

Table. 1 ORF analysis of the *Hafnia* phage yong2 genome

ORF	Size (aa)	Prediction function	Top BLAST hit ^a	identity ^b (aa)	E value ^c
1	164	Terminase small subunit	ref WP_199371973.1 DUF1441 family protein [<i>Hafnia paralvei</i>]	100%(164/164)	7e-115
2	709	Terminase large subunit	ref WP_199371974.1 phage terminase large subunit family protein [<i>Hafnia paralvei</i>]	100%(709/709)	0.0
3	71	Head-to-tail joining protein W	ref WP_004092438.1 MULTISPECIES: hypothetical protein [<i>Hafnia</i>]	100%(71/71)	4e-46
4	512	Portal protein	ref WP_199371975.1 phage portal protein [<i>Hafnia paralvei</i>]	100%(512/512)	0.0
5	643	ATP-dependent Clp protease proteolytic subunit	ref WP_199372001.1 ATP-dependent Clp protease proteolytic subunit [<i>Hafnia paralvei</i>]	100%(643/643)	0.0
6	116	Capsid fiber protein	ref WP_199371976.1 DUF2190 family protein [<i>Hafnia paralvei</i>]	100%(116/116)	2e-77
7	119	Head-to-tail joining protein	ref WP_130971335.1 MULTISPECIES: hypothetical protein [<i>Hafniaceae</i>]	100%(119/119)	4e-80
8	219	Unknown	ref WP_199371977.1 hypothetical protein [<i>Hafnia paralvei</i>]	100%(219/219)	5e-156
9	179	Unknown	ref WP_199371978.1 hypothetical protein [<i>Hafnia paralvei</i>]	100%(179/179)	3e-125
10	204	Baseplate assembly protein	ref WP_199372002.1 phage baseplate assembly protein V [<i>Hafnia paralvei</i>]	100%(204/204)	3e-147
11	487	Tail sheath protein	ref WP_199371979.1 phage tail sheath subtilisin-like domain-containing protein [<i>Hafnia paralvei</i>]	100%(487/487)	0.0
12	168	Tail tube protein FII	ref WP_199371980.1 phage major tail tube protein [<i>Hafnia paralvei</i>]	100%(168/168)	3e-121
13	98	Tail assembly protein	ref WP_199371981.1 phage tail assembly protein [<i>Hafnia paralvei</i>]	100%(98/98)	2e-65
14	40	Unknown	ref AWZ97224.1 hypothetical protein CSB67_0596 [<i>Enterobacter hormaechei</i>]	75%(30/40)	5e-12
15	591	Unknown	ref WP_199371982.1 hypothetical protein [<i>Hafnia paralvei</i>]	100%(591/591)	0.0
16	158	Tail protein	ref WP_199371983.1 phage tail protein [<i>Hafnia paralvei</i>]	100%(158/158)	3e-112
17	71	Tail protein X	ref WP_199371984.1 tail protein X [<i>Hafnia paralvei</i>]	100%(71/71)	9e-44
18	372	Tail protein	ref WP_199371985.1 late control protein D [<i>Hafnia paralvei</i>]	100%(372/372)	0.0
19	116	Baseplate wedge protein gp25	ref WP_199371986.1 GPW/gp25 family	100%(116/116)	1e-77

			protein [<i>Hafnia paralvei</i>]		
20	304	Baseplate assembly protein J	ref WP_199371987.1 baseplate J/gp47 family protein [<i>Hafnia paralvei</i>]	100%(304/304)	0.0
21	183	Tail protein	ref WP_199371988.1 phage tail protein I [<i>Hafnia paralvei</i>]	100%(183/183)	5e-132
22	529	Tail-collar fibre protein	ref WP_063587383.1 phage tail protein [<i>Hafnia alvei</i>]	58%(301/520)	0.0
23	131	Tail fiber assembly protein	ref WP_199371989.1 tail fiber assembly protein [<i>Hafnia paralvei</i>]	100%(131/131)	2e-91
24	181	Serine acetyltransferase	ref WP_199371990.1 serine acetyltransferase [<i>Hafnia paralvei</i>]	100%(181/181)	2e-126
25	41	Unknown	No hits		
26	371	RecA	ref PPE50861.1 recombinase RecA [<i>Escherichia coli</i>]	97%(361/371)	0.0
27	70	Unknown	No hits		
28	312	Integrase	ref WP_130973729.1 site-specific integrase [<i>Hafnia paralvei</i>]	100%(312/312)	0.0
29	123	Repressor LexA	ref WP_130973730.1 LexA family transcriptional regulator [<i>Hafnia paralvei</i>]	99%(122/123)	7e-87
30	205	3'-5' exoribonuclease	ref WP_199371503.1 3'-5' exoribonuclease [<i>Hafnia paralvei</i>]	100%(205/205)	1e-152
31	94	30S ribosomal protein subunit S22 family	ref WP_004091349.1 MULTISPECIES: stationary-phase-induced ribosome-associated protein [<i>Hafnia</i>]	100%(94/94)	1e-63
32	94	Unknown	ref WP_130959920.1 hypothetical protein [<i>Hafnia paralvei</i>]	99%(93/94)	2e-60
33	61	Unknown	ref PNK67761.1 hypothetical protein A6J69_012255 [<i>Hafnia paralvei</i>]	95%(58/61)	2e-36
34	290	Unknown	ref WP_199371500.1 hypothetical protein [<i>Hafnia paralvei</i>]	100%(290/290)	0.0
35	177	HD phosphohydrolase	ref WP_095661672.1 hypothetical protein [<i>Hafnia paralvei</i>]	100%(177/177)	2e-127
36	275	YfdQ family protein	ref WP_130959923.1 YfdQ family protein [<i>Hafnia paralvei</i>]	100%(275/275)	0.0
37	123	Unknown	ref WP_095661674.1 MULTISPECIES: hypothetical protein [<i>Enterobacterales</i>]	100%(123/123)	9e-83
38	185	Repressor protein cI	ref WP_004847751.1 MULTISPECIES: LexA family transcriptional regulator [<i>Enterobacterales</i>]	100%(185/185)	6e-137
39	66	Unknown	ref WP_004847753.1 transcriptional regulator [<i>Hafnia paralvei</i>]	100%(66/66)	2e-40
40	180	Phage regulatory protein CII	ref WP_095661675.1 DNA-binding protein [<i>Hafnia paralvei</i>]	100%(180/180)	1e-131
41	59	Unknown	ref WP_130959925.1 hypothetical protein	98%(58/59)	4e-36

			[<i>Hafnia paralvei</i>]		
42	275	Unknown	ref WP_193765037.1 transporter [<i>Hafnia paralvei</i>]	99%(274/275)	0.0
43	227	Ash family protein	ref WP_130959927.1 ash family protein [<i>Hafnia paralvei</i>]	99%(201/202)	1e-148
44	343	Unknown	ref WP_130973740.1 conserved phage C-terminal domain-containing protein [<i>Hafnia paralvei</i>]	99%(340/343)	0.0
45	88	PerC transcriptional activator	ref WP_096080967.1 hypothetical protein [<i>Hafnia paralvei</i>]	100%(88/88)	3e-58
46	76	Unknown	ref WP_130959517.1 hypothetical protein [<i>Hafnia paralvei</i>]	99%(75/76)	3e-46
47	85	Unknown	ref KFC87630.1 hypothetical protein GHAL_2326 [<i>Hafnia alvei</i> ATCC 13337]	96%(82/85)	4e-50
48	219	DNA N-6-adenine-methyltransferase	ref WP_130959522.1 phage N-6-adenine-methyltransferase [<i>Hafnia paralvei</i>]	99%(218/219)	5e-159
49	125	RusA protein	ref WP_130961503.1 RusA family crossover junction endodeoxyribonuclease [<i>Hafnia paralvei</i>]	98%(122/125)	2e-85
50	334	Unknown	ref WP_114445127.1 DUF968 domain-containing protein [<i>Hafnia paralvei</i>]	99%(331/334)	0.0
51	220	Antitermination protein	ref WP_130959624.1 antitermination protein [<i>Hafnia paralvei</i>]	97%(213/220)	2e-157
52	66	Transcription regulatory protein MotA	ref WP_199371967.1 hypothetical protein [<i>Hafnia paralvei</i>]	100%(66/66)	3e-41
53	351	Adenine specific DNA methyltransferase	ref WP_199371968.1 site-specific DNA-methyltransferase [<i>Hafnia paralvei</i>]	100%(351/351)	0.0
54	98	Unknown	ref WP_202712823.1 hypothetical protein [<i>Lelliottia amnigena</i>]	39%(22/57)	5e-04
55	122	Holin	ref WP_130975663.1 MULTISPECIES: phage holin family protein [<i>Hafnia</i>]	100%(122/122)	3e-75
56	92	Holin	ref WP_199371969.1 phage holin family protein [<i>Hafnia paralvei</i>]	100%(92/92)	3e-58
57	204	Endolysin	ref WP_199371970.1 glycoside hydrolase family 19 protein [<i>Hafnia paralvei</i>]	100%(204/204)	1e-147
58	180	Unknown	ref WP_199371971.1 hypothetical protein [<i>Hafnia paralvei</i>]	100%(180/180)	1e-129
59	59	Unknown	ref WP_199371972.1 hypothetical protein [<i>Hafnia paralvei</i>]	100%(59/59)	2e-33

^a the most closely related protein and its organism

^b percent identity for top hits in BLASTP searches. Numbers in parentheses provide length of each alignment

^c the probability of obtaining a match by chance as determined by BLASTP analysis