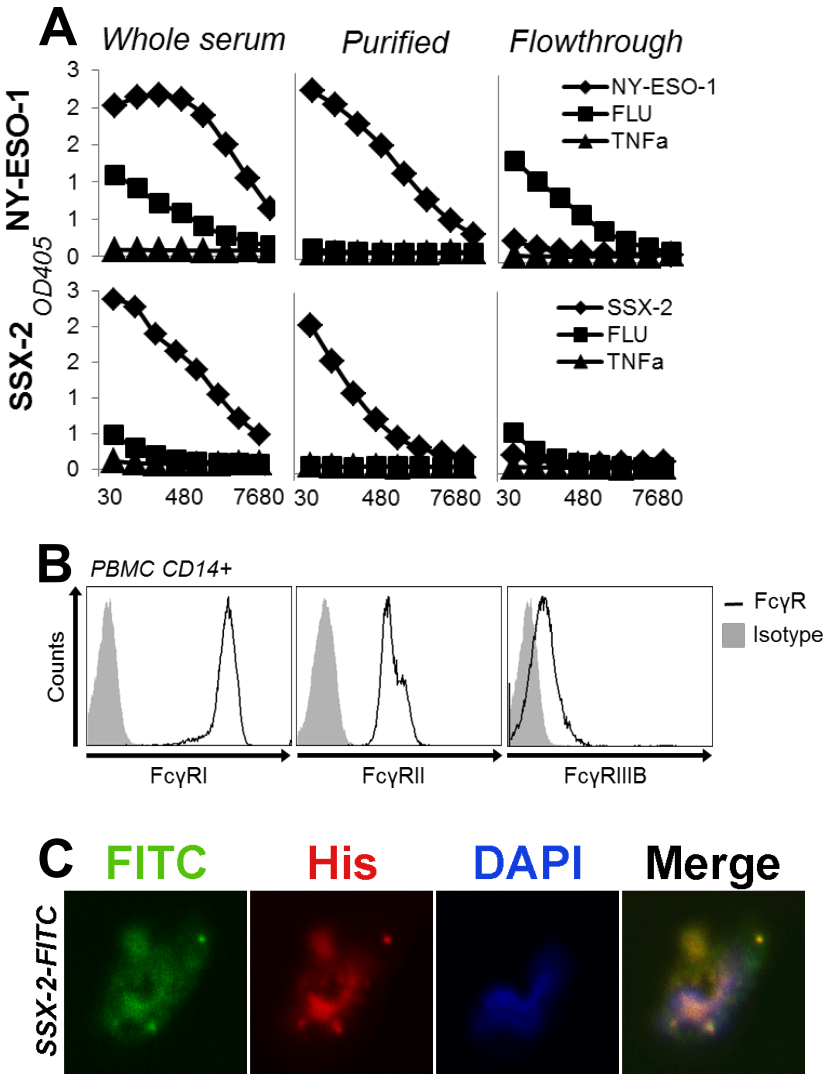
# SUPPLEMENTARY MATERIAL

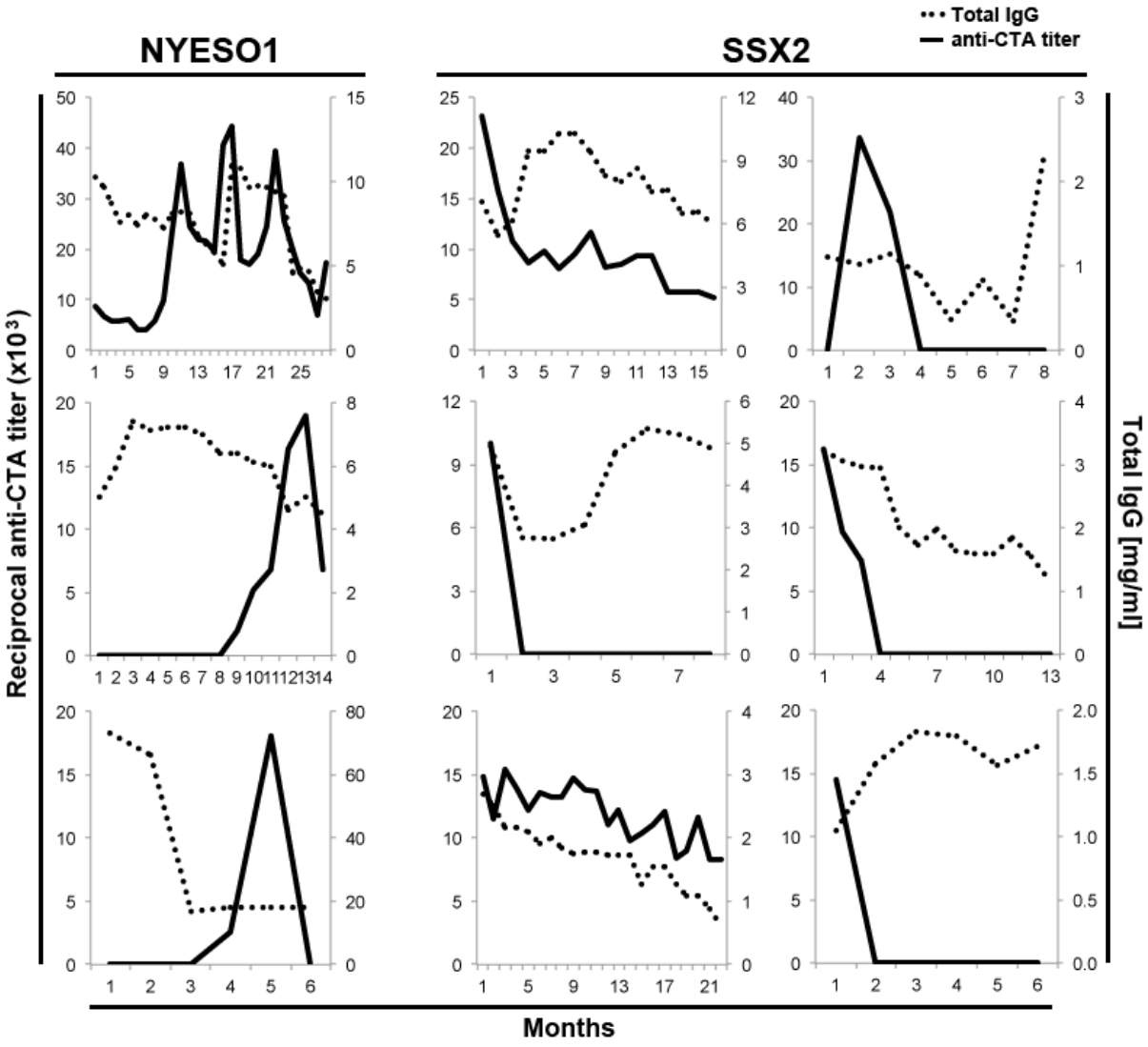
| Parameter | Total | NY-ESO-1 seropositive | SSX-2 seropositive |
|---|---|---|---|
| **Sex** | | | |
| Male | 115 | 4 | 5 |
| Female | 80 | 1 | 1 |
| **Age** | | | |
| > 60 | 69 | 2 | 1 |
| ≤ 60 | 126 | 3 | 5 |
| **Karyotype** | | | |
| Normal | 83 | 0 | 2 |
| Complex | 15 | 2 | 0 |
| Del13q14 | 46 | 2 | 4 |
| Del17p13 | 12 | 0 | 0 |
| t(4;14) | 9 | 1 | 0 |
| Not tested | 30 | 0 | 0 |
| **LC isotype *** | | | |
| Lambda | 62 | 5 | 4 |
| Kappa | 100 | 0 | 2 |
| **HC isotype *** | | | |
| IgG | 167 | 3 | 6 |
| IgA | 18 | 2 | 0 |
| **Maximum treatment** | | | |
| Unknown | 75 | 0 | 0 |
| Chemotherapy | 10 | 1 | 0 |
| AutoSCT | 27 | 1 | 0 |
| AlloSCT | 83 | 3 | 6 |
| **Stage *** | | | |
| I | 32 | 1 | 0 |
| II | 52 | 0 | 0 |
| III | 95 | 4 | 6 |

**Supplementary Table 1: Patient characteristics**

Data are shown for all patients and for the subgroup of NY-ESO-1 and SSX-2-seropositive patients (LC = light chain, HC = heavy chain). Categories with * do not add up to 195 because of unavailable data.

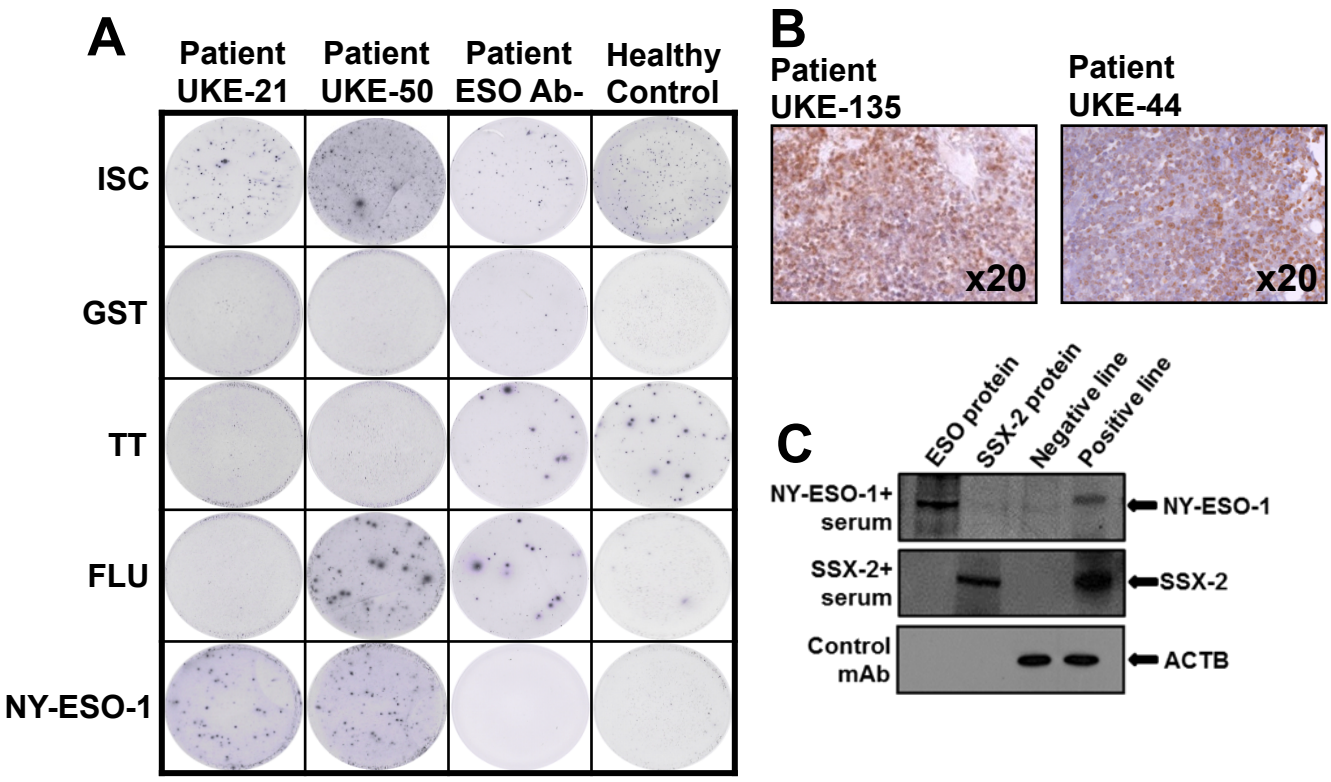



**Supplementary Figure 1: Validation of materials and procedures used in antigen uptake experiments,**
(A) ELISA optical density measurements from logarithmic dilution series of samples containing CTA-specific antibodies. Results indicate focused reactivity of purified fractions and loss of CTA-specific reactivity in flowthrough, with only the latter containing seroreactivity towards positive control protein FLU but not human TNFα. (B) Flow cytometry results showing the expression of all three FcgRs on the surface of CD14+ PBMCs. An isotype control staining was included to account for unspecific background signal. (C) Indirect immunofluorescence staining of recombinant protein internalized by APC using an anti-His antibody and a Cy3-conjugated anti-mouse antibody. Images show strong colocalization of fluorescence signals derived from FITC labeling and secondary His staining.




**Supplementary Figure 2: Absence of correlation between whole IgG levels and CTA-specific antibody titers**

When available whole IgG levels and CTA-specific antibody titers, as also shown in Figure 1A, were plotted for all antibody-positive patients.




**Supplementary Figure 3: Detection of NY-ESO-1 antibody-secreting B cells in MM patients and NY-ESO-1 expression by immunohistochemistry**
**(A)** Presence of CTA-specific B cells in the peripheral blood of myeloma patients. Results of B cell ELISPOTS are shown for to NY-ESO-1 antibody-positive patients (UKE-21 and UKE-50), a seronegative patient, as well as a healthy donor. Spots indicate total numbers of IgG-secreting cells (ISC) as well as numbers of NY-ESO-1-, FLU-, TT-, and GST-specific B cells. As we were not able to harvest a sufficient number of peripheral blood mononuclear cells for UKE-44, -135 and -146, analysis of NY-ESO-1 specific B cells was not feasible in these patients. **(B**) Extramedullar expression of NY-ESO-1 assessed by immunohistochemistry in patients UKE-44 and UKE-135. An estimated 30-40% of all MM were found to express NY-ESO-1. **(C**) Analysis of the specificity of NY-ESO-1- and SSX-2-specific antibody responses by western blot. Samples from NY-ESO-1 or SSX-2 seropositive patients recognized the respective recombinant protein as well as NY-ESO-1 and SSX-2 expressed in tumor cell lines SK-MEL-19 and K562, respectively. Cell lysate of SK-MEL-21 was used as a negative control and housekeeping protein ACTB was used as a positive control. Results of one representative experiment are shown.


**Supplementary Figure 4: Sequence alignment of SSX family in SSX-2 epitope region.**
Red letters indicate amino acids in the minimal epitope shared with SSX-2. Black letters indicate shared amino acids in the flanking region.