Genome insight and description of carotenoids producing *Croceicoccus gelatinilyticus* sp. nov., isolated from the tidal flat sediment

Tao Pei[1], Yang Liu[1], Juan Du[1], Kunpeng Huang[2], Ming-Rong Deng[1,*], Honghui Zhu[1,*]

Guangdong Provincial Key Laboratory of Microbial Culture Collection and Application, State Key Laboratory of Applied Microbiology Southern China, Guangdong Open Laboratory of Applied Microbiology, Guangdong Microbial Culture Collection Center (GDMCC), Institute of Microbiology, Guangdong Academy of Sciences, Guangzhou 510070, P. R. China

*Corresponding author: Ming-Rong Deng, Honghui Zhu

E-mail: dengmr@gdim.cn, zhuhh@gdim.cn

Address: Building 66, Xianlie Middle Road 100, Guangzhou 510070, Guangdong Province, China.

Supplementary Figures and Tables

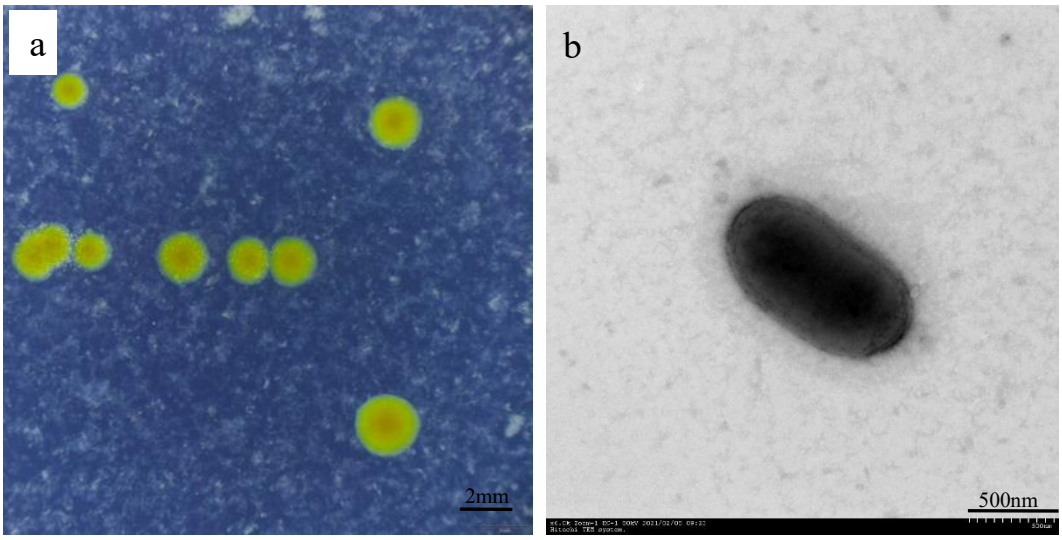

Figure S1 The morphology of colonies (a) and cells (b) of strain 1NDH52^T grown on MA medium at 28°C for 48 h.

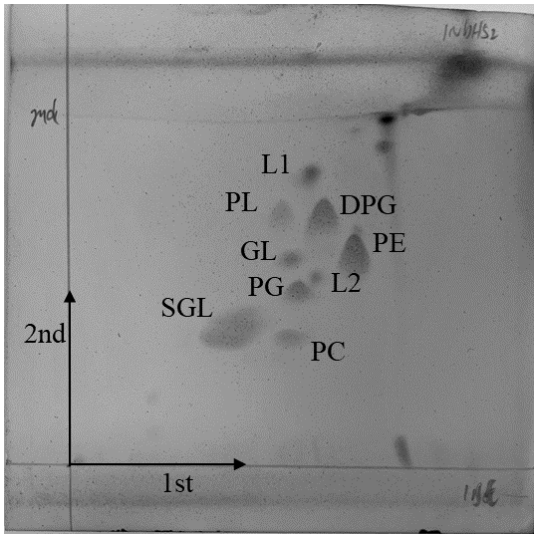

Figure S2 Polar lipids profiles of strain 1NDH52^T

DPG, diphosphatidylglycerol; PC, phosphatidylcholine; PE, phosphatidylethanolamine; PG, phosphatidylglycerol; GL, glycolipid; L1-2, lipid; SGL, phingoglycolipid; 1st, first dimension of TLC; 2nd, second dimension of TLC.

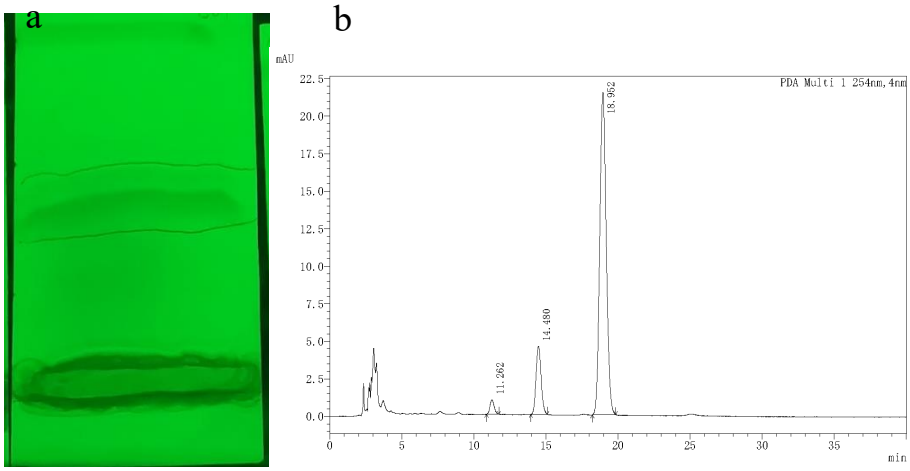

Figure S3 (a) Thin layer chromatography silica gel plate separation ubiquinone of the strain 1NDH52^{T}, (b) The respiratory quinones were determined by using the high-performance liquid chromatography.

Table S1 Subsystem category distribution of strain 1NDH52^T and the related type strains based on the RAST

Subsystem feature counts	1ND H52^T	*C. sediminis* S2-4-2^T	*C. pelagius* Ery9^T	*C. bisphenoli vorans* H4^T	*C. mobilis* Ery22^T	*C. ponticola* GM-16^T	*C. marinus* E4A9^T	*C. naphthovorans* PQ-2^T
Cofactors, vitamins, prosthetic groups, pigments	111	133	136	129	157	140	113	138
Cell wall and capsule	23	17	15	31	34	15	42	25
Virulence, disease and defense	40	35	33	47	34	28	25	38
Potassium metabolism	9	9	8	5	8	6	8	8
Photosynthesis	0	0	0	0	0	0	0	0
Miscellaneous	30	40	29	35	44	23	21	27
Phages, prophages, transposable elements, plasmids	20	1	0	15	0	0	0	1
Membrane transport	73	132	68	157	137	73	65	96
Iron acquisition and metabolism	0	0	2	0	0	0	0	0
RNA metabolism	28	34	32	34	36	34	30	36
Nucleosides and nucleotides	50	51	49	55	78	54	47	52
Protein metabolism	185	174	186	156	170	173	176	165
Motility and chemotaxis	5	0	0	0	20	0	17	0
Regulation and cell signaling	8	16	17	22	21	17	7	16
Secondary metabolism	4	4	4	5	5	4	4	4
DNA metabolism	69	68	68	69	72	68	64	75
Fatty acids, lipids, and isoprenoids	63	89	75	74	87	104	43	67
Nitrogen metabolism	10	11	11	17	13	11	10	12
Respiration	104	102	98	99	107	93	84	88

Stress response	58	48	51	59	59	55	47	59
Metabolism of aromatic compounds	14	38	33	34	22	11	20	17
Amino acids and derivatives	234	284	219	261	269	254	200	221
Sulfur metabolism	6	11	6	11	6	6	4	6
Phosphorus metabolism	25	21	21	25	22	22	21	22
Carbohydrates	151	190	150	184	201	198	128	131

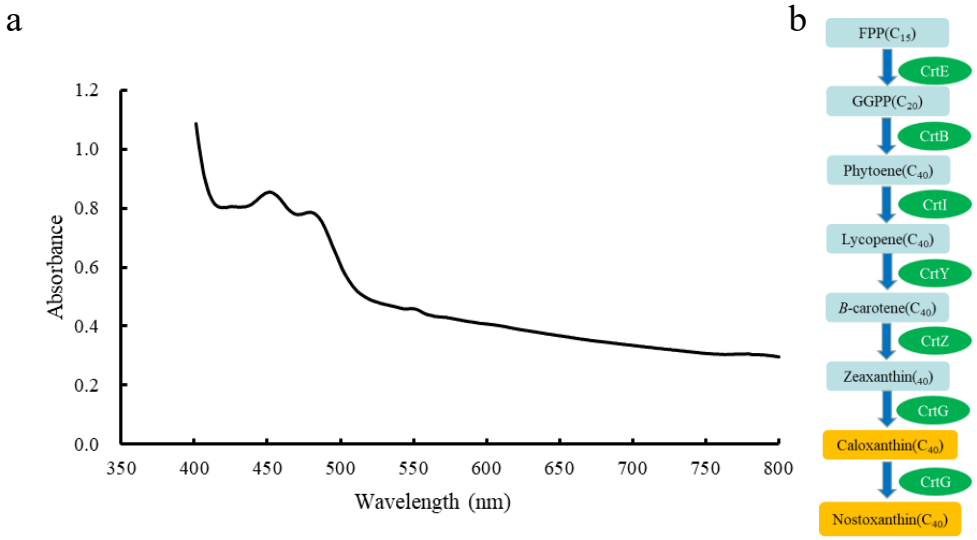

Figure S4 The absorption spectrum of strain 1NDH52^{T} with the wavelength from 300 to 800 nm (a). carotenoid biosynthesis pathway of strain 4Y14^{T} (b). CrtB, phytoene synthase; CrtE, GGPP synthase; CrtG, carotenoid 2,2¢-b-hydroxylase; CrtI, phytoene desaturase/dehydrogenase; CrtY, lycopene cyclase; CrtZ, *β*-carotene hydroxylase; FPP, farnesyl diphosphate; GGPP, geranylgeranyl pyrophosphate; GPP, geranyl diphosphate; IPP, isopentenyl diphosphate.

Table S2 Crotenoid biosynthesis genes of strain 1NDH52^{T} and related type starins

Genes	1NDH52^{T}	*C. sediminis* S2-4-2^{T}	*C. pelagius* Ery9^{T}	*C. bisphenolivorans* H4^{T}	*C. mobilis* Ery22^{T}	*C. ponticola* GM-16T	*C. marinus* E4A9^{T}	*C. naphthovorans* PQ-2^{T}
*crt*E	MBS7671020.1	WP_144094709.1	WP_066761730.1	WP_066557136.1	WP_185885654.1	WP_127611423.1	lcl|NZ_CP060052.1_prot_WP_185885654.1_1906	MBB3990688.1
*crt*B	MBS7668517.1	WP_144095290.1	WP_066765915.1	WP_066555302.1	WP_185885240.1	WP_127611905.1	lcl|NZ_CP060052.1_prot_WP_185885240.1_1251	MBB3991598.1
*crt*I	MBS7668518.1	WP_144096803.1	WP_066765917.1	WP_066555305.1	WP_185885241.1	WP_127610878.1	lcl|NZ_CP060052.1_prot_WP_185885241.1_1252	MBB3991599.1
*crt*Y	MBS7668519.1	WP_144095288.1	WP_066765919.1	WP_066555308.1	WP_185885242.1	WP_127610879.1	lcl|NZ_CP060052.1_prot_WP_185885242.1_1253	MBB3991600.1
*crt*G	MBS7669927.1	WP_144097014.1	WP_172807519.1	WP_082836140.1	WP_185884732.1	WP_127612144.1	lcl|NZ_CP060052.1_prot_WP_185884732.1_576	MBB3989427.1
DUF2141	MBS7669926.1	WP_144097373.1	WP_066764354.1	WP_066559407.1	WP_185884731.1	WP_127612145.1	lcl|NZ_CP060052.1_prot_WP_185884731.1_575	MBB3989426.1
*crt*Z	MBS7670281.1	WP_144098506.1	WP_066761395.1	WP_066560429.1	WP_185883873.1	WP_127613684.1	lcl|NZ_CP060052.1_prot_WP_185883873.1_2315	MBB3992292.1