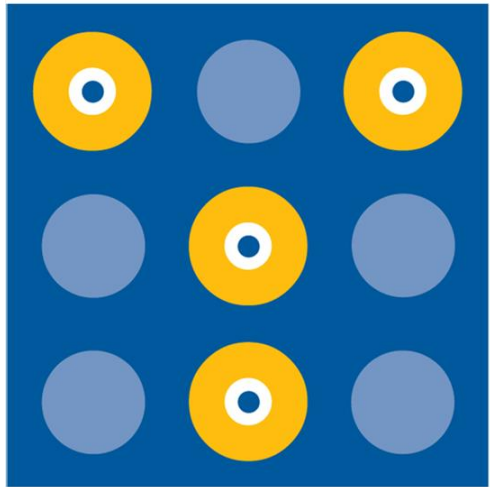


precision antibody™

- Jun Hayashi, Ph.D.
- President
- 9130 Red Branch Rd
- Columbia, MD 21045
- U.S.A.
- jhayashi@precisionantibody.com
- +1-410-884-4100

Fully Human Monoclonal Antibody Development In 60 Days



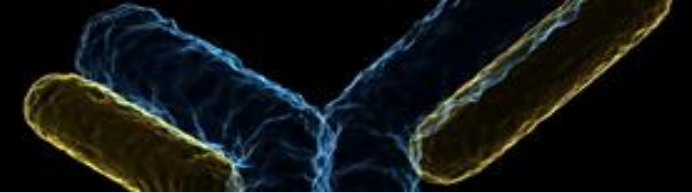
precision
antibody™



Trans Chromosomics



precision antibody™



Strategic Alliance

Precision Antibody, a service division of A&G Pharmaceutical Inc is pleased to announce business alliance with **Trans Chromosomics**



A&G Pharmaceutical Inc/Precision Antibody

- Theranostic antibody development against breast & lung cancer
- Global leader in antibody development



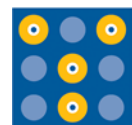
CEO, Ginette Serrero Ph.D.
Established: 1, June 2000
www.agpharma.com

Trans Chromosomics (TC)

- *Global Leader Of Artificial Chromosome Engineering Technology*
- *Innovative Platforms For Biopharmaceuticals, Cell/Gene Therapy, And Xenotransplantation*



President CEO, Mitsuo Oshimura Ph.D.
Established : 17 December 2014
www.trans-chromo.com

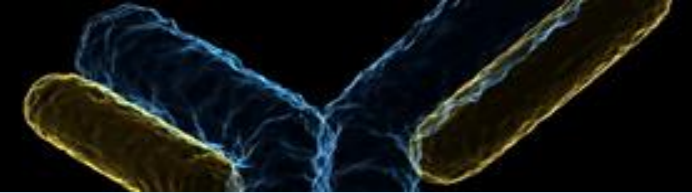


precision
antibody™

President, Jun Hayashi Ph.D.
Established: 1, June 2000
www.precisionantibody.com



precision antibody™



Summary

- **TC mAb™ mice are not immuno-suppressed and develop strong titer against the immunogen in short period of time using PA technology.**
- **PA generates fully human monoclonal Ab from TC mAb™ mice in about 60 days.**
- **TC mAb™ is the mouse that expresses 100% human antibody.**
- **The generated mAbs do not require further molecular manipulation such as constant region gene swapping.**
- **TC mAb™ mice provides increased efficiency in the generation of Ag-specific mAb producing hybridoma clones; i.e., A large number of clones; Diverse epitope specificity.**
- **Fully human mAb generated from TC mAb™ mice represent normal human IgG repertoire.**



Case Studies

Case Study 1

Immunogen: ~90KDa protein with ~75% homology with mouse ortholog

Duration of the project: 60 days from immunization to expansion of antigen-specific clones.

Serum titer prior to fusion:

Serum Dilutions	1:1K	1:3K	1:10K	1:30K	1:100K	control
A ₆₂₀	3.40	2.90	1.66	0.64	0.10	0.04

Number of Ag-positive mAb producing clones by ELISA screening:

antigen: 30 ng/well 1° Ab: 100 ng/well

OD	# of Ag-positive clones (out of 1727 clones)
0.5-1.0	335
1.0-2.0	423
2.0->3.0	387
>3.0	183
Total Positive	1,228

~77% of clones were positive against the immunogen.

Case Study 2

Immunogen: ~50KDa protein no homology to mouse proteins

Duration of the project: 60 days from immunization to expansion of antigen-specific clones.

Serum titer prior to fusion:

Serum Dilutions	1:1K	1:3K	1:10K	1:30K	1:100K	control
A ₆₂₀	3.02	2.94	2.60	1.80	0.95	0.04

Number of Ag-positive mAb producing clones by ELISA screening:

antigen: 50 ng/well 1° Ab 100 ng/well

OD	# of Ag-positive clones (out of 1920 clones)
0.5-1.0	358
1.0-2.0	205
2.0-3.0	276
>3.0	118
Total Positive	957

~50% of clones were positive against the immunogen



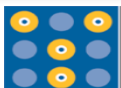


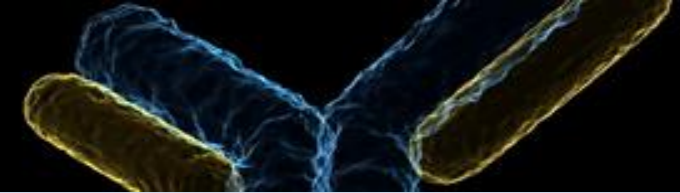
Advantages of TC mAb™ mice for the Development of Therapeutic mAbs

	Wild-type	Fully human IgG
Animals	Balb/c, ICR, etc.	TC-mAb mice
Immune response	Mouse IgG	Human IgG
Antibody titer	Excellent	Excellent
IgG subclass	mlgG1,2a, 2b, and 2c	hIgG1, 2, 3, 4
Humanization	The entire region	Not necessary
Ag-specific mAb generation	Normal	High ratio
Size of spleen	Enlarged	Normal
B cell development	Normal	Expanded
Antigen-specific B cells	Normal	Expanded
Ig-gene Repertoire	Normal mouse	Normal human
Somatic hypermutation	Yes	Yes
Length of CDR3H	Mouse (short)	Human (long)

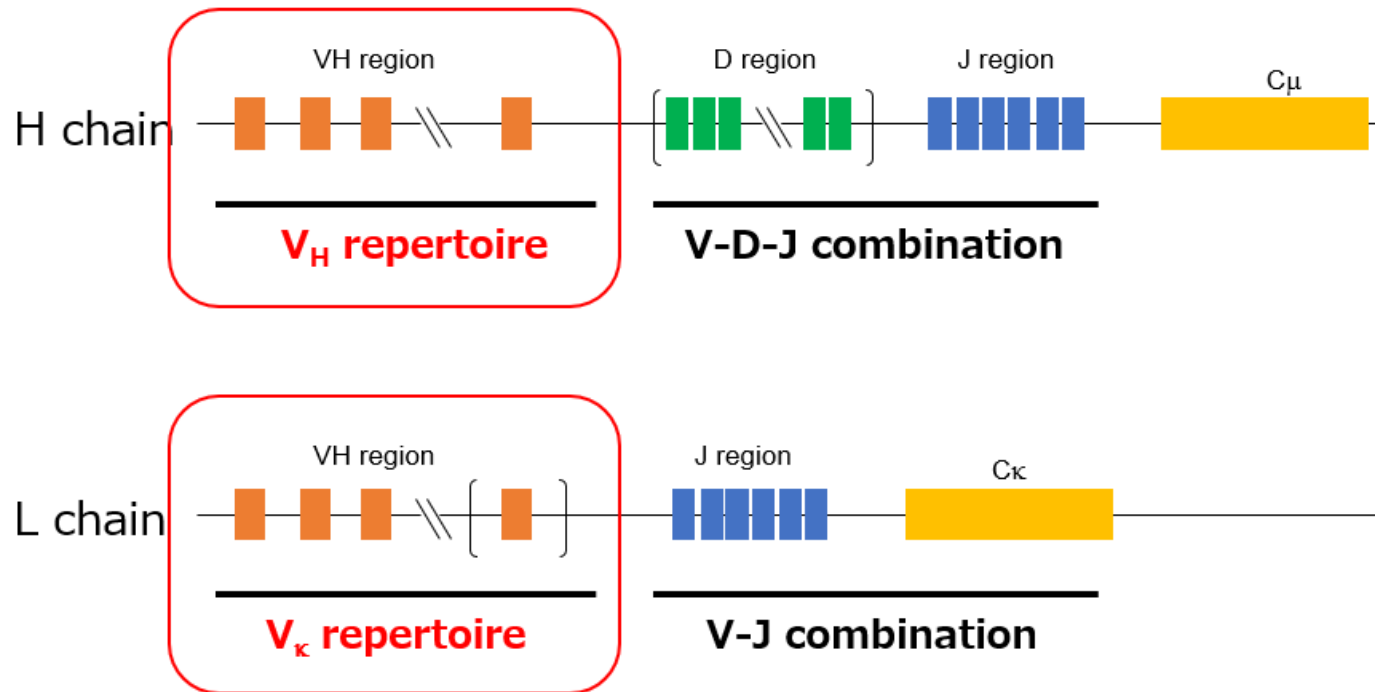
Summary

- TC mAb™ mice represents normal human IgG repertoire.
- MABs generated from TC mAb™ mice are fully human, affinity matured and do not require any further molecular manipulations.





Normal Representation of Human Ab Repertoire by TC mAb™ mice : Continued



Pooled samples were analyzed by NGS.



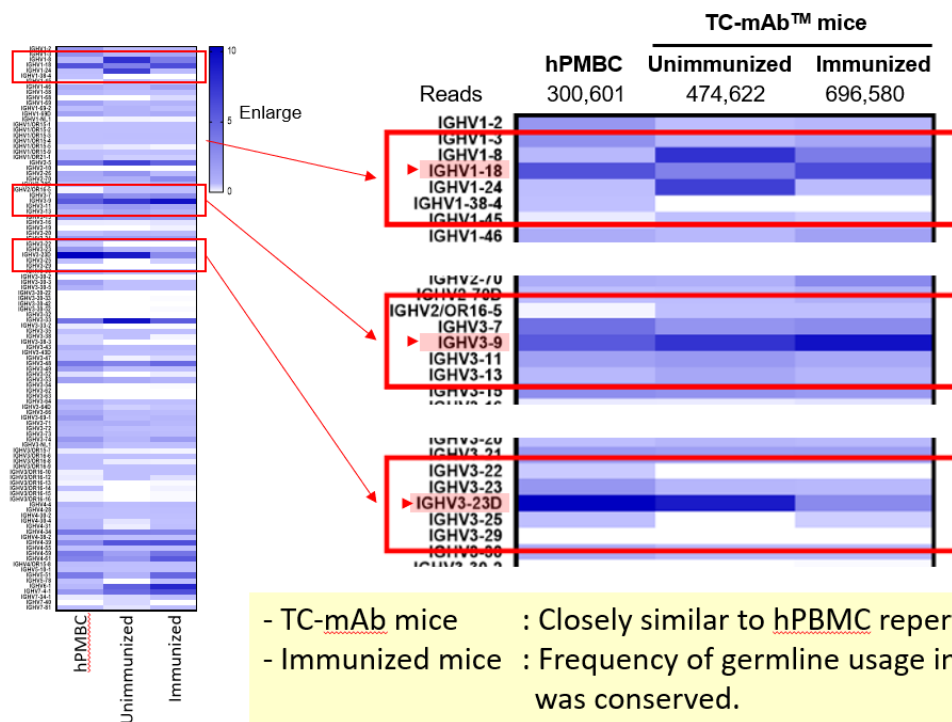
Heat map representation of V_H and V_L -gene usage



Normal Representation of Human Ab Repertoire by TC mAb™ mice : Continued

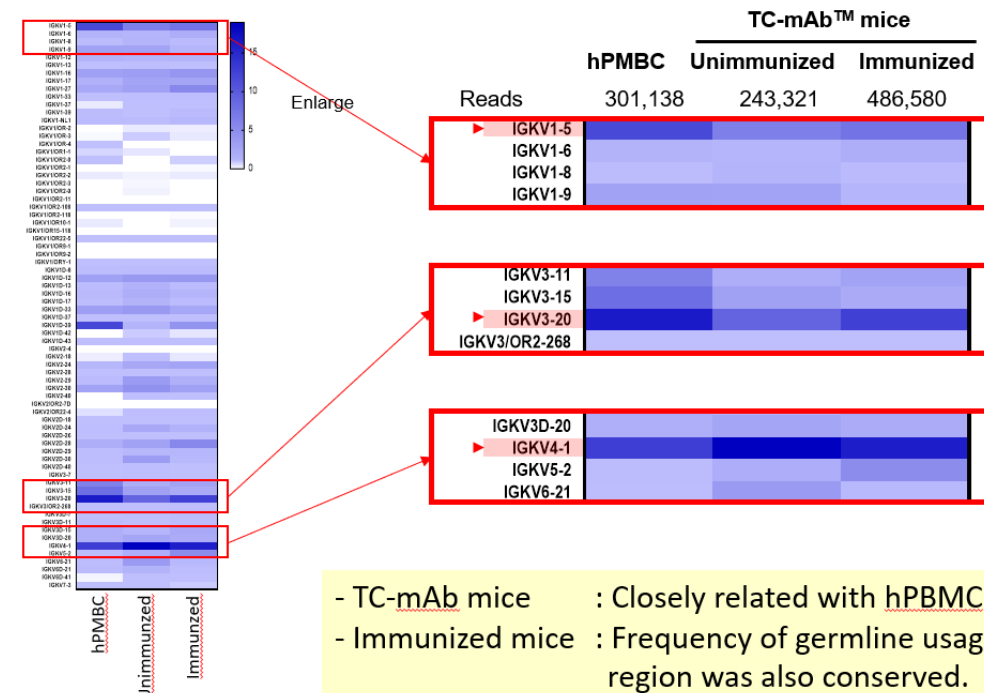
VH gene usage (IgM&IgG)

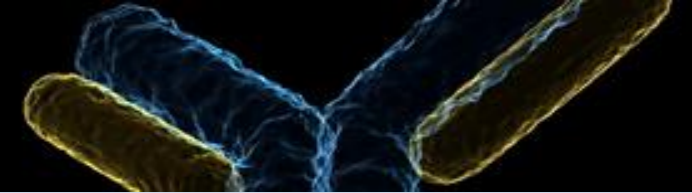
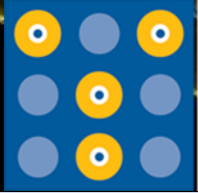
VH gene usage (IgM & IgG)



Vk gene usage

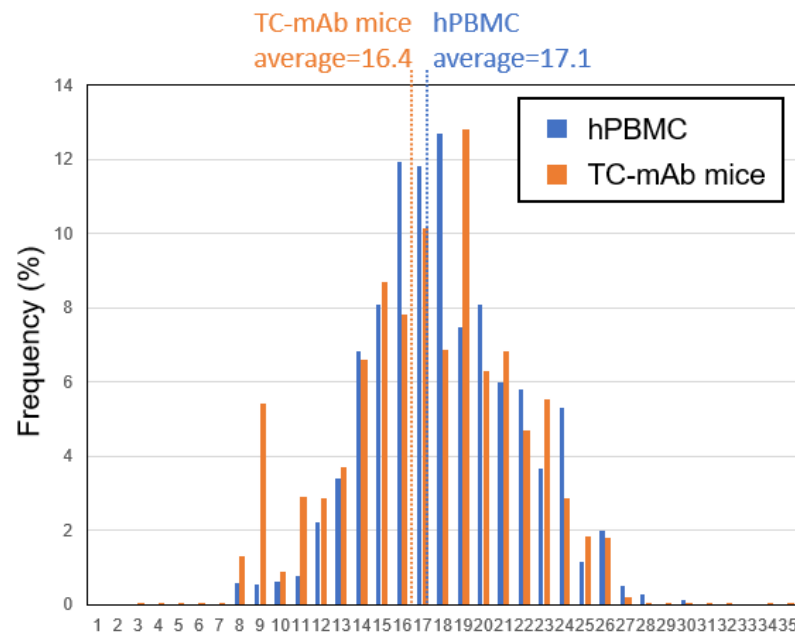
Vk gene usage



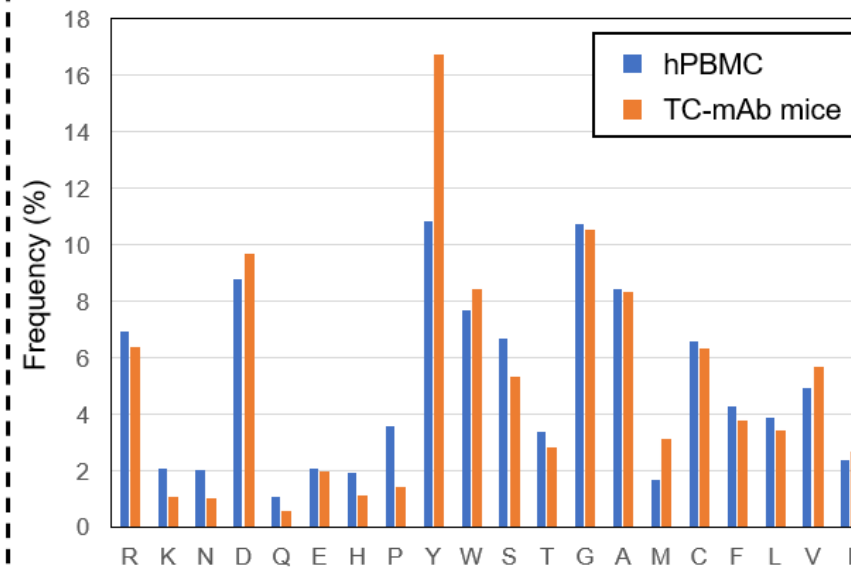


Normal Representation of Human Ab Repertoire by TC mAb™ mice

CDR3H Length



CDR3H Amino acids usage



Both amino acid length and composition in CDR3 region of the antibody heavy chain variable region (VH) were almost the same with human PBMC. It was speculated that antibodies similar to human individuals can be produced from TC-mAb mice.

