

Unveiling Cyanobacterial Diversity from Serbian Thermal Springs: Molecular Insights

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INTRODUCTION & AIM

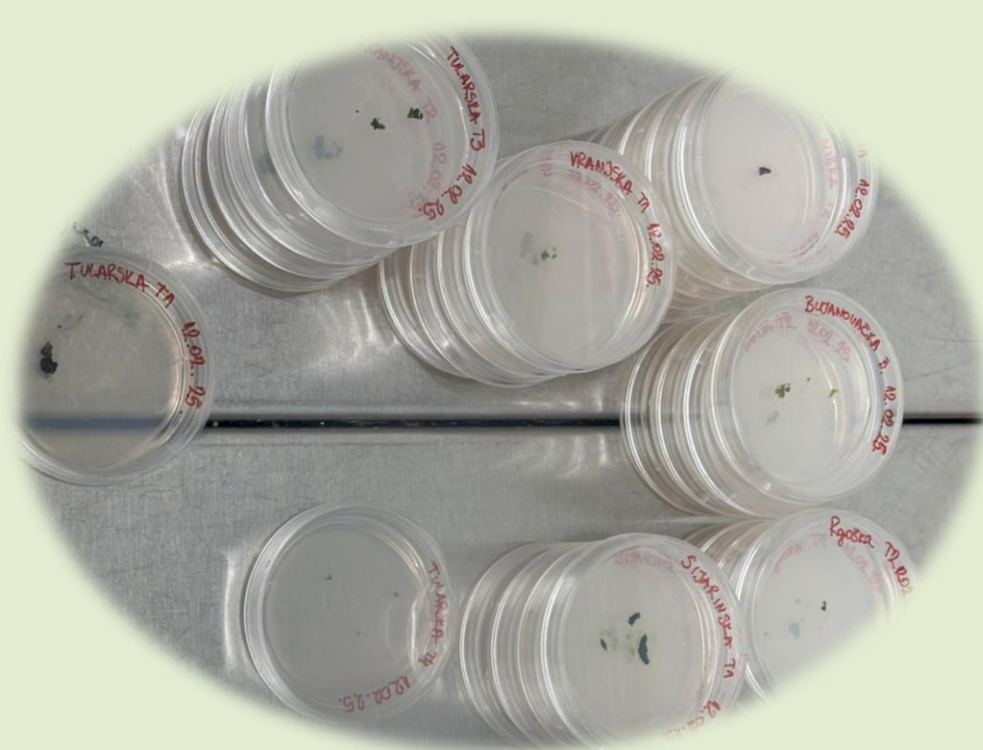
- Thermal springs represent extreme ecosystems characterized by **high temperatures** and **mineral-rich** waters.
- Cyanobacteria act as primary producers and display unique adaptations.
- Diversity and phylogenetic relationships of phototrophic microorganisms in Serbian geothermal systems are poorly documented.

Aim: To integrate molecular (16S rRNA) and morpho-ecological analyses to characterize cyanobacterial communities.



METHOD

- Field sampling conducted in **October** and **November** across five thermal springs in Serbia.
- Samples – Cyanobacteria isolated and cultivated in **BG11 medium** for several months.
- Morpho-ecological analysis.
- Molecular analysis was performed using 16S rRNA sequencing.



RESULTS & DISCUSSION

- Niška spa (38–39 °C):** *Leptolyngbya* sp. (WUC607).
- Lopatnica (≈29 °C) & Šarbanovac (30 °C):** *Leptolyngbya* sp. (CALU1715).
- Brestovačka spa (35 °C):** *Wilmottia* sp. (CCNU0051).
- Vranjska spa (93 °C):** *Nodosilinea* sp. (PGN35) and *Anabaena variabilis* (“Vasse River Type 3”).

Study enriches knowledge of thermophilic microorganisms and indicates possible discovery of new species.

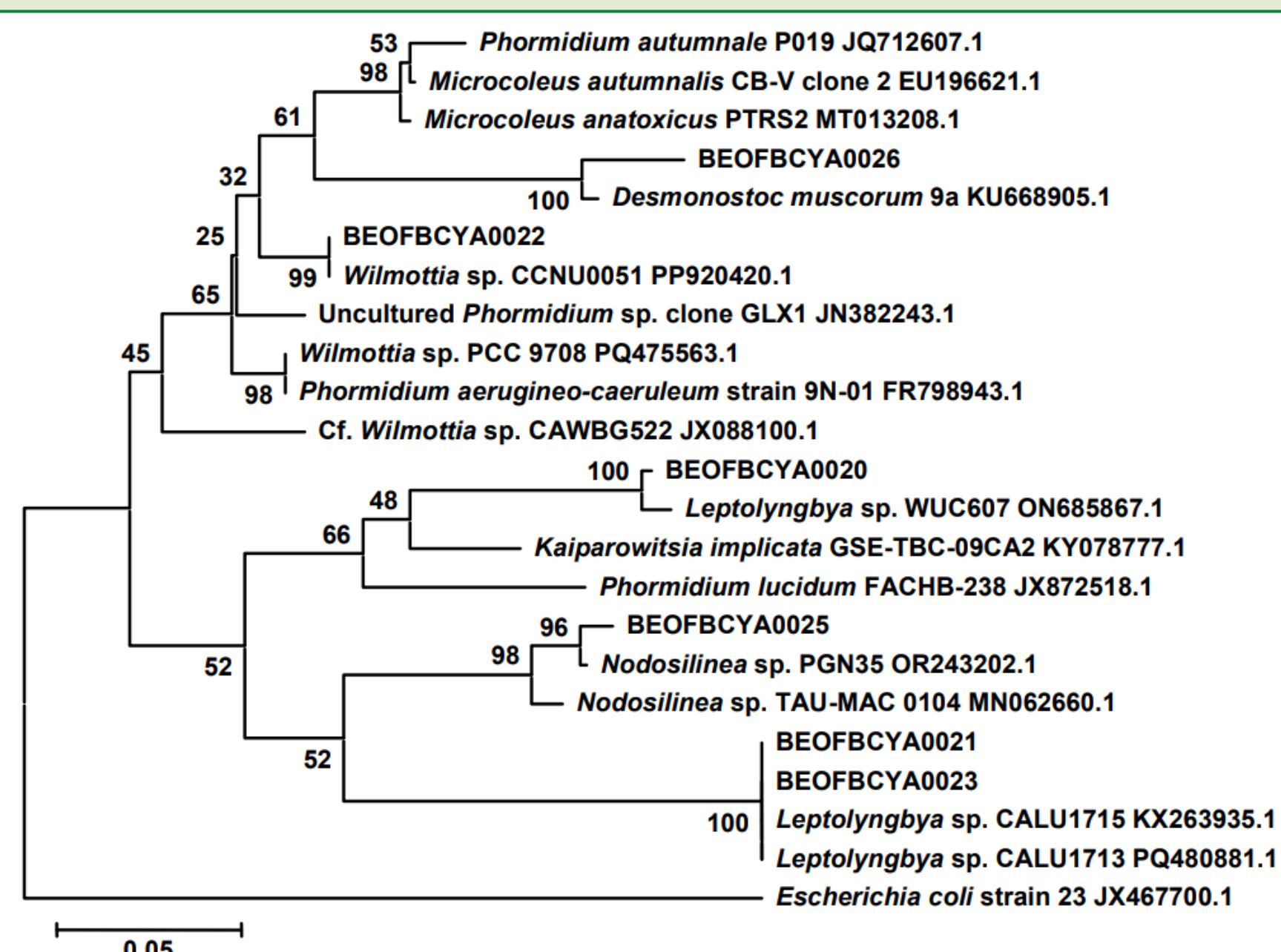


Figure 1. Neighbor joining phylogenetic tree based on 16S rRNA gene sequences showing the relationship between cyanobacterial strains isolated from thermomineral springs in Serbia and closely related reference sequences; BEOFB CYA0020 – Niška spa; BEOFB CYA0021 – Lopatnica; BEOFB CYA0022 – Brestovačka spa; BEOFB CYA0023 – Šarbanovac; BEOFB CYA0025, BEOFB CYA0026 – Vranjska spa.

CONCLUSION

- ✓ The results contribute to the global understanding and diversity of cyanobacteria associated with thermomineral springs, including lineages that may represent potential novel taxa and provide an important framework for future research.

FUTURE WORK / REFERENCES

- Potential for biotechnological applications, including bioactive compound production.
- Connecting morphology and molecular results as one full story.