Questions and Problems:

1. The findings in this paper can only be extrapolated to the Han River, so I do not agree with the authors when they conclude that this points to viruses being a "larger" reservoir for antibiotic resistance genes.
2. The paper does not unambiguously prove that viruses are transferring the antibiotic resistance genes between hosts.
3. Although this study has low bacterial contamination, it is not 0. So, there is always a chance that the ARGs found here may be from bacteria and not from viruses.
4. It is left unanswered if the other ARGs identified with low identity are actually functional ARGs.

Answer problem 2) demonstrate transfer

Control:

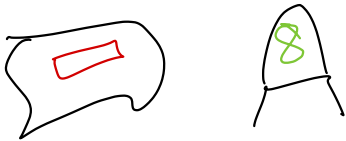Incubate bacteria
resistant to two
different ABX

place on
agar containing
ABX — & —

expect → no growth

experimental:

infect bacteria
resistant to —
with low MOI of
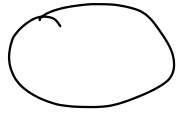lysogenic
phage resistant

to —

place on
agar containing
ABX — & —

expect
growth

Answer Question 4: Test other ARGs

control:

susceptible
bacteria

place on
agar with
ABX ——

expect
no
growth

experimental:

susceptible
bacteria &
lysogenic phage
resistant to ✗

place on
agar with
ABX ——

expect
growth

✱ repeat experiment for increasing —— concentrations
to find MIC