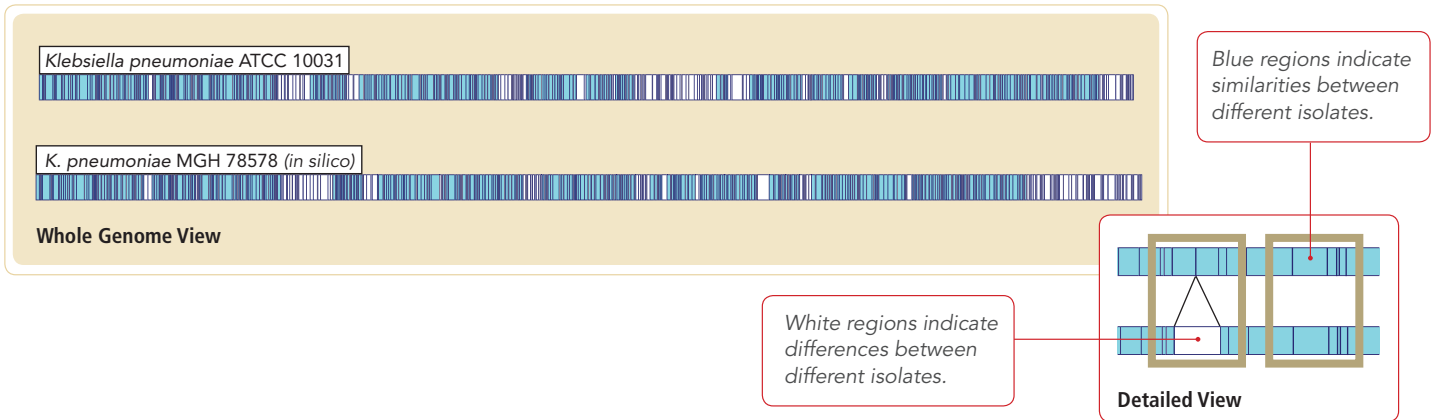


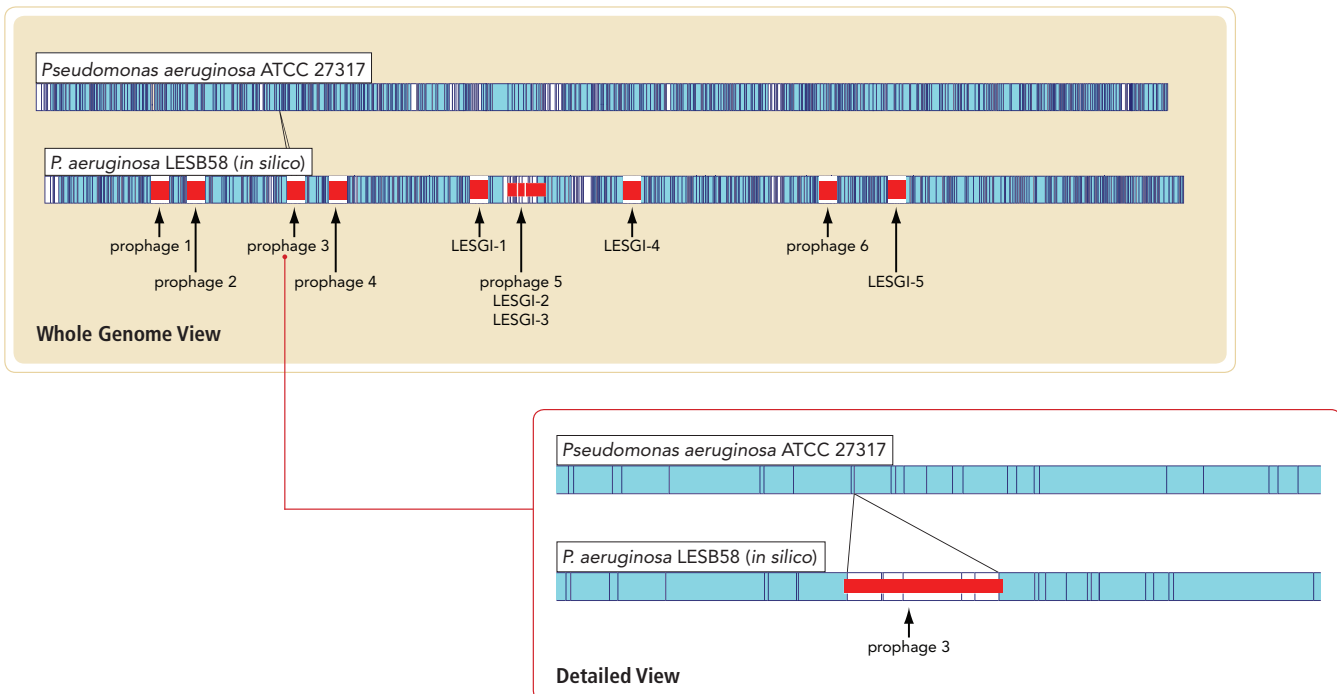
Provides Comprehensive View of Whole Genomes

Ordered, whole genome Optical Maps are compared between related *Klebsiella pneumoniae* isolates to rapidly discover differences (white) and similarities (blue). Optical Maps are compared according to their unique MapCode™ (restriction fragment pattern indicated by vertical black lines).



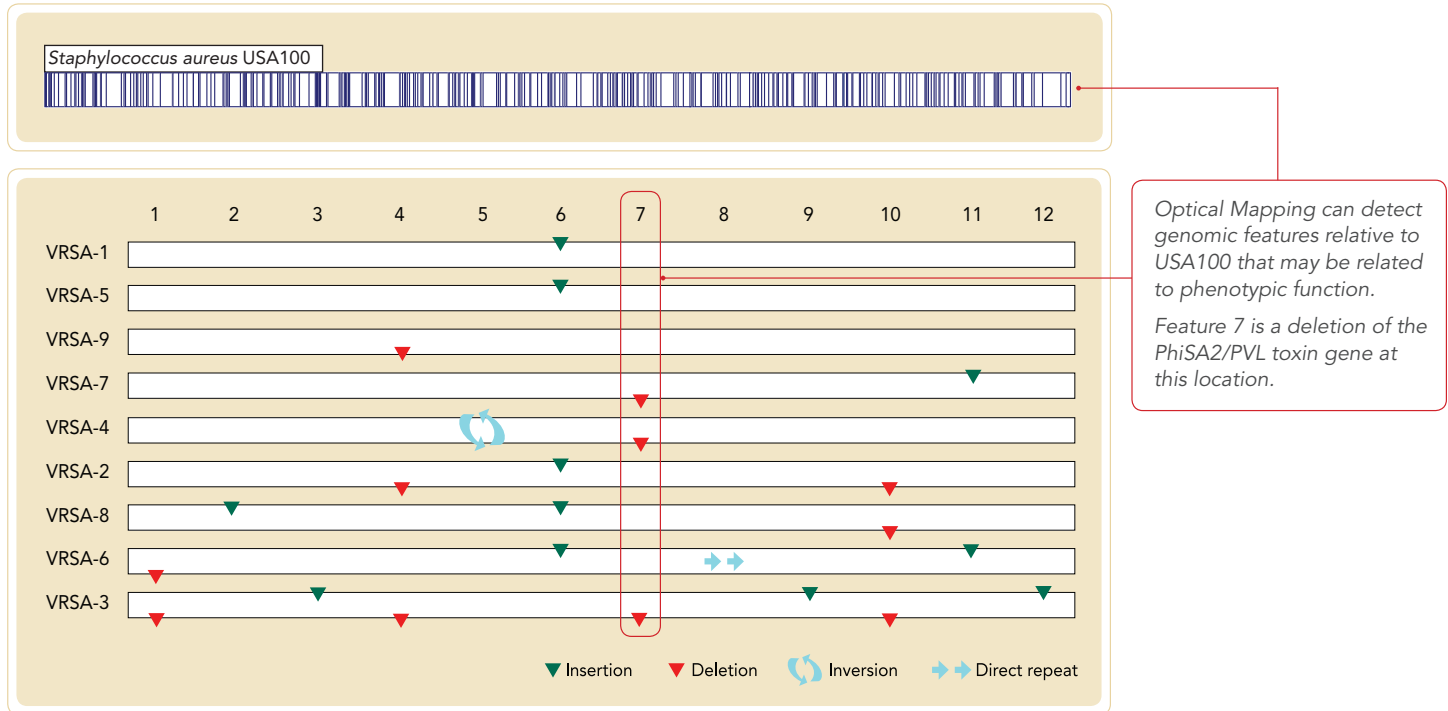
Provides Ordered, High Feature Density Data

Ordered, whole genome views of compared Optical Maps discover features unique to specific isolates. An Optical Map of *Pseudomonas aeruginosa* ATCC 27317 is compared to the sequenced Liverpool epidemic strain LESB58. Prophages and genomic islands (LESGI) identified in the sequenced isolate are indicated (red). Closer examination of the prophage 3 locus indicates the absence of the prophage in ATCC 27317 (Detailed View).



Provides Insight into Genomic Content

Optical Maps of nine vancomycin resistant *Staphylococcus aureus* (VRSA) isolates are compared to *Staphylococcus aureus* USA100 to locate and identify novel genomic markers and rearrangements such as insertions, deletions, inversions, and direct repeats that may be associated with phenotypic function. For example, feature 7 is a deletion of the PhiSA2/PVL toxin gene at that location. Optical Maps provide insight into genomic content that may relate to phenotypic function, a capability that is not possible with other genome analysis techniques.



Capabilities and Advantages

- Compare multiple whole genomes to rapidly discover differences and similarities
- Discover insertions, deletions, inversions and direct repeats
- Track mobile genetic elements such as pathogenicity islands, prophages and transposons
- Relate genomic differences to phenotype
- Annotate unique features by importing sequence information with MapSolver™ software
- Utilize MapSolver software to create your own Optical Map database and efficiently compare your genomes of interest

References

Kotewicz M. et.al. Optical maps distinguish individual strains of *Escherichia coli* O157:H7. *Microbiology* (2007) Jun; 153:1720-1733.
Zhou S, et. al. Single Molecule Approach to Bacterial Genomic Comparison via Optical Mapping. *J. Bacteriol.* (2004) 186: 7773-7782.
Winstanley, C., M. G. Langille, et al. (2009). "Newly introduced genomic prophage islands are critical determinants of *in vivo* competitiveness in the Liverpool Epidemic Strain of *Pseudomonas aeruginosa*." *Genome Res* 19(1): 12-23.
All bibliography articles may be found at www.OpGen.com, or by contacting OpGen, Inc.



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