

Genome sequence of *Halovibrio* sp. HP20-59 as a promising polyhydroxybutyrate producer

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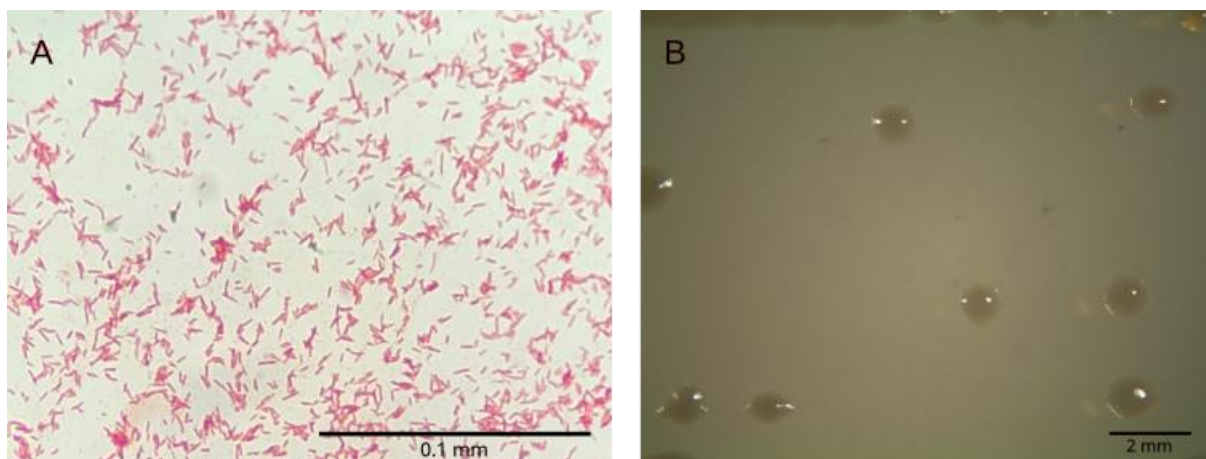


Fig. S1 Cell morphology (A) and colony characteristics (B) of the HP20-59 isolate obtained from the brine in Solivar (Prešov). Microscopic observation at 1000x (A) and 8x (B) total magnification



Fig. S2 The confirmation of PHA accumulation in the HP20-59 isolate using Nile Blue A under UV light

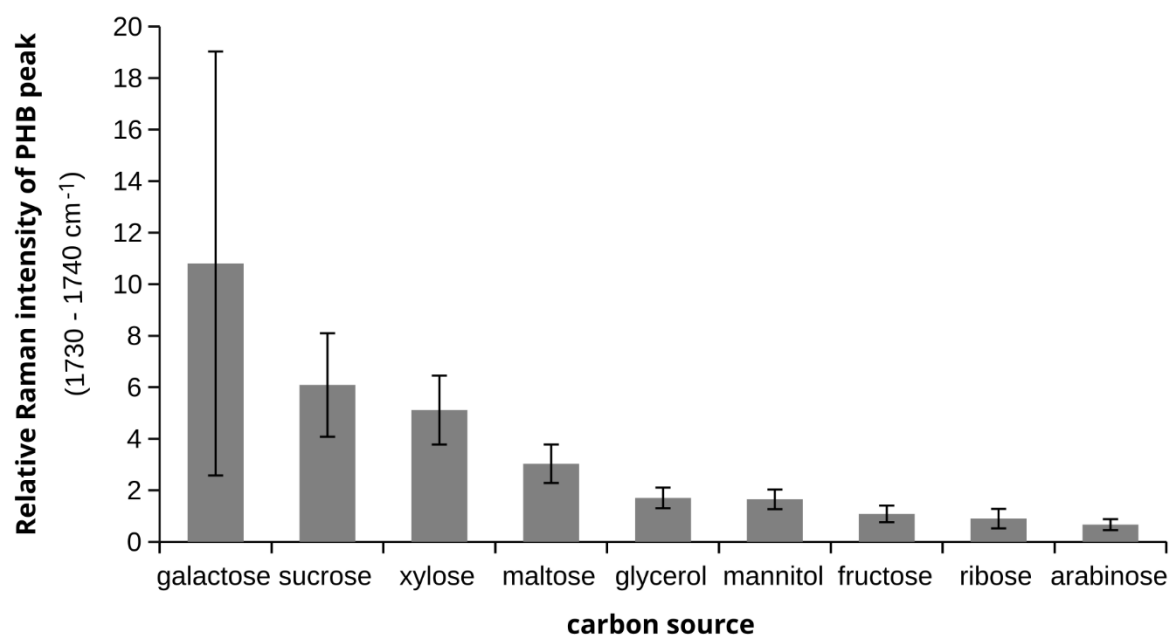


Fig. S3 Comparison of the PHB peak intensities ($1730\text{-}1740\text{ cm}^{-1}$) depending on the carbon source used in the cultivation medium

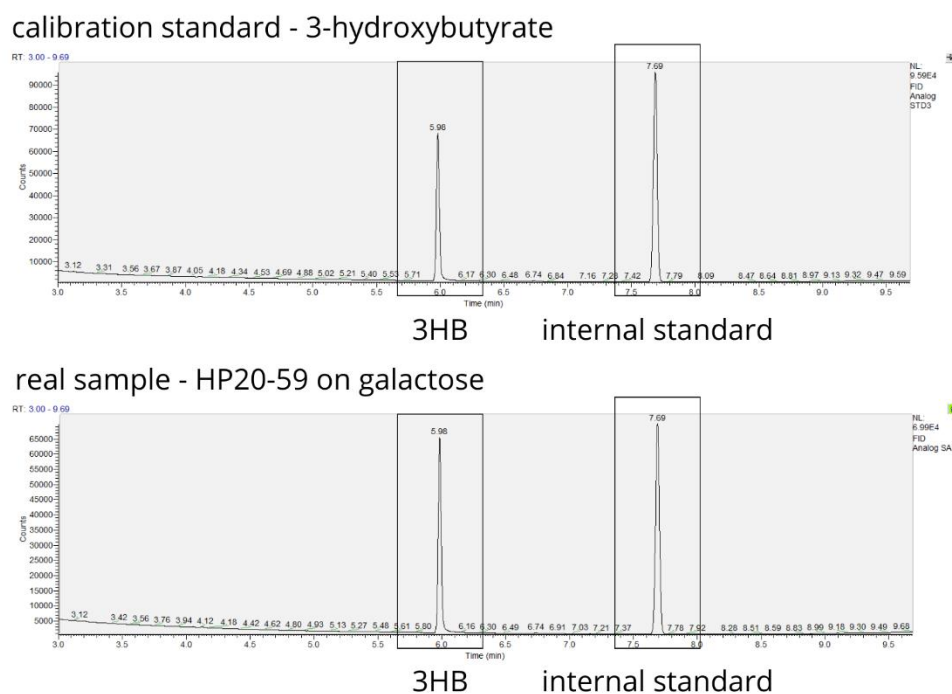


Fig S4 Representative chromatogram comparison assessed by GC- FID between standard 3-hydroxybutyrate (3HB) and the HP20-59 isolate in presence of galactose

Table S1 Genome features of the HP20-59 isolate according to the RAST server

Features	HP20-59 isolate
Domain	Bacteria
Taxonomy	Proteobacteria; Gammaproteobacteria; Oceanospirillales;
Genome size (bp)	4,165,293
Source	brine Solivar (Prešov, Slovakia)
GC content (%)	55.1
N50 (bp)	238926
L50	6
Number of contigs (with PEGs)	208
Number of subsystems	333
Number of coding sequences	4091
Number of RNAs	67

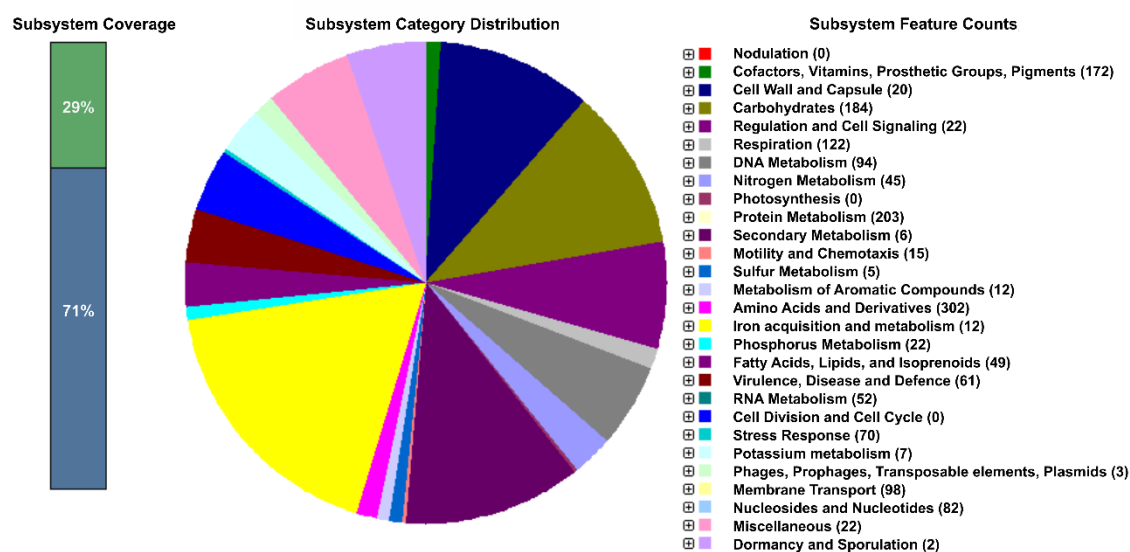


Fig. S5 Distribution of gene subsystems annotated in the HP20-59 genome.

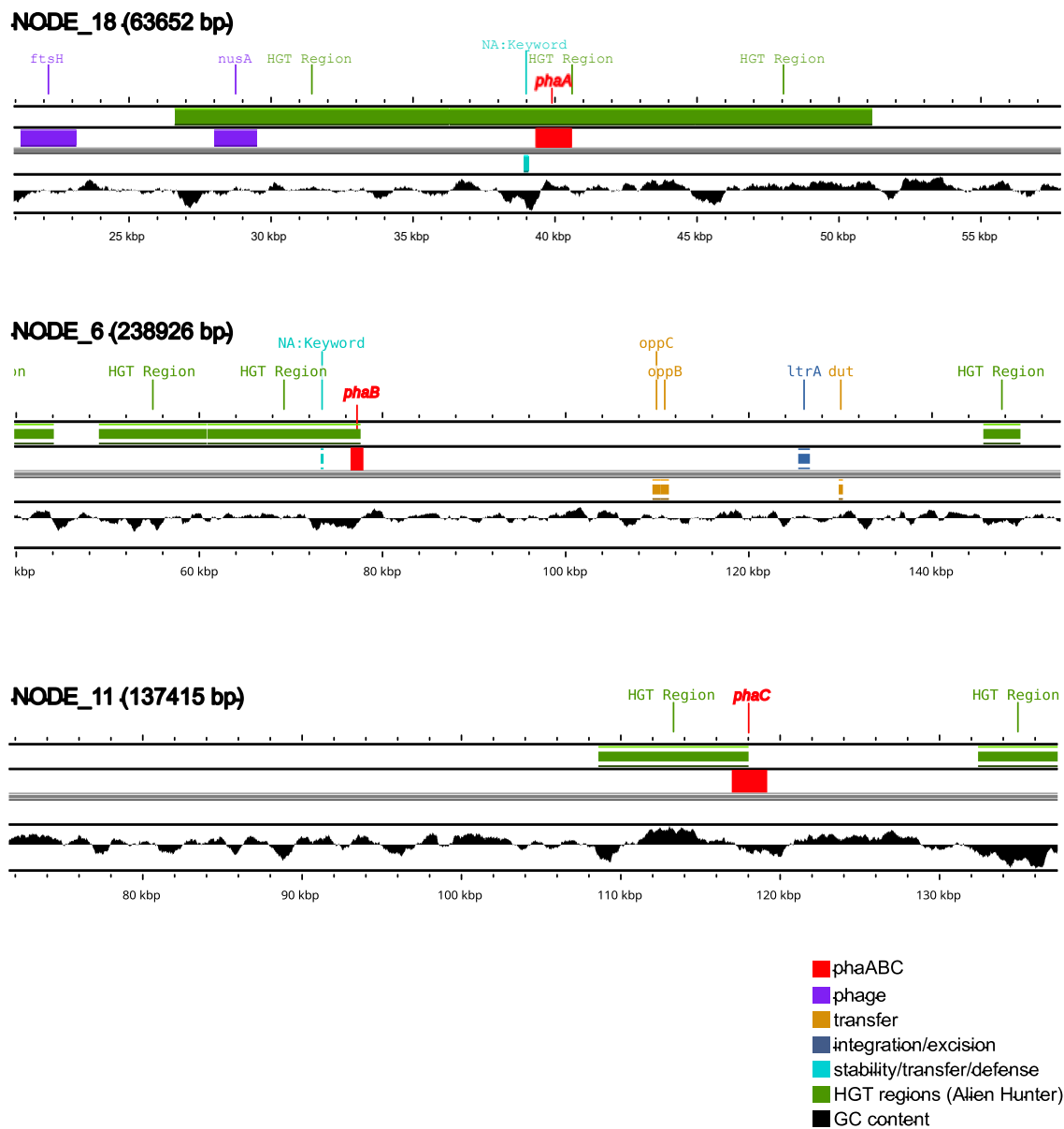


Fig. S6 PHA genes (red color) as a part of HGT regions located in the genome of *Halovibrio* sp. HP20-59

Table S2 Comparative genomic of PHA-related gene clusters in well-studied PHA producing bacteria

Bacterium	PHA production g L ⁻¹	<i>phaA</i>	<i>phaB</i>	<i>phaC</i> ^b	<i>phaZ</i>	<i>fadA</i>	Reference
<i>Halomonas</i> sp. MC140	1.1	1 ^a	1	1	1	1	Christensen et al. 2025
<i>Halomonas halophila</i> CCM 3662	4.59	1	1	1	-	1	Kourilová et al. 2021
<i>Paraburkholderia sacchari</i> DSM 17165	1.86	2	2	2	6	1	Kourilová et al. 2021
<i>Caldimonas thermodepolymerans</i> DSM 15344	4.26	1	1	1	1	3	Kourilová et al. 2021
<i>Halomonas</i> sp. YLGW01	1.6	1	1	1	1	1	Jeon et al. 2022

^a The number of gene copies found in bacterial genome

^b Class I poly(R)-hydroxyalkanoic acid synthase was found in all isolates studied

References

- Christensen M, Chiciudean I, Lascu I, Jablonski P, Shapaval V, Zimmermann B, Tanase AM, Hansen H (2025) *Halomonas* sp. MC140, a polyhydroxyalkanoate (PHA) producer isolated from the Arctic environment. *Sci Rep* 15:23744. <https://doi.org/10.1038/s41598-025-06898-7>.
- Kourilova X, Novackova I, Koller M, Obruca S (2021) Evaluation of mesophilic *Burkholderia sacchari*, thermophilic *Schlegelella thermodepolymerans* and halophilic *Halomonas halophila* for polyhydroxyalkanoates production on model media mimicking lignocellulose hydrolysates. *Bioresour Technol* 325:124704. <https://doi.org/10.1016/j.biortech.2021.124704>
- Jeon JM, Son YS, Chang L, Yang YH, Yoon JJ (2022) Polyhydroxyalkanoate production by *Halomonas* sp. YLGW01 using volatile fatty acids: a statistical approach to apply for food-waste water. *Biomass Conv Bioref* 1:11. <https://doi.org/10.1007/s13399-022-03550-6>.