Performing Comparisons in BioNumerics



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Overview

Create a Comparison and Perform a Cluster Analysis

Cluster Analysis Parameters Position Tolerance and Optimization Dice Coefficient with UPGMA Dendrogram Similarity within dendrograms ■ Change the look of the dendrogram Manage Comparisons ■ Save, Open, Delete ■ Cut, Copy, Paste in Comparison windows Print Comparisons Change Settings/Views, Copy to Clipboard Compare One Pattern to Others Compare Two Entries Compare Raw Images





Create New Comparison



Create New Comparison





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Comparisons: View Patterns





Comparisons: Perform Cluster Analysis







Comparisons: Perform Cluster Analysis

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Cluster Analysis Parameters

PulseNet Parameters for Cluster Analysis

Comparison settings:

- Dice coefficient
- UPGMA dendrogram
- Position tolerance settings
 - Optimization: 1.50
 - Tolerance setting: 1.50
 - Choose to ignore uncertain bands

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Cluster Analysis Parameters: Position Tolerance

Computer Interpretation of Band Positions

- To the computer a band is not a band, but a band plus a window surrounding the band
- When comparing band positions of two profiles the computer will consider the band position identical if the band position in one of the profiles falls within a window around a band in the other profile
- The size of this window is called the <u>Position</u> <u>Tolerance</u> (set at 1.5% of the run length of the band)







Cluster Analysis Parameters: Position Tolerance Set Too High

The computer will interpret some unique profiles as being identical!

Dice (Opt:1.50%) (Tol 2.0%-2.0%) (H⊳0.0% S>0.0%) [10.8%-97.0%] PFGE-Xbal PFGE-Xbal







Cluster Analysis Parameters: UPGMA



Note! In UPGMA clustering the similarity value at each branching in the dendrogram represents the average similarity of the profiles in the branches





Comparisons: Dendrograms







Comparisons: Dendrograms

PFGE-Xbal PFGE-Xbal	You can also right-click on the branches for additional options, such as to collapse or expand a branch
Here, we have	 718 ECOS COC 719 2005 IL 720 ECOS 721 2005 IL 722 WA WA 723 493-89 724 CB2755 CDC Cluster analysis (similarity matrix) (PFGE-XbaI) Show dendrogram (PEGE-XbaI)
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Select branch into list



Overview

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- If you want to add patterns to a comparison window: Click "Copy selection" in main window or another comparison
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- Click "Paste selection..." in comparison window

If you want to take patterns out of a comparison window: Select the patterns Click "Cut selection..." in comparison window Click "OK"

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Comparisons: Print

Comparisons: Print

Comparisons: Arrange by Serotype

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Comparisons: Compare Two Entries

1. Select two isolates in your database to compare

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Comparisons: Compare Two Entries

Also called a Pairwise comparison or 2x2 comparison

Comparisons: Compare Two Entries

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Shows matching bands and non-matches

