Advanced Tools

Kelley B. Hise

April 2011

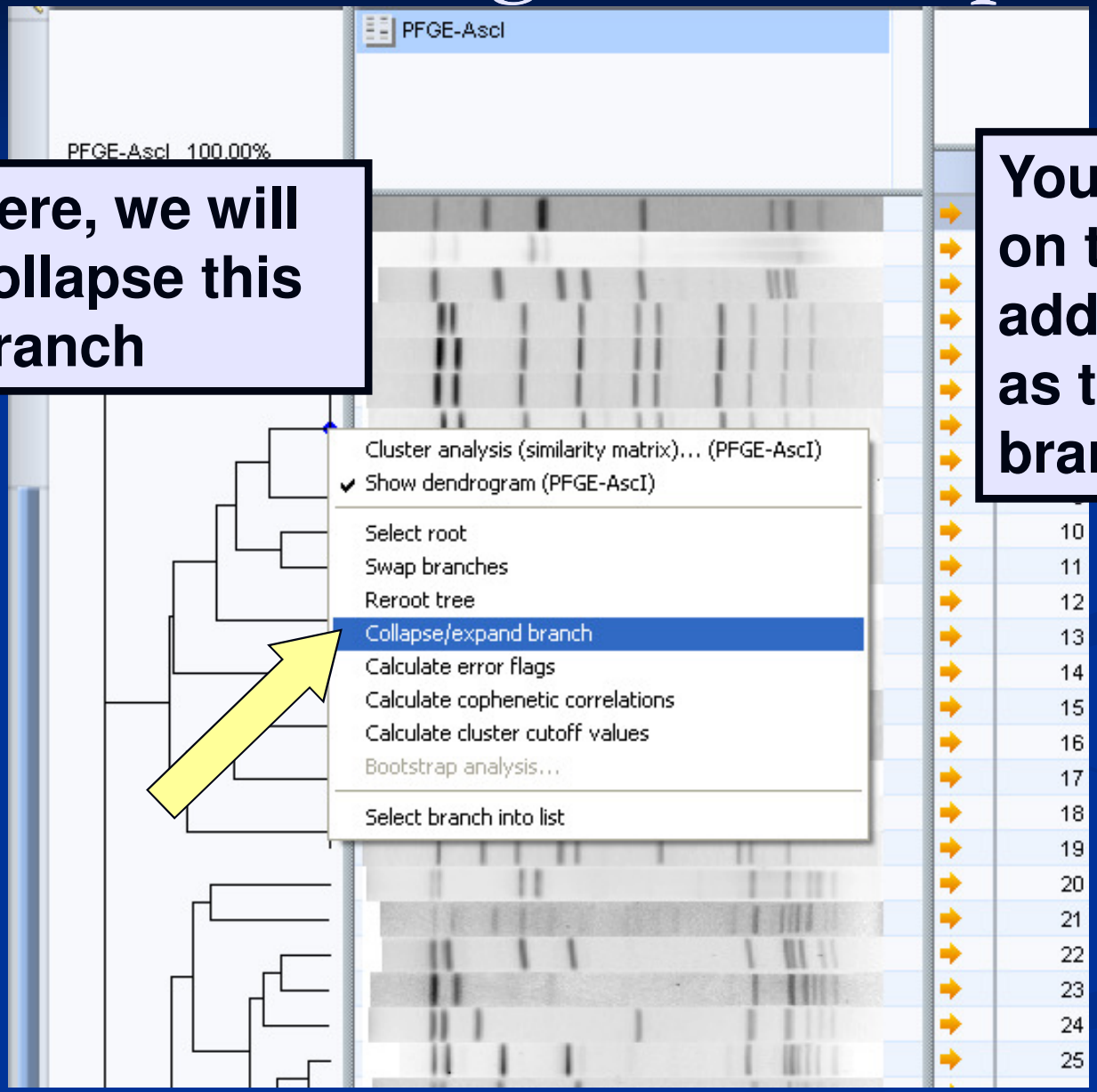
DEPARTMENT OF HEALTH & HUMAN SERVICES · USA

CDC
CENTERS FOR DISEASE CONTROL AND PREVENTION

Overview

- Advanced options with dendrograms
- Advanced options with comparisons
- Advanced options with groups
- Advanced Queries
- Examples of advanced queries
- Plugins

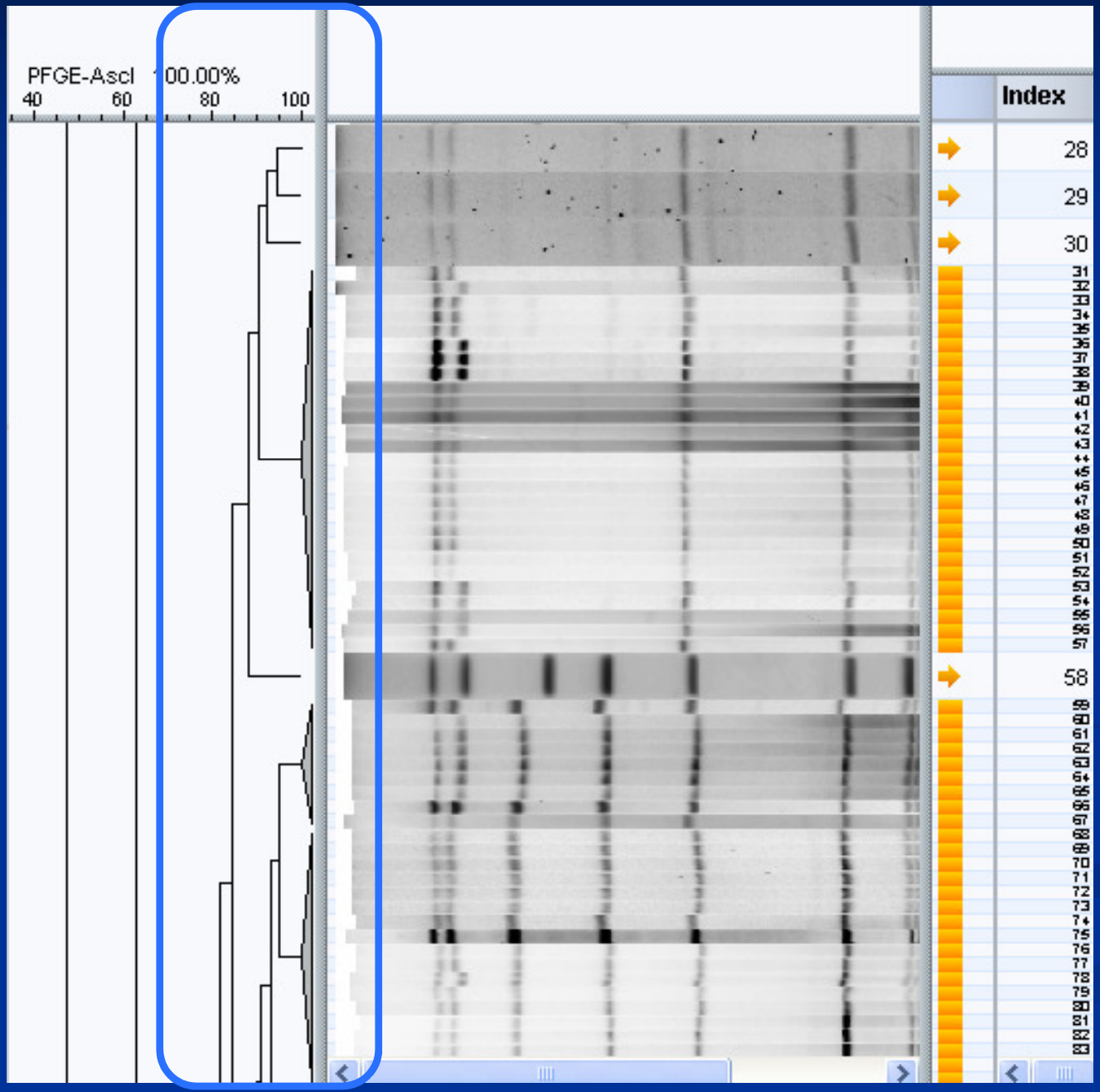
Dendrograms: collapse branches



Here, we will collapse this branch

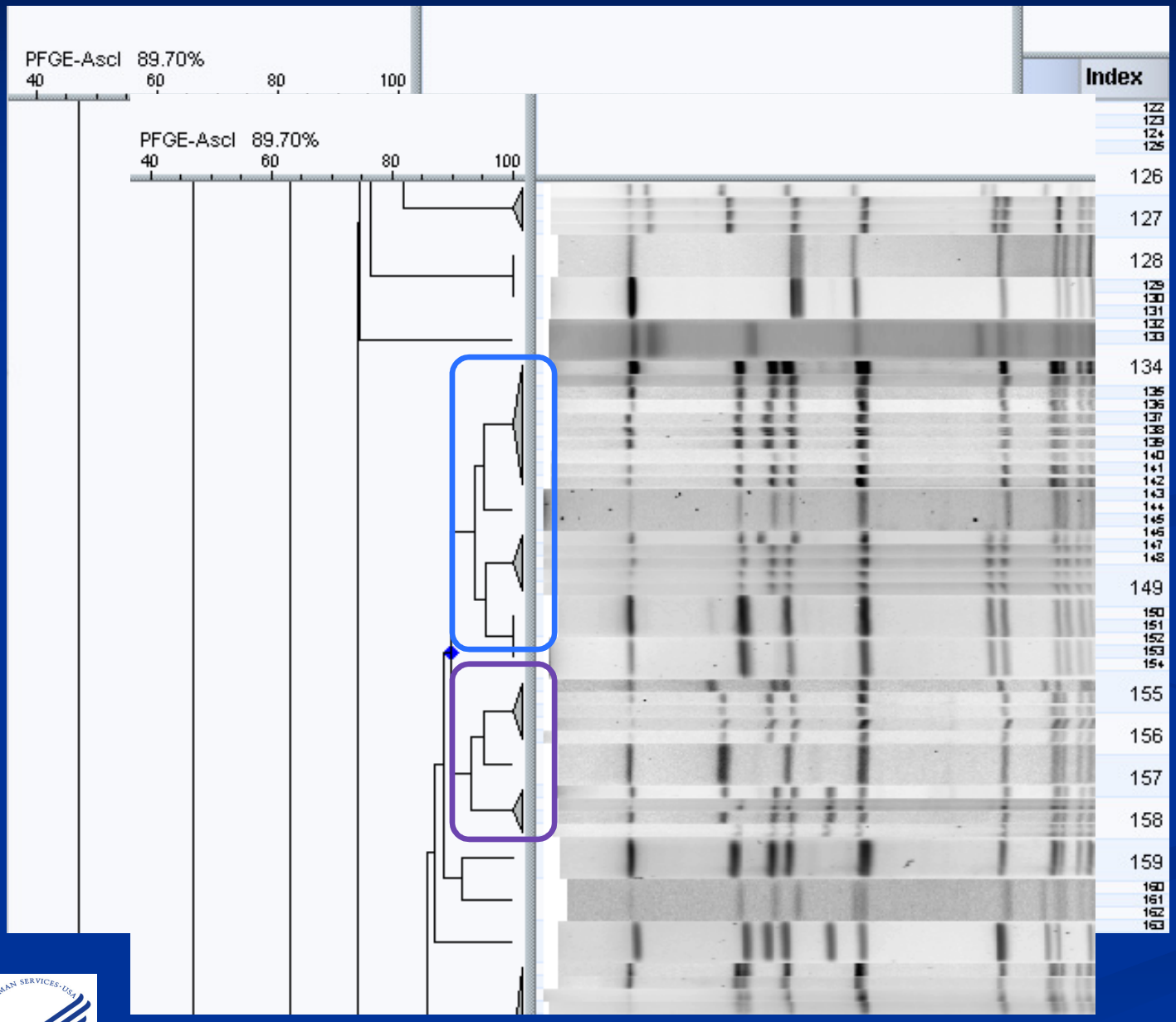
You can also right-click on the branches for additional options, such as to collapse or expand a branch

Dendrograms: collapse branches



When multiple branches have been collapsed, you can see more of the dendrogram on one page

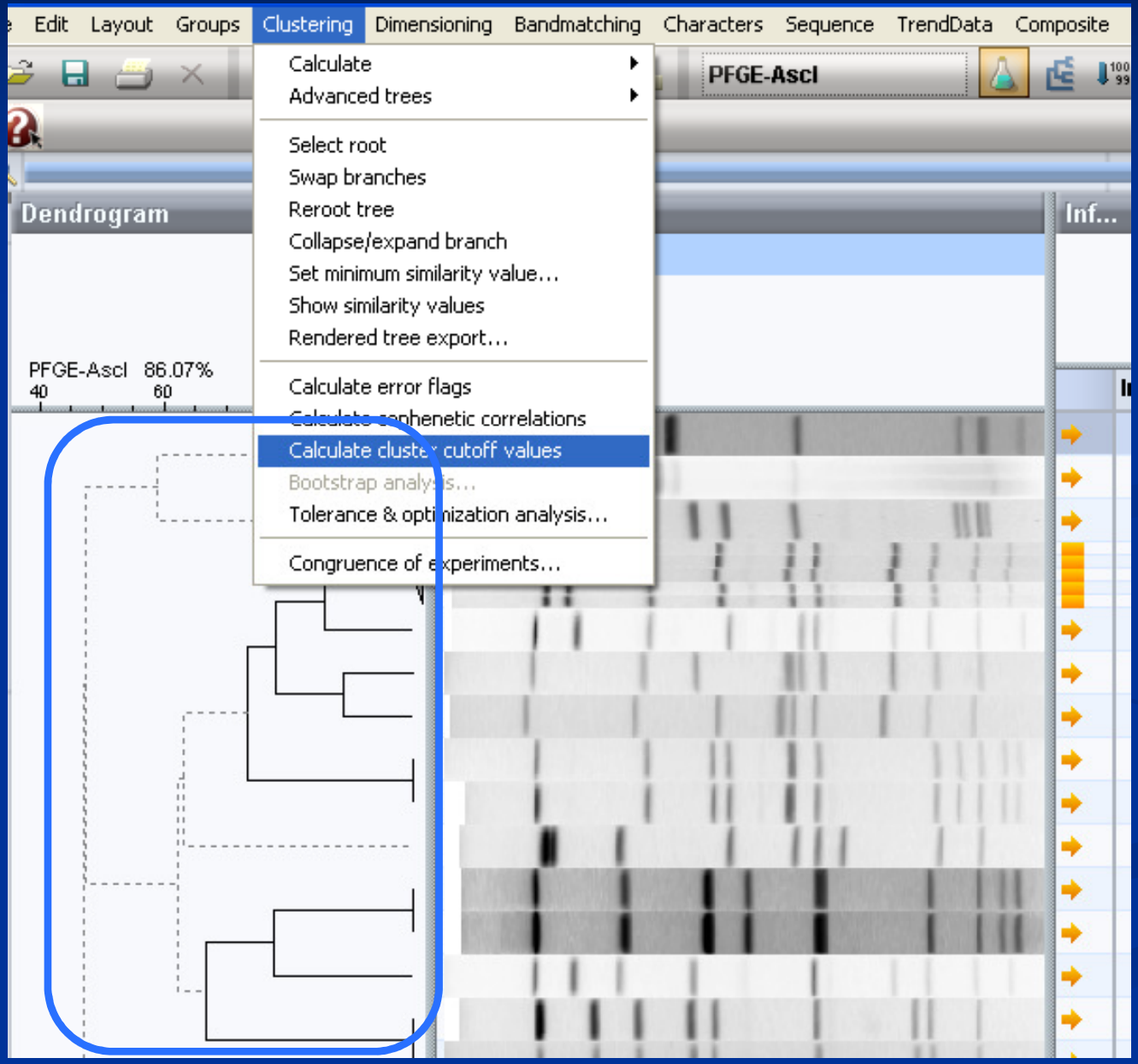
Dendrograms: swap branches



If you would rather clusters be switched around in the dendrogram, right-click on the node and select "Swap branches"

Now these branches have swapped places

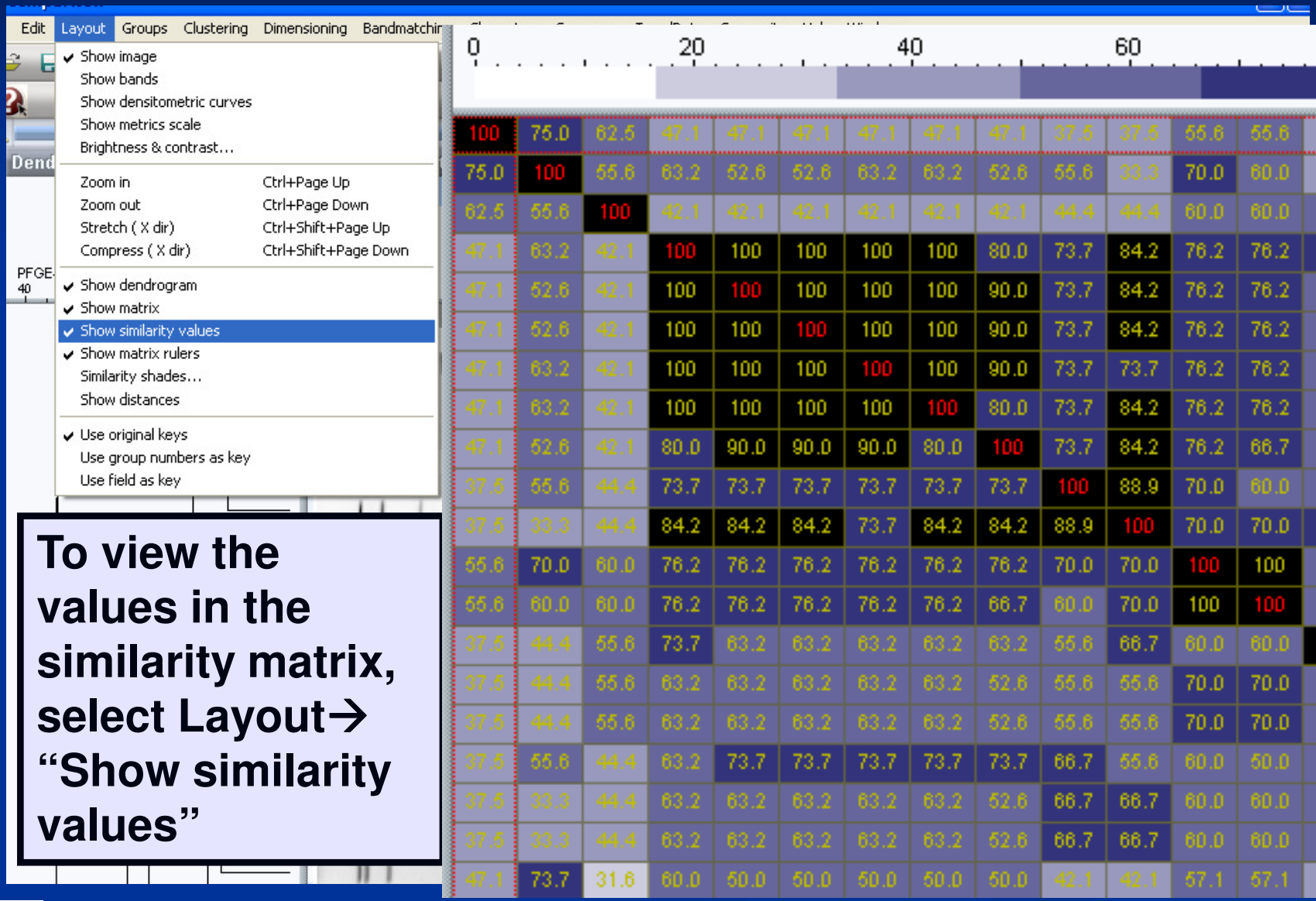
Dendrograms: cluster cutoffs



To quickly view clusters, select Clustering→ "Calculate cluster cutoff values"

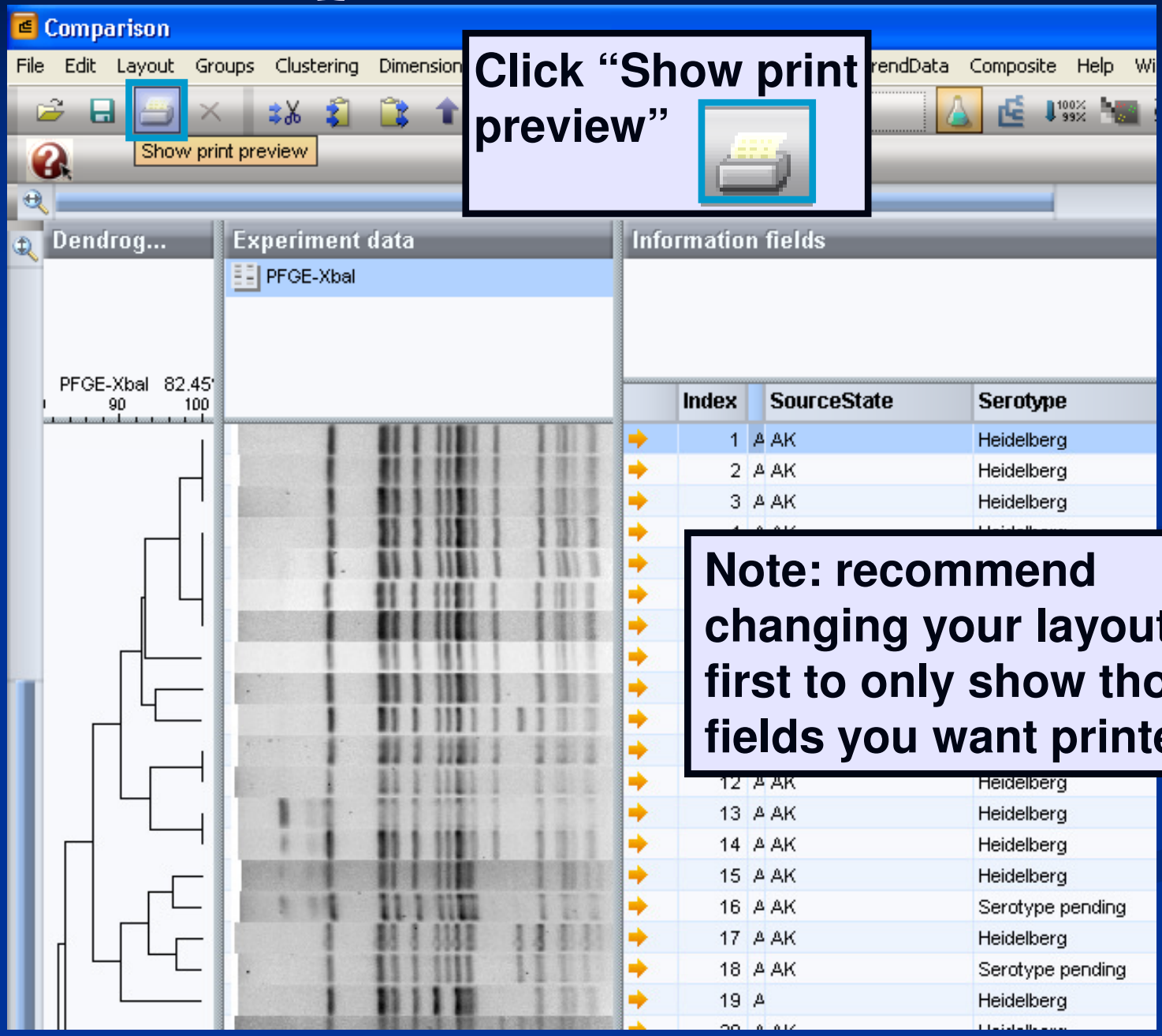
Solid lines indicate clusters and dashed lines link different clusters

Dendrograms: similarity matrix

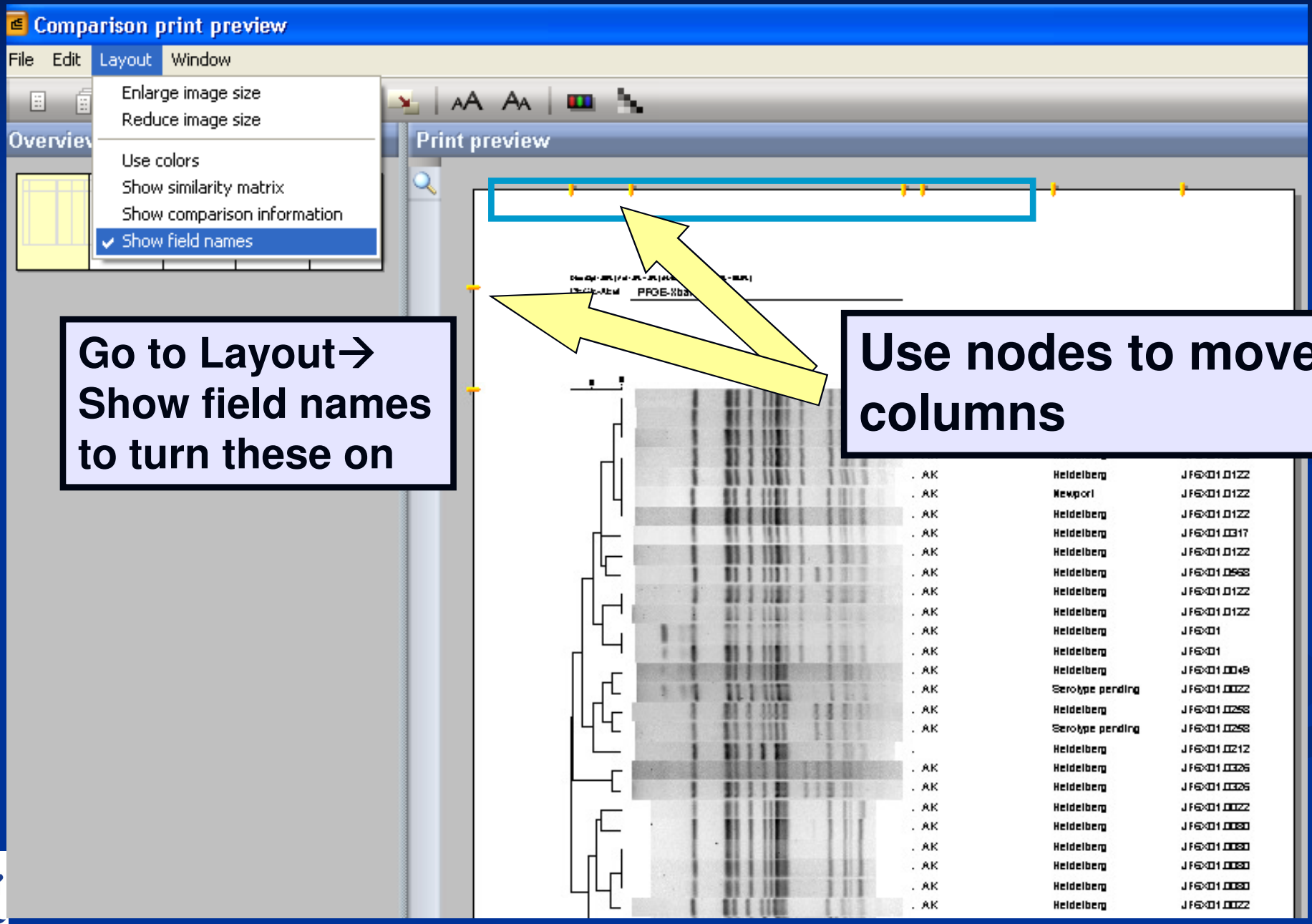


To view the values in the similarity matrix, select Layout→ "Show similarity values"

Comparisons: Print



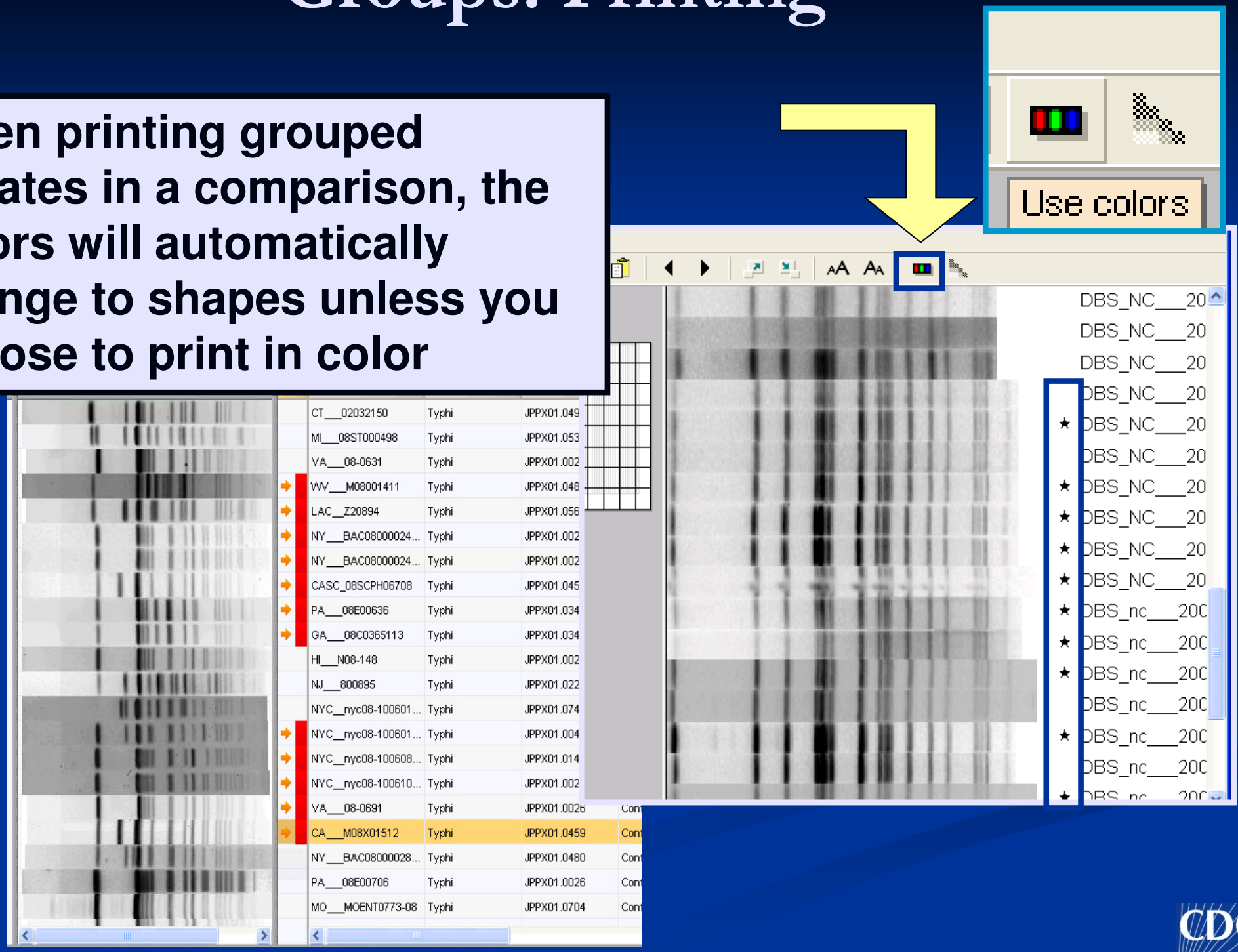
Comparisons: Print



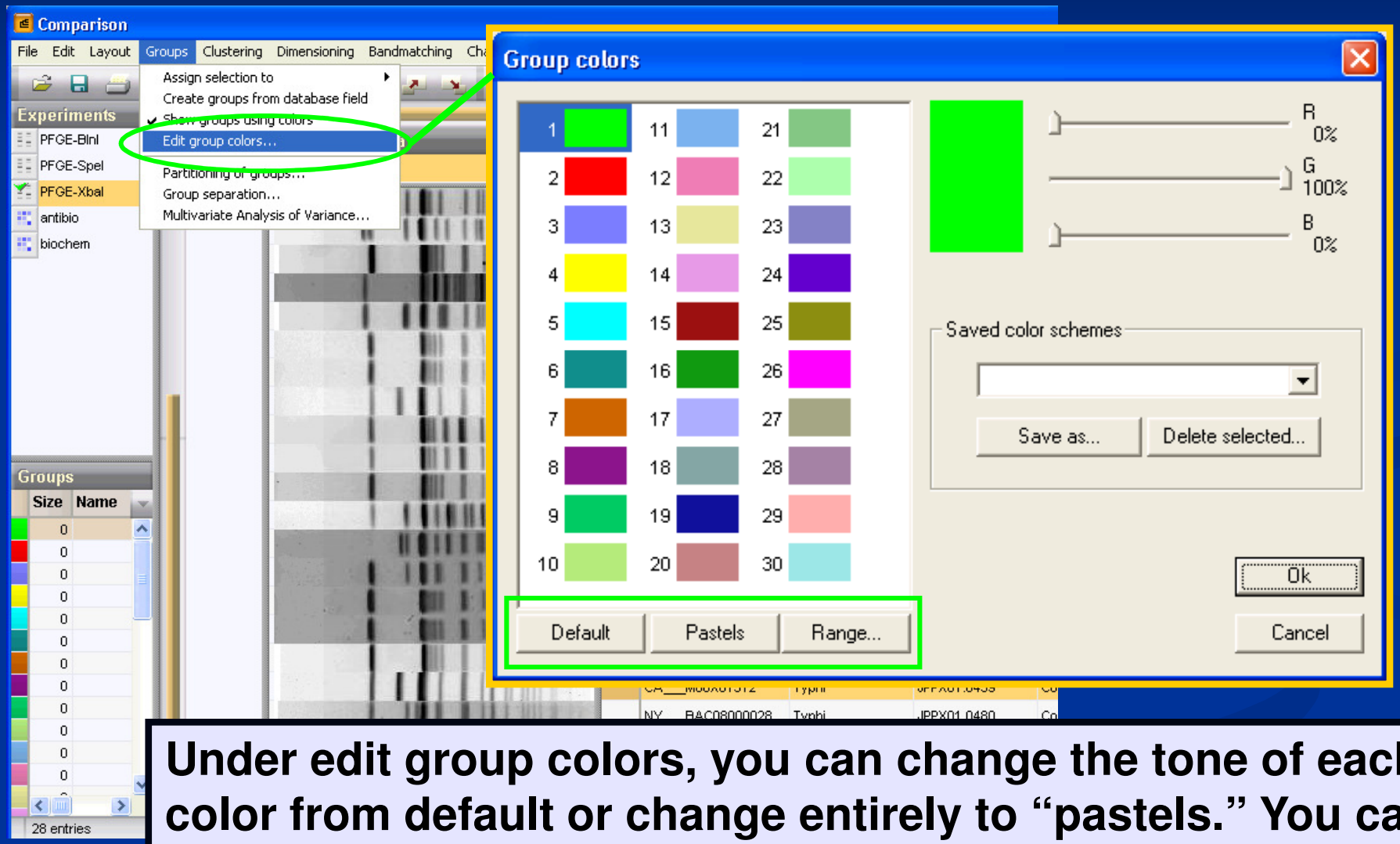
Comparisons: Print

Groups: Printing

When printing grouped isolates in a comparison, the colors will automatically change to shapes unless you choose to print in color

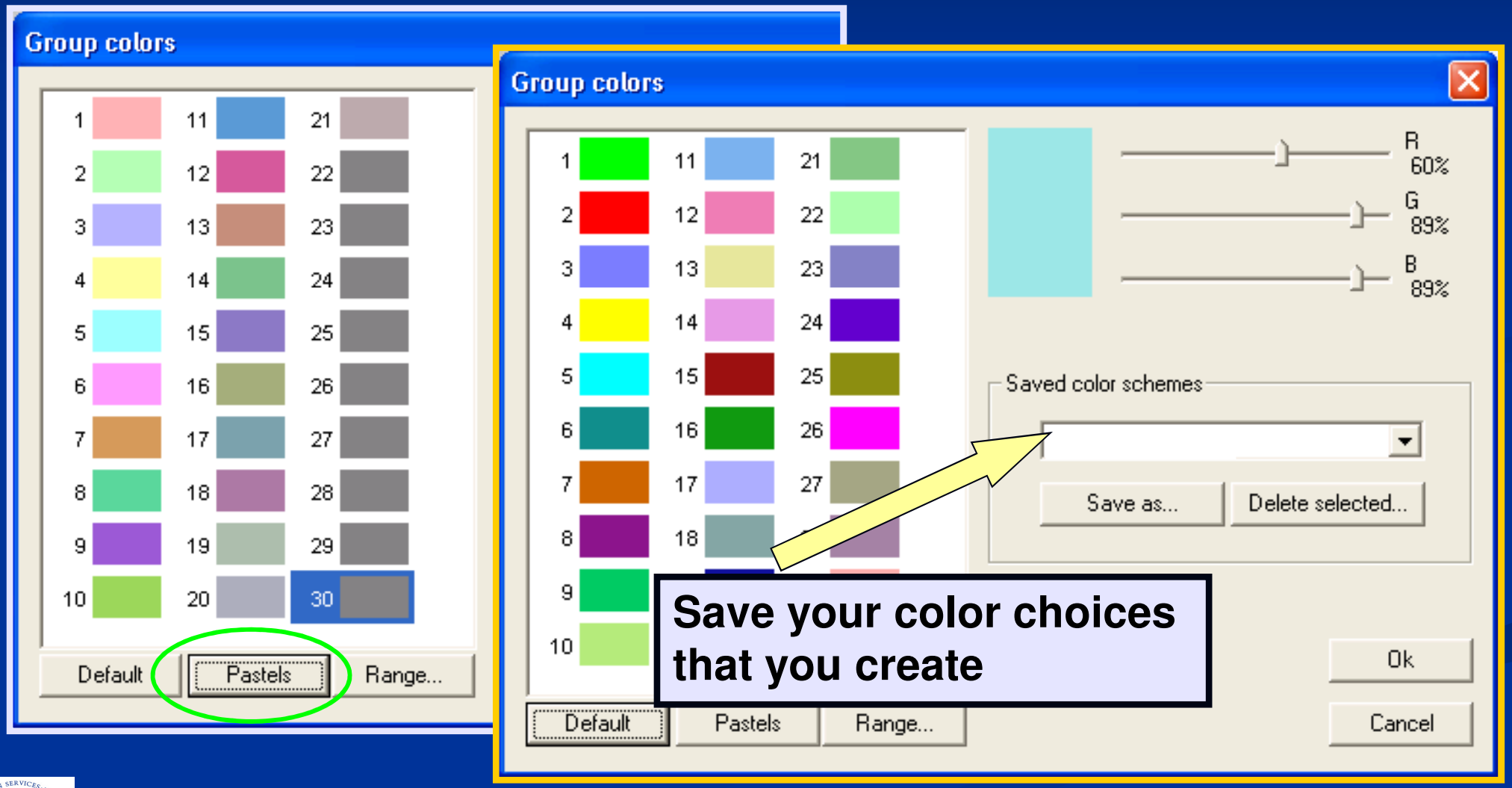


Groups: Customizing Colors

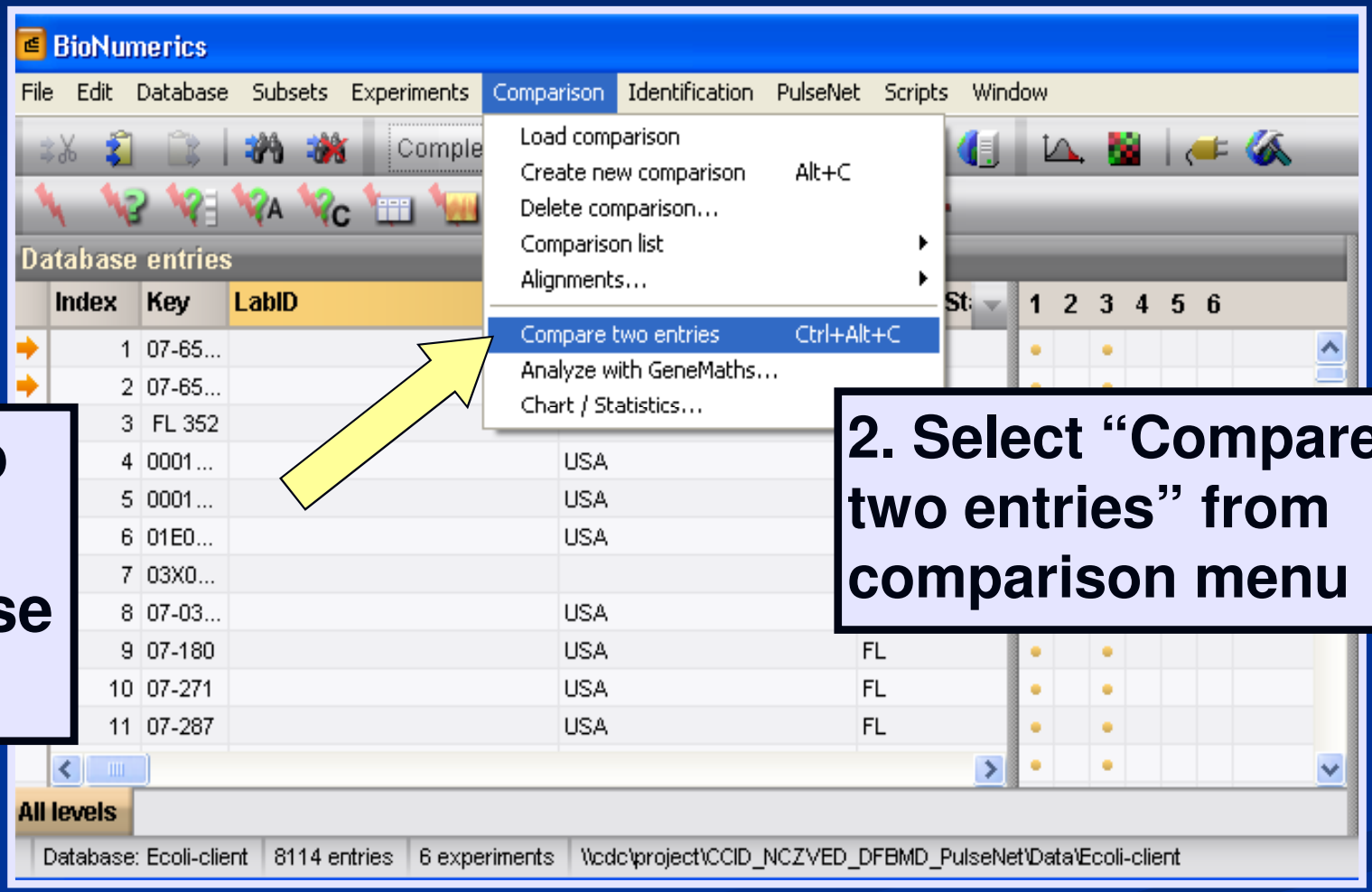


Under edit group colors, you can change the tone of each color from default or change entirely to "pastels." You can also choose to do a color gradient with "range."

Groups: Customizing Colors



Comparisons: Compare Two Entries

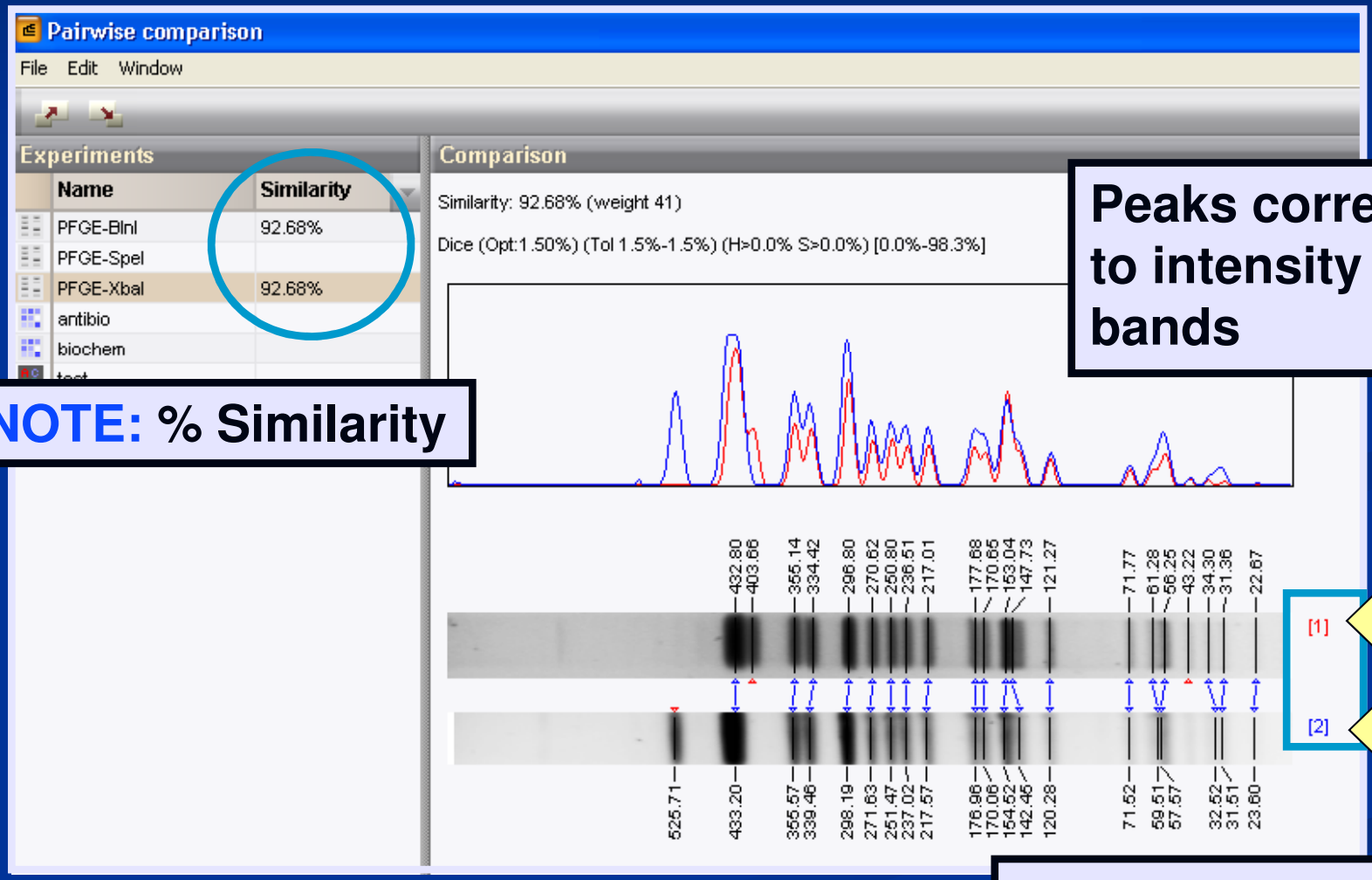


1. Select two isolates in your database to compare

2. Select "Compare two entries" from comparison menu

Comparisons: Compare Two Entries

Also called a Pairwise comparison or 2x2 comparison

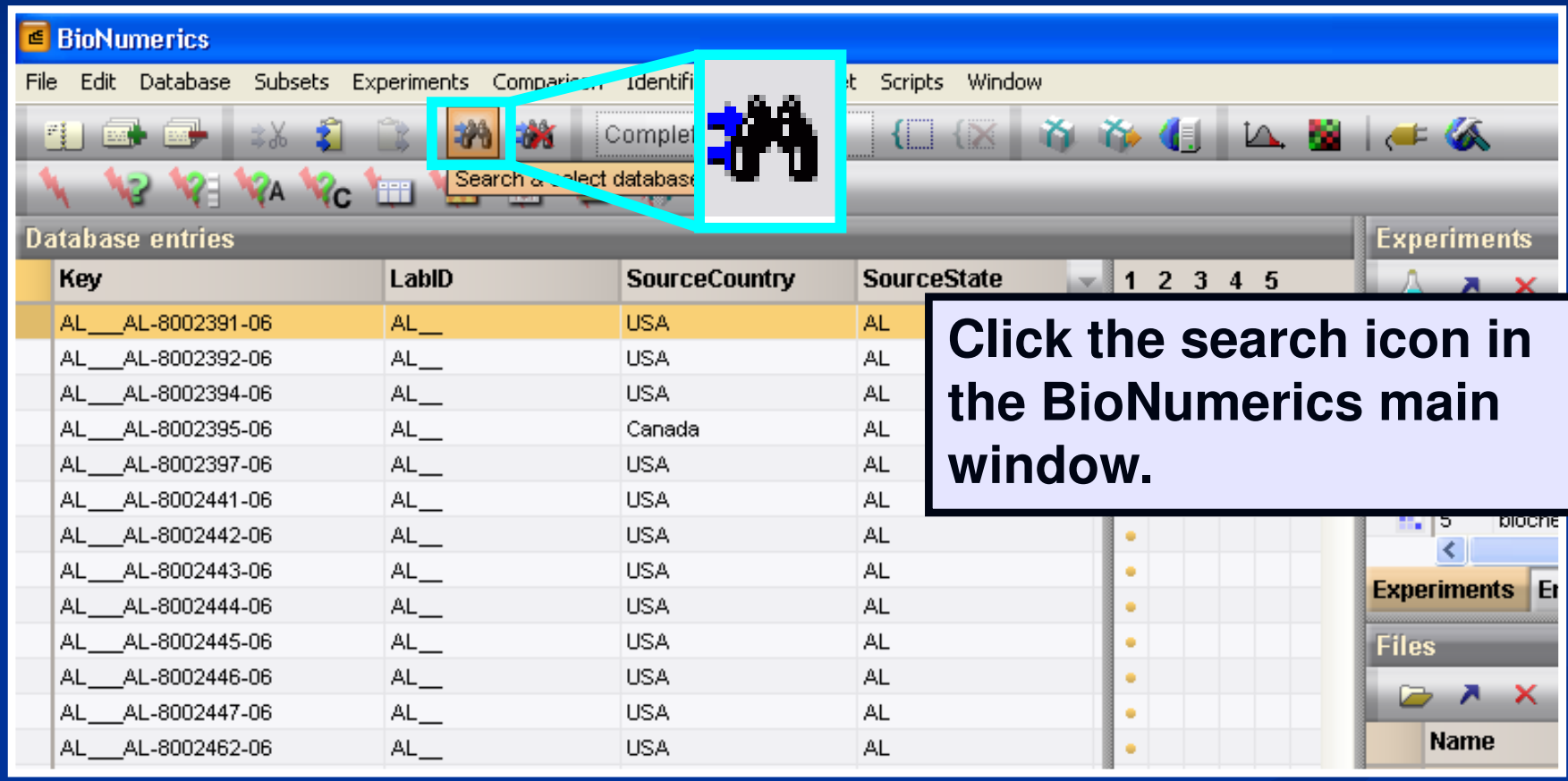


NOTE: % Similarity

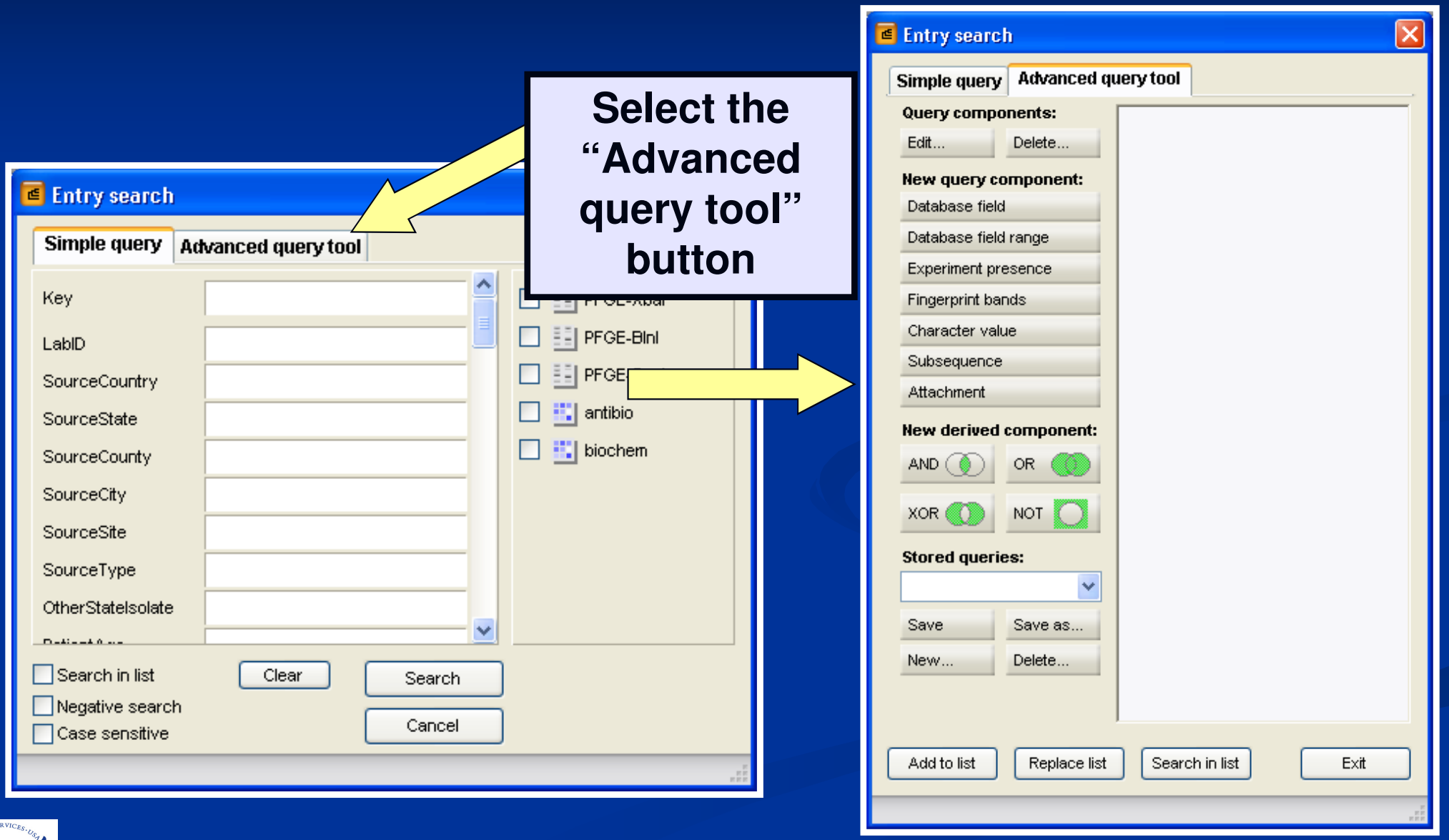
Peaks correspond to intensity of bands

Red for one isolate, blue for the other

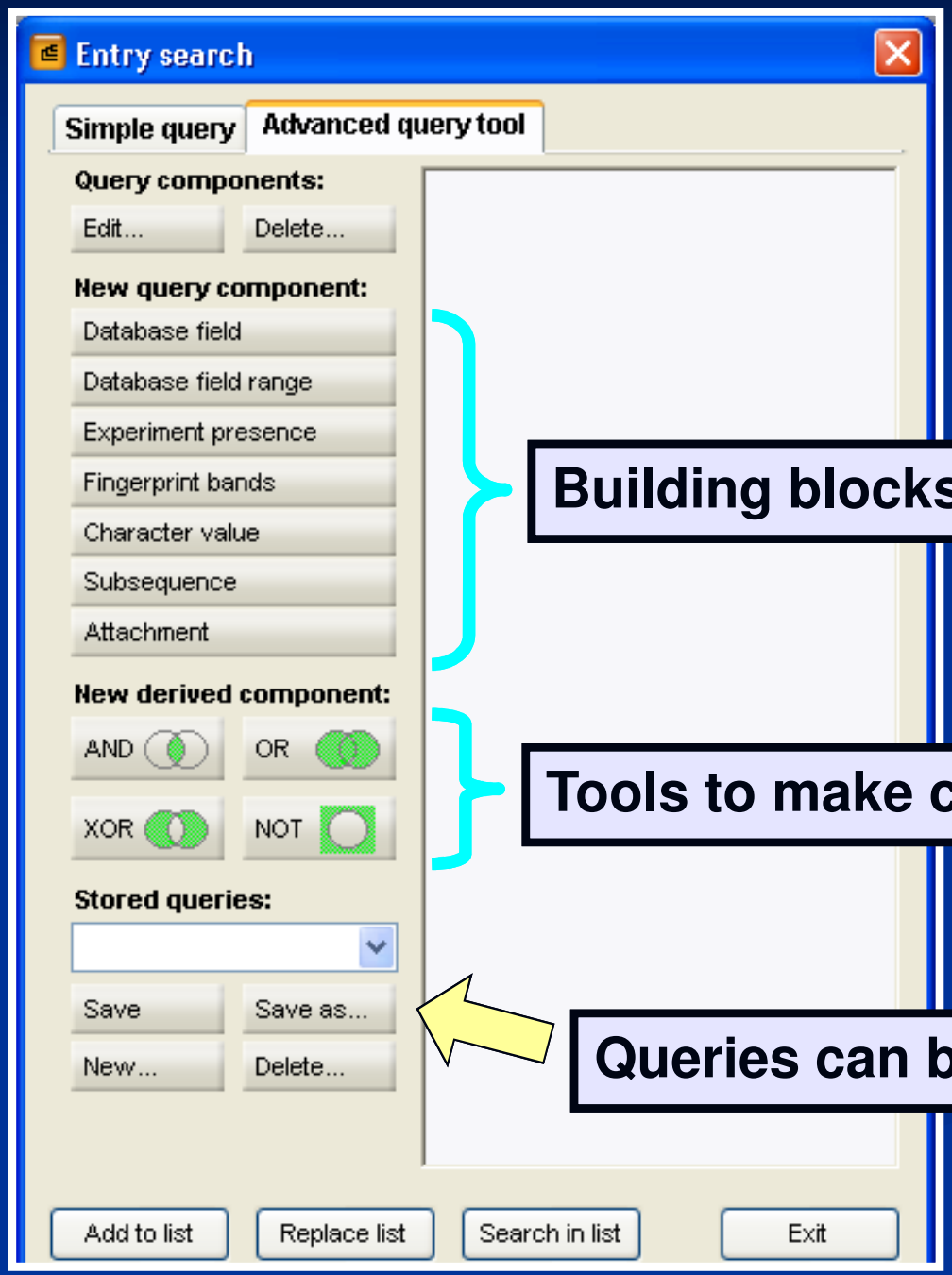
Advanced Queries: Components



Advanced Queries: Components



Advanced Queries: Components

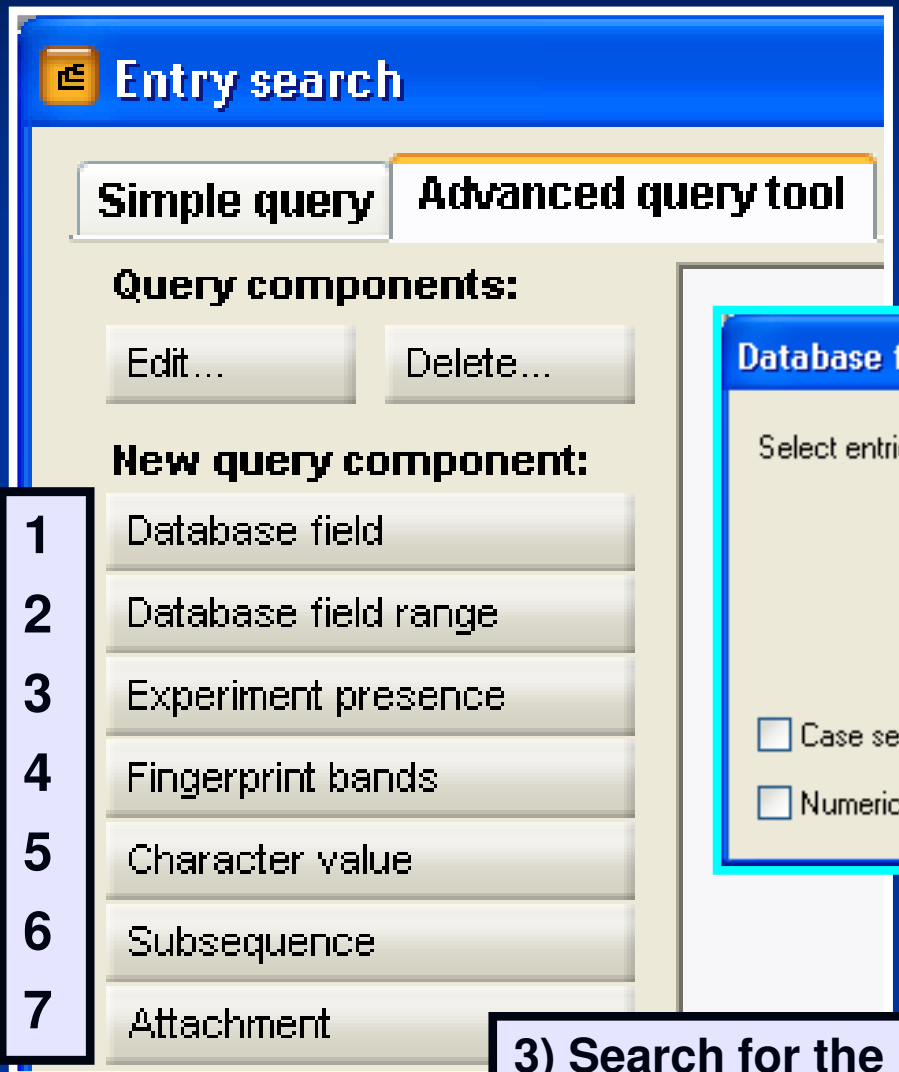


Building blocks of the query

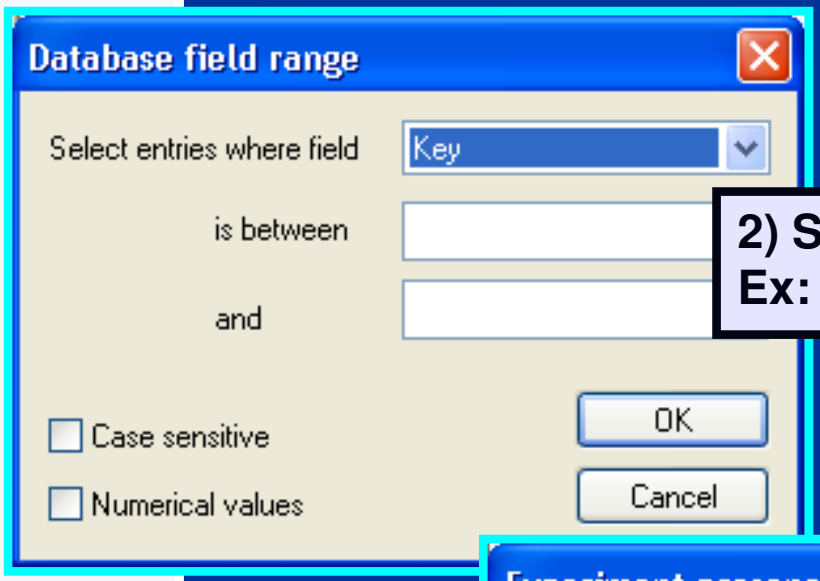
Tools to make composite queries

Queries can be stored/saved/deleted

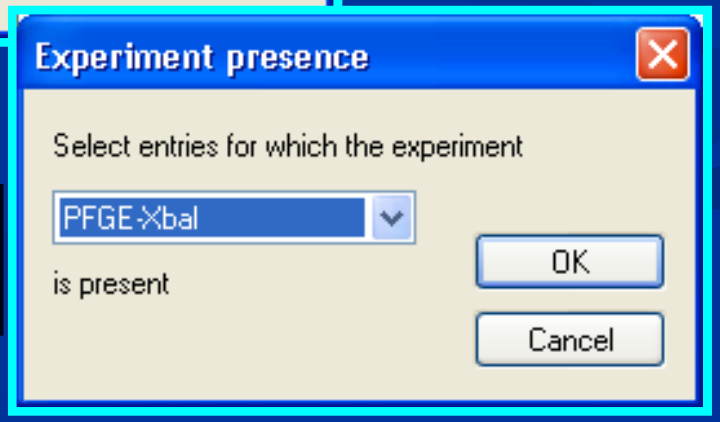
Advanced Queries: Components



1) Search in a specific field or in any field

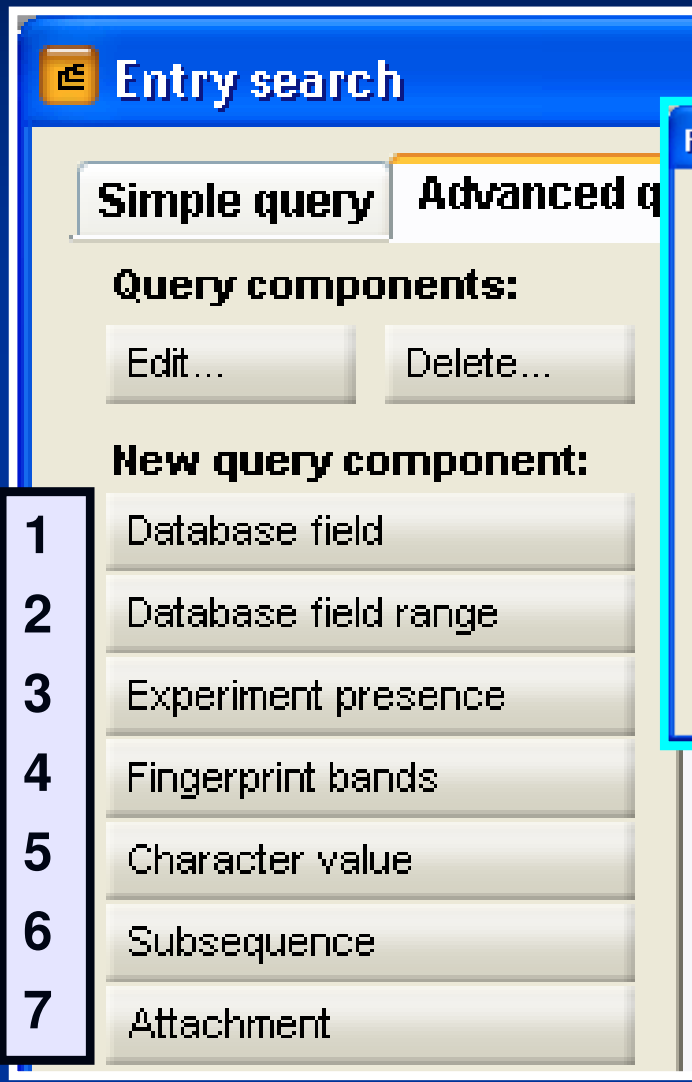


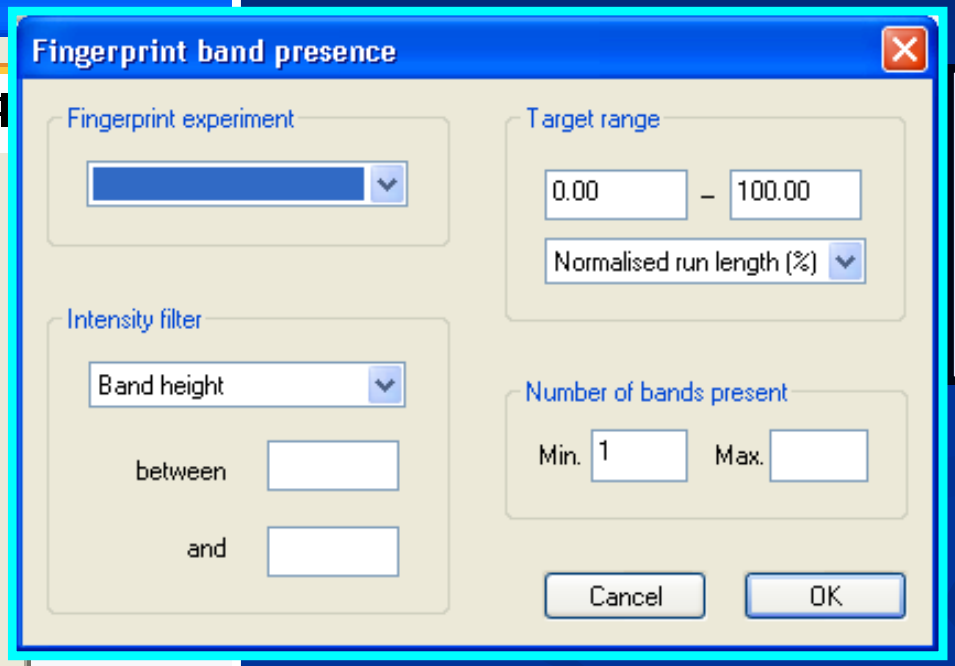
2) Search a range
Ex: date range



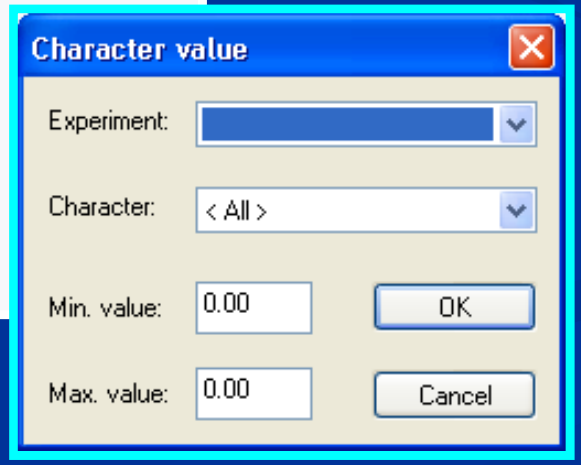
3) Search for the presence of an Experiment type

Advanced Queries: Components



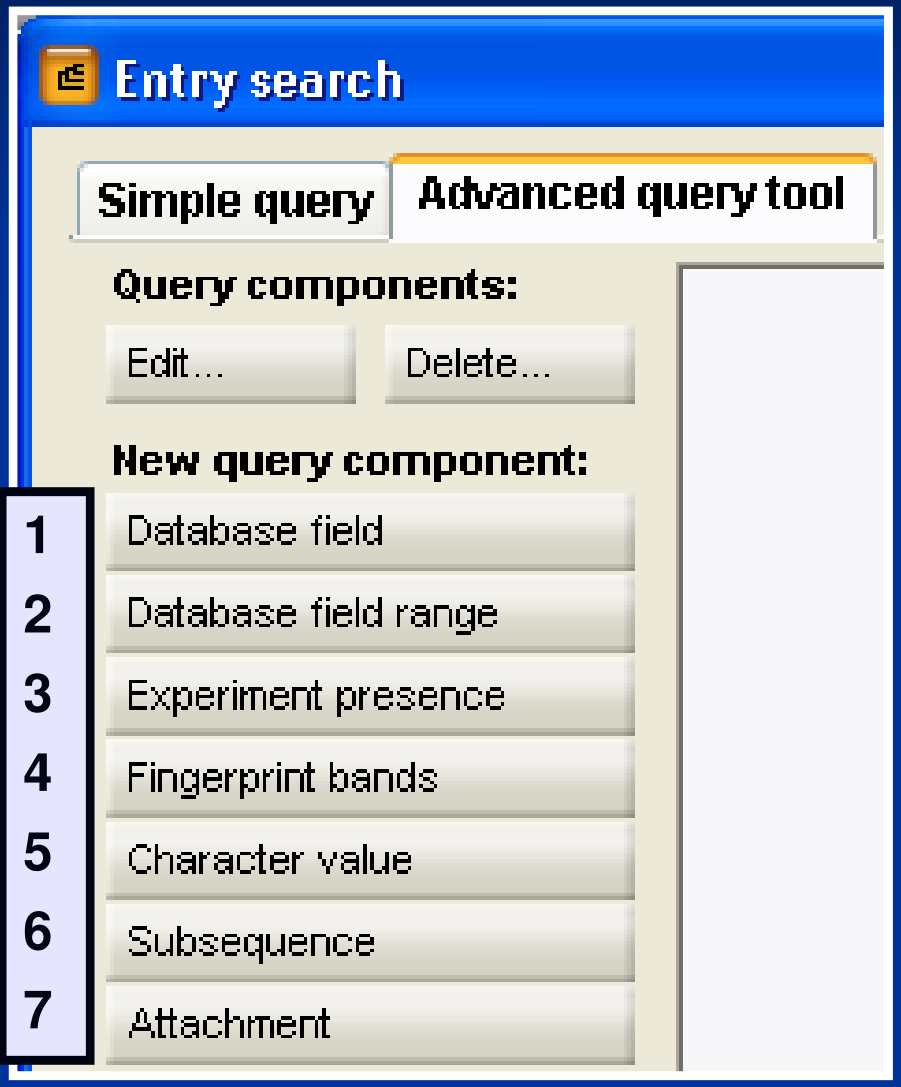


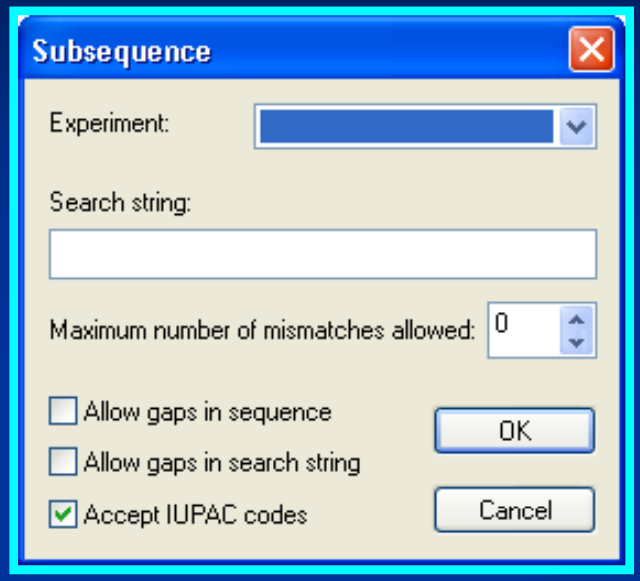
4) Search for presence of bands w/range of molecular weights



5) Search in your character types (i.e. antibio, biochem)

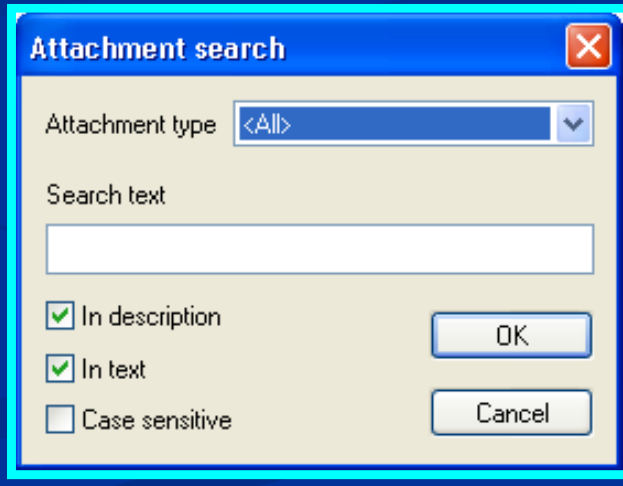
Advanced Queries: Components





6) Search for a specific subsequence in a sequence type experiment (if you have these)

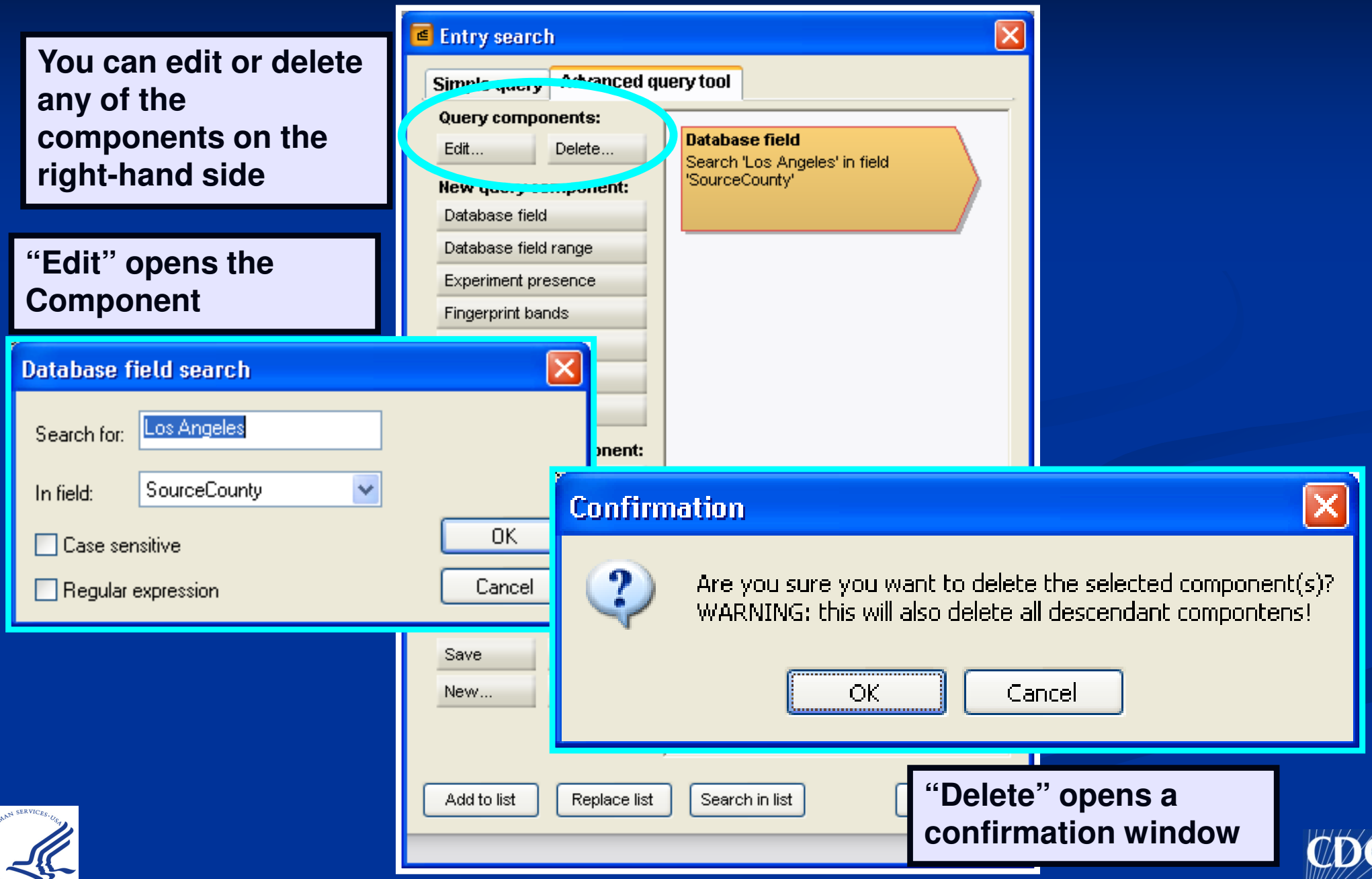
7) Search within attachments that are linked to database entries



Advanced Queries: Editing Components

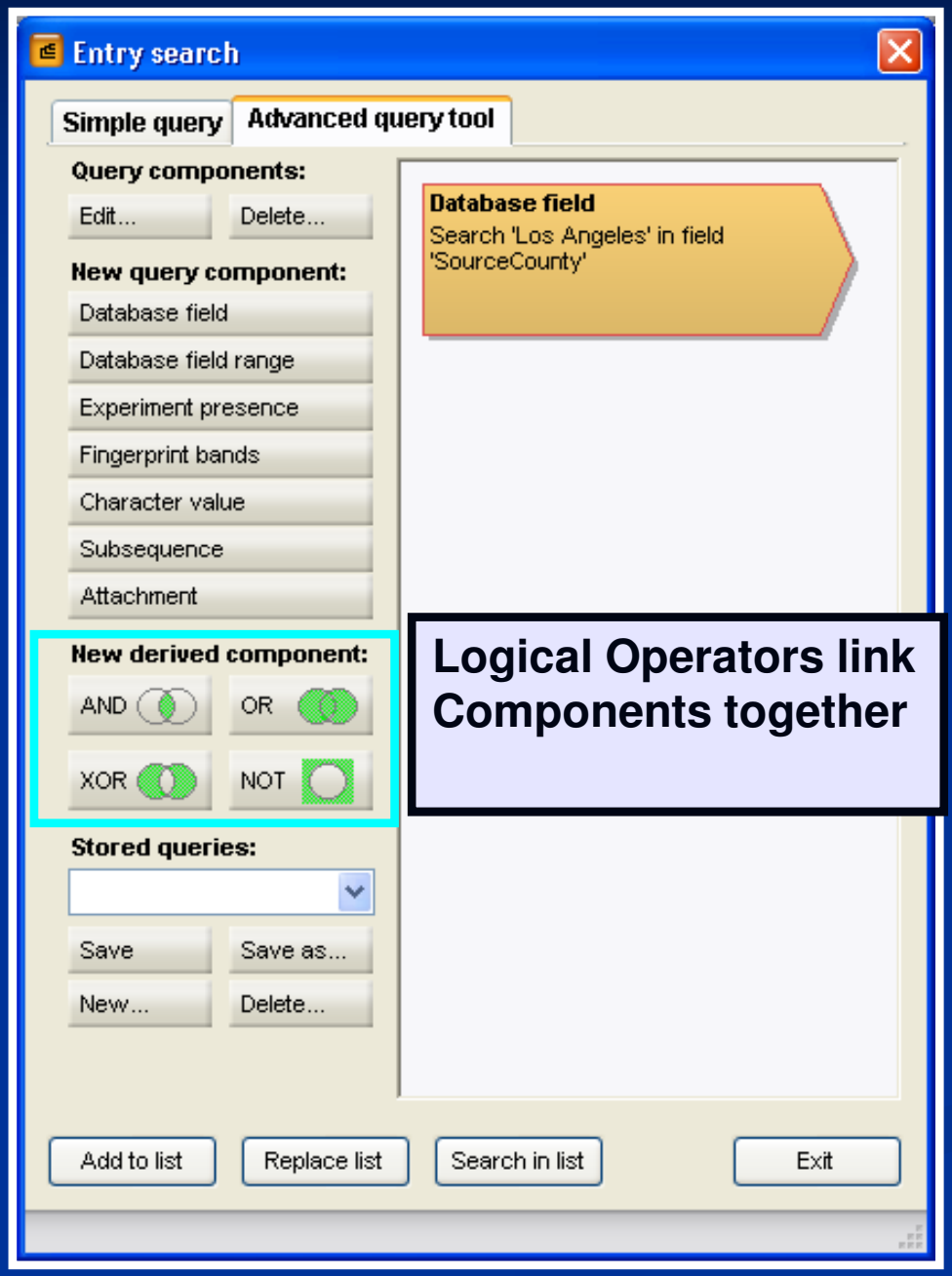
You can edit or delete any of the components on the right-hand side

"Edit" opens the Component

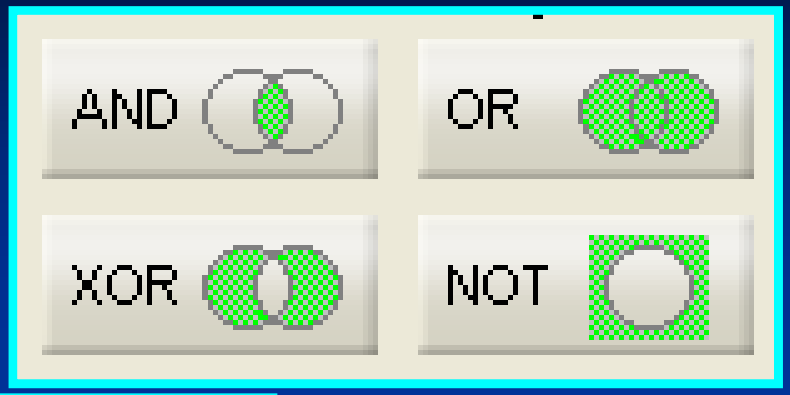


"Delete" opens a confirmation window

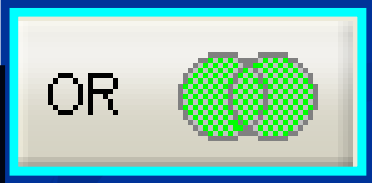
Advanced Queries: Logical Operators



Logical Operators link Components together

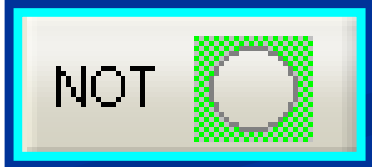


All conditions must be met



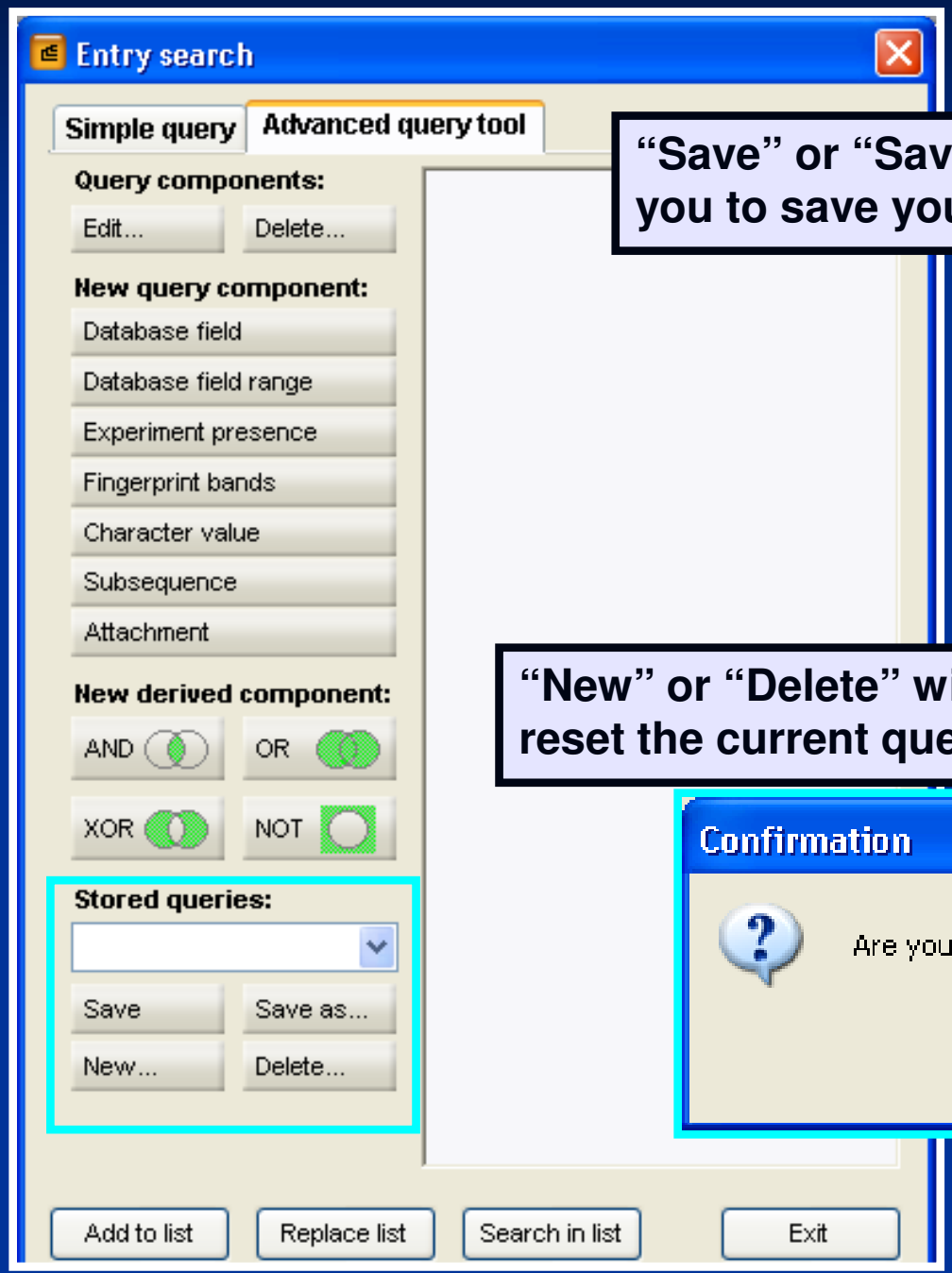
At least 1 component should be fulfilled

Exactly 1 condition from components should be fulfilled

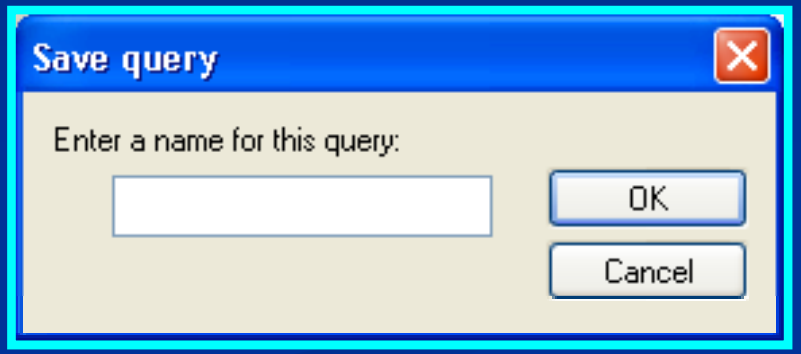


Condition will be inverted for component

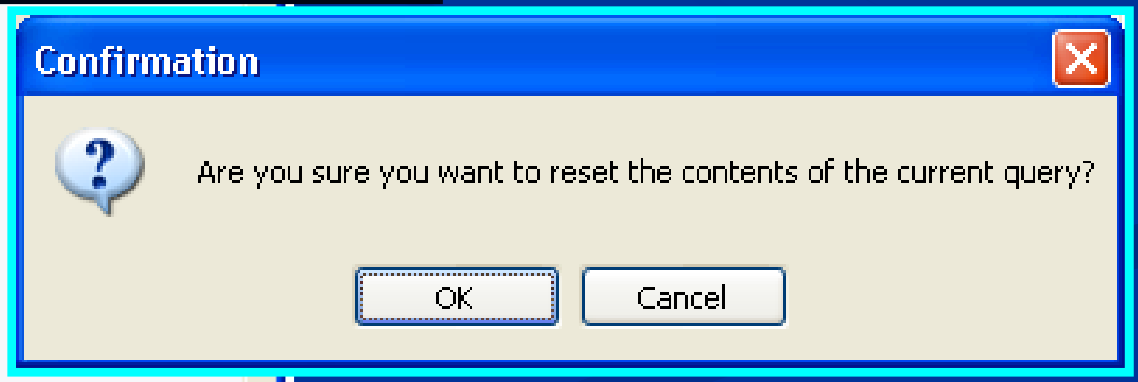
Advanced Queries: Saving



"Save" or "Save as…" allows you to save your query

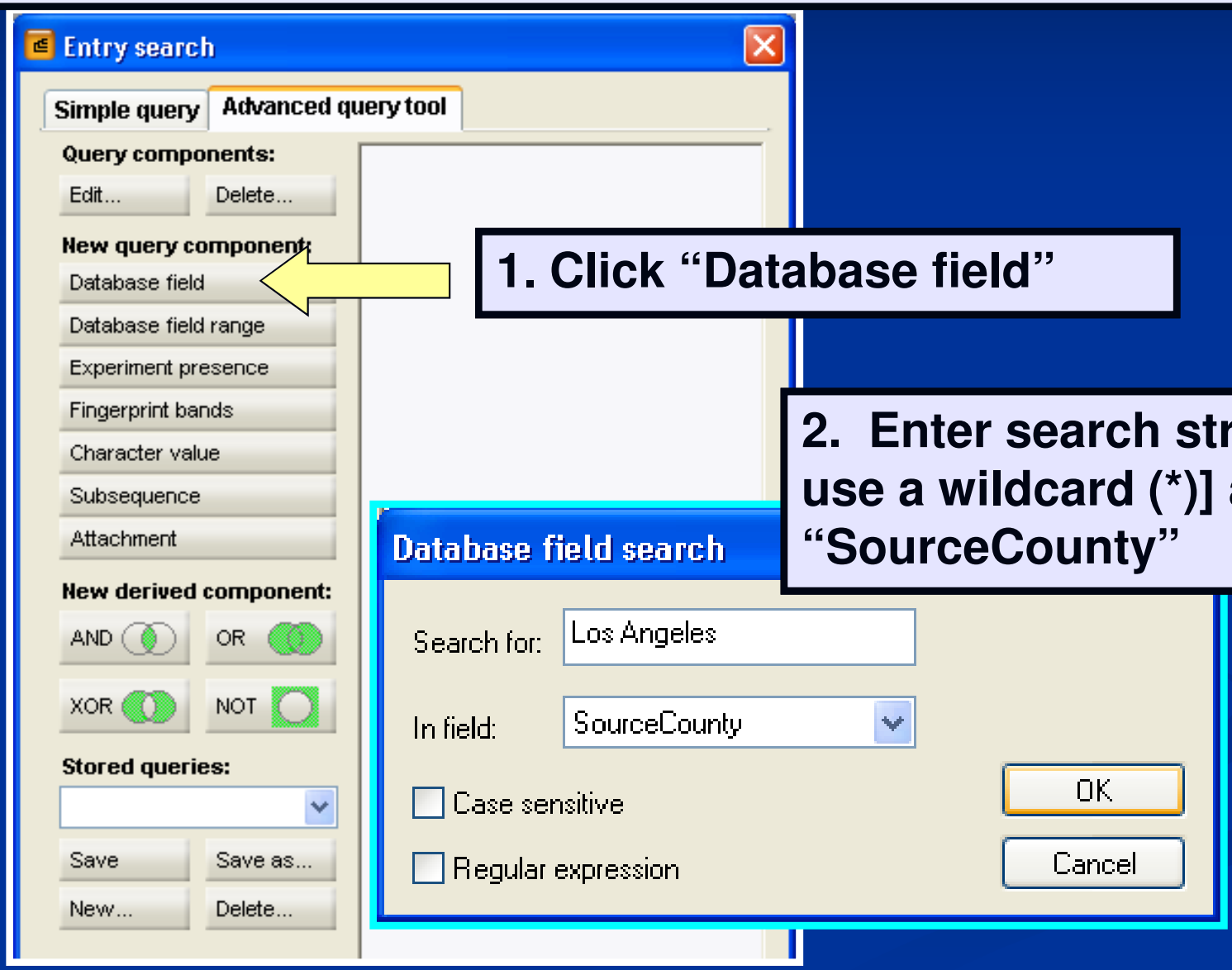


"New" or "Delete" will reset the current query



Advanced Queries
Example 1: County and Date Range

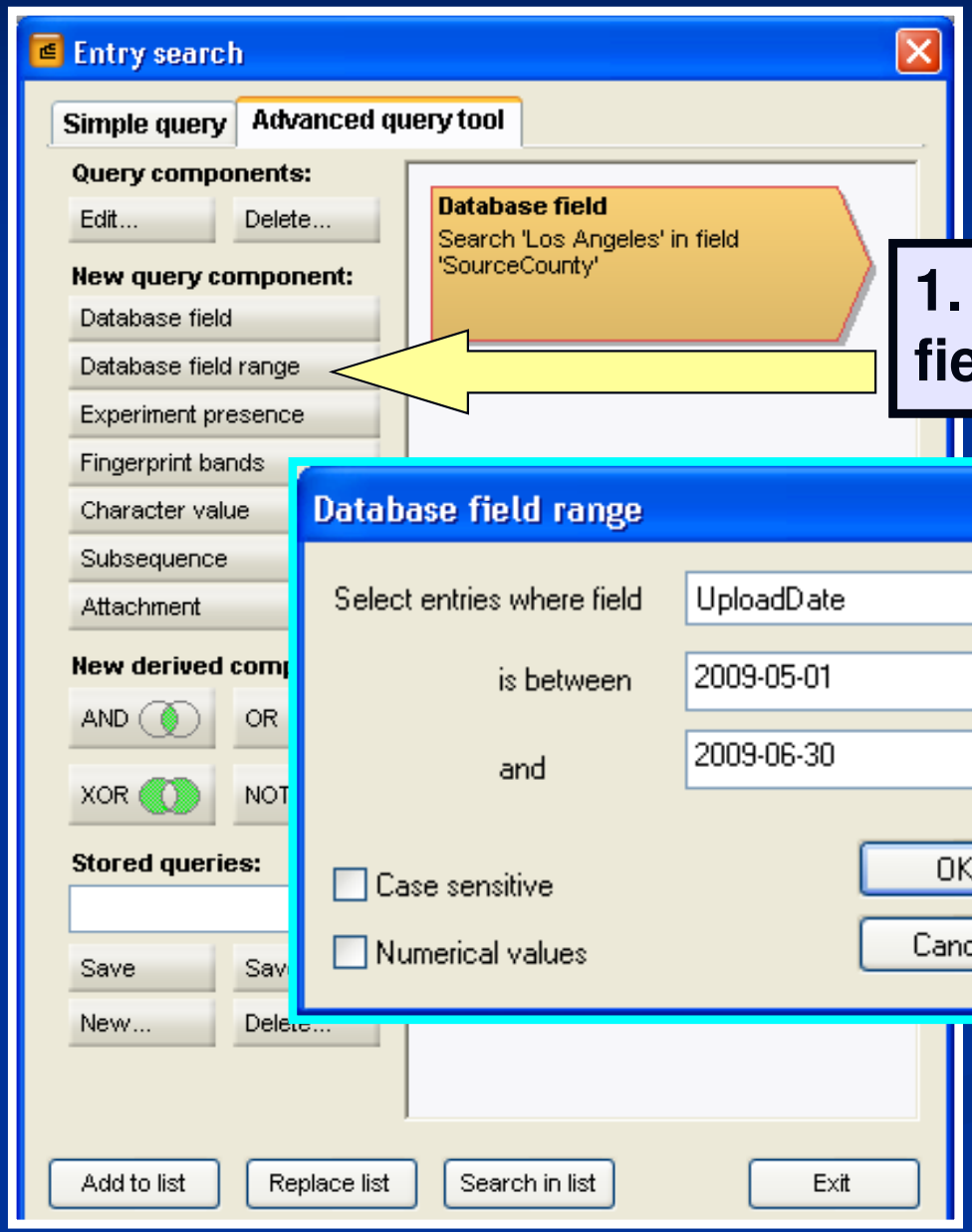
Search for isolates from "Los Angeles" county that were uploaded in May - June 2009

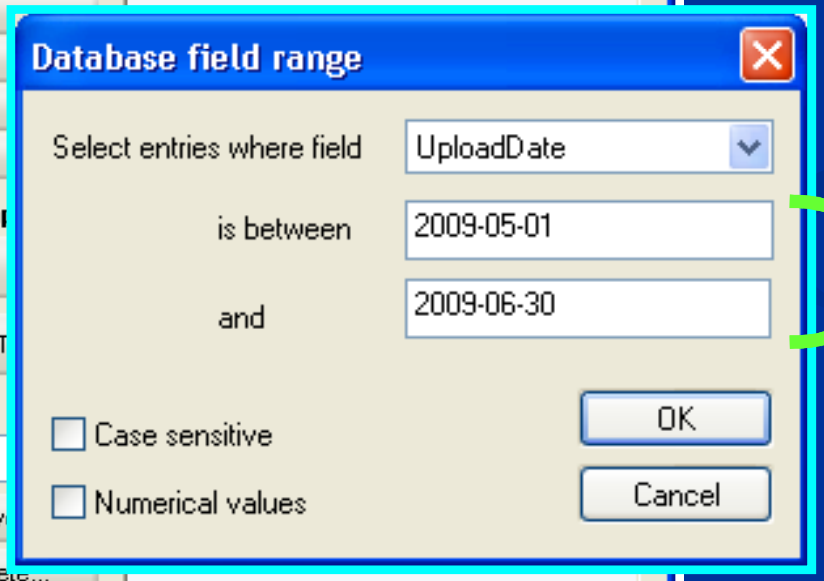


1. Click "Database field"

2. Enter search string [cannot use a wildcard (*)] and select "SourceCounty"

Advanced Queries
Example 1: County and Date Range

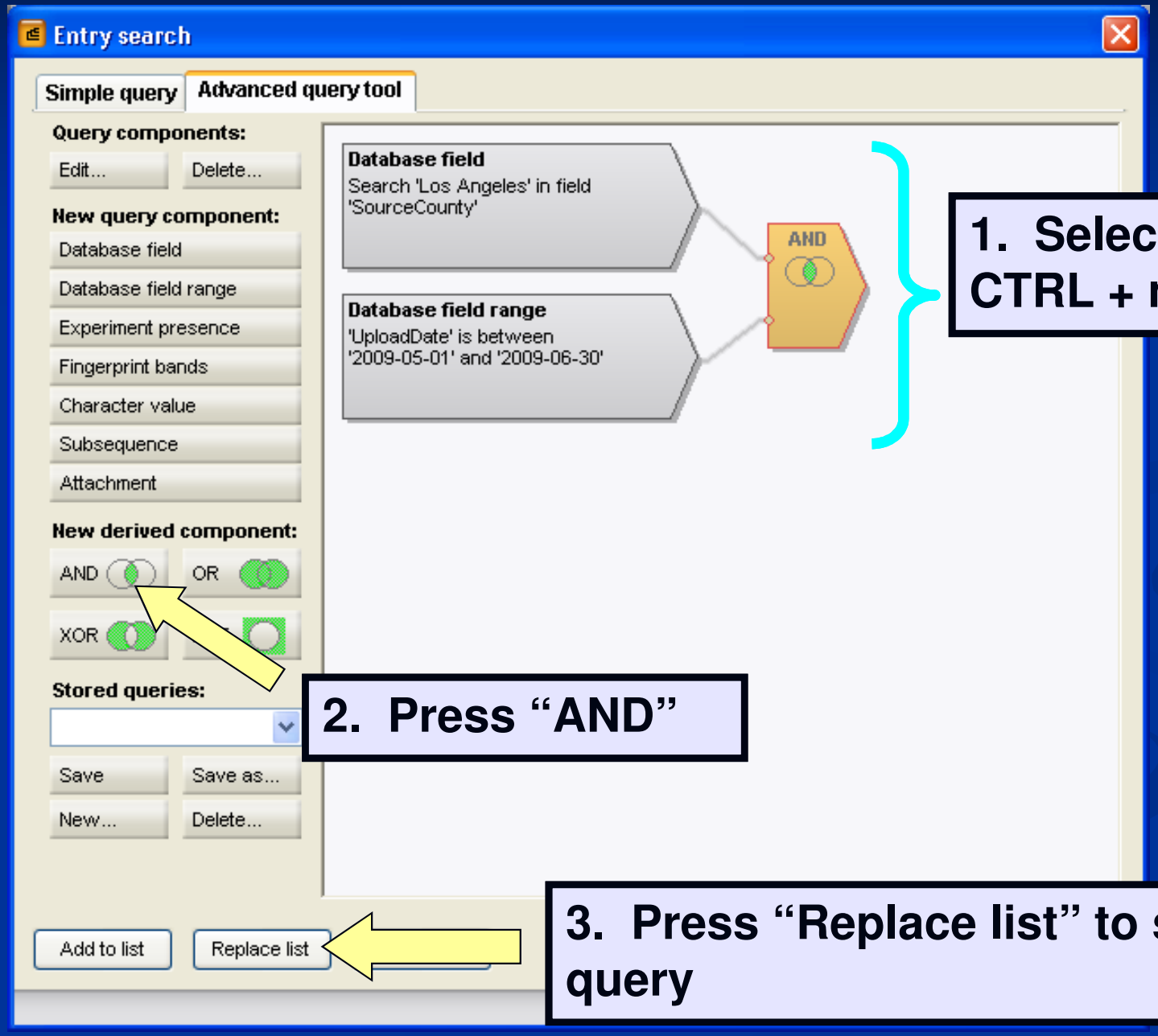




1. Select "Database field range"

2. Select "UploadDate" and fill in date range
NOTE: date format

Advanced Queries
Example 1: County and Date Range



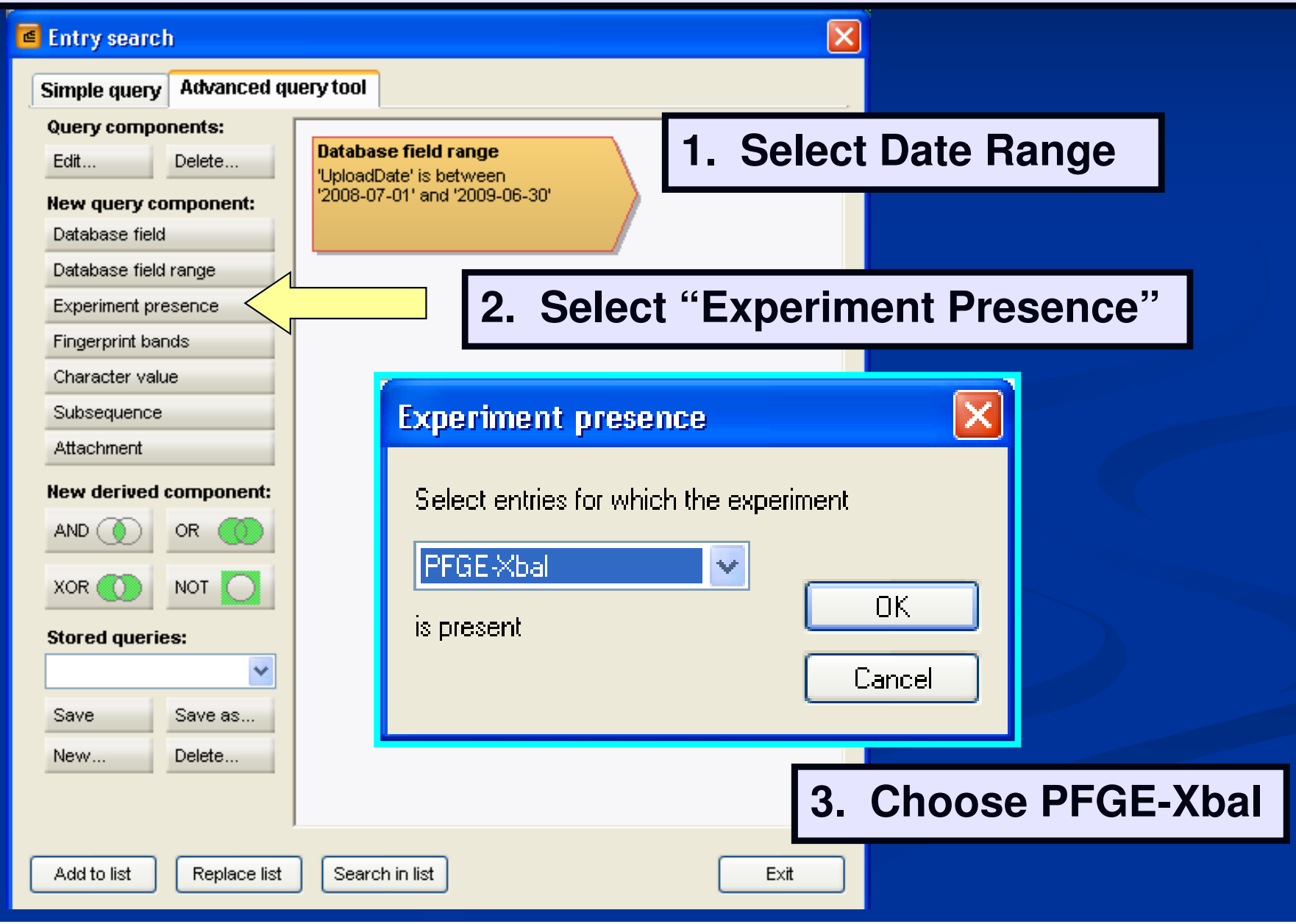
1. Select both using CTRL + mouse click

2. Press "AND"

3. Press "Replace list" to start the query

Advanced Queries
Example 2: Experiment Presence

Need to report all *Xba*l's that were done from July 1, 2008 – June 30, 2009 for ELCs

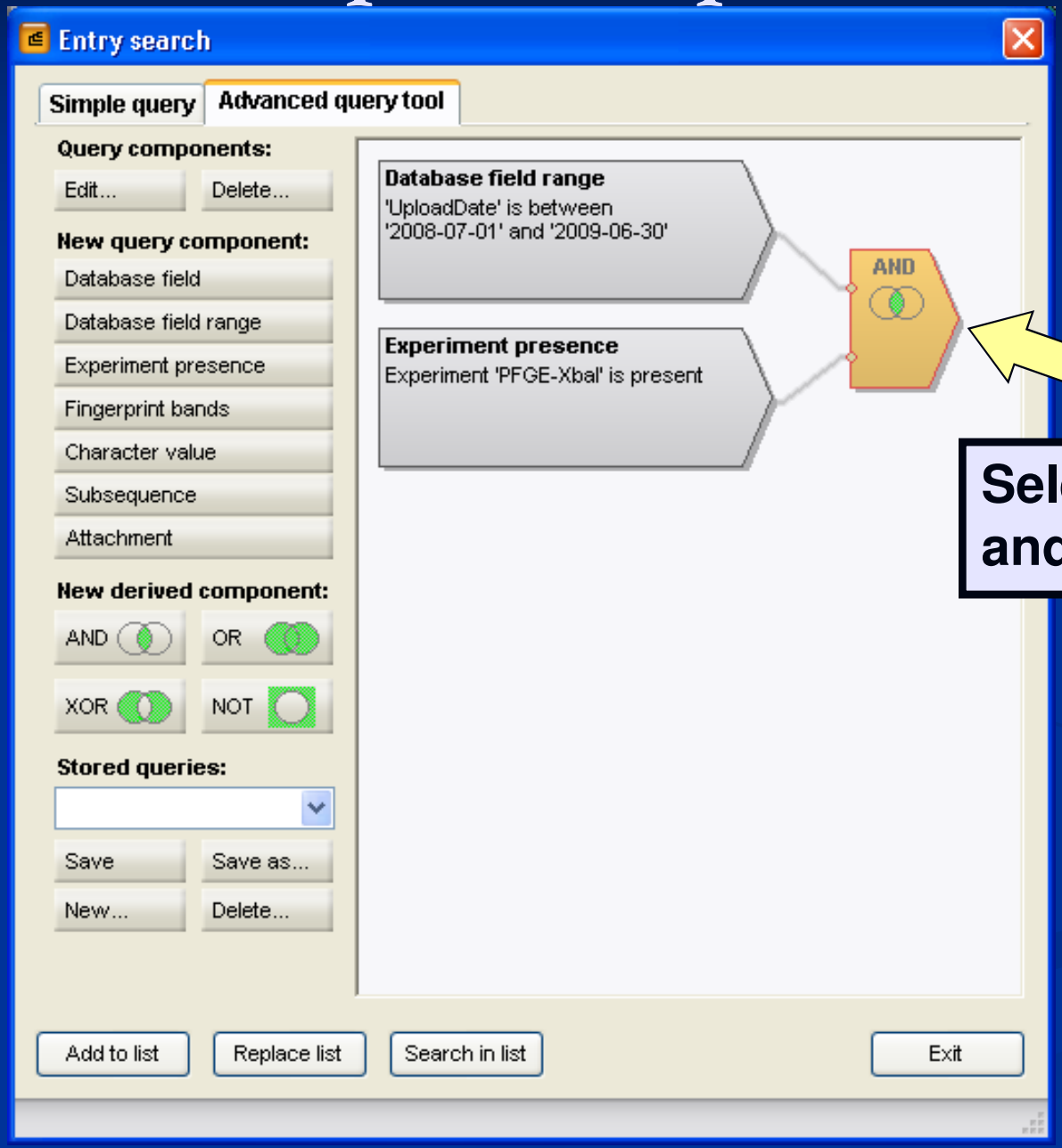


1. Select Date Range

2. Select "Experiment Presence"

3. Choose PFGE-Xbal

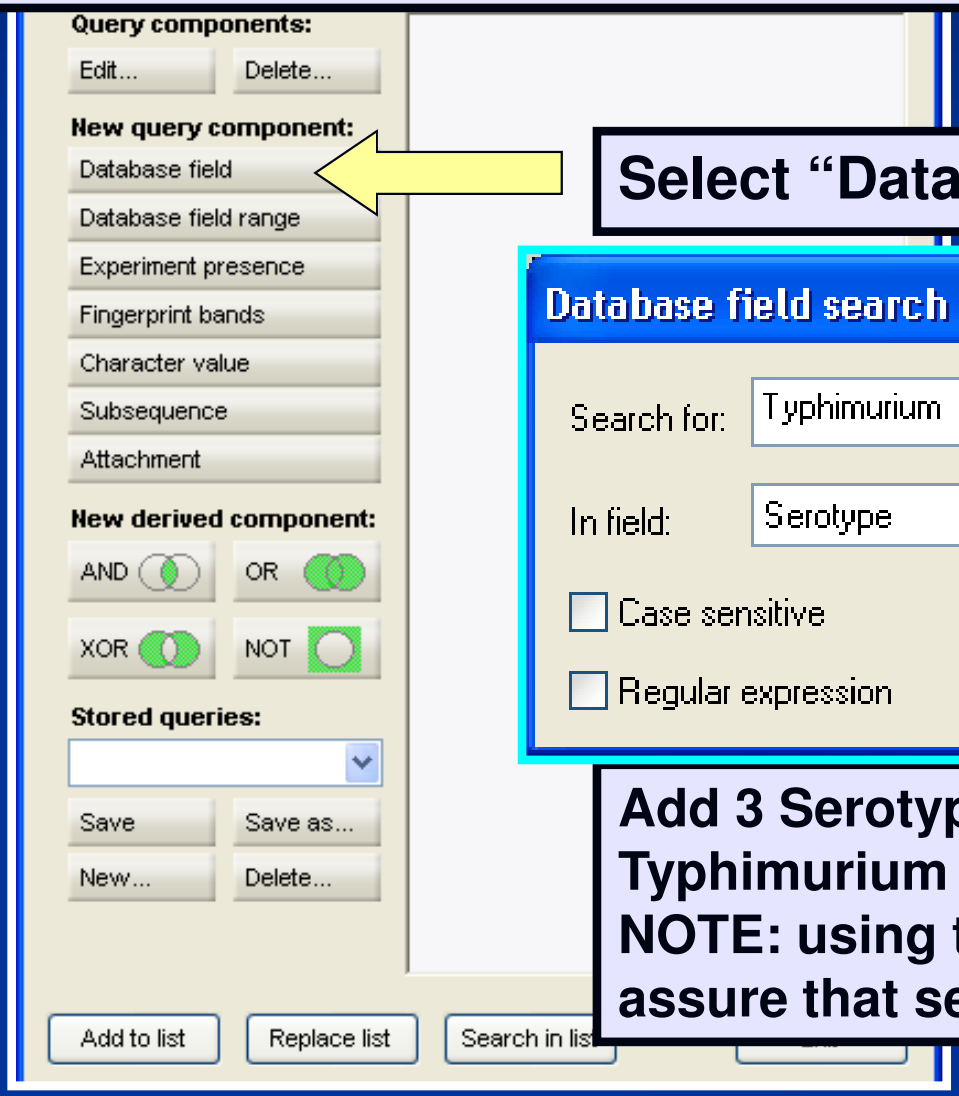
Advanced Queries
Example 2: Experiment Presence



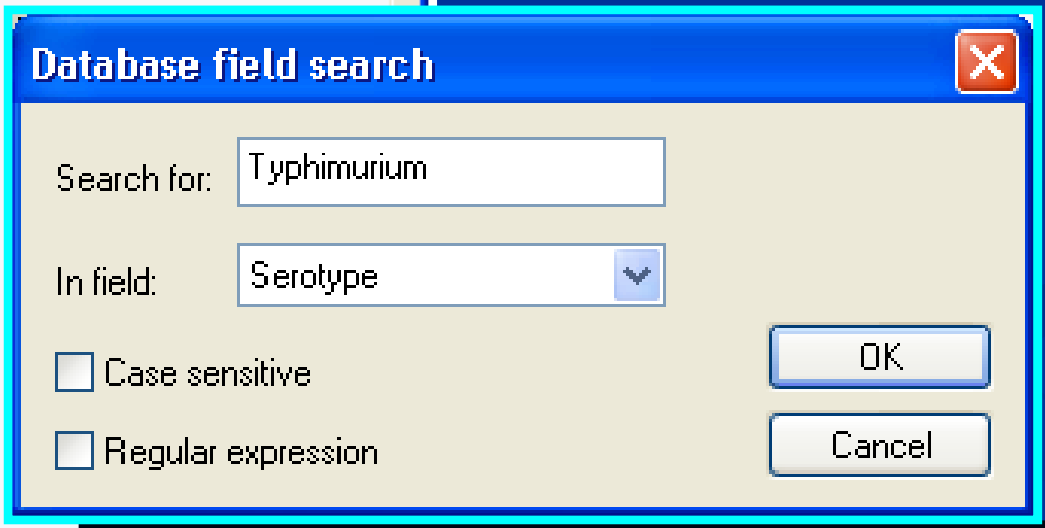
Select both components and choose "AND"

Advanced Queries
Example 3: Multiple Serotypes and Date

Search for all *Salmonella* Typhimurium/var Copenhagen and I 4,[5],12:i:- isolates uploaded in 2008

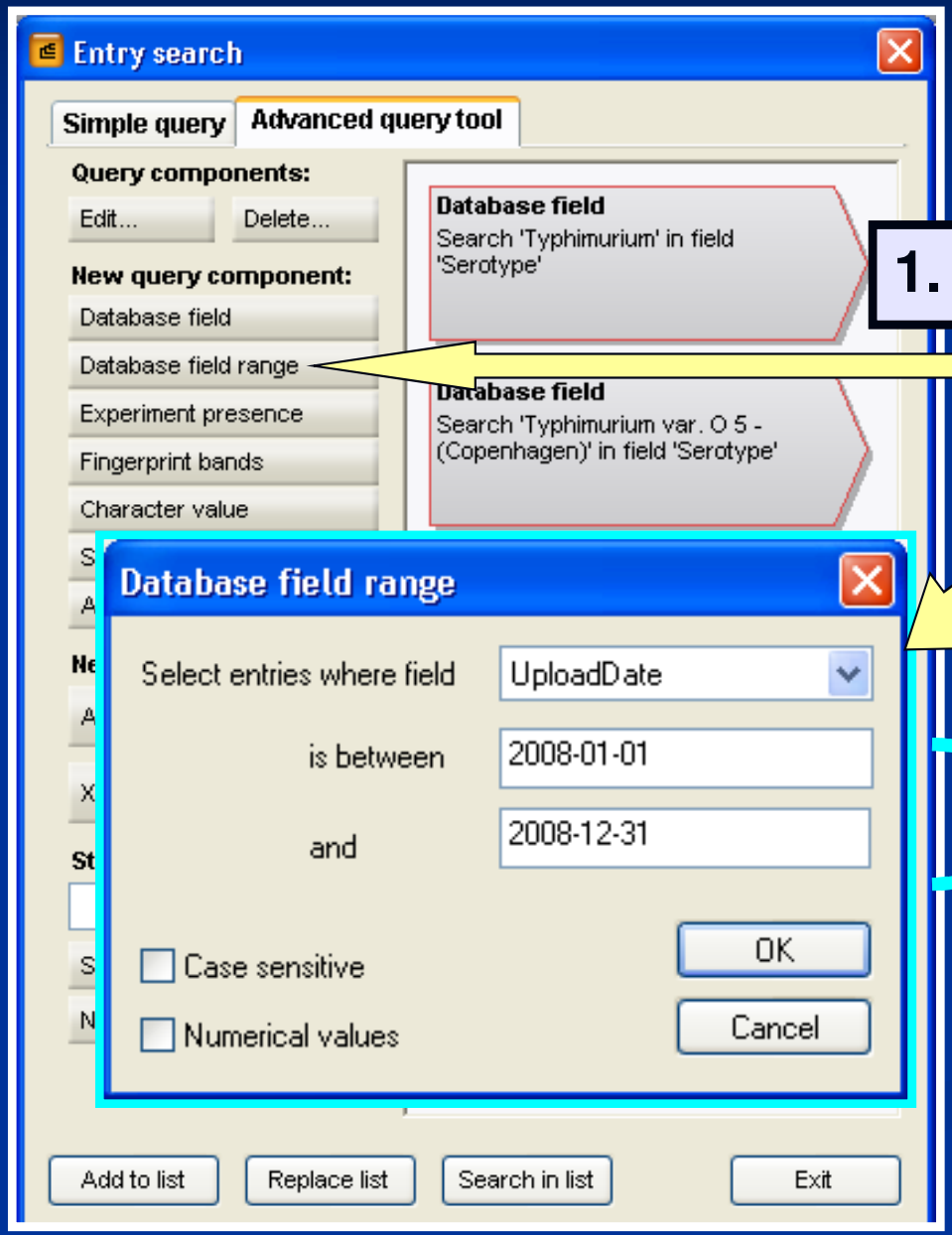


Select "Database field"



Add 3 Serotype components: Typhimurium, Typhimurium var. O 5 - (Copenhagen), I 4,[5],12:i:-
NOTE: using the Entry Properties screen will assure that search results are accurate

Advanced Queries
Example 3: Multiple Serotypes and Date

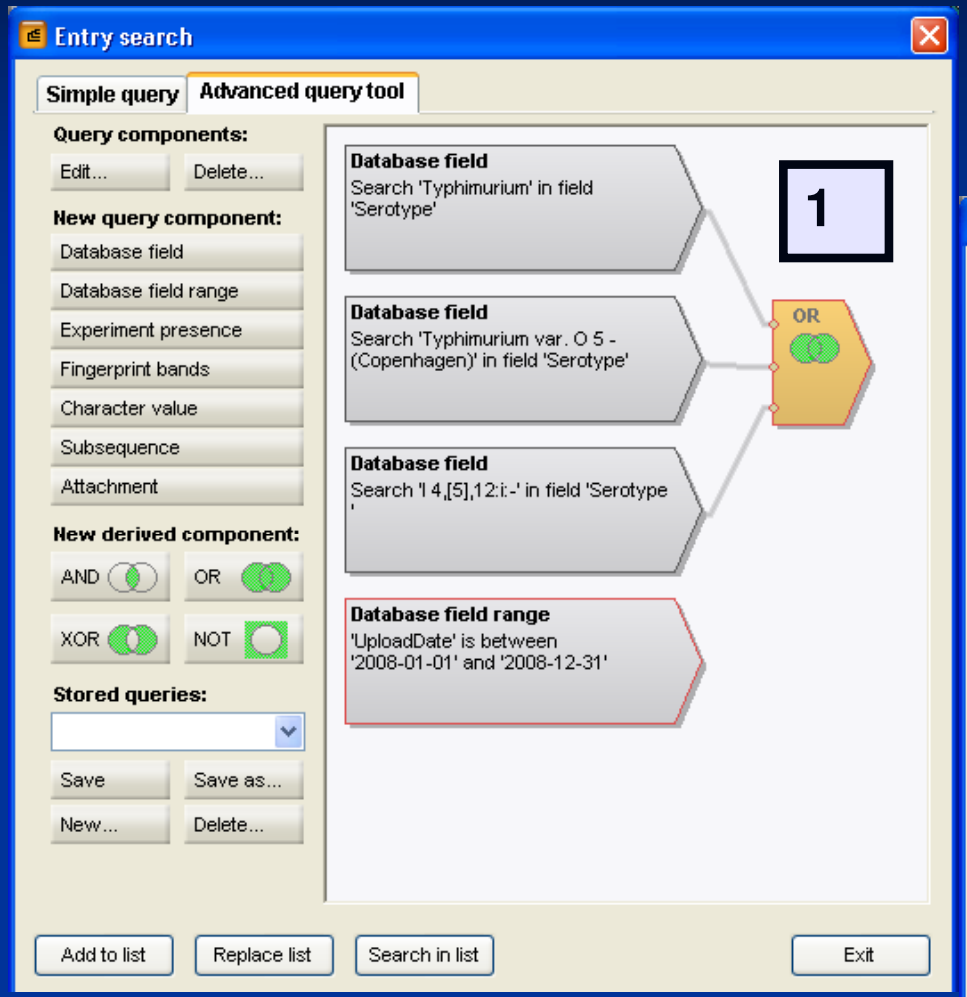


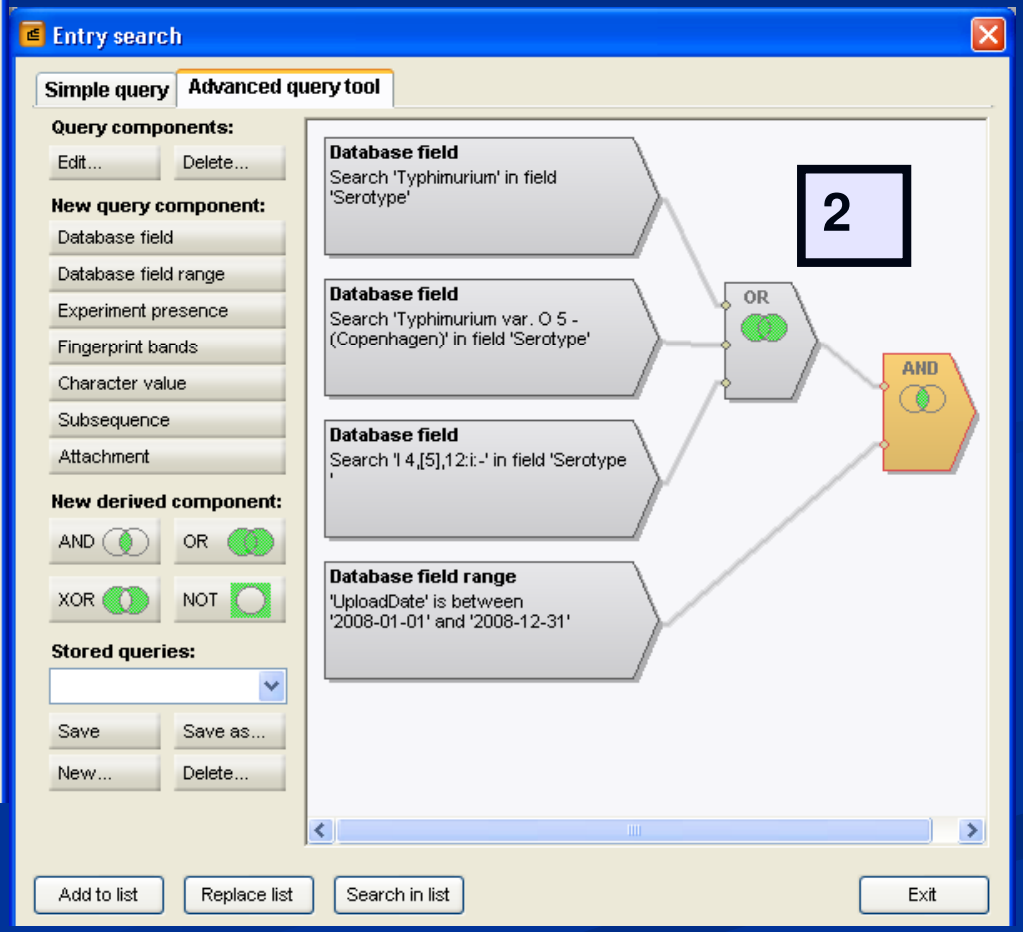
1. Select "Database field range"

2. Select "UploadDate"

3. Fill in the range

Advanced Queries
Example 3: Multiple Serotypes and Date

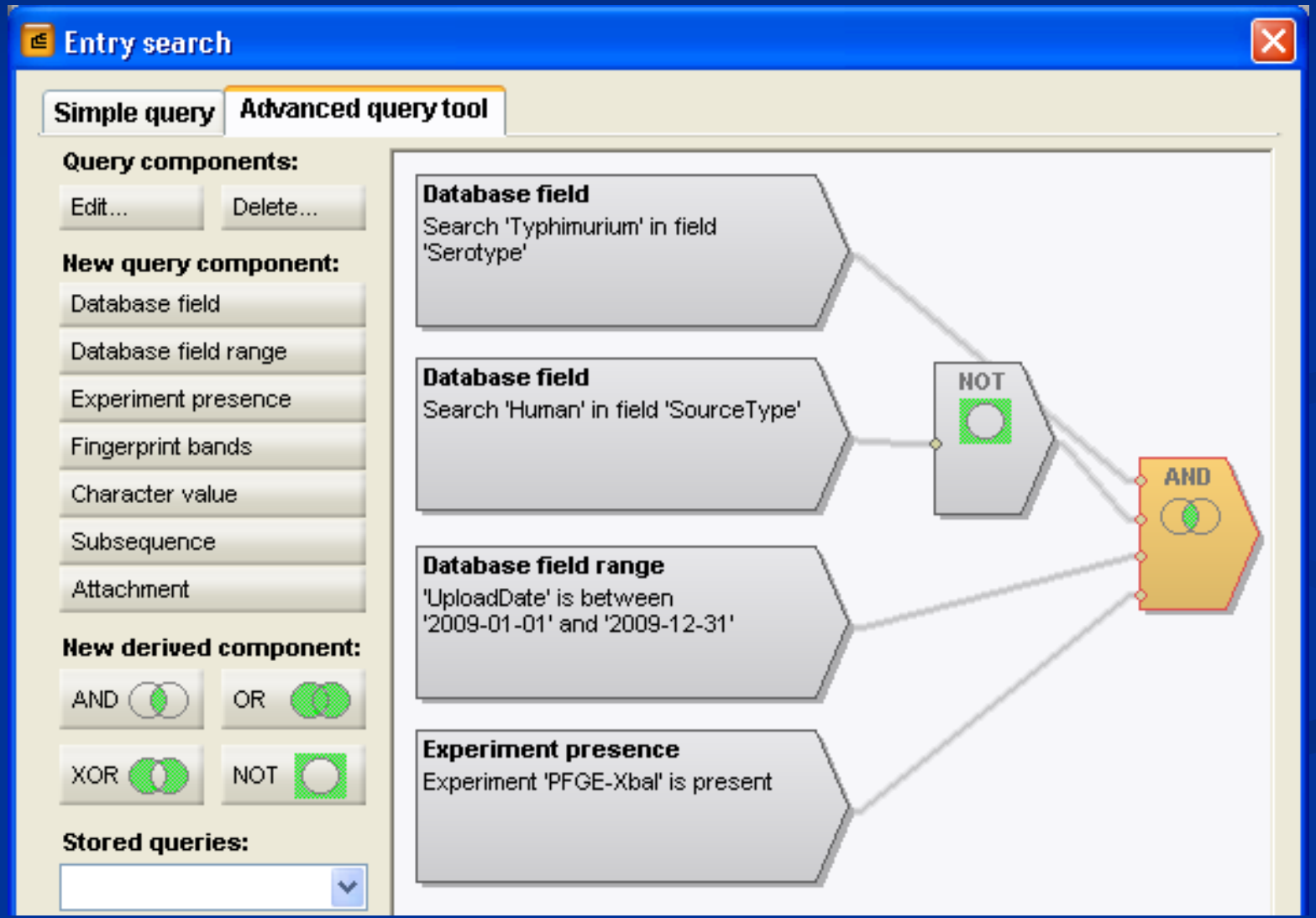




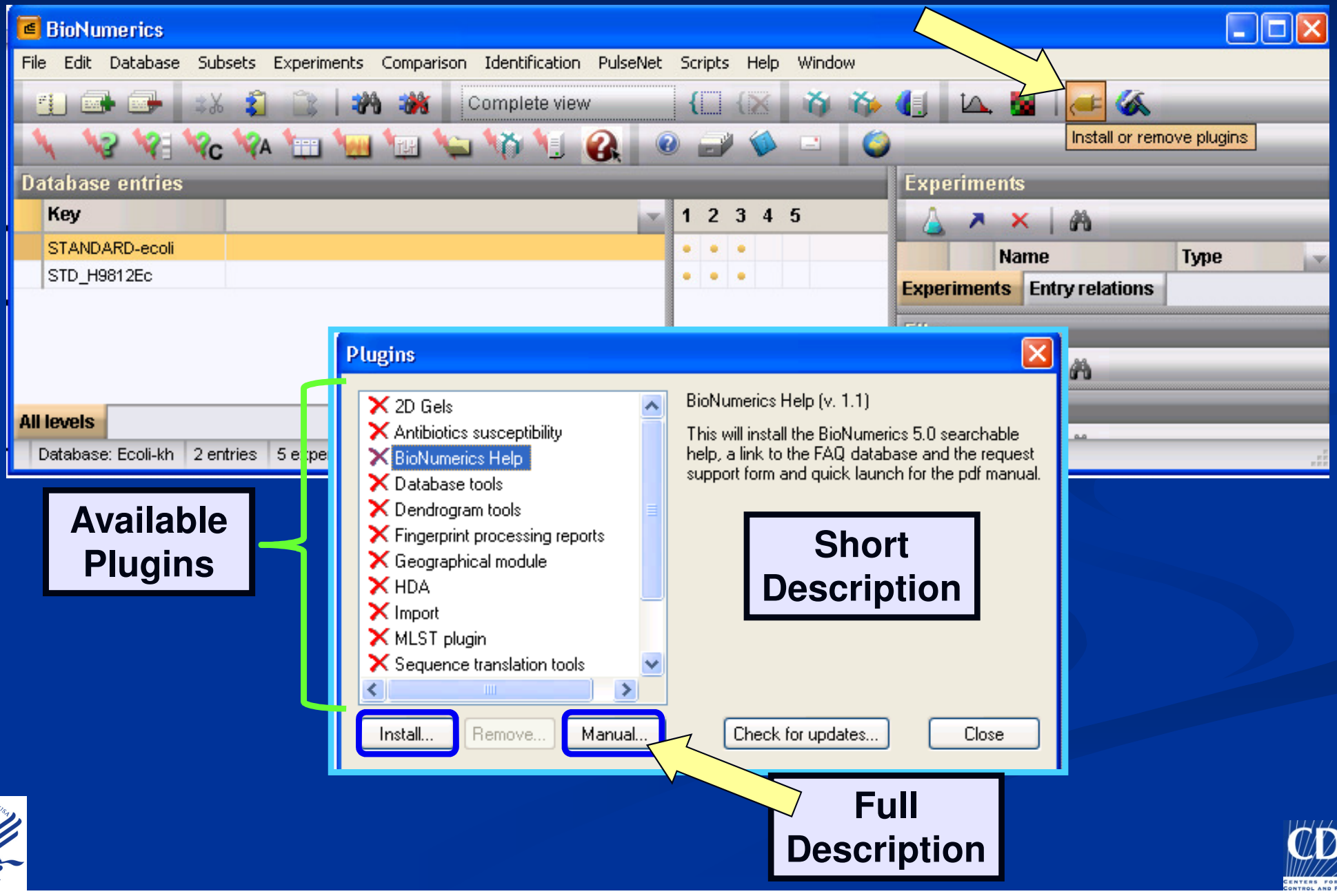
1. Select all 3 Database field boxes and choose “OR”
2. Select “OR” and Database field range box and choose “AND”

Advanced Queries
Example 4: Multiple Values

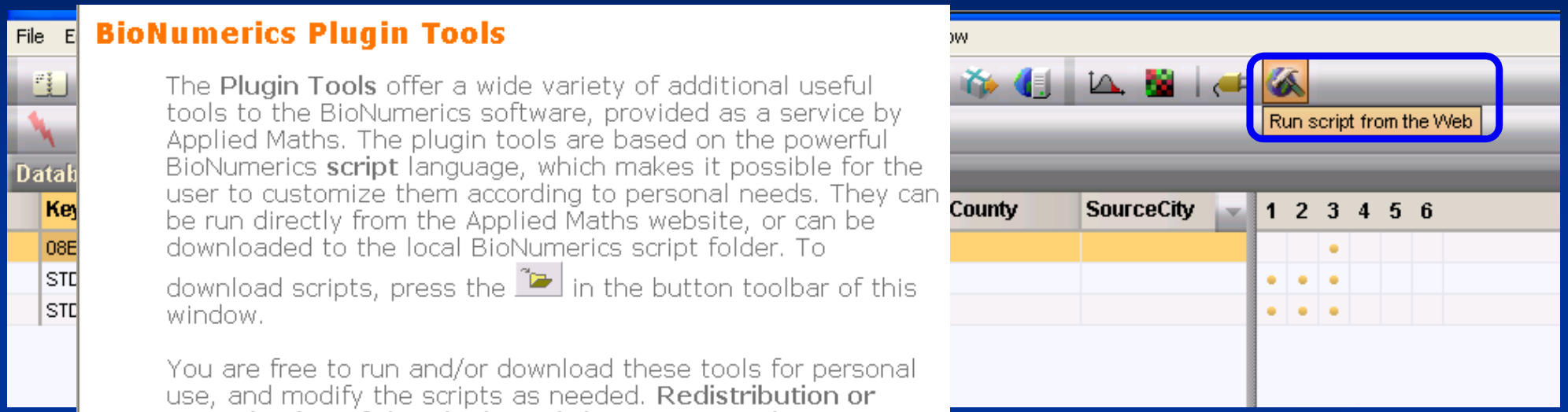
Search for all non-human *Salmonella* Typhimurium isolates uploaded in 2009 with an *Xba*I experiment file.



Plugins


BioNumerics
File Edit Database Subsets Experiments Comparison Identification PulseNet Scripts Help Window
Complete view
Install or remove plugins
Database entries
Key
STANDARD-ecoli
STD_H9812Ec
1 2 3 4 5
Experiments
Name
Type
Experiments
Entry relations
All levels
Database: Ecoli-kh
2 entries
Plugins
2D Gels
Antibiotics susceptibility
BioNumerics Help
Database tools
Dendrogram tools
Fingerprint processing reports
Geographical module
HDA
Import
MLST plugin
Sequence translation tools
BioNumerics Help (v. 1.1)
This will install the BioNumerics 5.0 searchable help, a link to the FAQ database and the request support form and quick launch for the pdf manual.
Install...
Remove...
Manual...
Check for updates...
Close
Available Plugins
Short Description
Full Description

Plugins



BioNumerics Plugin Tools

The **Plugin Tools** offer a wide variety of additional useful tools to the BioNumerics software, provided as a service by Applied Maths. The plugin tools are based on the powerful BioNumerics **script** language, which makes it possible for the user to customize them according to personal needs. They can be run directly from the Applied Maths website, or can be downloaded to the local BioNumerics script folder. To download scripts, press the in the button toolbar of this window.

You are free to run and/or download these tools for personal use, and modify the scripts as needed. **Redistribution or reproduction of the plugin tools by any means is prohibited**.
Each plugin tool is provided "as is" and with no further liability or guarantee from Applied Maths. Any consequences that may arise from the use of these tools are at your own responsibility.

Please select from the following categories:

- BioNumerics Online Help
- Database related tools
- Fingerprint related tools
- Sequence related tools
- Library and Identification tools
- Comparison tools
- Typing techniques
- Import tools
- Export tools
- Queries
- Miscellaneous

Available Categories

Plugins

- Can install plugins when installing a new database—suggest reading about them before installing
- Can provide useful tools
- Recommend trying the plugin out on either a "dummy" or test database or a copy of a database to see how it really works

Questions?

Thank you for your attention

The findings and conclusions in this presentation are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention