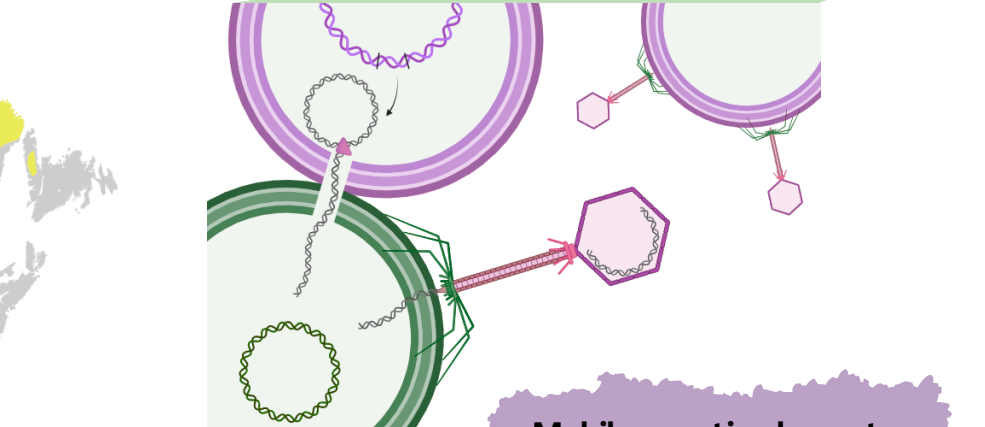
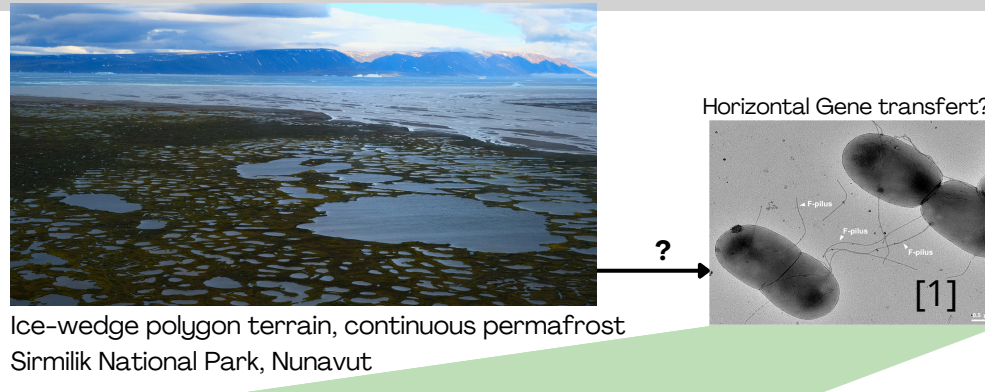
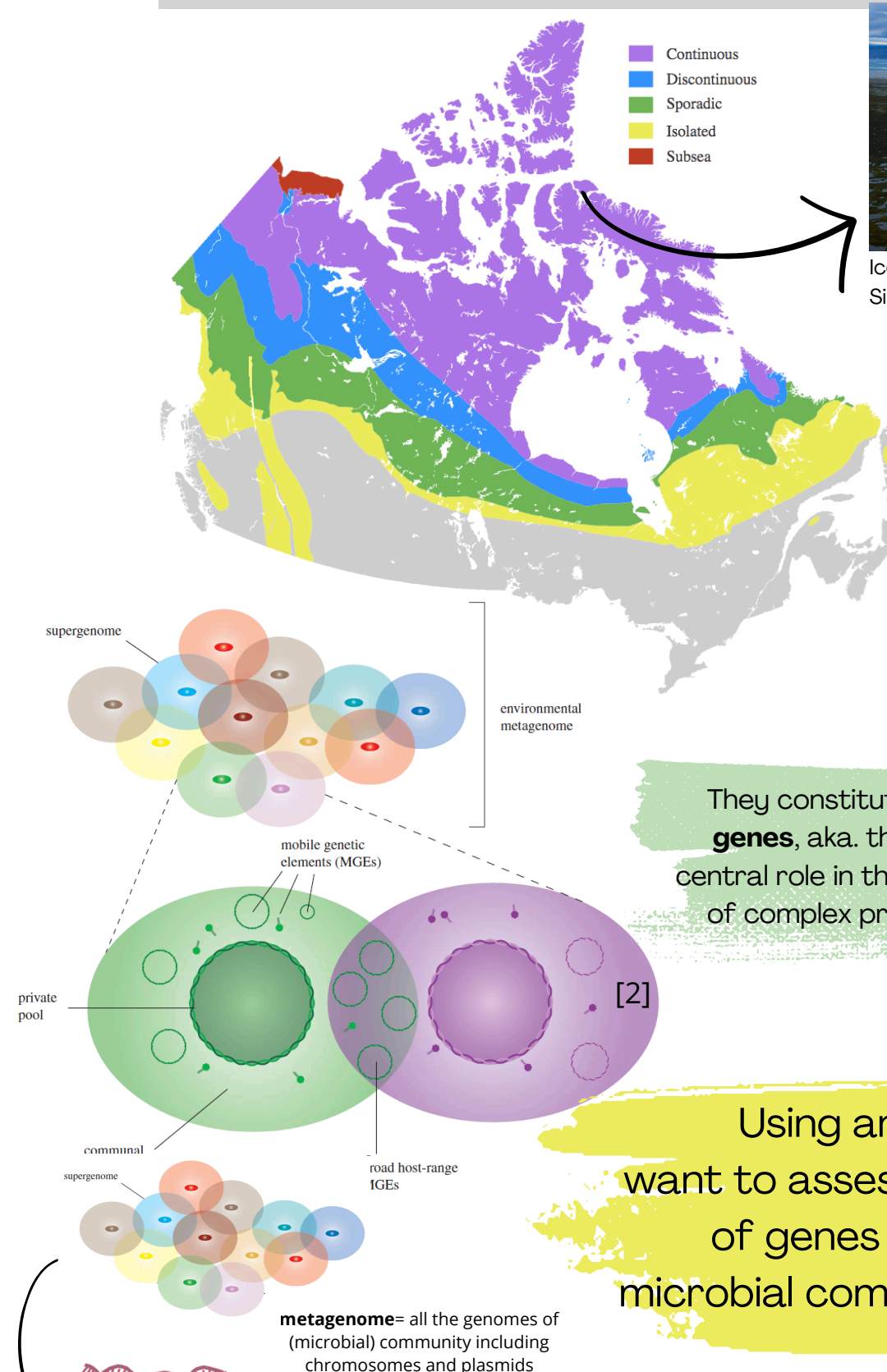


# PERMADAPT

Driving the adaptation of microbial communities of the thawing permafrost: Mobile genetic elements at play  
 Valentine Cyriaque, Martial Leroy, Anne-Charlotte Vranckx, Ruddy Wattiez, Jérôme Comte



## Study site

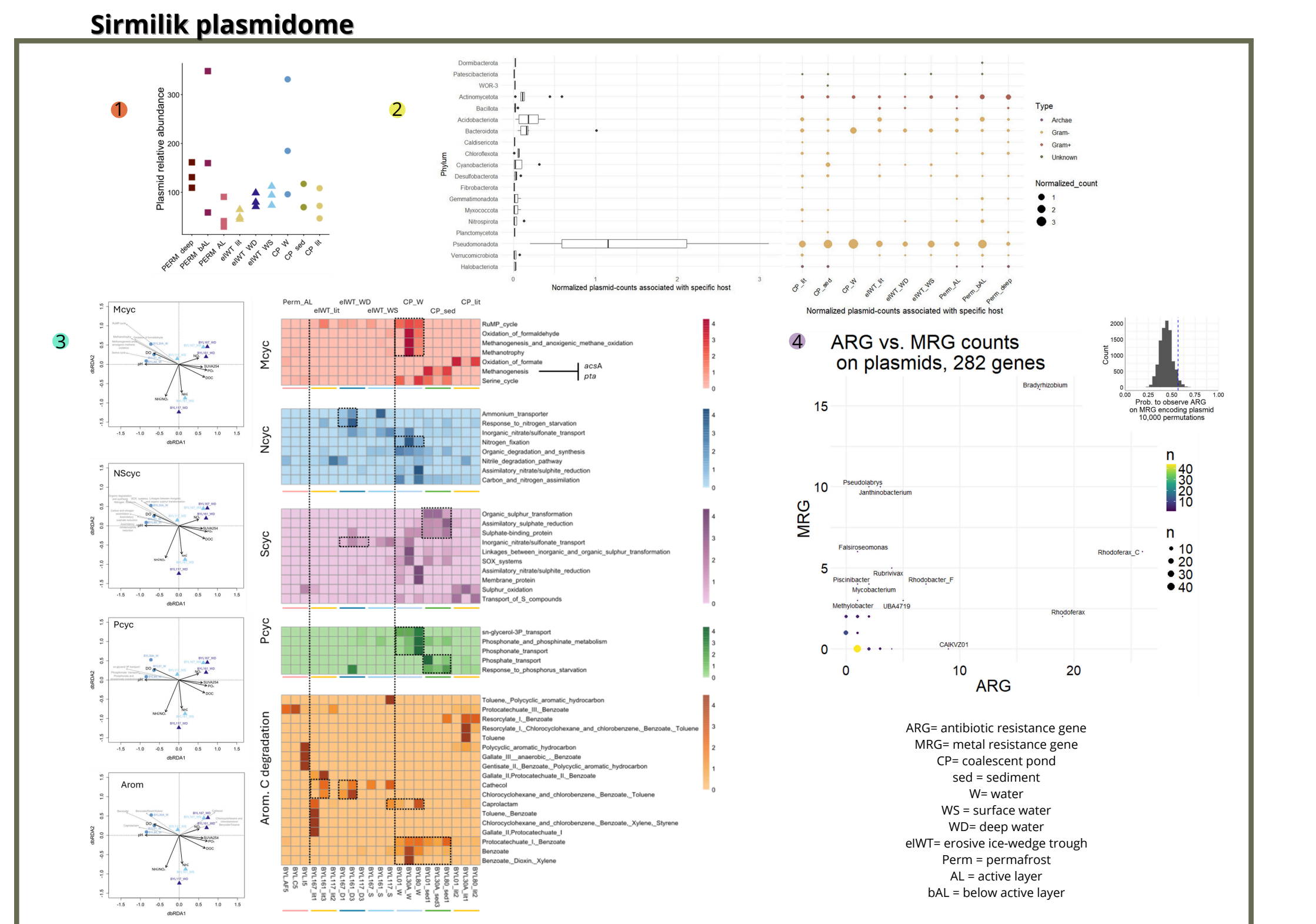
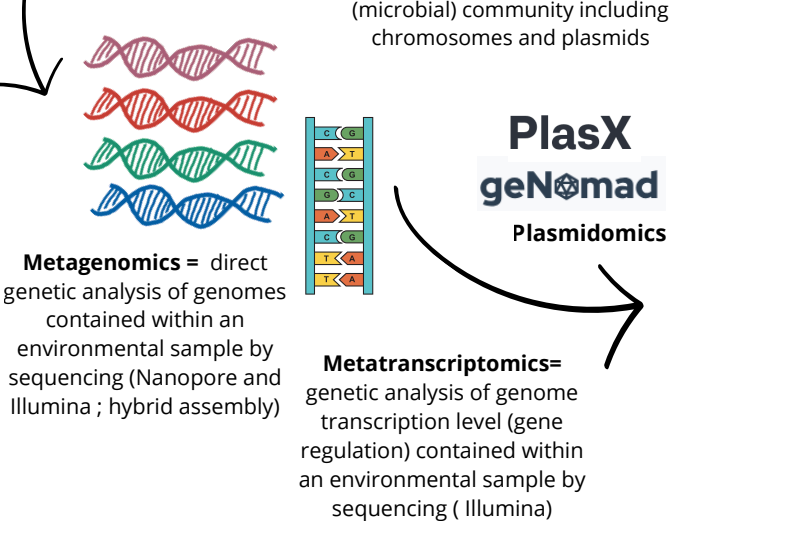
The **Sirmilik** National Park is located at 73°09'13"N, 79°59'44"W and is covered by high mountain peaks and glaciers. Plains are characterised by continuous permafrost covered by heterogeneous tundra vegetation. In the valley, **ice-wedge thermokarst** and **polygonal** ponds form new aquatic environments. Active layer soil, emerging and stabilised thermokarsts and coalescent ponds were sampled.

The island is located nearby the Inuit community of **Mittimatalik**.

They constitute a **communal pool of genes**, aka. the **mobilome**, playing a central role in the **evolution** and **function** of complex prokaryotic communities

**Mobile genetic elements**, like plasmids, are genetic material **transferring horizontally** between bacteria (HGT) across microbial **populations** and **communities**

Using an integrative **'omics'** approach, we want to assess the role played by the communal pool of genes in the eco-evolution of permafrost microbial communities in the transitioning permafrost.



## Conclusions

- Plasmids are not enriched in the new aquatic environments...yet
- Plasmid hosts are diversified with many Pseudomonadota, Acidobacteriota and Bacteroidota
- Metabolic genes carried by plasmids are specific to their environment
- Antibiotic and metal resistance genes are co-selected on plasmids

We acknowledge that our work is conducted on unceded Indigenous lands. We honor the long history of stewardship that shapes these ecosystems.