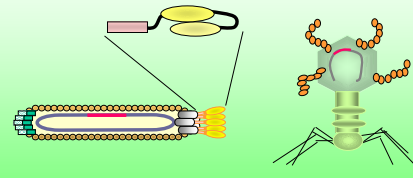


Design of protein function-mimicking peptides and therapeutic human antibodies by phage library

Department of Bioengineering, Faculty of Engineering, Kagoshima University

Yuji Ito, Associate Professor (Ph. D.)

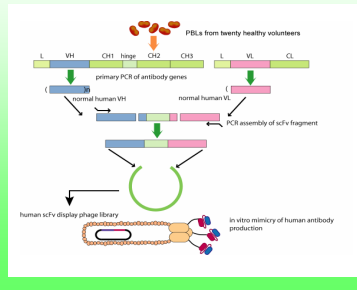
Phage display



M13 bacterial phage

T7 bacterial phage

Human antibody phage library



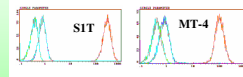
ATL
(Adult T cell leukemia caused by infection of HTLV-1)



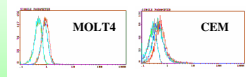
SIT cell
(Target cell)

SIT-specific scFv antibody dimer (diabody) can induce a strong apoptotic cell death

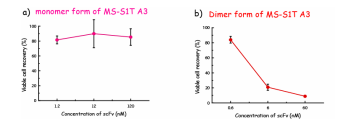
Binding to HTLV-1 carried cell



Binding to HTLV-1 non-carried cell



SIT-specific scFv dimer strongly induces cell death on SIT



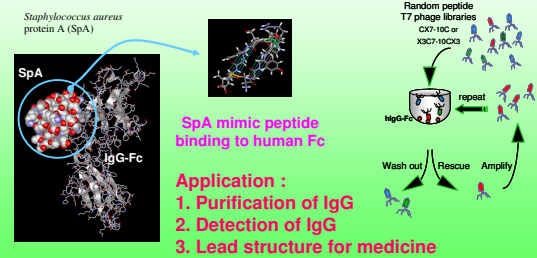
Construction of huge peptide library on T7 phage

Form	Diversity
CX4C	1.2×10^9
CX5C	1.2×10^9
CX6C	1.8×10^9
CX7C	1.4×10^9
CX8C	1.3×10^9
CX9C	1.5×10^9
CX10C	1.8×10^9
X3CX4CX3	1.4×10^9
X3CX5CX3	1.7×10^9
X3CX6CX3	1.5×10^9
X3CX7CX3	1.6×10^9
X3CX8CX3	9.0×10^8
X3CX9CX3	1.0×10^9
X3CX10CX3	5.4×10^8
X16	2.5×10^7
X12	7.0×10^8
X18	6.3×10^8
X20	1.8×10^9

Total 2.5×10^{10}

X: randomized amino acid

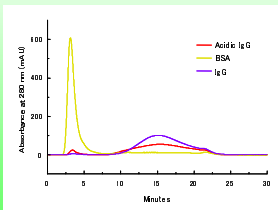
Human IgG Antibody-specific binding peptide



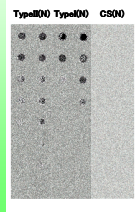
Application:
1. Purification of IgG
2. Detection of IgG
3. Lead structure for medicine

Type I peptide specific to human IgG

Affinity purification of human IgG by peptide-conjugated column



Human IgG detection on dot blot by using biotinylated peptide



Type II peptide specific to abnormal conformer of human IgG

Abnormal conformer of hIgG is generated by acidic treatment in the purification process using SpA column.

Type II conjugated column can remove the abnormal conformer from IgG preparation with i.e. SpA column.

