Rapid resistome mapping using nanopore sequencing - DTU Orbit (28/03/2019)

Rapid resistome mapping using nanopore sequencing

The emergence of antibiotic resistance in human pathogens has become a major threat to modern medicine. The outcome of antibiotic treatment can be affected by the composition of the gut. Accordingly, knowledge of the gut resistome composition could enable more effective and individualized treatment of bacterial infections. Yet, rapid workflows for resistome characterization are lacking. To address this challenge we developed the poreFUME workflow that deploys functional metagenomic selections and nanopore sequencing to resistome mapping. We demonstrate the approach by functionally characterizing the gut resistome of an ICU (intensive care unit) patient. The accuracy of the poreFUME pipeline is with >97% sufficient for the annotation of antibiotic resistance genes. The poreFUME pipeline provides a promising approach for efficient resistome profiling that could inform antibiotic treatment decisions in the future.

General information
State: Published
Organisations: Novo Nordisk Foundation Center for Biosustainability, Bacterial Synthetic Biology, Research Groups, iLoop, University Medical Centre Utrecht
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Number of pages: 8
Publication date: 2017
Peer-reviewed: Yes

Publication information
Journal: Nucleic Acids Research
Volume: 45
Issue number: 8
Article number: gkw1328
ISSN (Print): 0305-1048
Ratings:
BFI (2019): BFI-level 2
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 10.84 SJR 9.025 SNIP 3.028
Web of Science (2017): Impact factor 11.561
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 9.28 SJR 7.883 SNIP 2.744
Web of Science (2016): Impact factor 10.162
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 9.48 SJR 7.358 SNIP 2.631
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 8.74 SJR 6.64 SNIP 2.552
Web of Science (2014): Impact factor 9.112
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 8.46 SJR 6.801 SNIP 2.284
Web of Science (2013): Impact factor 8.808
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Web of Science (2012): Impact factor 8.278
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2