

Supplementary Table I: Anti-TfR1 antibodies that show direct anti-cancer activity.

Antibody name	Class and subclass	Targeted TfR1 species	Inhibits binding of Tf *	Anti-cancer Activity	References
RI7 208	Rat IgM	Mouse	No	<i>In vitro</i> Inhibits proliferation of murine myeloma and lymphoma cell lines. <i>In vivo</i> Increases survival in a syngeneic murine model of leukemia (s.c. inoculation).	(92, 114-116)
REM 17.2	Rat IgM	Mouse	No	<i>In vitro</i> Inhibits cancer cell proliferation.	(92,116)
RI7 217	Rat IgG2a	Mouse	No	<i>In vitro</i> Inhibits proliferation of a murine T-cell lymphoma cell line, enhanced in the presence of a cross-linking antibody.	(92)
D18	Mouse IgG2a	Chicken	No	<i>In vitro</i> Inhibits proliferation and induces caspase-independent cell death in a chicken B-lymphoid tumor cell line.	(117-118)
D19	Mouse IgG2a	Chicken	No	<i>In vitro</i> Inhibits proliferation and induces caspase-independent cell death in a chicken B-lymphoid tumor cell line.	(117-118)
7579	Mouse IgG	Human	ND	<i>In vitro</i> Inhibits proliferation and induces apoptosis of glioma, hepatoma, and breast cancer cell lines. In combination with curcumin induces necrosis in glioma cell lines. In combination with nimustine induces synergistic cytotoxic effects in glioma cell lines. In combination with 5-fluorouracil, synergistically increases necrosis of breast and hepatocellular cancer cell lines. In combination with doxorubicin, additively increases necrosis of breast and hepatocellular cancer cell lines. In combination with sinomenine hydrochloride, decreases proliferation and induces apoptosis in a hepatocellular cancer cell line.	(120-122, 132)
E2.3	Mouse IgG1	Human	ND	<i>In vitro</i> Inhibits proliferation of MM and breast cancer cell lines in combination with the antibody A27.15.	(125, 133)
A27.15	Mouse IgG1	Human	No	<i>In vitro</i> Inhibits proliferation of MM and breast cancer cell lines in combination with the antibody E2.3. <i>In vivo</i> In combination with the antibody D65.30 inhibits T-cell leukemia tumor growth in a murine xenograft model.	(125, 133)

B3/25	Mouse IgG1	Human	No	<i>In vitro</i> Inhibits proliferation of human AML cell lines.	(126)
43/31	Mouse IgG	Human	Yes	<i>In vitro</i> Inhibits proliferation of human AML cell lines.	(126)
D65.30	Mouse IgG1	Human	No	<i>In vitro</i> Inhibits proliferation of a human ALL (T-cell origin) cell line. <i>In vivo</i> Limited inhibition of s.c. implanted human ALL (T-cell origin) tumor growth in a murine xenograft model as a single agent and with increased effectiveness when combined with the antibody A27.15.	(127)
A24	Mouse IgG2b	Human	Yes	<i>In vitro</i> Inhibits proliferation and induces apoptosis of ATLL, AML, and MCL cell lines. <i>In vivo</i> Abrogates human AML and MCL tumor formation in a s.c. mouse xenograft model. Inhibits tumor growth in a delayed tumor growth model.	(94, 119, 128)
RBC4	Mouse IgM	Human	ND	<i>In vitro</i> Inhibits proliferation and induces cell death in human CML, ALL (T-cell origin), TCL, and AML cell lines.	(135)
42/6	Mouse IgA	Human	Yes	<i>In vitro</i> Inhibits proliferation of human ALL (T-cell origin), AML, and melanoma cell lines. <i>In vivo</i> Phase I clinical trial showed out of 27 patients with various malignancies, 3 showed mixed anti-tumor response, one with follicular small cleaved cell lymphoma, one with HL, and one with CLL.	(124, 126-127, 130, -131, 136)
D2C	Mouse/human chimeric IgG1 (Fv from 7579)	Human	ND	<i>In vitro</i> Inhibits proliferation and induces apoptosis in an erythroleukemia cell line. Induces ADCC against erythroleukemia, ALL (T-cell origin), and hepatocellular cancer cell lines. Induces CDC against ALL (T-cell origin) and hepatocellular cancer cell lines. In combination with curcumin, enhances anti-cancer activity in a castration resistant prostate cancer cell line.	(139-141)
ch128.1Av	Mouse/human chimeric IgG3-Avidin (Fv from 128.1)	Human	No	<i>In vitro</i> Exhibits anti-proliferative/pro-apoptotic activity in human MM, AML, BL, B-lymphoblastoid cells, TCL, and erythroleukemia cell lines. Enhances anti-cancer cytotoxic effects when used in combination with gambogic acid, HXR9, or cisplatin. <i>In vivo</i> Increases survival in a disseminated xenograft murine models of human MM, though less effective than ch128.1.	(96, 144, 152-154)
chOX26Av	Mouse/human chimeric IgG3-Avidin	Rat	No	<i>In vitro</i> Exhibits anti-proliferative/pro-apoptotic activity in rat myeloma and T-cell lymphoma cell lines.	(145)

ch128.1/IgG3	(Fv from OX26) Mouse/human IgG3 (Fv from 128.1)	Human	No	<i>In vitro</i> Inhibits proliferation and induces apoptosis of certain hematopoietic malignant cell lines such as B-lymphoblastoid cell lines. Induces ADCC and ADCP against malignant B cell lines. <i>In vivo</i> Increases survival in disseminated xenograft models of human MM. Increases survival in a xenograft model of AIDS-NHL where cells were inoculated i.p.	(95-96, 142, 144, 160)
ch128.1/IgG1	Mouse/human IgG1 (Fv from 128.1)	Human	No	<i>In vitro</i> Induces ADCC and ADCP against a MM cell line. <i>In vivo</i> Increases survival in disseminated xenograft models of human MM and AIDS-NHL. In combination with either lenalidomide or bortezomib, improves survival in disseminated xenograft models of human MM compared to the single agents alone. Inhibits EBV-driven lymphomagenesis in mice bearing human B cells.	(163, 166-168)
hu128.1	Humanized IgG1 (Fv from 128.1)	Human	No	<i>In vivo</i> Increases survival in disseminated xenograft models of human AIDS-NHL.	(167)
3TF12	Fv	Human	Yes	<i>In vitro</i> Inhibits proliferation and decreased viability of human TCL, erythroleukemia, BL, histiocytic lymphoma, and AML cell lines.	(170)
3GH7	scFv	Human	Yes	<i>In vitro</i> Inhibits proliferation and decreased viability of human TCL, erythroleukemia, BL, histiocytic lymphoma, and AML cell lines.	
H7CH	Bivalent scFv	Human	Yes	<i>In vitro</i> Inhibits proliferation and induces apoptosis of an erythroleukemia cell line.	(170)
F12CH **	Bivalent scFv	Human	Yes	<i>In vitro</i> Inhibits proliferation and induces apoptosis of an erythroleukemia cell line. Inhibition of proliferation is rescued by iron supplementation. <i>In vivo</i> Inhibits tumor growth of erythroleukemia cells in a s.c. xenograft mouse model.	(170)
scFv HAK	Intra-cellular scFv	Human	Yes	<i>In vitro</i> Inhibits proliferation and induces apoptosis in a human breast cancer cell line.	(171)
H7-Fc **	scFv-Fc ***	Human	Yes	<i>In vitro</i> Induces apoptosis in human erythroleukemia and BL cell lines. Induces ADCC against mastocytoma leukemic cells and lymphoma cell lines. <i>In vivo</i> Tumor regression was observed in a s.c. erythroleukemia xenograft mouse model.	(175)

Anti-TFRC	Fully human IgG1	Human	Yes	<i>In vitro</i> Inhibits proliferation and induces apoptosis in human OSCC cell lines. Induces ADCC against OSCC cell lines. <i>In vivo</i> Inhibits human OSCC tumor growth in a murine xenograft model.	(41)
JST-TFR09 (PPMX-T003)	Fully human IgG1	Human	Yes	<i>In vitro</i> Inhibits proliferation and increases apoptosis in ATLL, AML, erythroleukemia, and anaplastic large cell lymphoma cell lines. Induces ADCC against an ATLL cell line. <i>In vivo</i> Inhibits human ATLL, cutaneous T-cell lymphoma, large cell lymphoma, AML, and erythroleukemia tumor growth in s.c. xenograft mouse models. Increases survival in disseminated xenograft mouse models of ATLL and ALL (T-cell origin). Showed anti-cancer activity in xenograft mouse models using patient-derived AML cells implanted intratibially.	(173-174)
H7-IgG1	IgG1 (Fv from 3GH7 scFv)	Human	Yes	<i>In vitro</i> Induces apoptosis in human erythroleukemia and BL cell lines. Induces ADCC of mastocytoma leukemic cells and lymphoma cell lines. <i>In vivo</i> Tumor regression and increased survival in a s.c. erythroleukemia xenograft mouse model.	(175)

* *If the antibody inhibits the binding of Tf it is known as a neutralizing antibody.*

** *These antibodies cross-react with mouse TfR1.*

*** *Two 3GH7 scFv attached to the Fc region of human IgG1.*

ADCC, antibody-dependent cell-mediated cytotoxicity; ADCP, antibody-dependent cell-mediated phagocytosis; AIDS-NHL, acquired immunodeficiency syndrome associated non-Hodgkin lymphoma; ALL, acute lymphocytic leukemia; AML, acute myeloid leukemia; ATLL, adult T-cell leukemia/lymphoma; BL, Burkitt lymphoma; CDC, complement-mediated cytotoxicity; CLL, chronic lymphocytic leukemia; CML, chronic myeloid leukemia; Fv, variable regions; HL, Hodgkin lymphoma; i.p., intraperitoneal; MCL, mantle cell lymphoma; MM, multiple myeloma; ND, not described; OSCC, oral squamous cell carcinoma; s.c., subcutaneous, TCL, acute T-cell leukemia.