

1 **Draft genomes, phylogenomic reconstruction and comparative genome**
2 **analysis of three *Xenorhabdus* strains isolated from soil dwelling nema-**
3 **todes in Kenya**

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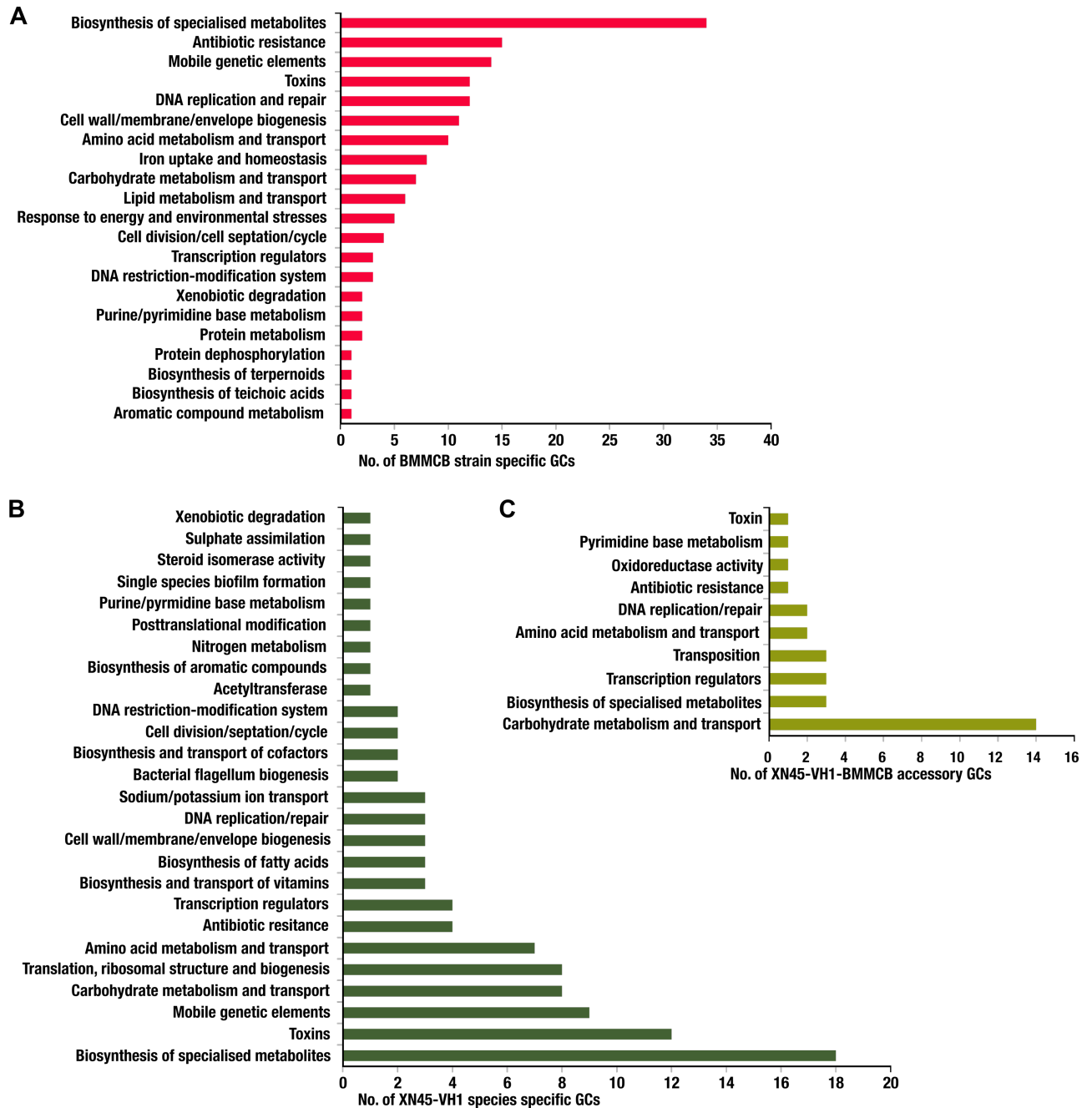
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20 **Supplementary Figures and Tables**

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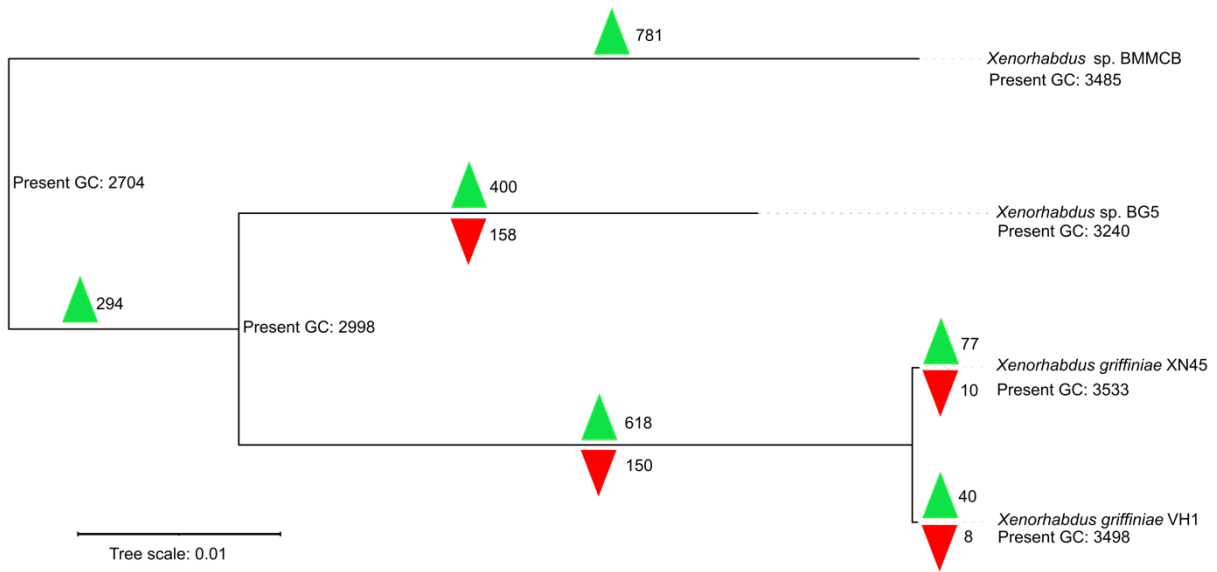
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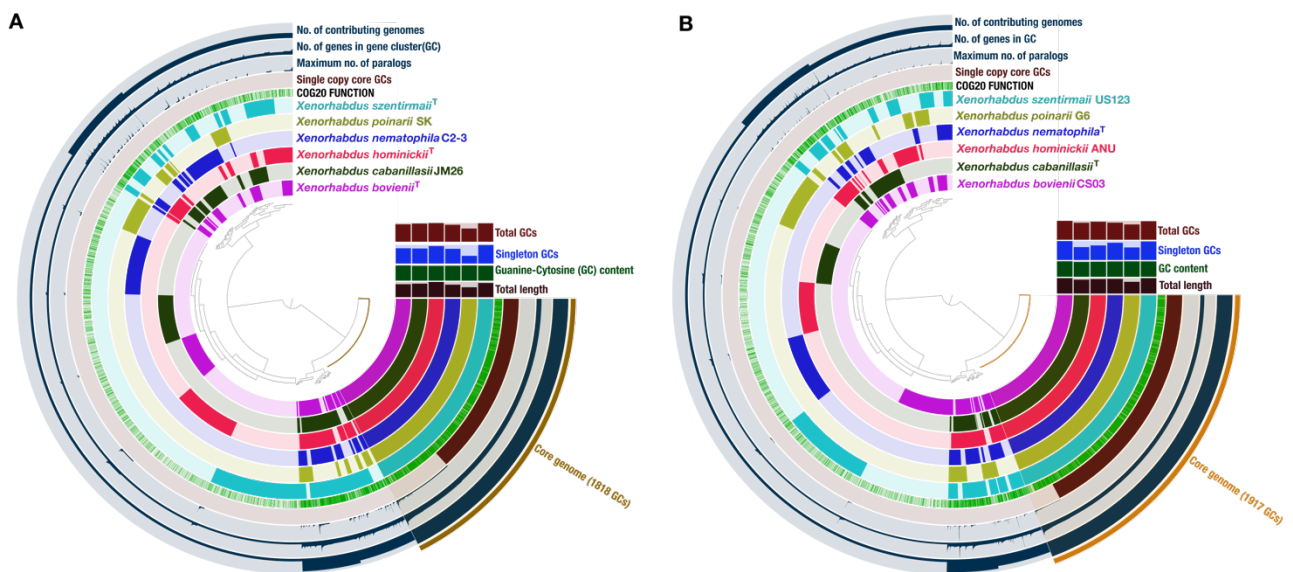
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27 **Supplementary Figure S1.** A) Bar chart of known protein functions encoded by single copy genes of the *Xenorhabdus*
 28 sp. BMMCB strain specific gene clusters (GCs). GCs that encoded biosynthesis of specialised metabolites such as non-
 29 ribosomal peptides, polyketides, antibiotics, siderophores, and antibiotic resistance such as efflux pumps, MFS transporters,
 30 and beta-lactamases were enriched among those with known protein functions. B) Bar chart of known protein functions
 31 encoded by single copy GCs of the *Xenorhabdus griffinae* specific genome. GCs that encoded biosynthesis of
 32 specialised metabolites were enriched. C) Bar chart of known functions encoded by single copy GCs of the *Xenorhabdus*

33 sp. BMMCB-*X. griffinae* accessory genome. GCs that encoded the metabolism and transport of carbohydrates such as
 34 ribose, galactose, myo-inositol, D-malate, and galactonate were enriched among those with known protein functions.



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 36 **Supplementary Figure S2.** Evolution of the number of gene clusters in the *Xenorhabdus griffinae* clade. GC denotes
 37 total gene clusters present in either an extant or extinct genome. Green and red triangles denote gene gains and losses
 38 respectively.



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 40 **Supplementary Figure S3.** Comparison of core genomes from two pangenomes of similar *Xenorhabdus* species created
 41 from draft and complete (composed of less than two contigs) genomes. For the pangenome made from A) draft genomes,
 42 the number of core, and single copy core GCs were 1818 and 1365 respectively. For the pangenome made from B)
 43 complete genomes, the number of core and single copy core gene clusters (GCs) were 1917 and 1728 respectively. Thus,
 44 draft genomes underestimated the number of core and single copy core GCs by 5% and 21% respectively.

45 **Supplementary Table S1.** *Steinernema* isolates from locations in Sub-Saharan Africa.

Isolate	Location	Xenorhabdus symbiont	Reference
<i>Steinernema pwaniansis</i>	Mwalusembe, Tanzania	No published isolate	Půža <i>et al.</i> , 2017
<i>Steinernema</i> sp. Thui	Akoutaossé, Benin	<i>X. indica</i>	Godjo <i>et al.</i> , 2018
<i>S. cameroonense</i>	Obala, Cameroon	<i>Xenorhabdus</i> sp. A71	Kanga <i>et al.</i> , 2012; Kanga <i>et al.</i> , 2014
<i>S. nyetense</i>	Nyété, Cameroon	No published isolate	Kanga <i>et al.</i> , 2012
<i>S. ethiopiense</i>	Mendi area, Ethiopia	No published isolate	Tamiru <i>et al.</i> , 2012
<i>S. yirgalemense</i>	Yirgalem, Ethiopia	<i>X. indica</i>	Ferreira <i>et al.</i> , 2016; Nguyen <i>et al.</i> , 2004
<i>S. nguyeni</i>	Clanwilliam S. Africa	<i>X. bovienii</i>	Antoinette P. Malan <i>et al.</i> , 2016; Dreyer <i>et al.</i> , 2017
<i>S. tophus</i>	Clanwilliam S. Africa	No published isolate	Cimen <i>et al.</i> , 2014
<i>S. sacchari</i>	Gingindlovu, S. Africa	<i>X. khoisanae</i>	Dreyer <i>et al.</i> , 2017; Nthenga <i>et al.</i> , 2014
<i>S. fabii</i>	Piet Retief, S. Africa	No published isolate	Abate <i>et al.</i> , 2016
<i>S. bertusi</i>	Port Edward, S. Africa	No published isolate	Katumannane <i>et al.</i> , 2020
<i>S. citrae</i>	Piketberg, S. Africa	No published isolate	Nomakholwa <i>et al.</i> , 2011
<i>S. innovationi</i>	Free State, S. Africa	No published isolate	Çimen <i>et al.</i> , 2015
<i>S. jeffreyense</i>	Jefferson Bay, S. Africa	<i>X. khoisanae</i>	A.P. Malan <i>et al.</i> , 2016; Dreyer <i>et al.</i> , 2017
<i>S. beitlechemi</i>	Bethlehem, S. Africa	<i>X. khoisanae</i>	Cimen <i>et al.</i> , 2016
<i>S. khoisanae</i>	Villiersdorp, S. Africa	<i>X. khoisanae</i>	Ferreira <i>et al.</i> , 2013; Malan <i>et al.</i> , 2006
<i>Steinernema</i> sp. WS9	Fridenheim, S. Africa	<i>X. griffiniae</i>	Jonike Dreyer <i>et al.</i> , 2018
<i>S. australe</i> TEL	Walkerville, South Africa	No published isolate	Lephoto & Gray 2019
<i>Steinernema</i> sp. HBG28	Guateng, S. Africa	<i>X. khoisanae</i>	Naidoo <i>et al.</i> , 2015
<i>Steinernema</i> sp. LAOS	S. Africa	<i>Xenorhabdus</i> sp. strain GDc328	Soobramoney <i>et al.</i> , 2015
<i>Steinernema</i> sp. BMMCB	Brits, S. Africa	<i>Xenorhabdus</i> sp. BMMCB	Mothupi <i>et al.</i> , 2015

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47 **Supplementary Table S2.** Soil samples names and their geographic regions of collection. *Steinernematids* were isolated
48 from those in bold

Sample name	Latitude	Longitude	Altitude(m)	Area description
TN1	0.01971	35.44755	2485.7	Virgin forest
TN3	0.01968	35.44765	2486.7	Virgin forest
TN4	0.01968	35.44765	2486.7	Virgin forest
TN5	0.01926	35.44772	2478.7	Virgin forest
TN6	0.01908	35.44796	2478.7	Virgin forest

TN7	0.01908	35.44804	2451.7	Virgin forest
TN8	0.01673	35.4545	2595.7	Cultivated land with minimum disturbance
TN9	0.01662	35.45479	2613.7	Cultivated land with minimum disturbance
TN10	0.01647	35.45539	2629.7	Cultivated land with minimum disturbance
TN11	0.02258	35.46348	2773.6	Virgin forest
TN12	0.02287	35.46344	2744.0	Virgin forest
TN13	0.02223	35.46351	2694.0	Virgin forest
TN14	0.02223	35.46341	2672.0	Virgin forest
ND1	0.1053	35.19019	2045.0	Near tea cultivated land
ND2	0.10535	35.19028	2062.0	Tea cultivated land
ND3	0.10498	35.19019	2047.0	Near tea cultivated land
ND4	0.10355	35.19836	2017.0	Eucalyptus cultivated land
ND5	0.10309	35.19858	1989.0	Eucalyptus cultivated land
ND6	0.10207	35.19084	2064.0	Tea cultivated land
ND7	0.10219	35.19069	2055.0	Tea cultivated land-1990 tea bush
ND8	0.0926	35.19466	1967.0	Eucalyptus cultivated land
ND9	0.0884	35.19389	1934.0	Riverine vegetation
ND10	0.08779	35.19403	1930.0	Riverine vegetation
ND11	0.08725	35.21023	2019.0	Tea cultivated land- 1996 tea bush
ND12	0.08631	35.21016	2010.6	Indigenous trees cultivated land
ND13	0.0862	35.21019	1996.0	Indigenous trees cultivated land
ND14	0.08594	35.21032	1981.6	Riverine vegetation
KR1	-0.1957	35.28344	1422.7	Fallow land
KR2	-0.19564	35.2839	1420.0	Fallow land
KR3	-0.21374	35.31923	1429.4	Riverine vegetation
KR4	-0.21363	35.31924	1491.4	Riverine vegetation
KS1	-0.12548	34.7447	1143.0	River Wigia Inlet
KS2	-0.12547	34.7464	1143.0	River Wigia Inlet swamp area
KS4	-0.12565	34.74166	1117.0	Hippo Point
KS5	-0.12537	34.74238	1117.0	Hippo Point-River inlet swamp area
KS6	-0.12541	34.74238	1117.0	Hippo Point
KS7	-0.13592	34.74103	1133.0	Swamp Land
KS8	-0.08592	34.74627	1130.0	Lake Victoria shoreline
KS9	-0.08596	34.74644	1130.0	Lake Victoria shoreline
KS10	-0.08596	34.74654	1130.0	Lake Victoria shoreline
KS11	-0.087818	34.74231	1139.0	Lake Victoria shoreline
KS12	-0.08756	34.7432	1139.0	Lake Victoria shoreline
KS13	-0.08761	34.74207	1139.0	Lake Victoria shoreline
KS14	-0.08774	34.74140	1140.0	Lake Victoria shoreline
GS1	0.0577	34.76411	1680.0	Cultivated land
GS2	0.05824	34.76421	1680.0	Cultivated land-Maize
GS3	0.05857	34.76486	1668.0	Eucalyptus cultivated land
GS4	0.05895	34.76526	1634.6	Riverine vegetation
GS5	0.05913	34.76493	1656.3	Man-made pond banks
GS6	0.05623	34.77107	1719.6	Virgin land
VH1	0.06293	34.72903	1624.0	Cultivated land-cabbage
VH2	0.0629	34.72911	1624.0	Cultivated land-cabbage
VH3	0.06644	34.7316	1592.0	Virgin forest

VH4	0.06637	34.73195	1592.0	Virgin forest
ST1	0.12841	34.85427	1660.0	Virgin tropical rain forest
ST2	0.12972	34.8464	1657.0	Virgin tropical rain forest
ST3	0.12978	34.84423	1657.0	Virgin tropical rain forest
ST4	0.12968	34.84413	1610.0	Virgin tropical rain forest
KG1	0.17356	34.89599	1627.0	Virgin tropical rain forest
KG2	0.17382	34.8959	1627.0	Virgin tropical rain forest
KG3	0.15393	34.8935	1618.0	Kakabuti Riverbed
KG4	0.15375	34.89375	1618.0	Virgin tropical rain forest
BY1	0.48037	34.40839	1240.0	Virgin riverbank land
BG5	0.48044	34.40836	1239.0	Virgin riverbank land
BY2	0.48035	34.40849	1239.0	Virgin riverbank land
BY3	0.48043	34.40851	1239.0	Virgin riverbank land
BY4	0.48051	34.40845	1239.0	Virgin riverbank land
BY5	0.48046	34.40828	1239.0	Virgin riverbank land
BY6	0.48419	34.373222	1239.0	Cultivated land- Maize
BY7	0.48466	34.37534	1230.0	Cultivated land- cassava
BY8	0.4857	34.3763	1230.0	Fallow land
BY9	0.48584	34.37654	1215.0	Riverine vegetation
BY10	0.48575	34.37653	1229.0	Riverine vegetation
BY11	0.48937	34.37311	1229.0	Riverine vegetation
EL1	0.882906	34.731095	2149.0	Fallow land
EL2	0.882906	34.731095	2149.0	Fallow land

49 **Supplementary Table S3.** Accessions numbers, strains and predicted gene counts of genomes used in phylogenomic
50 and pangenomic analyses.

Genbank number of master- record for drafts/complete genome	Strain name	For pangenome analyses		
		Number of genes called	Number of excluded partial gene calls	Number of gene calls used
JACWFC000000000.1	<i>Xenorhabdus griffinae</i> XN45	3957	274	3683
JADEUF000000000.1	<i>X. griffinae</i> VH1	3853	196	3657
JADEUG000000000.1	<i>Xenorhabdus</i> sp. BG5	3575	96	3479
MUBK01000000	<i>X. beddingii</i> DSM 4764	3735	219	3516
JANAIF000000000.1	<i>X. bovienii</i> T228	4337	480	3857
NIBS000000000.1	<i>X. budapestensis</i> DSM 16342	3807	168	3639
NZ_QTUB01000001	<i>X. cabanillasii</i> DSMZ 19705	3822	1	3821
GCA_000968195.1	<i>X. doucetiae</i> FRM16	3653	1	3652
MKGQ000000000.1	<i>X. eapokensis</i> DL20	3895	175	3720
NIBT000000000.1	<i>X. ehlersii</i> DSM 16337	3978	96	3882
NJAI000000000.1	<i>X. hominickii</i> DSM 17903	4955	152	4803
NIBU000000000.1	<i>X. innexi</i> DSM 16336	4262	328	3934
NJAK000000000.1	<i>X. ishibashii</i> DSM 22670	3557	4	3553
FOVO000000000.1	<i>X. japonica</i> DSM 16522	3229	51	3178
LFCV000000000.1	<i>X. khoisanae</i> MCB	4182	197	3985
FPBJ000000000.1	<i>X. koppenhoeferi</i> DSM 18168	2771	37	2733

NJCX00000000.1	<i>X. kozodoii</i> DSM 17907	3733	133	3600
JACOII000000000.1	<i>X. lircayensis</i> VLS	3909	79	3830
NITY000000000.1	<i>X. mauleonii</i> DSM 17908	4446	118	4328
NITZ00000000.1	<i>X. miraniensis</i> DSM 17902	4357	139	4218
GCA_000953355.1	<i>X. nematophila</i> AN6/1	4127	0	4127
FO704551	<i>X. poinarii</i> G6	3357	0	3357
NJAJ000000000.1	<i>X. stockiae</i> DSM 17904	4164	194	3970
NIBV000000000.1	<i>X. szentirmaii</i> DSM16338	4257	80	4177
MKGR000000000.1	<i>X. thuongxuanensis</i> 30TX1	3560	101	3459
MUBJ000000000.1	<i>X. vietnamensis</i> DSM 22392	3998	134	3864
LDNM000000000.1	<i>Xenorhabdus</i> sp. BMMCB	4024	214	3810

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