Vector NTI Advance™ 11.0
Release Notes

Release Date: December 15, 2008

The industry standard for sequence analysis is now better than ever. Version 11 incorporates new cloning, search, and design tools, ease-of-use improvements across the entire application, Windows® Vista® and Intel-based Mac support, and new license options especially for academic researchers.

For more information, visit www.invitrogen.com/VectorNTI.

What’s New

• QuickStart Page — find the right tools for the job, faster
  An easy-to-use console with explanations and links to all the key functions for sequence analysis and data management in version 11

• Clone2Seq™ — simplified workflow and interface for rapid cloning
  Greatly simplified workflow for 2-fragment restriction-ligation cloning, with all the power of our renowned graphical map creation and lineage tracking

• VectorSelector™ — quickly find the right vector for cloning and expression
  Completely new interface to quickly find cloning/expression vectors with selected restriction sites, drug resistance markers, promoters, purification/expression tags, and other key features

• ReGENerator™ — designer expression constructs, with any mutation you want
  The fastest way to “clone” and express—build your desired DNA from the ground up, optimized for expression, with any amino acid mutation you want, and with the flanking sequences you need for expression, purification or detection. Then, right from your desktop, send your DNA sequence to our partner Blue Heron® Bio’s secure server for rapid synthesis

• Database Backup Reminder — protect your critical data
  A handy, configurable reminder to back up your Local Database regularly that you can set by interval or specific date

• Interoperability with GenomeQuest® — seamless patent database search
  Search the latest and best-curated sequence and patent databases using query sequences directly from Vector NTI Advance™ 11, and download search results to your desktop with the click of a button

• Academic License Options — new 1-year and 3-year license options
  More cost-effective license options that respect grant funding and other academic research realities
What’s Improved

- **Redesigned Interface** — entire application redesigned with a fresh, clean look
  Completely updated, bright interface with improved toolbar and menu options, a redesigned Local Database Explorer for quicker access to files, and fresh looks to every viewer, dialog and message box across the entire suite of tools

- **Expanded Vector Data Set** — more Invitrogen vectors, fully annotated
  Almost 150 more Invitrogen vectors included in the v11 Local Database, each fully annotated with key features, such as drug resistance markers, cloning sites, etc.

- **Windows® and Mac Support** — validated on Windows® Vista and Intel®-based Macs
  Validated and supported on Windows® Vista Business, as well as on the Windows® XP Pro operating system running on Intel®-based Macs
What’s New

QuickStart Page
The QuickStart Page is a console that includes links to all the major functions of Vector NTI Advance™ 11 in one easy-to-use interface. The QuickStart Page is launched from the Start Menu, and includes a brief explanation of each of the major sequence analysis functions, grouped in logical categories. Simply click on a link to launch the functionality of interest, such as the Local Database, DNA assembly tool, or various file import or conversion utilities (shown).

Clone2Seq™
Clone2Seq™ is a greatly simplified workflow and interface for the rapid cloning of two restriction fragments. It reduces the current workflow from five separate interfaces to one, with dramatically fewer mouse-clicks needed to clone two fragments with compatible ends. Clone2Seq™ is designed for those who already know how they wish to recombine two restriction fragments, e.g., cloning a BamHI-EcoRI insert into an appropriately digested vector. The interface makes it easy to select molecules and fragments for cloning, to modify fragment ends for compatibility (if necessary), and to create the desired recombinant, whether circular or linear. Despite the simplicity of the workflow, Clone2Seq™ retains all the power of the cloning functionality in Vector NTI Advance™, including our renowned graphical map creation and parent-descendant lineage tracking.
VectorSelector™

VectorSelector™ is a completely new interface to help you quickly find the right cloning and/or expression vectors with desired features. You can search any subset in your Local Database for vectors with a large number of attributes, for example: with one or two different restriction sites, with annotated coding DNA sequence (CDS) features that confer drug resistance, by linear or circular form, having specific attB sites that are used in Gateway® cloning. Results are captured in a spreadsheet-like format, and any group of results can be saved to a subset in the Local Database. Any individual search result can be opened in the Molecule Viewer or even sent to Clone2Seq™ for use in a rapid cloning experiment.

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1. Choose search parameters
2. Hit Find Vectors!
3. View, save or use your results in Clone2Seq™
ReGENerator™

As the accuracy of de novo DNA synthesis and sequencing have increased, and as the costs have decreased, designing your desired gene by building it from the ground up has become much more feasible. Indeed, this kind of “cloning” really shows its strength when the goal is to create expression constructs with a defined set of mutations: it may be significantly faster, quicker, and cheaper, to start with your desired protein sequence, mutate it as needed, attach whatever flanking sequences are required for propagation, expression, selection, purification and detection, and then synthesize your target construct chemically from individual nucleotide bases.

ReGENerator™ allows you to design such specific DNAs in silico. Simply start with your protein sequence, and if required, mutate it by substituting, adding or deleting amino acids by simply typing in new residues. Any number and type of mutation can be made in this step. Choose a codon-usage table that best reflects your experimental expression system, and ReGENerator™ will calculate a DNA sequence that encodes your desired protein. You can add any number of flanking sequences to the 5’ and 3’ ends of the newly-created DNA—such as restriction sites, Gateway cloning sites, and expression or purification tags—then send the designed sequence electronically the secure servers at Invitrogen’s gene synthesis partner, Blue Heron® Bio. Blue Heron™ will then synthesize your DNA, often in less than two weeks.
Database Backup Reminder

To help protect the valuable sequence and other information in your Local Database, we have provided a configurable reminder that alerts you to run the existing Database Backup functionality. This Database Backup Reminder can be set by interval, or specific date, or it can be switched off if necessary. When active, the Reminder alerts you at the scheduled time(s) to back up your data by providing a simple message box with instructions on how to proceed with the Database Backup function.

Interoperability with GenomeQuest®

GenomeQuest® provides high-performance systems for large scale database-to-database sequence search and analysis, using industrial-strength database access and management, supercomputing processing power, high-throughput algorithms, and fast, accurate search result filtering and reporting. If your organization has implemented GenomeQuest's platform solution, you can now access the latest and best-curated sequence and patent databases using query sequences directly from Vector NTI Advance™ 11. In addition, if you find relevant hits in the GenomeQuest® database, you can seamlessly download those search results to Vector NTI Advance™ 11 for further analysis and reporting.
**Academic License Options**

As genomic research projects grow in scope and cost, and as budgets get squeezed ever more tightly, we have created two cost-effective v11 license options specifically for researchers in academic, government and non-profit institutions. You can now obtain full 1-year and 3-year Academic Licenses that provide full software functionality, greatly streamlined license delivery, and Technical Support by email to bioinfosupport@invitrogen.com. At significantly reduced prices, these license options respect the current grant funding and other realities of academic research. Find out how to obtain Academic Licenses at www.invitrogen.com, or contact your local Invitrogen office.
What’s Improved

Redesigned Interface
One immediately noticeable improvement in Vector NTI Advance™ 11 is that the software has been completely updated with a fresh, clean look. Every viewer, dialog, and message box across the entire suite of tools has been updated with improved toolbar and menu options. We have redesigned the Local Database Explorer for quicker access to files. New functionalities have clearer instructions present directly on the interface. And the explanations and instructions on many message and alert boxes have been clarified and improved. Our intention in making these changes is to provide a better experience for all in using Vector NTI Advance™ 11, while at the same time retaining the overall organization and layout of the software to respect the knowledge and experience of our many long-standing users.

Updated Toolbars

Redesigned Local Database, with Additional Invitrogen Vectors
Expanded Vector Data Set

Almost 150 more Invitrogen vectors have been included in the new v11 Local Database, bringing the total number of vectors to just under 275. These include all Invitrogen vectors released since 2004. Each vector is fully annotated with key features, such as drug resistance markers, multiple cloning sites, primer binding sites, etc. If you are upgrading from an earlier version of Vector NTI Advance™, and you wish to retain your existing Local Database, you can access these additional vectors as a single-file download by visiting www.invitrogen.com/VectorNTI. Simply drag-and-drop that Archive File of new v11 vectors onto your Local Database window and the new vectors will be imported automatically.

Windows® and Mac Support — validated on Windows® Vista and Intel®-based Macs

Vector NTI Advance 11 has been fully tested and is now supported on Windows® Vista Business, as well as on Windows® XP Pro SP3. In addition, v11 is now validated for use on Intel®-based Macs. To run in this mode, simply create a Windows® partition on your Mac using Apple’s free Boot Camp software. Then install the Windows® XP Pro SP2 operating system on that partition, and you will then be able to run v11 with full functionality. See the Installation and Licensing Guide that comes with v11 for all the details.
Open Issues

Upgrading to v11.0 from v10.3.0 or v10.3.1 requires manual step
When you upgrade to v11.0 from the previous versions of Vector NTI Advance™ listed in Table 1, the v11.0 installation process will generally recognize the previous version and will automatically uninstall it. As always, during installation you will be able to point v11.0 to your existing Local Database such that you get all the new functionality of v11 but you also maintain full access to your historical data. And as always, we strongly recommend that you first back up your existing Local Database to a secure location prior to upgrading to v11.

However, when you upgrade to v11.0 from v10.3.0 and v10.3.1, you will need to uninstall either of those previous versions manually using the Add/Remove Programs tool in your Control Panel. Please see the Installation and Licensing Guide that is included with v11.0 for full details.

<table>
<thead>
<tr>
<th>Previous Version</th>
<th>Release Date</th>
<th>Uninstallation with v11</th>
<th>Action Prior to v11 installation</th>
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Incomplete ORF with Undefined Stop functionality
The Incomplete ORF with Undefined Stop in this version comes with a default Nested option to give complete results. Reading frames on the complementary strand will be displayed as 1, 2 and 3.

Cosmetic issues in the interface
There are several “look-and-feel” issues that do not follow the newly designed v11.0 interface style, e.g., grid controls in some dialog boxes to not display the new color scheme. None of these cosmetic issues affects any scientific or software functionality and these issues are scheduled to be addressed in an upcoming interim release.

Screen resolution for ReGENerator™, VectorSelector™, Clone2Seq™
The recommended screen resolution for these three new features is 1024 x 768 or higher.

File format changes by PDB
Recent changes in the PDB file format may result in certain molecules not opening in the 3D Molecule Viewer. However, this affects a minority of PDB files.

Opening multiple search results in the PubMed-Entrez Search tool
When a group of nucleotide, protein or structure search results is selected and the “Open/Save to DB” option is selected from the shortcut menu, only the first result will be opened. **Workaround:** double-click on each result individually to open that result.

**3D Molecule Viewer “Molecule” drop-down menu issue**

You may notice the non-availability of certain sub-options under the View > Molecule drop-down menu in the 3D Molecule Viewer. All the sub-options are available from the right-click shortcut menu on the Graphics Pane.

**Launching the Local Database from the QuickStart Page for the first time**

You may experience a problem in accessing the Citations, Analysis Results and Blast Results tables in the Local Database when you try to launch these options directly from QuickStart Page for the first time. **Workaround:** Open the Local Database Explorer first from the Windows Start menu before using the QuickStart Page. You only need to do this one time.

**Accessing Online Help Files in Windows® Vista Business**

Depending on your system configuration, accessing Vector NTI Advance™ 11 Online Help in Windows® Vista may require an additional free application from Microsoft. If so, please take the following steps:

1. Download the Windows® Help program from the following link and follow the instructions presented online: [http://go.microsoft.com/fwlink/?LinkID=82148](http://go.microsoft.com/fwlink/?LinkID=82148)

2. Click on `winhelp.reg` in the Vector NTI Advance™ 11 CD

**Note:** You do not need to follow these recommendations if you already have Windows® Help installed and you are able to access “.hlp” files in other applications on your Windows® Vista machine.
The Benefits of Vector NTI Advance™

Vector NTI Advance™ is the most comprehensive and highly integrated desktop sequence analysis and data management application available today. The software consists of five interconnected modules, each with an information-rich graphical user interface that makes sequence analysis both simple and intuitive:

- **Vector NTI®** sequence creation, mapping, analysis, annotation, and management
- **Alignx®** multiple sequence alignment of proteins and DNAs
- **ContigExpress®** DNA sequence assembly
- **BioAnnotator™** functional annotation of proteins and DNAs
- **GenomBench™** analysis and annotation of reference genomic DNA sequences

Vector NTI Advance™ uniquely contains an object-oriented database, accessible from all modules, that enables a wide range of cross-module bioinformatics workflows. No tedious data reformatting is necessary, and the software supports all key public file formats, such as GenBank and GenPept, so data import, export, sharing and collaboration are flexible and simple. Vector NTI Advance™ also contains tools such as *in silico* design of cloning experiments to accelerate bench research, and every representation of data within the suite is available for export to other applications for presentation purposes.

**Benefits**

- Eases and speeds life science research by integrating multiple sequence analysis tools in one application suite
- Improves productivity by enabling scientific staff to focus on critical research objectives, rather than data manipulation, reformatting, and transfer among programs
- Simplifies scientific research by providing an intuitive, easy-to-use, graphically-rich interface to complex bioinformatics tools
- Delivers unique research capability to the bench scientist by enabling users to analyze reference genomic data in conjunction with proprietary sequence information
- Reduces the time and cost of research by allowing experimental strategies to be designed and tested *in silico* prior to actual bench work
- Simplifies research by enabling users to connect to massive public databanks and Internet bioinformatics resources from the convenience of their own computer
- Improves laboratory data management and integrity through the use of a database architecture, and supports the re-use and sharing of data
- Scales with the size of the organization, as it is optimized to work with LabShare™, Invitrogen's relational database storage solution for secure, large-scale data sharing
- Enables easy data sharing and collaboration by supporting multiple file formats for import, and by effecting seamless data export of publication-quality graphics
- Supports intellectual property management, by storing critical information on proprietary sequences in standard, publicly supported file formats
- Reduces costs, by delivering an integrated, comprehensive solution at suite prices comparable to 4 or 5 stand-alone applications
- Provides a proven technological solution to the needs of differing research groups within an organization, minimizing IT overhead and support
- Constitutes the most actively-developed desktop bioinformatics platform on the market, and forms a robust foundation for further tool and analysis enhancements

v1.1