**SUPPLEMENTAL FIGURES**

Figure S1. (A) MBP alone does not bind ssDNA via EMSA. Concentration of MBP is 2 μM. (B) Control EMSA of RPA, X-rhodamine labeled p53TAD2 peptide, ssDNA and FPA. The X-rhodamine signal bleeds into the 700 nM channel, and does not appear to interact with DNA or FPA as indicated by a lack of change in fluorescence or band shift.

Figure S2. (A) p53TAD2 and RPAbinding curve as measured by average fluorescence anisotropy (<r>). The initial concentration of the p53TAD2 was 300 nM. The Kd for p53TAD2 binding was 6.06 ± 0.08 μM. (B) Release of p53TAD2from RPA upon addition of FPA, following a change in anisotropy (<r>100% p53TAD2/RPA, 0.128 ± 0.004; <r> p53TAD2 only,0.078 ± 0.003). Initial concentrations of RPA and p53TAD2 were 11 µM and 300 nM respectively. (C) Measurement of FPA binding to RPA (solid circles) as determined by tryptophan fluorescence quenching with a 28% total change in fluorescence at 348 nm (Kd = 29.0 ± 3.5 μM). The initial concentration of RPA was 3μM. FPA did not cause quenching in RPAΔF (hollow circles). (D) p53TAD2 and DBD-FMBPbinding as measured by fluorescence quenching of the X-rhodamine dye on p53TAD2 (solid circles). The initial concentration of the p53TAD2 was 300 nM. The Kd for p53TAD2 binding was 1.03 ± 0.25 μM. The maltose binding protein control did not cause quenching of the X-rhodamine dye (hollow circles). (E) Addition of FPA to prebound p53TAD2-DBD-FMBP results in a decrease in the product of anisotropy and fluorescence (F) as p53TAD2 is released (Maximum change in rF was 45%). The initial concentrations of DBD-FMBP and p53TAD2 were 14 µM and 300 nM respectively. (F) The gray area is the 68% joint confidence region truncated by the 68% confidence level of the individually determined Kd from the data shown in Fig. S1D. The optimal Kd values (1.1 μM (p53TAD2/DBD-FMBP) and 8.6μM (FPA/DBD-FMBP) are represented by the dot near the middle of the truncated ellipse.

Figure S3. (A) FPA does not bind the X-rhodamine labeled p53TAD2 peptide as determined by fluorescence anisotropy. Concentration of peptide is 300 nM, (B) GST does not bind RPA in a ELISA-based binding assay. (1) no RPA (2) 250 nM RPA. No difference in signal was detected.

Figure S4. Characterization of bacterially expressed and purified proteins. (A) Coomassie stained 1% SDS-PAGE gel of purified MBP and the DBD-FMBP. Lanes are: (1) MBP and (2) DBD-FMBP (B) Coomassie stained 1% SDS-PAGE gel of purified full length recombinant RPA. Fractions 1-4 are shown, of which fractions 1 and 2 were used in this study (C) Coomassie stained SDS-PAGE gel of purified RPAΔF. Fractions 1-3 are shown, of which fraction 2 was used in this study (D) Coomassie stained SDS-PAGE gel of purified RPA (R41E,R43E). (E) Western blot of recombinant GST and GST-p53 in bacterial lysates. Lanes 1,2: blot of GST and GST-p53 using an anti-GST antibody (Bethyl, 1:1000). Lanes 3,4: blot of GST and GST-p53 using an anti-p53 antibody (Cell Signaling, 1:1000).