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Data Article

Survey of viral populations within Lake Michigan nearshore waters at four Chicago area beaches



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ABSTRACT

In comparison to the oceans, freshwater environments represent a more diverse community of microorganisms, exhibiting comparatively high levels of variability both temporally and spatially Maranger and Bird, *Microb. Ecol.* 31 (1996) 141–151. This level of variability is likely to extend to the world of viruses as well, in particular bacteria-infecting viruses (bacteriophages). Phages are known to influence bacterial diversity, and therefore key processes, in environmental niches across the globe Clokie et al., *Bacteriophage* 1 (2011) 31–45; Jacquet et al., *Adv. Ocean Limn.* 1 (2010) 97–141; Wilhelm and Suttle, *Bioscience* 49 (1999) 781–788; Bratback et al., *Microb. Ecol.* 28 (1994) 209–221. Despite their prevalence and likely critical role in freshwater environments, very few viral species have been characterized. Metagenomic approaches, however, have allowed for a glimpse into phage diversity. We collected surface water samples from four Chicago area beaches – Gillson Park, Montrose Beach, 57th Street Beach, and Calumet Beach – every two weeks from May 13 through August 5, 2014. Sampling was conducted with four biological replicates for each sampling date and location, resulting in 112 samples. DNA isolated from each of the individual samples for a given collection date/location was pooled together, with one exception – Calumet Beach on August 5, 2014 – in which each

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biological replicate was sequenced individually. Raw sequence data is available via NCBI's SRA database (part of BioProject PRJNA248239).

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Specifications Table [please fill in right-hand column of the table below]

Subject area	<i>Biology</i>
More specific subject area	<i>Viral metagenomics</i>
Type of data	<i>Text files: sequences</i>
How data was acquired	<i>Illumina MiSeq Desktop Sequencer</i>
Data format	<i>Raw</i>
Experimental factors	<i>DNA extracted from virus-like particles captured using 0.10 µm filtration through tangential flow filtration system.</i>
Experimental features	<i>Genomic DNA was fragmented and then sequenced using the MiSeq Reagent Kit v2 (500-cycles) kit for the Illumina MiSeq platform.</i>
Data source location	<i>Chicago, IL, USA: Montrose Beach (41°58'0.71"N, 87°38'13.35"W), 57th Street Beach (41°47'25.54"N, 87°34'41.25"W), and Calumet Beach (41°43'8.18"N, 87°31'32.51"W); Wilmette, IL, USA: Gillson Park (42°4'45.10"N, 87°40'59.10"W).</i>
Data accessibility	<i>Raw data is available through NCBI's BioSample database by this link. BioSample IDs include: SAMN03407346, SAMN03408283, SAMN03435782, SAMN03435784, SAMN03435787, SAMN03435791, SAMN03435794, SAMN03435808, SAMN03435814, SAMN03435817, SAMN03435819, SAMN03435823, SAMN03435829, SAMN03435836, SAMN03435838, SAMN03435841, SAMN03436866, SAMN03436867, SAMN03436868, SAMN03436869, SAMN03436870, SAMN03436871, SAMN03436872, SAMN03436873, SAMN03436874, SAMN03436875, SAMN03436876, and SAMN03436877.</i>

Value of the data

- Despite their ubiquity and importance in maintaining microbial communities [1–5], very few bacteriophage species have been fully characterized, largely due to the difficulty in isolating and propagating phage within the laboratory setting. Nevertheless, metagenomics provides a peek into the functionalities present within phage communities.
- Little is known about the viral species within the freshwaters of the Great Lakes.
- Genomic information produced here provides a baseline which can aid future efforts in determination of the viral diversity present in Lake Michigan.

1. Experimental Design, Materials and Methods

1.1. Sample collection

Four Chicago area beaches were selected as study sites: Gillson Park (42°4'45.10"N, 87°40'59.10"W), Montrose Beach (41°58'0.71"N, 87°38'13.35"W), 57th Street Beach (41°47'25.54"N, 87°34'41.25"W), and Calumet Beach (41°43'8.18"N, 87°31'32.51"W). All four are recreational swimming areas. The Montrose Beach sampling site is bordered to the north by the Montrose Beach dog park and to the south by the Montrose Harbor Marina. 57th Street Beach and Calumet Beach are used solely for swimming. Gillson Park is located north of Chicago in Wilmette, IL; this beach is recreational and adjacent to the north of Wilmette Harbor. Gillson Park and Calumet Beach are adjacent to locks controlling the movement of water between the North Shore Channel and Calumet River, respectively,

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