

Table S1. Patient list. Information about patients from the Tuscany outbreak enrolled in the study, related to Figure 1

Patient ID	Age	Date of Bacteremia	Collection Date	Months after infection	Bacterial strain
SBJ001	67	21/08/19	21/03/20	7	Klebsiella ST147 _{NDM-1}
SBJ003	69	16/02/20	07/10/20	8	Klebsiella ST147 _{NDM-1}
SBJ005	74	02/11/19	12/11/20	12	Klebsiella ST147 _{NDM-1}
SBJ006	77	05/11/20	04/12/20	1	Klebsiella ST147 _{NDM-1}
SBJ008	43	27/08/20	07/01/21	5	Klebsiella ST147 _{NDM-1}
SBJ009	61	11/04/20	08/01/21	8	Klebsiella ST147 _{NDM-1}
SBJ0010	74	20/04/20	25/01/21	8	Klebsiella ST147 _{NDM-1}

Table S2. List of primers used in this work, related to Figure 1.

Name	Sequence
Heavy chain PCR I primer mix	
L-VH1_VH7 fw	CACTCCCAGGTGCAGCTGGTGCAG
L-VH2 fw	TGGGTCTTRTCCCAGGTCACCTTG
L-VH 3fw	AAGGTGTCCAGTGTSAGGTGCAG
L-VH4_6 fw	GTCCTGTCCCAGGTGCAGCTGCAG
L-VH5 fw	GAGTCTGTTCCGAGGTGCAGCTGG
IgG CH rev	GTGCCAGGGGGAAGACCGATG
IgA CH rev	GCMGAGGCTCAGCGGGAAGAC
Kappa chain PCR I primer mix	
L-VK1 fw	CAGGTGCCAGATGTGHCATCCAG
L-VK2 fw	CTGGATCCAGTGSGGATATTGTGATG
L-VK3 fw	CCCAGATACCACCGGAGAAATTGTG
L-VK4 fw	CTCTGGTGCCTACGGGGACATCTGTG
L-VK5 fw	CTGATACCAGGGCAGAAACGACAC
CK rev 1 st	GAACACTCTCCCCTGTTGAAGCTCTTTG
Lambda chain PCR I primer mix	
L-VL1 fw	GGTCCTGGGCCCAGTCTGTGCTG
L-VL2 fw	GGTCCTGGGCCCAGTCTGCCCTG
L-VL3 fw	TCTGTGRCCTCCTATGAGCTGAC
L-VL4_VL5_VL9 fw	CTCTCGCAGCCTGTGCTGACTCA
L-VL6 fw	GTTCTTGGGCCAATTTTATGCTG
L-VL7 fw	GGTCCAATTCTCAGGCTGTGGTG
L-VL8 fw	GAGTGGATTCTCAGACTGTGGTG
L-VL10 fw	GTCA GTGGTCCAGGCAGGGCTGAC
CL rev 1 st	GTGCTCCCTTCATGCGTGACC
Heavy chain PCR II primer mix	
HIFI*_C134_VH1_5_7	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC CAG GTG CAG CTG GTG CAG TCT G
HIFI*_C134_VH2	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC CAG GTC ACC TTG AAG GAG TCT GGT C
HIFI*_C134_VH3	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC GAG GTG CAG CTG GTG GAG TCT GGG GGA G
HIFI*_C134_VH4_6_a	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC CAG GTG CAG CTG CAG GAG TCG GG
HIFI*_C134_VH4_6_b	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC CAG GTG CAG CTG CAG CAG TGG GG
HIFI*_IgG CH rev	CTT GGA GGA GGG TGC CAG GGG GAA GAC CGA TGG GCC CTT GGT GGA RGC
HIFI*_IgA CH rev	CTT GGA GGA GGG TGC CAG GGG GAA GAC CGA CTT GGG GCT GGT CGG GGA
HIFI*_IgM CH rev	CTT GGA GGA GGG TGC CAG GGG GAA GAC CGA TGG GGC GGA TGC ACT CCC
Kappa chain PCR II primer mix	
HIFI*_C135_VK1	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC GCC ATC CAG ATG ACC CAG TCT CCA TC
HIFI*_C135_VK2_a	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC GAT ATT GTG ATG ACC CAG ACT CCA CTC TC
HIFI*_C135_VK2_b	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC GAT ATT GTG ATG ACT CAG TCT CCA CTC TC
HIFI*_C135_VK3_a	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC GAA ATT GTG TTG ACA CAG TCT CCA G
HIFI*_C135_VK3_b	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC GAA ATT GTG ATG ACG CAG TCT CCA G
HIFI*_C135_VK4	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC GAC ATC GTG ATG ACC CAG TCT CCA G
HIFI*_C135_VK5	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT GTACATTCC GAA ACG ACA CTC ACG CAG TCT CCA G
HIFI*_C080_VK Rev	GA TTT CAA CTG CTC ATC AGA TGG CGG GAA GAT GAA GAC AGA TGG TGC AGC CAC AGT TC
Lambda chain PCR II primer mix	
HIFI*_C080_VL1	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT TCCTGGGCC CAG TCT GTG CTG ACT CAG CCG CCC TCA G
HIFI*_C080_VL2	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT TCCTGGGCC CAG TCT GCC CTG ACT CAG CCT GCC TCC G
HIFI*_C080_VL3_a	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT TCCTGGGCC TCC TAT GAG CTG ACA CAG CCA C
HIFI*_C080_VL3_b	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT TCCTGGGCC TCC TAT GAG CTG ACT CAG GAC C
HIFI*_C080_VL4	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT TCCTGGGCC CAG CCT GTG CTG ACT CAA TCG TCC TCT G
HIFI*_C080_VL5-9	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT TCCTGGGCC CAG CCT GTG CTG ACT CAG CCR ACT TC
HIFI*_C080_VL6	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT TCCTGGGCC AAT TTT ATG CTG ACT CAG CCC CAC TC
HIFI*_C080_VL7	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT TCCTGGGCC CAG GCT GTG GTG ACT CAG GAG CCC TC
HIFI*_C080_VL8	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT TCCTGGGCC CAG ACT GTG GTG ACC CAG GAG CCA TC
HIFI*_C080_VL10	GT ATC ATC CTT TTT CTA GTA GCA ACT GCA ACC GGT TCCTGGGCC CAG GCA GGG CTG ACT CAG CCA CCC TCG G
HIFI*_CL_generic	G TGT GGC CTT GTT GGC TTG AAG CTC CTC ACT CGA GGG YGG GAA CAG AGT G
Primers to amplify transcriptionally active PCR (TAP) products	
CMV_TAP_FW	TTAGGCACCCAGGCTTTAC
polyA_TAP_Rev	AGATGGTTCTTCCGCCTCA

Table S3 (.xls file). Pangenome presence-absence table of COGs in cluster 1 , related to Figure 2.

The presence/absence table of COGs generated from Roary was annotated with gene ontology (GO), Kegg and PFAM functional annotations, and filtered for COGs present exclusively in strains belonging to the cluster 1.

Table S4. Sequence analysis of 20 functional mAbs, related to Figure 2

Sample	Type	V_usage	D_usage	J_usage	Variable region germline identity, %	CDR3 amino acid length
SBJ03-F18	light	IGKV1-9*01		IGKJ4*01	93 706	9
SBJ03-F18	heavy	IGHV3-21*01	IGHJ3*01	IGHJ4*02	95 222	13
SBJ03-L02	light	IGKV1-27*01		IGKJ1*01	95 088	9
SBJ03-L02	heavy	IGHV3-30*18	IGHJ2*01	IGHJ4*02	95 578	14
SBJ05-B17	heavy	IGHV3-74*01	IGHJ1*01	IGHJ6*02	90 203	20
SBJ05-B17	light	IGKV1-39*01		IGKJ3*01	89 895	9
SBJ05-C11	heavy	IGHV1-18*01	IGHJ1*01	IGHJ4*02	89 384	13
SBJ05-C11	light	IGLV1-51*01		IGLJ3*02	93 515	11
SBJ05-D08	heavy	IGHV3-15*01	IGHJ5*01	IGHJ4*02	95 286	10
SBJ05-D08	light	IGLV2-14*03		IGLJ1*01	95 578	10
SBJ05-D14	light	IGLV2-14*01		IGLJ1*01	93,75	10
SBJ05-D14	heavy	IGHV3-15*01	IGHJ5*01	IGHJ4*02	92 256	10
SBJ05-K07	heavy	IGHV3-23*04	IGHJ5*01	IGHJ4*02	96 259	18
SBJ05-K07	light	IGKV1-27*01		IGKJ1*01	98 592	9
SBJ05-M13	light	IGKV2-24*01		IGKJ2*01	95 695	10
SBJ05-M13	heavy	IGHV3-64D*06	IGHJ4*01	IGHJ5*02	90 753	6
SBJ05-N02	heavy	IGHV3-74*01	IGHJ1*01	IGHJ6*02	92 905	20
SBJ05-N02	light	IGKV1-39*01		IGKJ3*01	95 819	9
SBJ08-D18	heavy	IGHV3-23*04	IGHJ5*01	IGHJ4*02	93 493	12
SBJ08-D18	light	IGKV1-17*01		IGKJ3*01	97 535	9
SBJ08-F04	heavy	IGHV3-33*01	IGHJ6*01	IGHJ4*02	97 635	16
SBJ08-F04	light	IGKV3-11*01		IGKJ1*01	99 301	9
SBJ08-H10	heavy	IGHV3-23*04	IGHJ4*01	IGHJ4*02	91 186	12
SBJ08-H10	light	IGKV3-20*01		IGKJ1*01	94,81	9
SBJ08-J10	heavy	IGHV3-23*04	IGHJ1*01	IGHJ4*02	90 785	11
SBJ08-J10	light	IGKV2-30*01		IGKJ2*03	96 321	9
SBJ08-K19	heavy	IGHV3-21*01	IGHJ2*01	IGHJ3*02	96 918	14
SBJ08-K19	light	IGKV3-11*01		IGKJ2*03	99 303	10
SBJ08-M13	heavy	IGHV3-23*04	IGHJ6*03	IGHJ4*02	93 836	15
SBJ08-M13	light	IGKV1-16*02		IGKJ4*01	98 592	9
SBJ08-N23	heavy	IGHV3-66*01	IGHJ6*01	IGHJ4*02	92,15	14
SBJ08-N23	light	IGKV2-30*02		IGKJ1*01	96 296	8
SBJ08-O03	heavy	IGHV3-23*04	IGHJ3*01	IGHJ4*02	93 878	13
SBJ08-O03	light	IGKV3-20*01		IGKJ4*01	97 544	12
SBJ08-O09	light	IGKV3-20*01		IGKJ2*03	96 194	10
SBJ08-O09	heavy	IGHV3-23*04	IGHJ2*01	IGHJ3*01	94 218	12
SBJ09-I10	heavy	IGHV3-23*04	IGHJ1*01	IGHJ4*02	89 492	14
SBJ09-I10	light	IGKV1-17*01		IGKJ5*01	97 183	9
SBJ10-H18	heavy	IGHV3-21*01	IGHJ6*01	IGHJ4*02	95 254	12
SBJ10-H18	light	IGKV2-30*01		IGKJ1*01	97 674	9

Table S5 (.xls file). Image analysis pipeline developed with Harmony 4.9 for mAb binding characterization, related to Figure 3.