

TZ47 scFv

QVQLQQSGAELMKPGASVKLSCKATGYTFTGYWIEWIKQRPBGHLEWIGEILPGTGSTNYNEKFKGKATFTADTSS
NTAYMQLSSLTTEDSAIYYCAIPGMDYWGQGTSVTVSSAGGGGSGGGGSGGGGSEFDIKMTQSPSSMYASLGER
VTITCKASQDINSYLSWFQQKPGKSPKTLIYRANRLVDGVPSRFSGSGSQDYSLTISSLEYEDMGIYYCLQYDEFPYTF
GGGKLEIK

TZ47-specific Designs

Summary of TZ47-specific Design Mutations

Design	Mutations
TZ47-Ag1	F24Y, N26Q, W75E
TZ47-Ag2	F161D, I165Q, V202T
TZ47-Ag3	T48K, K51E, V53H
TZ47-Ag4	M131E, N134G, S194H

*Mutations annotated in red

TZ47-Ag1

GDLKVEMMAGGTQITPLNDNVTIY**CQ**IFYSQPLNITSMGITWFWKSLTFDKEVKVFEFFGDHQEAFRPGAIVSP**ERL**
KSGDASLRPLPGIQLEEAGEYRCEVVVTP**LA**QGT**VQ**LEV**VAS**PARLLLDQVGMKENEDKYMCESSGFYPEAINITW
EKQTQKFPHPIEISEDVITGPTIKNMDGTFNVT**SCL**KL**NSSQ**EDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSETE
KTDNFS

TZ47-Ag2

GDLKVEMMAGGTQITPLNDNVTIFCNIFYSQPLNITSMGITWFWKSLTFDKEVKVFEFFGDHQEAFRPGAIVSPWR
LKSGDASLRPLPGIQLEEAGEYRCEVVVTP**LA**QGT**VQ**LEV**VAS**PARLLLDQVGMKENEDKYMCESSGFYPEAINIT
WEKQTQK**D**PH**PQ**EISEDVITGPTIKNMDGTFNVT**SCL**KL**NSSQ**EDPG**TY**QCVVRHASLHTPLRSNFTLTAARHSL
ETEKTDNFS

TZ47-Ag3

GDLKVEMMAGGTQITPLNDNVTIFCNIFYSQPLNITSMGITWFWKSL**KFDEEH**KVFEFFGDHQEAFRPGAIVSPWR
LKSGDASLRPLPGIQLEEAGEYRCEVVVTP**LA**QGT**VQ**LEV**VAS**PARLLLDQVGMKENEDKYMCESSGFYPEAINIT
WEKQTQKFPHPIEISEDVITGPTIKNMDGTFNVT**SCL**KL**NSSQ**EDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSE
TEKTDNFS

TZ47-Ag4

GDLKVEMMAGGTQITPLNDNVTIFCNIFYSQPLNITSMGITWFWKSLTFDKEVKVFEFFGDHQEAFRPGAIVSPWR
LKSGDASLRPLPGIQLEEAGEYRCEVVVTP**LA**QGT**VQ**LEV**VAS**PARLLLDQVGE**KEG**EDKYMCESSGFYPEAINITW
EKQTQKFPHPIEISEDVITGPTIKNMDGTFNVT**SCL**KL**HSQ**EDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSETE
KTDNFS

PB11 scFv

QVQLVQSGAEVKKPGASVKISKASGYTLGTYTLHWMRQAPGQRIEWMGWINPGNGYTKYSQRFQGRVTINRDT
SATTYMESSLRSEDTAVYFCATDRAPVRRAFDIWGQGTMTVSSGILSGGGGSGGGGSGGGGSGSVLTQPAS
VSGSPGQSVTISCTGTSSDIGSYKFVSWYQHHPGKAPKLMYDVTQRPSPGVPRFSGSKSGNTASLTISGLQAEDEAD
YYCCSYAGDYTYALFGGGTQLTVLS

PB-specific Designs

Summary of PB-specific Design Mutations

Design	Mutations
PB-Ag1	M7V, Q109V, Q113L
PB-Ag2	F28H, Y29D, R76G
PB-Ag3	A65T, F66T, G88R
PB-Ag4	T153K, V171I, R208E
PB-Ag5	N193K, S194A, Q196V

*Mutations annotated in red

PB-Ag1

GD LKVEV MAGGTQITPLNDNVTIFCNIFYSQPLNITSMGITWFWKSLTFDKEVKVFEFFGDHQEAFRPGAIVSPWRL
KSGDASLRLPGIQLEEAGEYRCEVVVTP LKA VGTV LLEVVASPASRLLLDQVGMKENEDKYMCESSGFYPEAINITWE
KQTQKFPHPIEISEDVITGPTIKNMDGTFNVT SCLKLNSSQEDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSETEK
TDNFS

PB-Ag2

GD LKVEMMAGGTQITPLNDNVTIFCNHDSQPLNITSMGITWFWKSLTFDKEVKVFEFFGDHQEAFRPGAIVSPWG
LKSGDASLRLPGIQLEEAGEYRCEVVVTP LKAQGT VQLEVVASPASRLLLDQVGMKENEDKYMCESSGFYPEAINIT
WEKQTQKFPHPIEISEDVITGPTIKNMDGTFNVT SCLKLNSSQEDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSE
TEKTDNFS

PB-Ag3

GD LKVEMMAGGTQITPLNDNVTIFCNIFYSQPLNITSMGITWFWKSLTFDKEVKVFEFFGDHQETTRPGAIVSPWRL
KSGDASLRLRRIQLEEAGEYRCEVVVTP LKAQGT VQLEVVASPASRLLLDQVGMKENEDKYMCESSGFYPEAINITW
EKQTQKFPHPIEISEDVITGPTIKNMDGTFNVT SCLKLNSSQEDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSETE
KTDNFS

PB-Ag4

GD LKVEMMAGGTQITPLNDNVTIFCNIFYSQPLNITSMGITWFWKSLTFDKEVKVFEFFGDHQEAFRPGAIVSPWR
LKSGDASLRLPGIQLEEAGEYRCEVVVTP LKAQGT VQLEVVASPASRLLLDQVGMKENEDKYMCESSGFYPEAINIK
WEKQTQKFPHPIEISEDITGPTIKNMDGTFNVT SCLKLNSSQEDPGTVYQCVVEHASLHTPLRSNFTLTAARHSLSET
EKTDNFS

PB-Ag5

GD LKVEMMAGGTQITPLNDNVTIFCNIFYSQPLNITSMGITWFWKSLTFDKEVKVFEFFGDHQEAFRPGAIVSPWR
LKSGDASLRLPGIQLEEAGEYRCEVVVTP LKAQGT VQLEVVASPASRLLLDQVGMKENEDKYMCESSGFYPEAINIT
WEKQTQKFPHPIEISEDVITGPTIKNMDGTFNVT SCLK KASVEDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSET
EKTDNFS

Multi-Ab Designs

Summary of MULTI-specific Design Mutations

Design	Mutations
MULTI-1	N34D, D61N, W75E
MULTI-2	F43Y, T48K, F49D
MULTI-3	V55L, F66T, G88R
MULTI-4	M131E, N134E, N193K
MULTI-5	A149H, R208E, A210E
MULTI-6	T153K, R208E, H213S

*Mutations annotated in red

MULTI-1

GD LKVEMMAGGTQITPLNDNVTIFCNIFYSQPLDITSMGITWFWKSLTFDKEVKVFEFFGNHQEAFRPGAIVSPERL
KSGDASLRLPGIQLEEAGEYRCEVVVTP LKAQGT VQLEVVASPASRLLLDQVGMKENEDKYMCESSGFYPEAINITW
EKQTQKFPHPIEISEDVITGPTIKNMDGTFNVT SCLKLNSSQEDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSETE
KTDNFS

MULTI-2

GD LKVEMMAGGTQITPLNDNVTIFCNIFYSQPLNITSMGITWYWKSLKDDKEVKVFEFFGDHQEAFRPGAIVSPWR
LKSGDASLRLPGIQLEEAGEYRCEVVVTP LKAQGT VQLEVVASPASRLLLDQVGMKENEDKYMCESSGFYPEAINIT
WEKQTQKFPHPIEISEDVITGPTIKNMDGTFNVT SCLKLNSSQEDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSE
TEKTDNFS

MULTI-3

GDLKVEMMAGGTQITPLNDNVTIFCNIFYSQLNITSMGITWFWKSLTFDKEVKLFEFFGDHQEATRPGAIVSPWRL
KSGDASLRRLPRIQLEEAGEYRCEVVVTPKAQGTQVLEVVASPASRLLDQVGMKENEDKYMCESSGFYPEAINITW
EKQTQKFPHPHIEISEDVITGPTIKNMDGTFNVTSCLLNSSQEDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSETE
KTDNFS

MULTI-4

GDLKVEMMAGGTQITPLNDNVTIFCNIFYSQLNITSMGITWFWKSLTFDKEVKVFEFFGDHQEAFRPGAIVSPWR
LKSGDASLRRLPGIQLEEAGEYRCEVVVTPKAQGTQVLEVVASPASRLLDQVGKEEEDKYMCESSGFYPEAINITW
EKQTQKFPHPHIEISEDVITGPTIKNMDGTFNVTSCLLKSSQEDPGTVYQCVVRHASLHTPLRSNFTLTAARHSLSETE
KTDNFS

MULTI-5

GDLKVEMMAGGTQITPLNDNVTIFCNIFYSQLNITSMGITWFWKSLTFDKEVKVFEFFGDHQEAFRPGAIVSPWR
LKSGDASLRRLPGIQLEEAGEYRCEVVVTPKAQGTQVLEVVASPASRLLDQVGMKENEDKYMCESSGFYPEHINIT
WEKQTQKFPHPHIEISEDVITGPTIKNMDGTFNVTSCLLNSSQEDPGTVYQCVVEHESLHTPLRSNFTLTAARHSLSET
EKTDNFS

MULTI-6

GDLKVEMMAGGTQITPLNDNVTIFCNIFYSQLNITSMGITWFWKSLTFDKEVKVFEFFGDHQEAFRPGAIVSPWR
LKSGDASLRRLPGIQLEEAGEYRCEVVVTPKAQGTQVLEVVASPASRLLDQVGMKENEDKYMCESSGFYPEAINIK
WEKQTQKFPHPHIEISEDVITGPTIKNMDGTFNVTSCLLNSSQEDPGTVYQCVVEHASLSTPLRSNFTLTAARHSLSET
EKTDNFS