

**Table S1. Baseline characteristics of 275 cancer patients<sup>a</sup>**

<b>Characteristics</b>	<b>n= 275</b>
Age, yrs	61.3 ± 10.3
Male	206 (74.9)
Smoking (n=256)	
Current	113 (44.1)
Former	69 (27.0)
Never	74 (28.9)
Stage	
1	82 (29.8)
2	98 (35.6)
3	91 (33.1)
4	4 (1.5)
Lung cancer cell type	
Adenocarcinoma	134 (48.7)
Squamous cell carcinoma	134 (48.7)
Other	7 (2.5)

<sup>a</sup>Data are presented as numbers (percentages) unless otherwise indicated. Plus-minus values are means ± standard deviation.

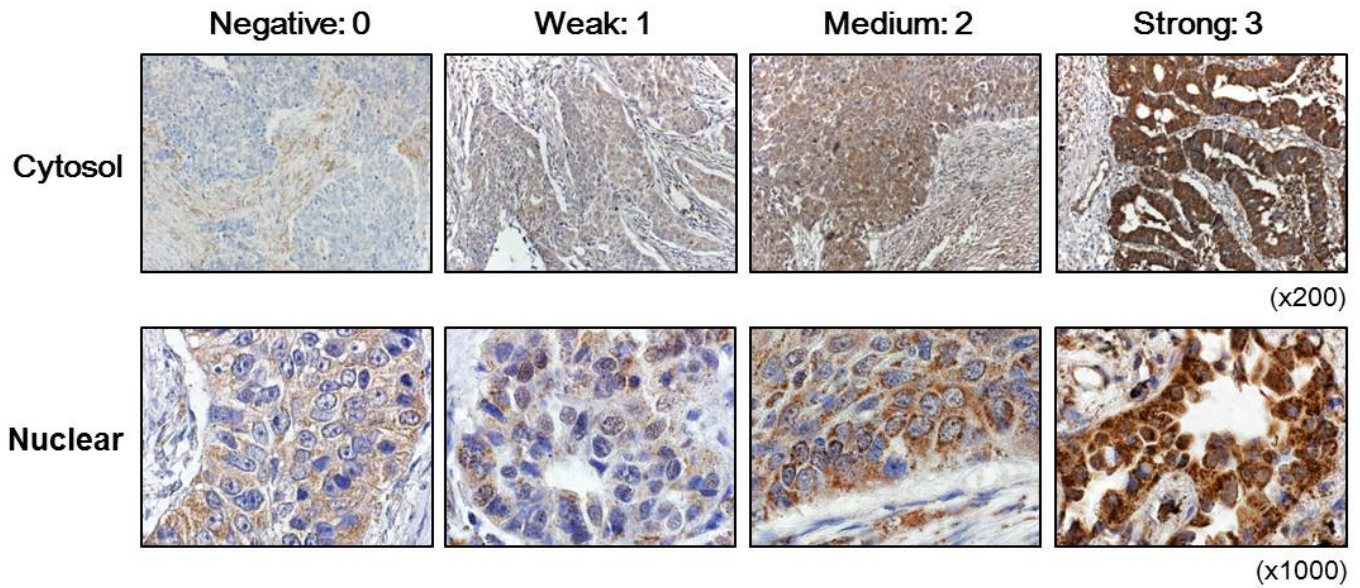
**Table S2. Clinical and pathological characteristics of patients with high and low cytoplasmic or nuclear expression<sup>a</sup>**

Characteristics	Cytoplasmic expression			Nuclear expression		
	Low (0-3)	High (4-9)	<i>P</i> -value	Low (0)	High (≥1)	<i>P</i> -value
	n=126	n=149		n=184	n=91	
Age, yrs	61.9 ± 9.8	61.4 ± 10.0	0.687	61.7 ± 9.7	61.6 ± 10.3	0.970
Male	94 (74.6)	112 (75.2)	0.914	138 (75.0)	68 (74.7)	0.961
Ever smokers	88 (75.2)	94 (67.6)	0.213	124 (72.5)	58 (68.2)	0.477
Size > 3cm	88 (47.6)	97 (52.4)	0.351	124 (67.0)	61 (33.0)	0.904
Stage						
I-II	90 (71.4)	90 (60.4)	0.055	128 (69.6)	52 (57.1)	0.042
III-IV	36 (28.6)	59 (39.6)		56 (30.4)	39 (42.9)	
Pathology (n=268)						
Adenocarcinoma	49 (40.2)	85 (58.2)	0.003	82 (45.8)	52 (58.4)	0.052
Squamous cell	73 (59.8)	61 (41.8)		97 (54.2)	37 (41.6)	

<sup>a</sup>Data are presented as numbers (percentages) unless otherwise indicated. Plus-minus values are means±standard deviation.

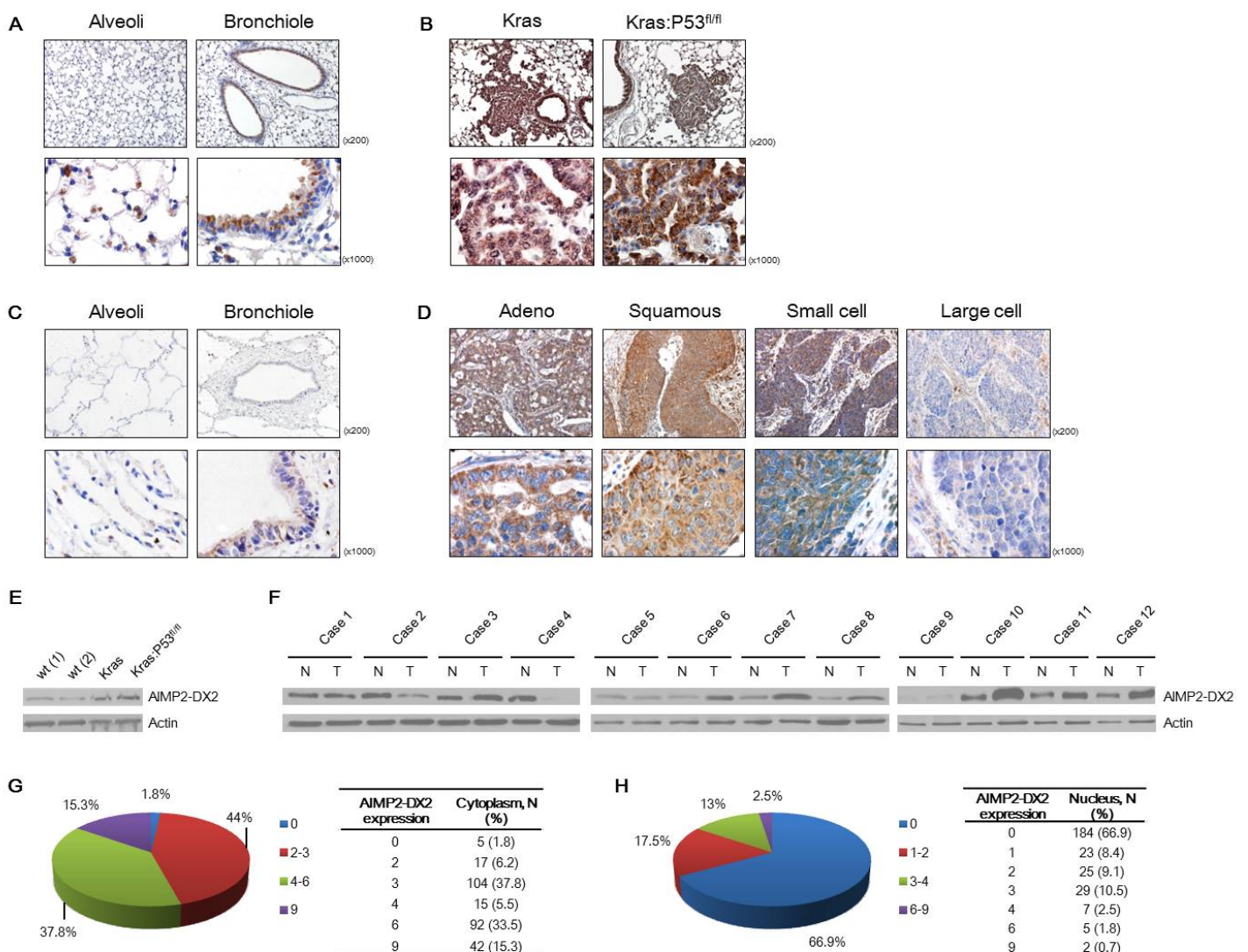
AIMP2: aminoacyl-tRNA synthetase interacting multi-functional protein 2, AIMP2-DX2: aminoacyl-tRNA synthetase interacting multi-functional protein 2–exon 2 deletion (AIMP2-DX2)

**Fig. S1. Representative microphotographs of cytoplasmic and nuclear AIMP2-DX2 expression in lung cancer.** Expression of AIMP2-DX2 was evaluated using a scoring system that takes into account the product of staining intensity and the percentage of positive cells. Staining intensity was classified as 0, 1, 2, and 3 and frequency was classified as 0 (<10%), 1 (10–50%), 2 (51–80%), and 3 (>80%).

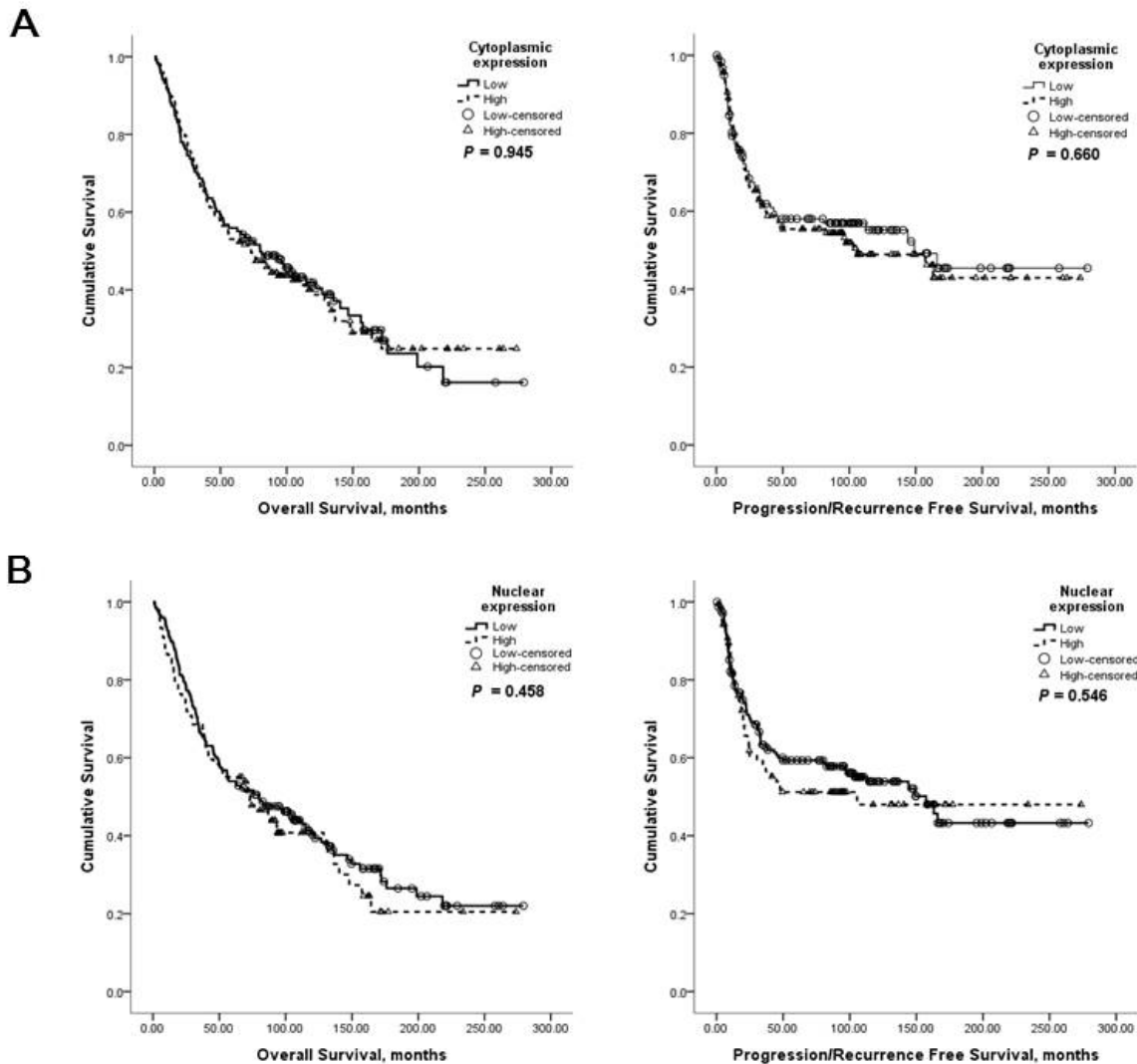


Expression grade	Description	
	Intensity	Frequency
0	negative	< 10%
1	Weak	10-50 %
2	Medium	51-79 %
3	Strong	>80%

**Fig. S2. Expression of AIMP2-DX2 in mouse and human lung tissue by immunohistochemistry and immunoblotting.** Representative microphotographs showing AIMP2-DX2 expression in (A) 8-week-old wild-type C57BL/6 mice, (B) *Kras*-LSL G12D and *Kras*-LSL G12D:p53<sup>fl/fl</sup> lung cancer model mice, (C) normal-appearing human tissues adjacent to lung cancer tissues, and (D) different histologic types of human lung cancer. Immunoblots showing AIMP2-DX2 expression in (E) wild-type C57BL/6 mice and *Kras*-LSL G12D and *Kras*-LSL G12D:p53<sup>fl/fl</sup> lung cancer model mice and (F) 12 pairs of human lung cancer tissues and adjacent normal-appearing lung tissues. Immunohistochemical analysis of the distribution of AIMP2-DX2 expression in (G) the cytoplasm and (F) the nucleus of 275 human lung cancer tissues. AIMP2-DX2: aminoacyl-tRNA synthetase-interacting multi-functional protein 2–exon 2 deletion



**Fig. S3. Kaplan–Meier curve for overall survival and progression/recurrence-free survival in high and low AIMP2-DX2 expression in the cytoplasm and nucleus.** Samples with high expression of cytoplasmic AIMP2-DX2 include those with 4 or higher product of intensity and frequency of cytoplasmic AIMP2-DX2; samples with low expression include those with 3 or less. Samples with high expression of nuclear AIMP2-DX2 include those with 1 or higher product of intensity; samples with low expression include those with 0. *P*-value was obtained by log-rank test. AIMP2-DX2: aminoacyl-tRNA synthetase-interacting multi-functional protein 2–exon 2 deletion.



Expression of AIMP2-DX2	Median	
	OS, months (95% CI)	PFS, months (95% CI)
Cytoplasmic expression		
Low (0-3)	80.0 (44.9 - 115.1)	149.0
High (4-9)	73.1 (48.7 - 97.5)	105.5 (20.7 - 190.3)
Nuclear expression		
Low (0)	79.9 (46.9 - 112.9)	157.2 (106.3 - 208.1)
High ( $\geq 1$ )	73.1 (41.0 - 105.2)	105.5