	
Distant metastasis, no of patients			
M0	40	53	*0.0043
M1	15	4	

*$P < 0.05$ Significance of association was determined using a Chi-square test.

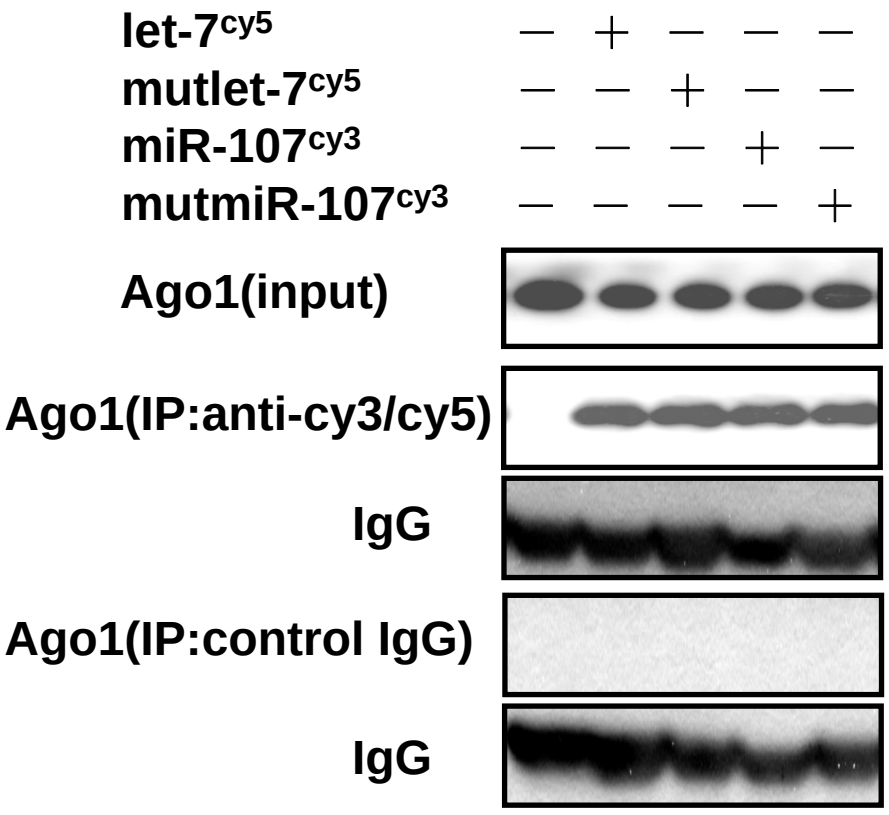
SUPPLEMENTARY FIGURES

Supplementary Figure S1.

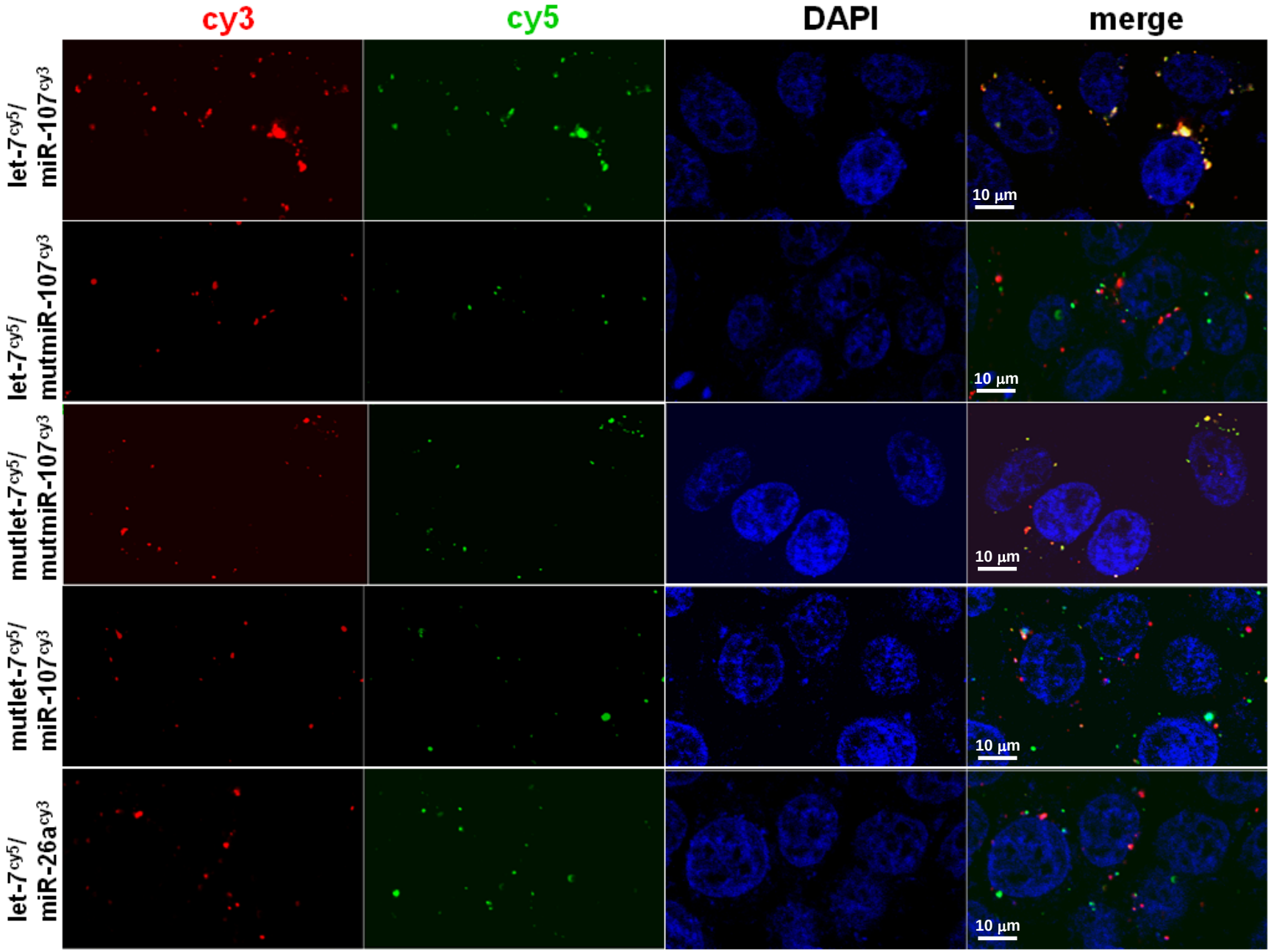
Group / Specific miRNA expression (fold)	miR-346	miR-329	miR-107	miR-330	miR-374	miR-202*	miR-26a
miR-346	16.2	1.0	1.2	1.1	0.9	1.0	1.2
miR-329	0.9	18.5	1.1	0.9	1.0	1.0	1.2
miR-107	0.9	1.0	19.4	0.9	1.0	1.0	1.0
miR-330	1.0	1.0	1.0	16.8	1.0	0.9	1.1
miR-374	1.1	1.0	1.0	1.1	16.9	0.9	1.0
miR-202*	1.0	1.0	1.2	0.9	1.1	18.2	1.0
miR-26a	0.9	1.1	0.9	0.9	0.9	1.1	17.6
miR-376a	1.0	0.9	1.0	1.0	0.9	1.0	0.9
let-7	1.0	1.1	0.4	1.0	0.9	1.1	1.0

Fold: Normalized with vector control

Supplementary Figure S2A.



Supplementary Figure S2B.



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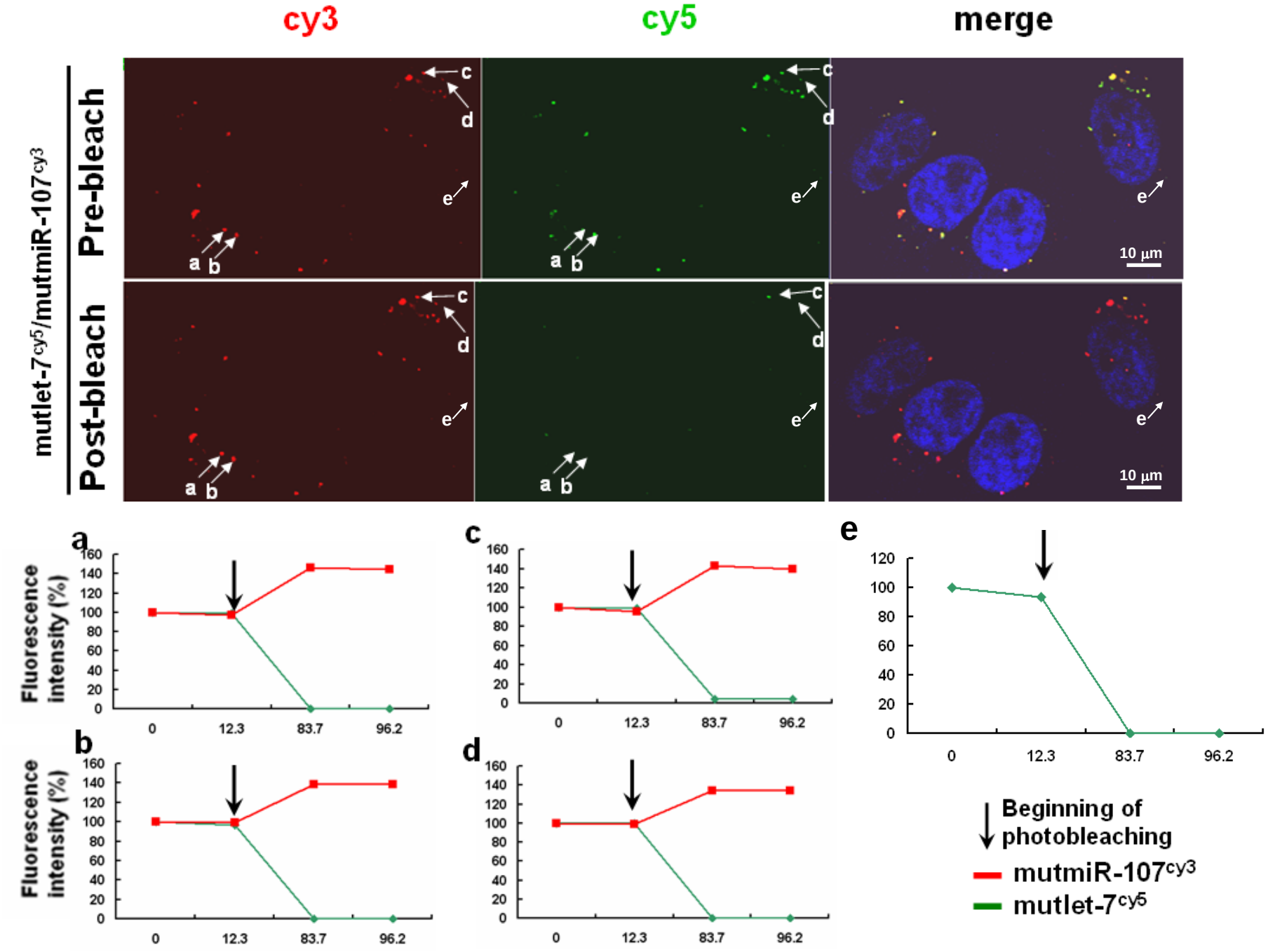

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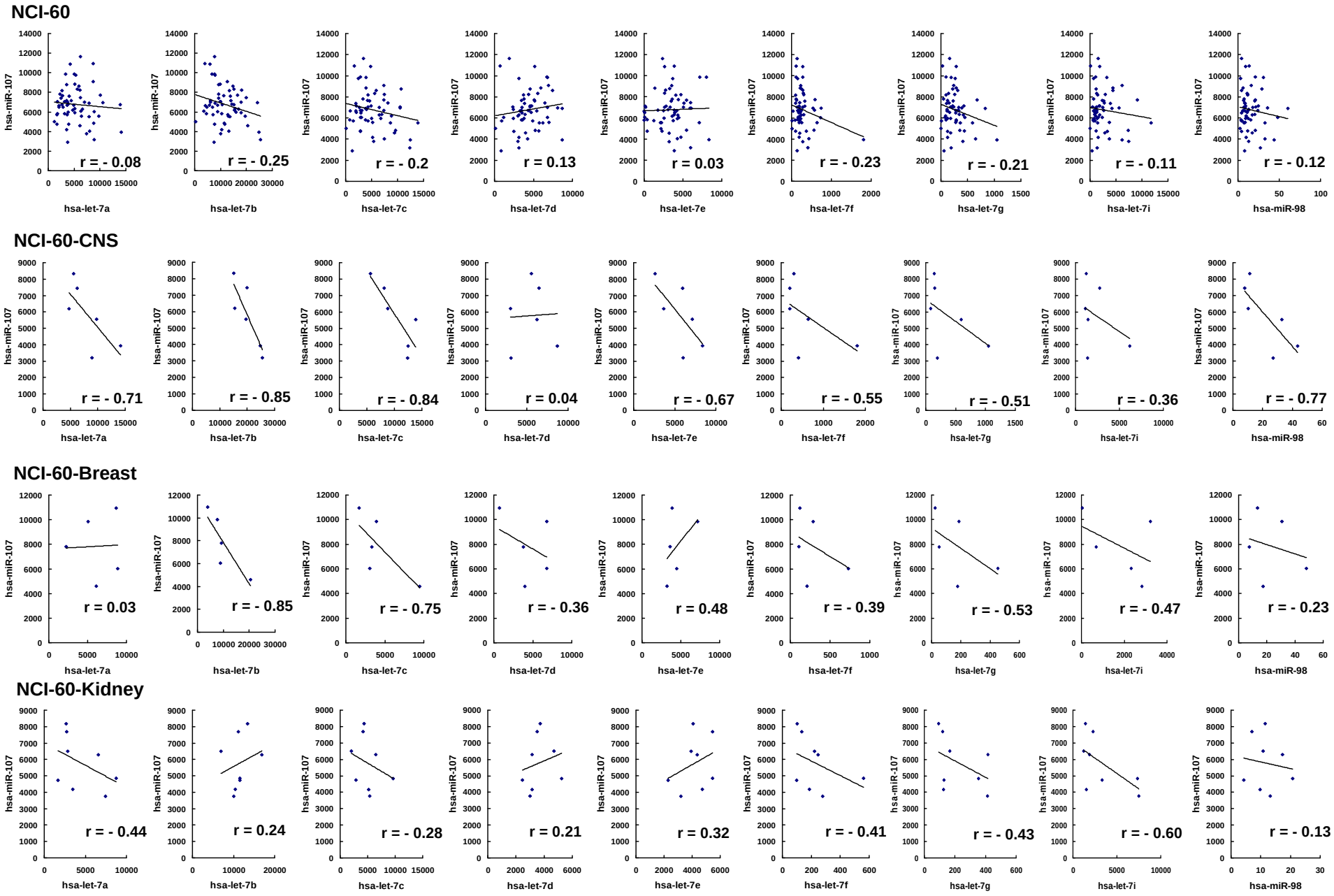

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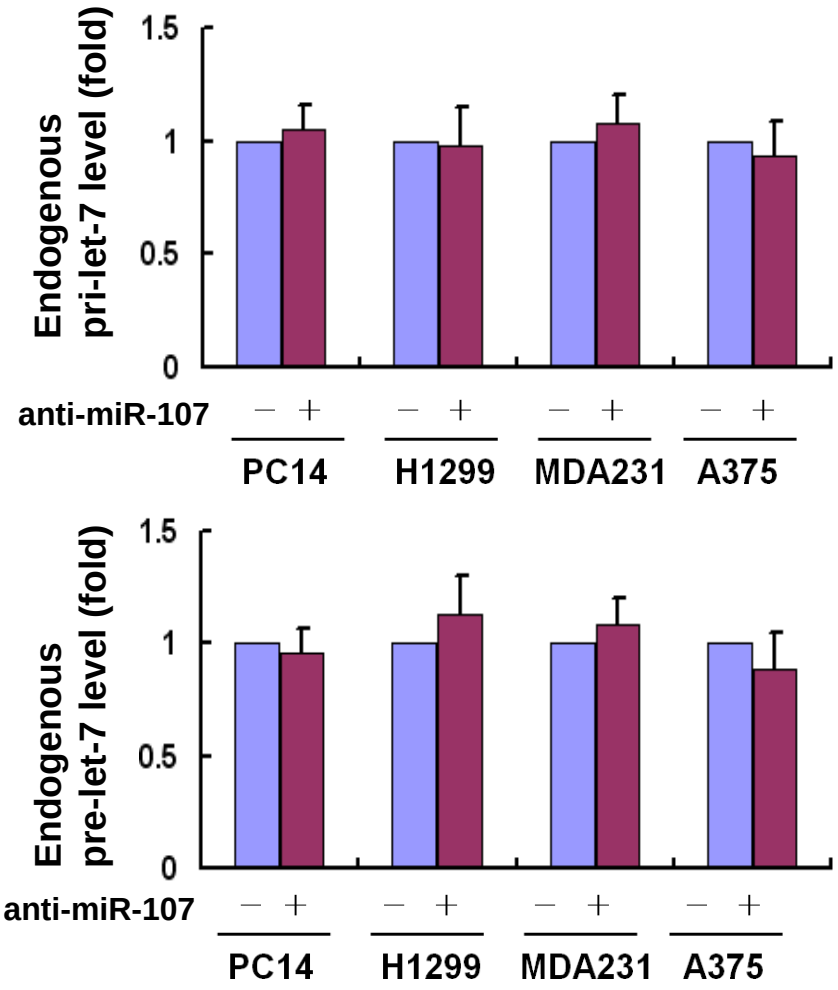
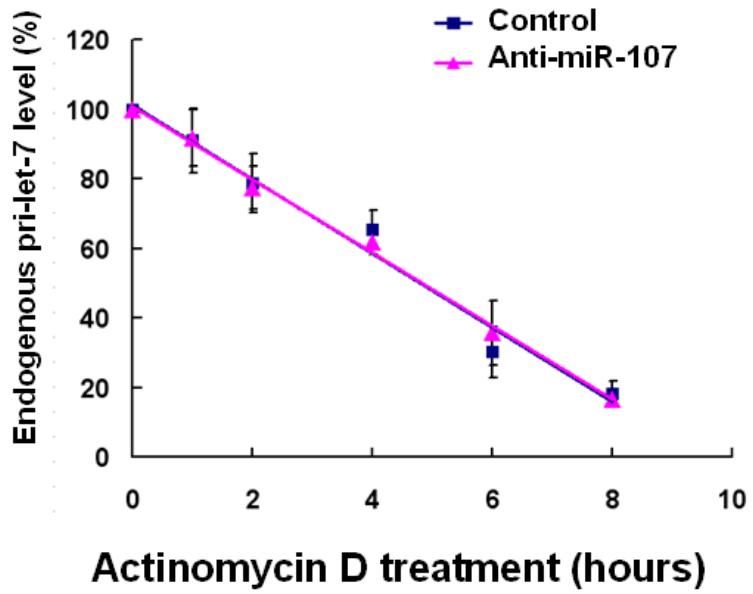


Supplementary Figure S6.

A



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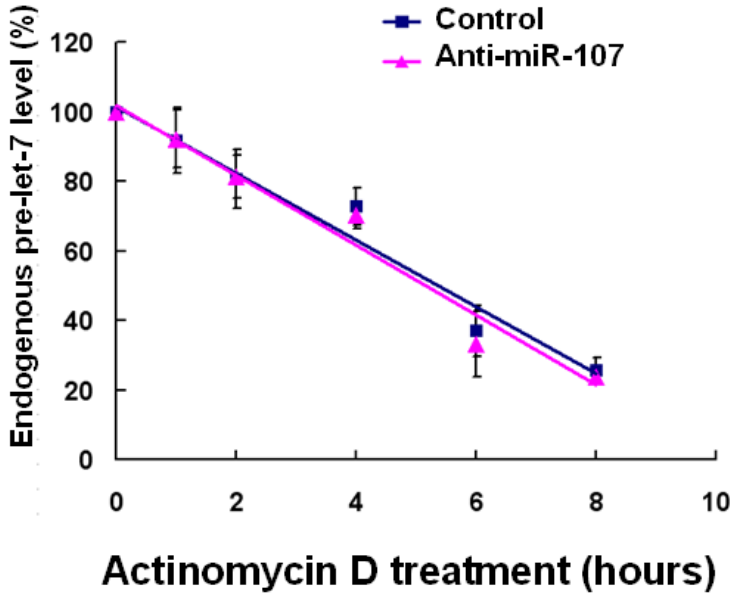

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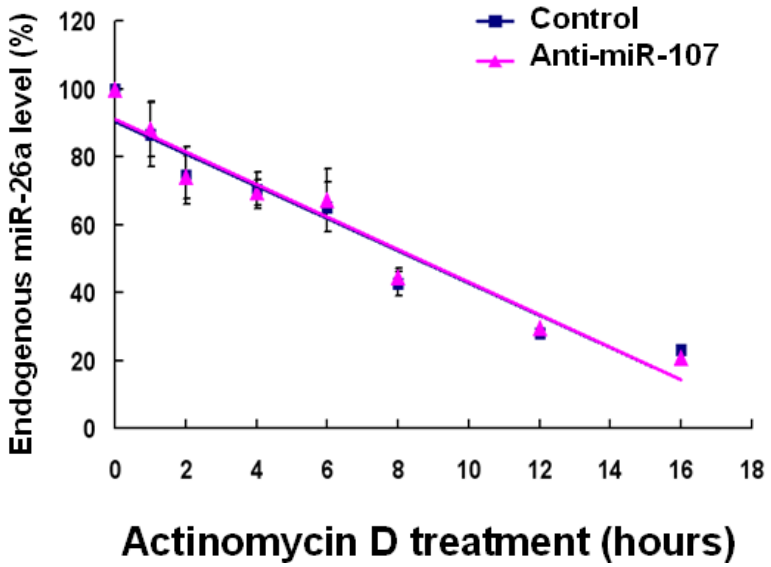

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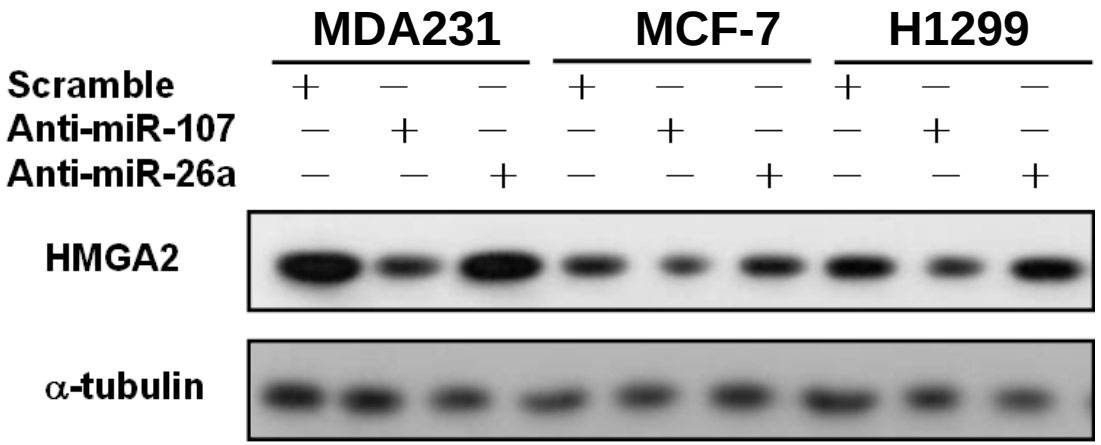

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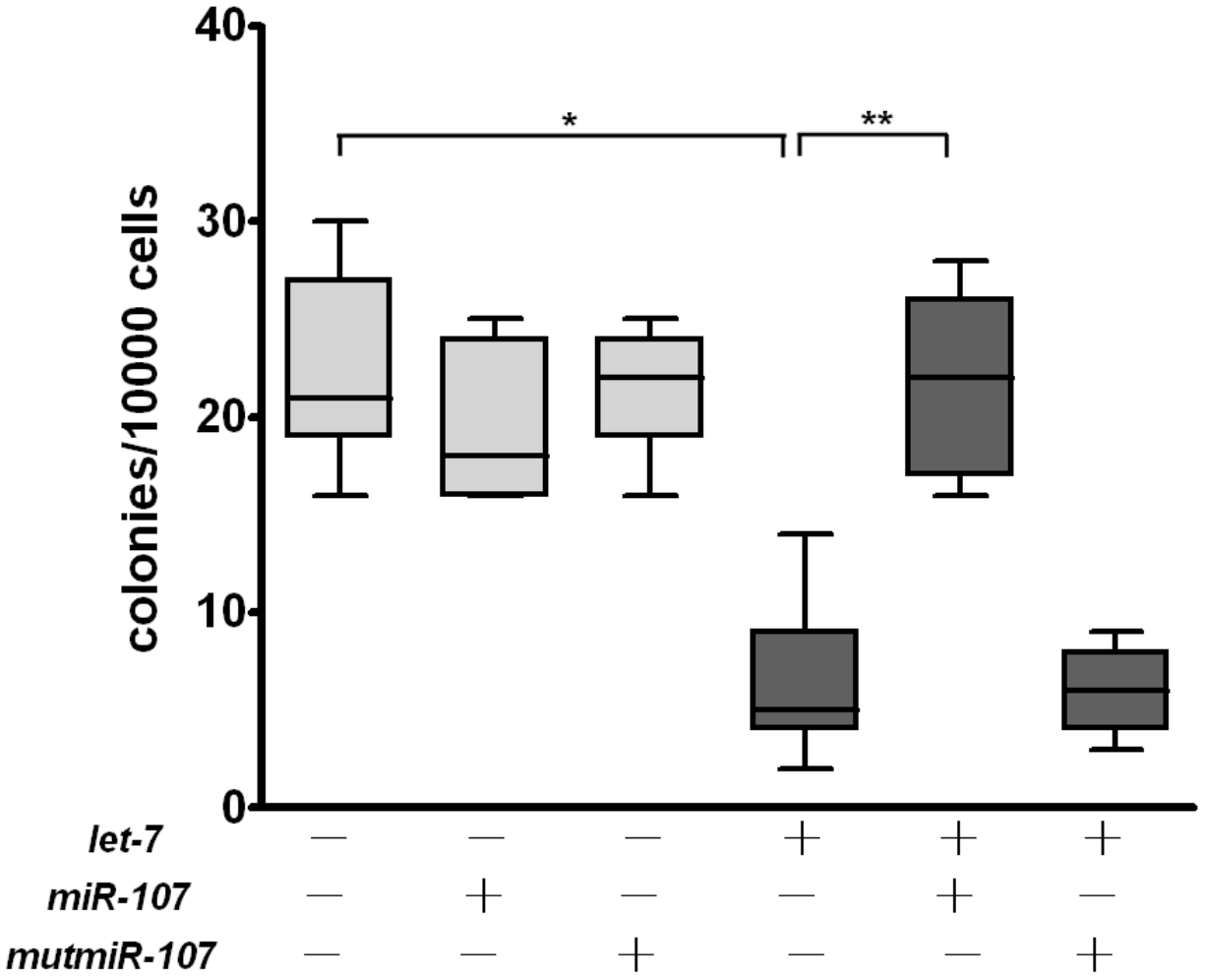

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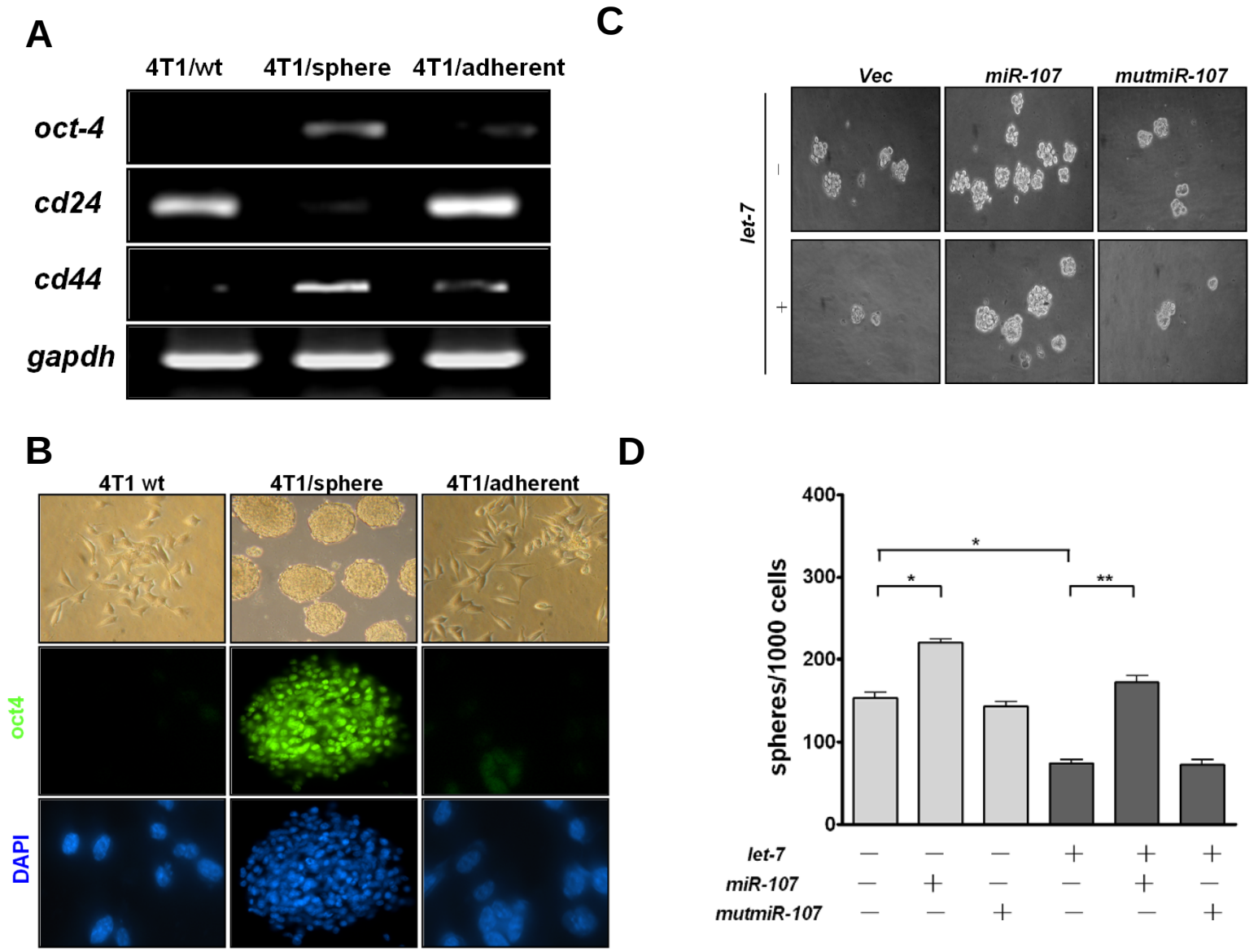

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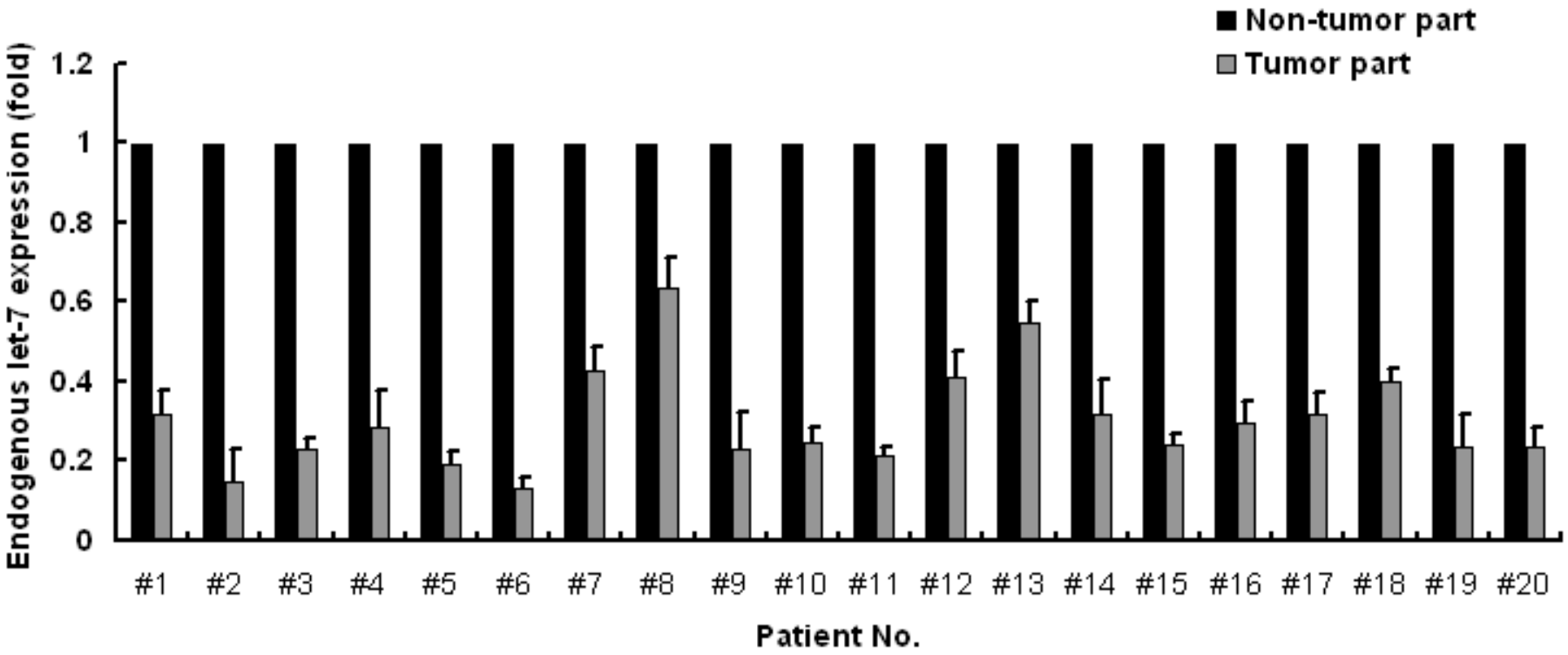

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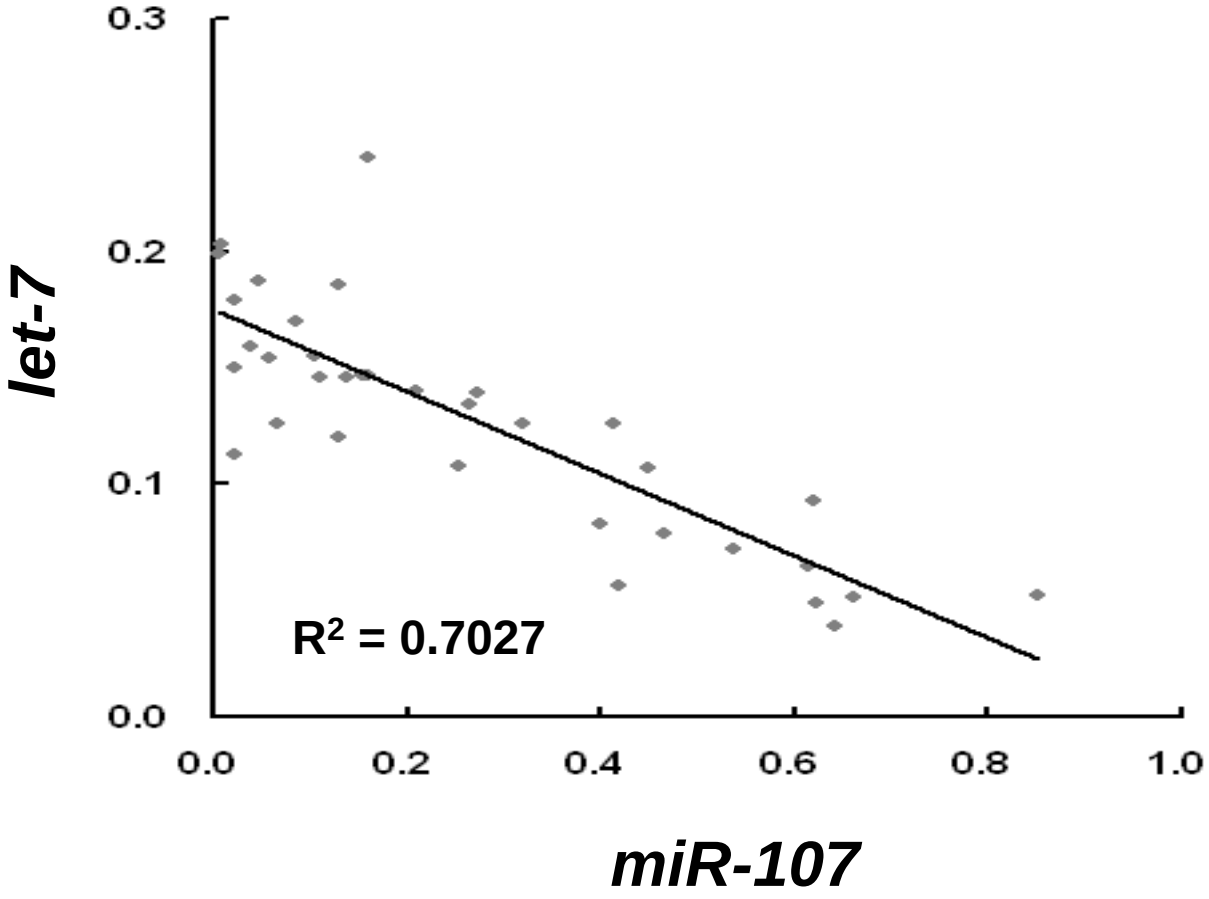

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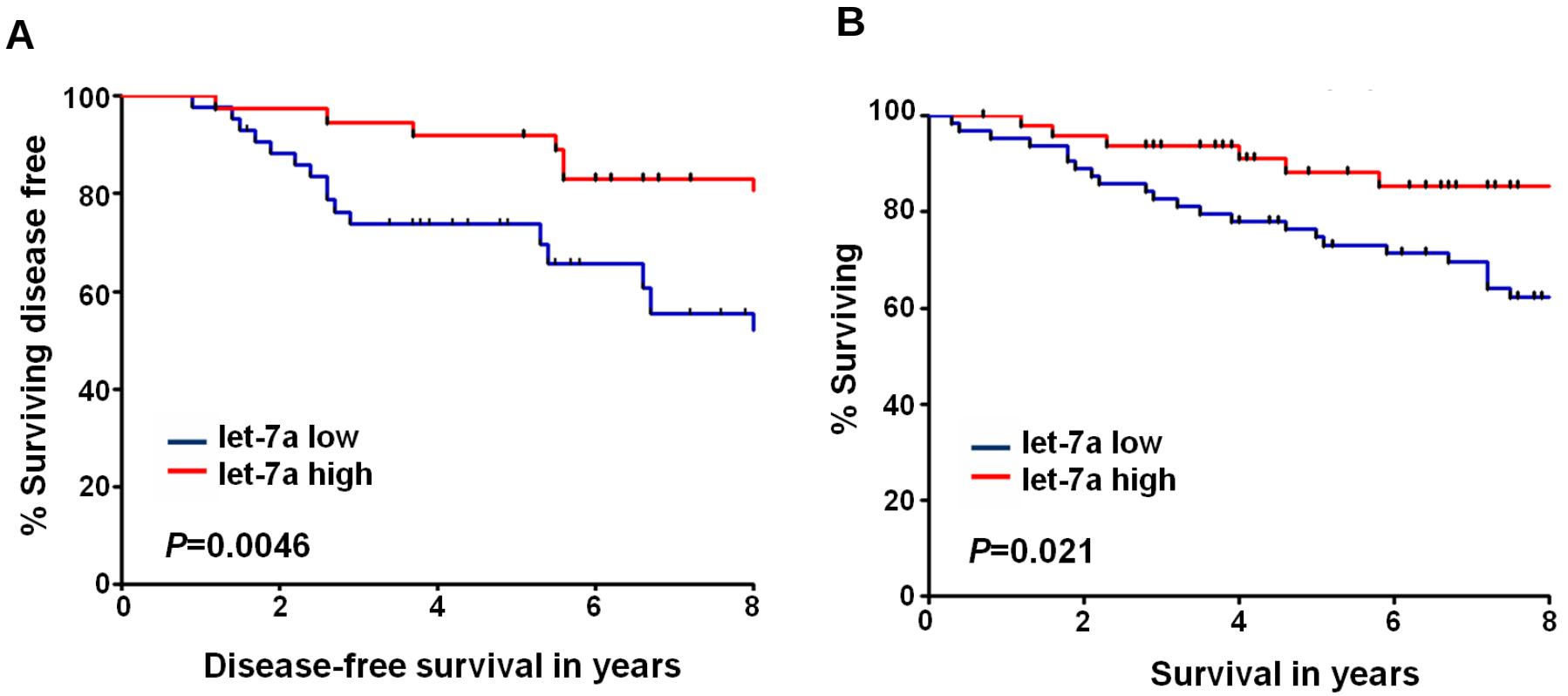

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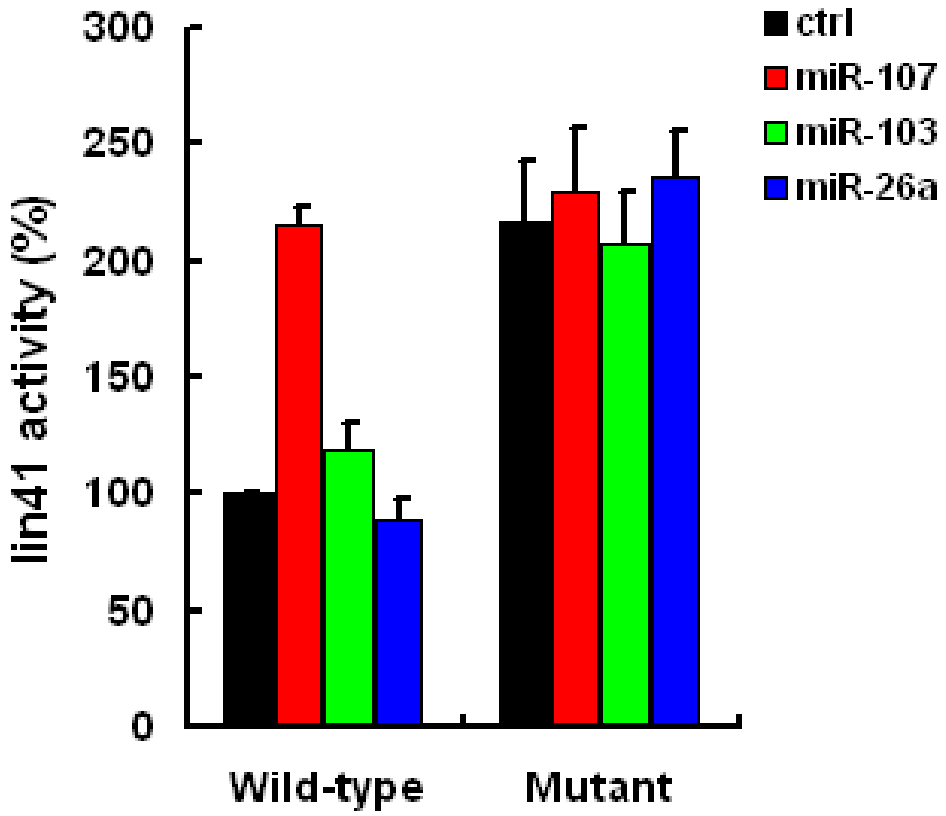

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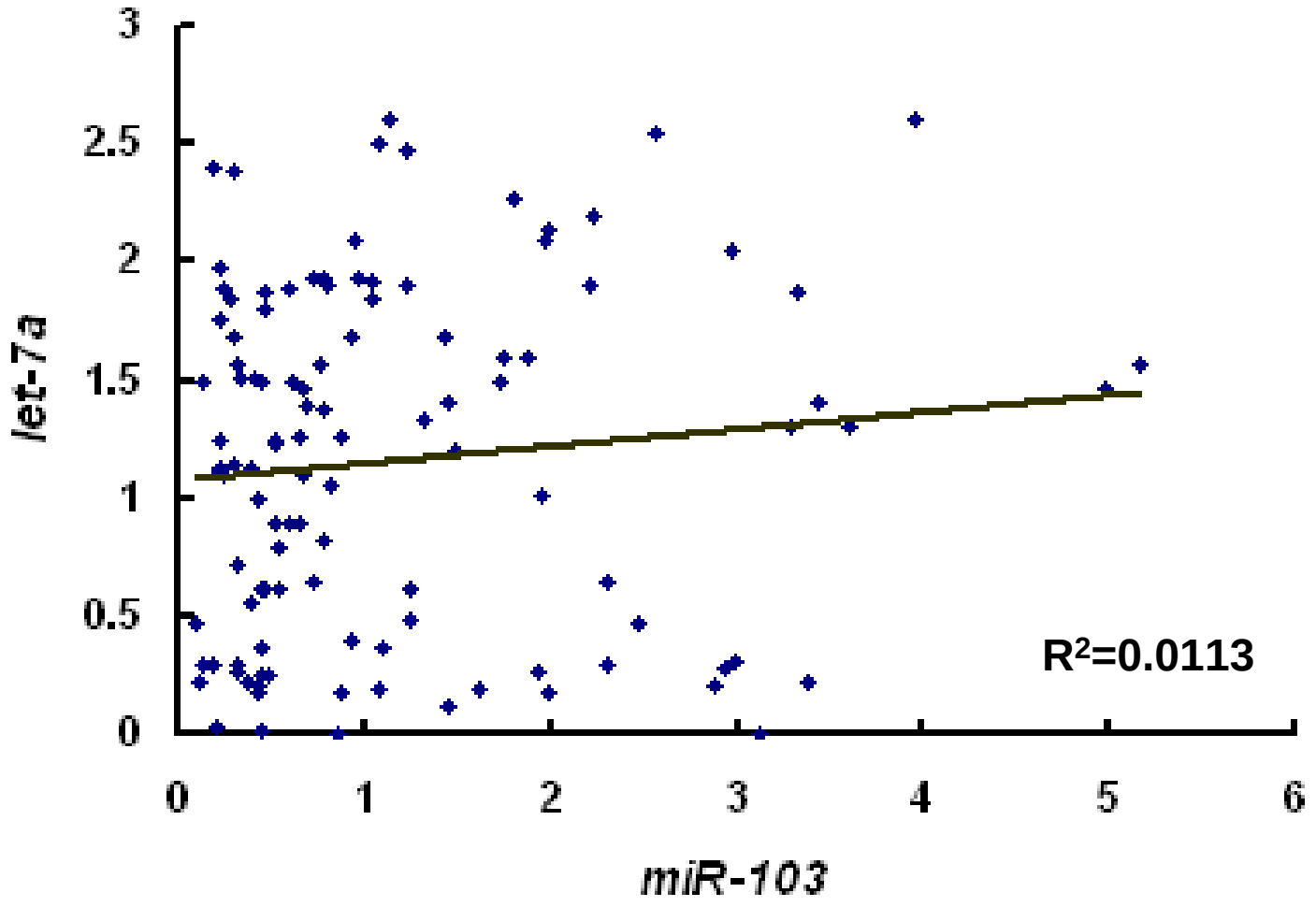

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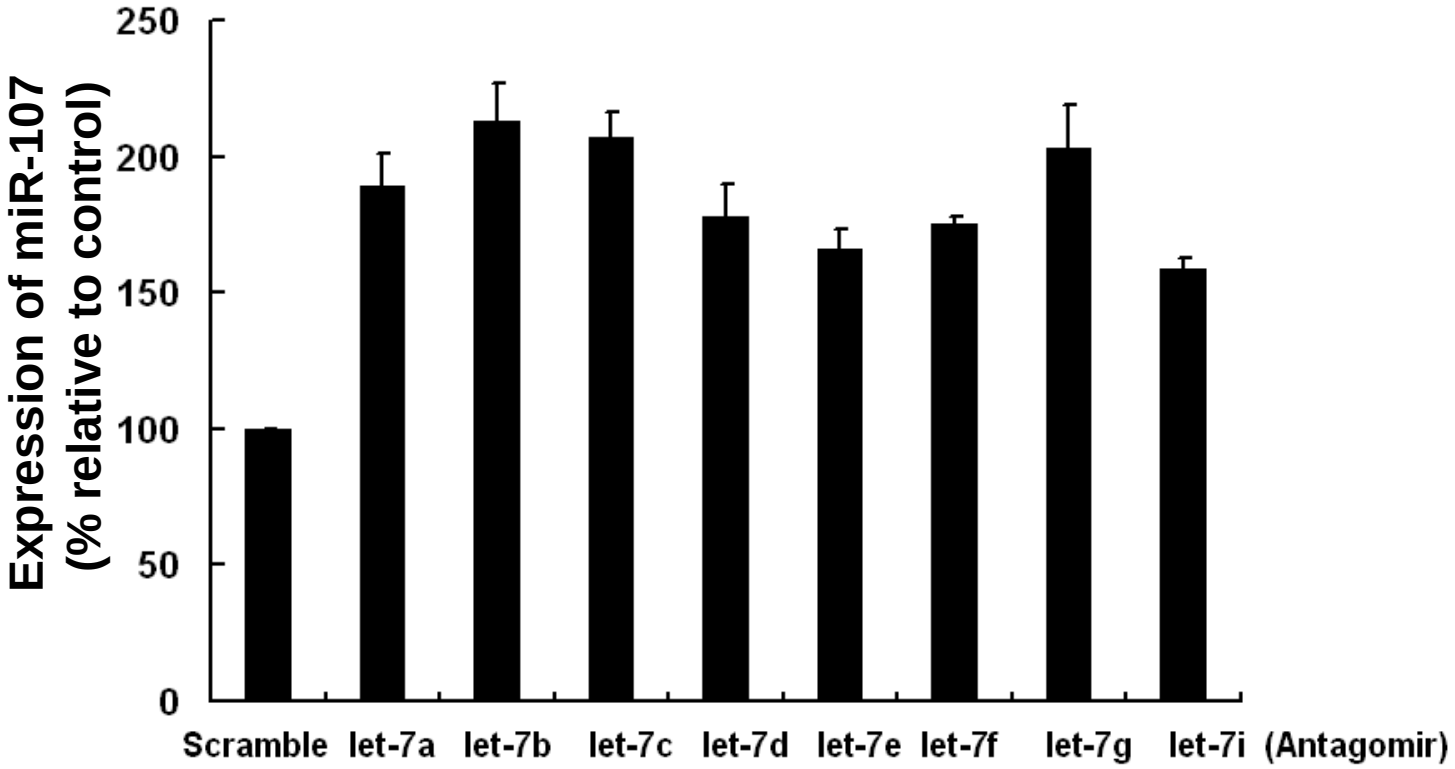

Supplementary Figure S16.