



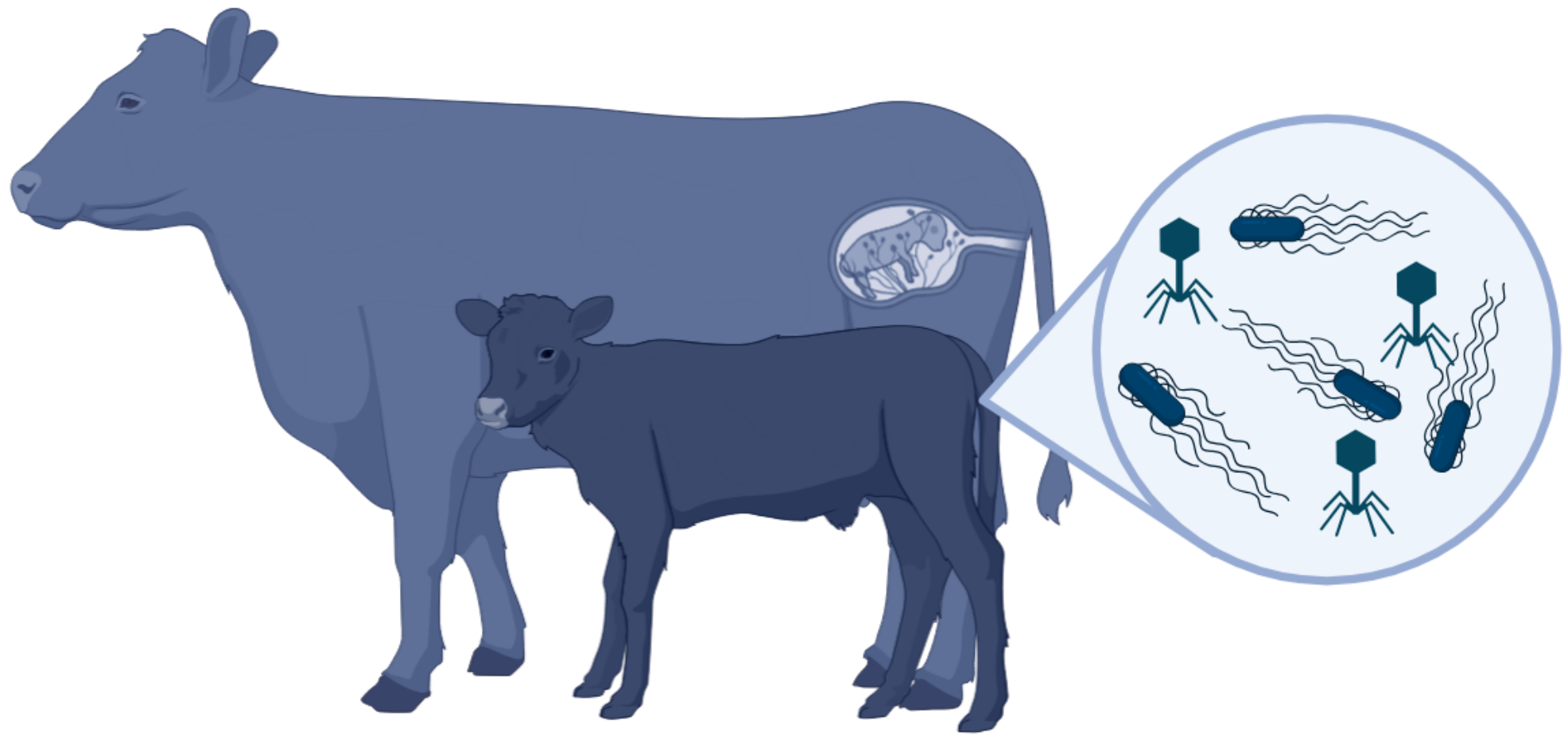
PHAGE TREATMENT OF SALMONELLA DUBLIN INFECTIONS IN BOVINES

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INTRODUCTION

Salmonella enterica serovar Dublin can cause serious infections in cattle, especially calves and pregnant cows, where they can lead to severe complications including abortions. Humans can get infected by *S. dublin* via the consumption of raw milk and milk products. Especially concerning are latent carriers, cows which do not show symptoms after surviving the infection but keep transmitting the disease. *S. dublin* infections are currently cured using antibiotics, which contributes to the overuse of antibiotics in agriculture and thus the antibiotic resistance crises. Furthermore, since antibiotics may lose their efficacy in the future, alternative treatment options like phage therapy are essential. Thus, we aim to use phage cocktails as an efficient alternative to antibiotics.

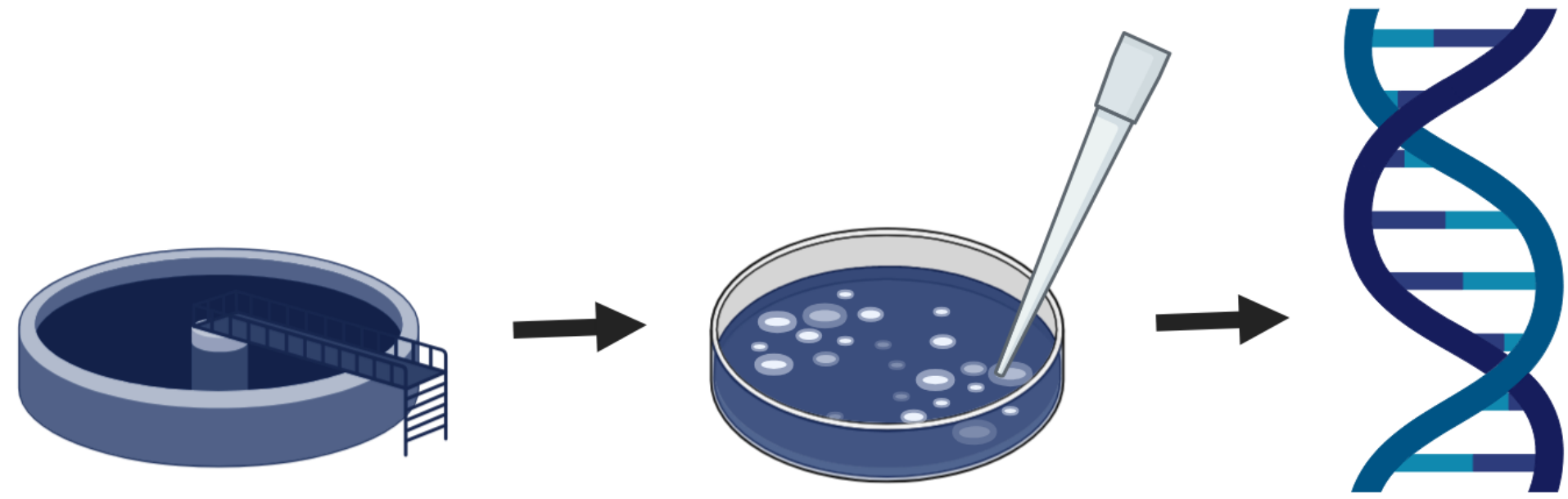


OBJECTIVES

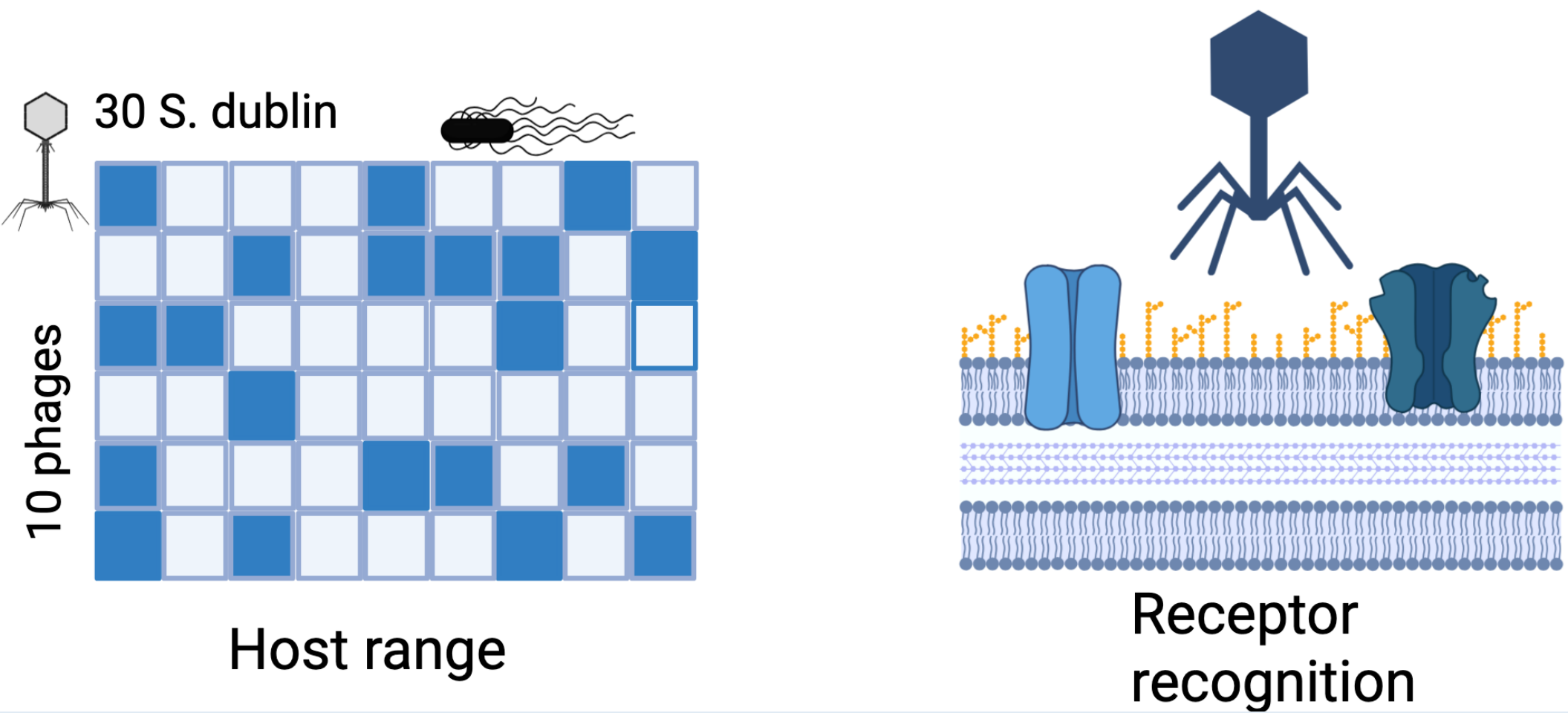
- Isolating phages infecting *S. dublin*
- Characterizing phages
 - taxonomy
 - host range
 - receptor usage
- Mix phages to phage cocktails according to their characteristics

METHODS

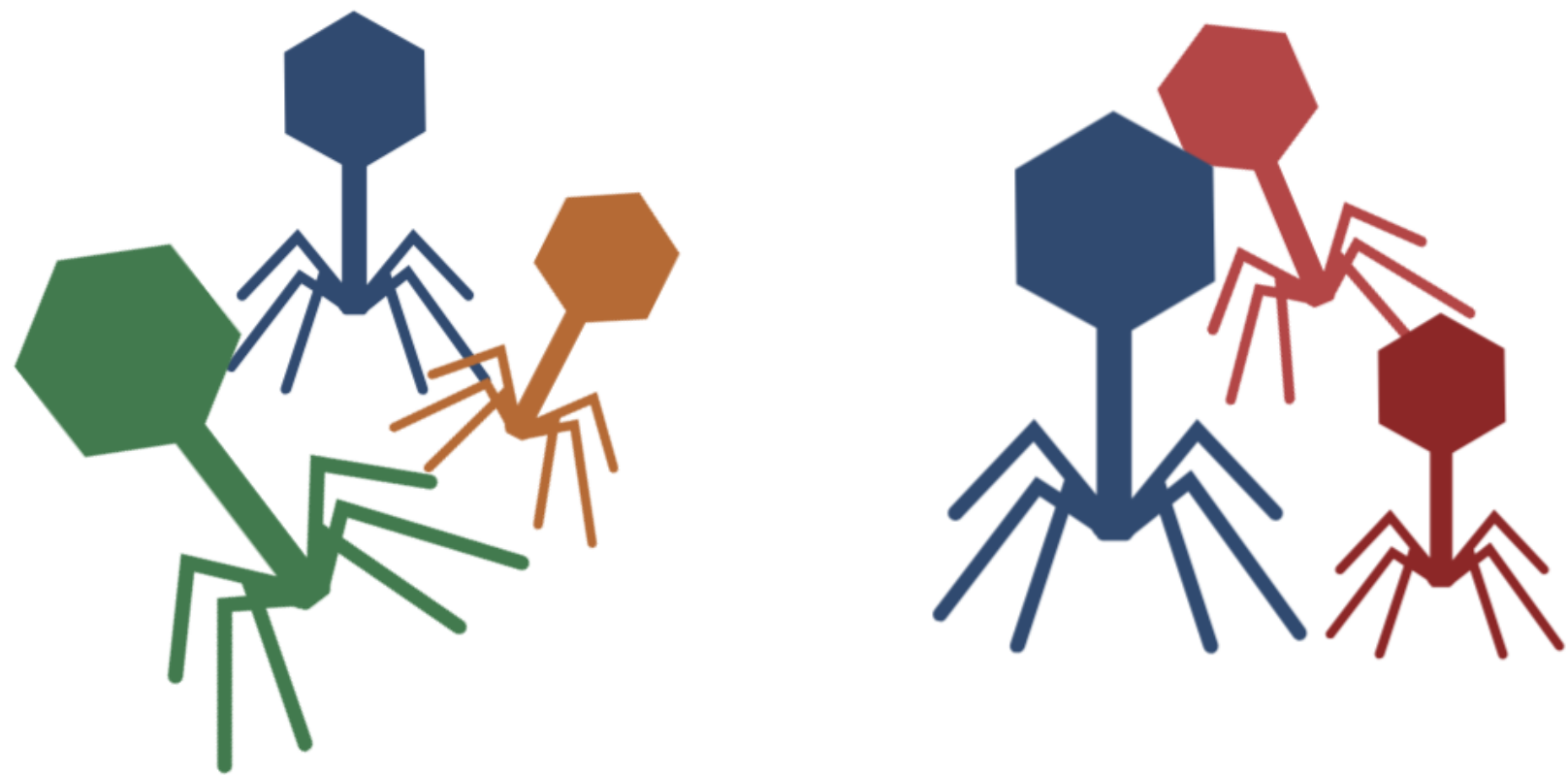
Phage Isolation



Phage Characterization



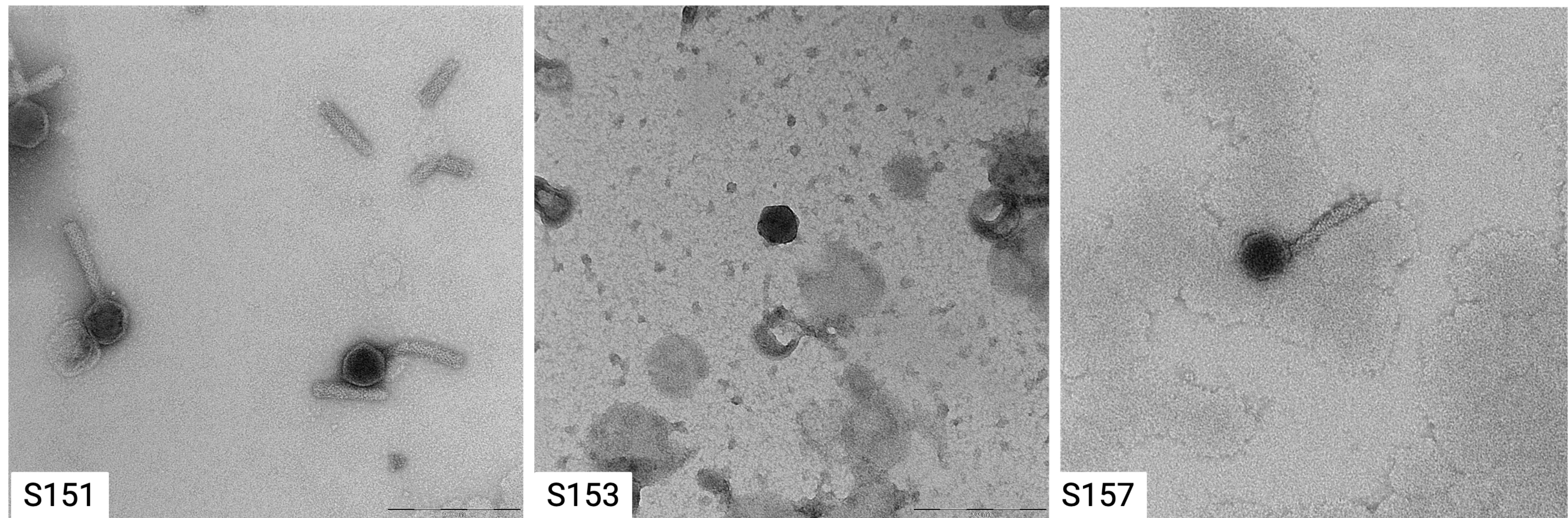
Mixing two different phage cocktails



RESULTS

Phage name	Genus	Isolation host /source	Receptors used
S139	<i>Epseptima</i>	EGS43 (by Gencay et. al.)	Vitamin B transporter BtuB
S151	<i>Felixouna</i>	Phage cocktail	LPS inner core
S158	Not sequenced	D23580 ΔΦ (prophage)	Vitamin B transporter BtuB
S153	<i>Epseptima</i>	D23580 ΔΦ (prophage)	Vitamin B transporter BtuB
S156	<i>Epseptima</i>	EGS40 (<i>S. Dublin</i>)	Vitamin B transporter BtuB
S157	Not sequenced	EGS40 (<i>S. Dublin</i>)	Not defined

Six different phages can infect representative *S. dublin* strains. They bind to two different receptors



Transmission electron microscopy reveals two different morphologies within our phage collection

CONCLUSION

- S. dublin* phages in our collection belong to two different genera.
- They show a low receptor diversity
- They display with Myoviruses and Podoviruses, two different phage morphologies

OUTLOOK

- Perform host range analysis to determine how efficiently phages are infecting a representative collection of *S. dublin* strains in Denmark
- Analyze bacterial phage defense systems of these *S. dublin* strains
- Test stability of isolated phages in stables

ACKNOWLEDGEMENTS

This work was funded by

Mælkeafgiftsfonden