MacVector 15.5

for Mac OS X

The online updater for this release is 52.3 MB in size

System Requirements

MacVector 15.5 runs on any Intel Macintosh running **Mac OS X 10.7** or higher. There are no other specific hardware requirements for MacVector – if your machine can run OS X 10.7 or above, it can run MacVector. A complete installation of MacVector 15.5 uses approximately 190 MB of disk space. Please note this release will NOT run on OS X 10.6 or earlier.

ASSEMBLER NOTE: If you are performing contig assembly using MacVector with Assembler, we recommend you have **at least** 1 GB of FREE RAM available on your machine. For any serious NGS work using phrap, velvet or bowtie, you should have at least 8 GB and preferably 16 GB or more for satisfactory performance.

Installation and License Activation

You can choose to install MacVector in one of two ways; if you want to install MacVector for all users of the computer, simply drag the MacVector folder onto the Applications folder. You will be prompted for a system administrator account and password during this copy. If you don't have administrative privileges, or if you want to install it for just your own use, you can install MacVector in the /Applications/ folder in your own personal home directory. To do that, double-click on the **OpenUserApplicationsFolder** icon to open the folder in a separate window, then drag the MacVector folder into that window.

Once installation is complete, when you first run MacVector you must enter a valid license owner, serial number and activation code, if one does not already exist on your computer. This information is usually sent by e-mail but is also printed on the inside of the CD sleeve if you opted to receive MacVector on physical media. If you previously installed an earlier version of MacVector and have a serial number with a maintenance end date of February 1st 2016 or later, MacVector 15 will automatically use your existing license and you will not be required to enter the details again. NOTE: one important change for MacVector 14.0 and later is that you can now activate a license for your own use without requiring Administrative privileges.

Changes for MacVector 15.5
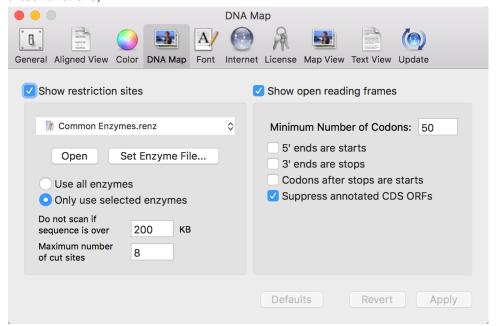
Graphical DNA BLAST Results

There is a new graphical BLAST results tab. It displays a graphical alignment of the query sequence aligned against each high scoring segment pair of the BLAST hits (NOTE: individual hits may have multiple high scoring segment pairs). This allows you to clearly see which genes or features your query is aligning to. If there are too many features to display in the graphical pane, simply hovering over it will expand to display

all overlapping features. For each hit, you can choose to download the entire sequence, or, particularly useful for hits to entire genomes, just the aligned segment plus ~2kb either side.
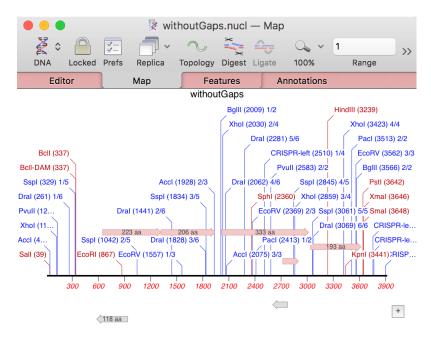
This interface represents a new and powerful approach to quickly identifying the function of your query sequence. With the advent of NGS genomic sequencing, any bacterial query sequences in particular typically match entire genomes – this allows you to identify and download just the region that matches your sample sequence for further detailed analysis within MacVector.

Automatic ORF Display

MacVector now automatically searches for open reading frames in every DNA sequence that you open. This works similarly to the existing automatic Restriction Enzyme display. There is a new **DNA Map** tab in the main **Preferences** window that controls both of these functions;

Note that there is a checkbox (turned on by default) to suppress the display of ORFs that are already annotated on the sequence. In addition, the default appearance of ORFs has been changed to be less obtrusive in crowded **Maps** and they are now labeled with the length of the ORF;

Align to Reference Editor Context Menu

Both the **Align To Reference Editor** and **Contig Editor** now have context sensitive menus. To invoke these, simply right-click (or <control>-click) in the window. Many of these functions have been specifically designed to simplify the use of MacVector for closing the gaps in bacterial genome sequencing projects. The functions available for the **Align To Reference Editor** are;

Export Consensus with/without Gaps

Align Selected Reads

Delete Selected Reads

Reset (unalign) Selected Reads

Export Selected Reads as FASTA/FASTQ

Select Matching Pairs (*)

Extend Reference with Selected Read (**)

(*) – if you have aligned a set of paired-end reads, you can select individual read(s) and use this function to select the corresponding mate(s). This is particularly useful if you want to find pairs that will extend a contig and export them for further analysis/assembly.

(**) This is active if you have selected a single read that hangs over either end of a Reference sequence. This will extend the Reference in the appropriate direction using the sequence of the read.

The **Contig Editor** has a subset of these functions with just the *Export…* and *Select Matching Pairs* functions available.

Miscellaneous Enhancements

Map windows now update when you change the default appearance of features.

A number of menu items have been renamed to more clearly explain what they do.

ORF results can now be filtered by minimum length.

Some bugs saving large assemblies have been fixed.

A number of issues selecting different display options in the **Phylogenetic**

Reconstruction tree display have been resolved.

A few intermittent crashes when editing **Multiple Sequence Alignment** documents have been fixed.

MacVector now does a better job of interpreting complicated Bowtie alignments so that the alignment display has fewer out-of phase mismatches, whilst still retaining all of the residues in each read.

There is now an option to control the length of vertically oriented labels in the **Map** tab.

A bug where you could not display multiple digest when just a small number of restriction enzymes were used has been resolved.

By default, only the main three NCBI databases are now shown in Entrez searches. You can ask to view more, but you may not be able to retrieve sequences from many of the others, other than through a browser.

A number of default settings have been changed to enhance the interface experience for new users.

Support information

For assistance with MacVector, please contact your local MacVector, Inc office. You will need a current MacVector maintenance contract to be eligible for technical support other than for basic installation or licensing problems. New sales of MacVector include 12 months of support that also entitles you to any upgrades to MacVector released during the maintenance period.

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When contacting Customer Support with a technical problem, please be prepared to give your product serial number as well as a detailed description of your problem and any error messages you encounter. Visit the MacVector Web site for details of any available updates, and any relevant information that could not be added to these release notes in time for publication:

`http://www.macvector.com`

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