**Supplemental Figure Legends**

Supplemental Figure 1. Immunoblots of Patient Serum before and after Therapy

To detect induced humoral responses against tumor antigens, we performed immunoblotting against purified mesothelin and extracts from allogeneic mesothelioma cell lines. Multiple exposures were obtained and comparisons were made on the exposures in which the major bands detected on pre-treatment blots were of equal intensity in post-treatment blots. The blots were semi-quantitatively scored as follows: 0= no change in any bands (Supplemental Figure 1A); 1= minimal changes (i.e. increased intensity in one or two bands) (Supplemental Figure 1B); 2= clear increases in >2 bands or appearance of new bands (Supplemental Figure 1C).

Supplemental Figure 2. Distribution of 1/Nab Titers for the 40 Patients

All potential patients were screened for baseline adenoviral Nab titers per methods. Sixteen percent of the screened patients had titers above our pre-determined cut-off value of 1:2000 and were thus deemed ineligible. This figure shows the inverse of the titer (1/Nab) for each of the 40 patients who participated in the trial. The median titer was 1:100; the distribution of titers is shownin the graph.

Supplemental Figure 3. Distribution of the Day 2 serum levels of Interferon-alpha.

Serum levels of interferon-were measured two days after Ad.IFN administration (Supplemental Fig 3A). Roughly half of the patients (n=21) had detectable levels of serum IFN (15 to 1608 pg/ml) on Day 2 after vector infusion. Levels of IFN in the pleural fluid were also measured on Day 2 in 38 patients (Supplemental Fig. 3B). Pleural levels were much higher than seen in the serum after initial dosing. We saw no correlation of survival times with the serum (Supplemental Fig. 3C, upper panels) or pleural (Supplemental. Fig. 3C, lower panels) interferon levels.

Supplemental Figure 4. Lack of Correlation of lymphocyte or macrophage infiltration with survival.

Pretreatment biopsies were stained using immunohistochemistry (IHC) and patients ranked for infiltration. Patients with counts > than the median value were called “more infiltrated”. We noted no significant correlations with either the degree of lymphocyte (CD8 staining) (Panel A), or macrophage (CD68 staining) infiltration (Panel B) in all patients (left panels) or just the epithelial histology patients (right panels).

Supplemental Figure 5. Lack of Correlation of PDL1 staining with survival.

Pretreatment biopsies were stained using immunohistochemistry (IHC) and slides were graded on staining intensity varying from 0 (no staining) to 5 (intense diffuse staining). In the upper panels, patients with low intensity staining (defined as grade 0-2) were compared to patients with strong staining (defined as grade 3-5). In the lower panels, patients with low intensity staining (defined as grade 0-1) were compared to patients with strong staining (defined as grade 2-5). Using either definition of staining intensity, we noted no significant correlations of expression of PD-L1 with survival.

Supplemental Figure 6. Correlation of the mRNA immunoscore with survival.

Biopsy slides were also used to produce RNA that was interrogated for 600 immune response-related genes using Nanostring® technology. We had information on 27 of the 61 PCR-validated genes from a recently published immune response gene signature which were markers are primarily T cell and interferon-induced genes (see **Supplemental Table 4**). When the MPM specimens were ranked for intensity of expression of these genes (using the median score as a cut-off), there was no significant correlation with survival in all patients (left panel) or just the epithelial patients (right panel).