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Life Science Analysis Essentials

Product Specification:

Phoretix™ 1D 21 CFR v11

Lane Creation

- Automatic lane detection
- Export and import of lane templates
- Manual lane detection
- Multi-tier analysis
- Move, resize and bend multi-box
- Move, resize and bend individual lanes
- Add grimaces to account for band distortion
- Delete lanes
- MADGE manual grid detection
- MADGE grid renumbering

Background Subtraction

- Automatic methods:
  - Rolling ball
  - Rubber band
  - Minimum profile
  - Valley to valley
  - Lane edge subtract
- Manual methods:
  - Image rectangle
  - Image stripe
  - Manual baseline

Band Detection

- Fully automatic band detection
- Adjustable peak parameters:
  - Minimum peak
  - Noise reduction
  - % max peak of lane or gel
- Band edge detection methods:
  - Single edge
  - Automatic detection
  - Fixed width
  - % peak
- Manual editing of peak and edge detection in image and lane profile windows
- Snap to peak editing
- Automatic band measurements
- View band measurements in measurements table
- Wide range of data fields to display in measurements table
- Histograms for viewing band data
- View multiple lane profiles either stacked or overlaid
- Export lane profile information
- Edit Band Name and display on Image and in table

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Profile Deconvolution

- Fit Gaussian curves to profile
- One Gaussian per band
- Manual adjustments of Gaussian
- FWHM (Full Width Half Max) measurement of bands

Rf Calibration

- Add Rf lines to any part of lanes
- Assign values to Rf lines
- Adjust / bend Rf lines
- Snap to band when editing Rf line
- View calculated Rf values for any lane

Molecular Size / pI Calibration

- Library of standards
- Add new standards
- Edit existing standards
- Automatic assignment of standard bands
- Propagation by Rf between standards
- 6 curve fitting methods
- MWs automatically displayed in measurements table
- pI standards can increase or decrease

Band Matching

- Automatic matching to any reference lane
- Manual matching to any reference lane
- Match by lane position, Rf or MW/pI
- Automatic generation of synthetic reference lane
- Edit reference lane
- Global reference lanes
- Propagate band names via reference lane
- Semi-automatic and manual lane calling
- Call lanes from matching
- Automatic match data calculation
- Different table views for band and match data:
    - Reference lanes
    - All lanes
    - Current lane
    - Lane calls
- Single band window gives tabular and histogram data on bands matched to a selected band

Quantity Calibration

- Range of methods to quantify:
    - Selected bands
    - Individual lanes
    - Single lane
    - Average of selected bands
    - Total of selected bands
    - Using a pre-defined standard
- Manually assign known values to bands
- Range of calibration units
- View interpolated and extrapolated values in measurements table

Normalisation

- Normalise to a single band
- Normalise to a matched band
- Normalise to bands in a lane

Band Picking

- Support for band picking robots including:
    - Ettan
    - ProPic
    - GelPix
    - Xcise
    - ProXCISION

Dendrograms

- Dendrogram parameters control
- Choice of dendrogram algorithms:
    - Neighbor Joining
    - UPGMA

File Navigation

- Files organised using tree structure for easy navigation
- Create experiments
- Reorganise experiments
- Multiple gels within an experiment
- “Save As” option for experiments
- Backup experiments
- Identify gels associated with experiments

Experiment Navigation

- View experiment tree
- View lane list
- View list of MW standards
- View list of global reference lanes
- Edit & rename standards
- Drag standard onto desired lane to analyse
- Create and save automatic analysis protocols
- Run last protocol
- Lane naming

Intensity Calibration

- Use optical density
- Use diffuse density
- 5 curve fitting methods
- Semi-automatic assignment
- Transfer calibration to other gels

Additional Analysis Features

- Supports multiple image formats:
    - .tiff
    - .gel
    - .jpg
    - .bmp
    - .gif
    - .png
    - .img (Fuji format)
- Image editor tool accessible from any module for image manipulation including:
    - Crop
    - Rotate
    - Filter
    - Flip
- Storage of image properties and image edits performed using the image editor
- On-the-fly recalculation after all editing

- Invert intensity measurements facility
- Simple data transfer to Microsoft Excel, clipboard or file
- Comprehensive Help menu and tutorial files
- Context-specific help panes
- Tool tips on all features
- Adjust contrast/brightness/colour of image
- Comprehensive and customisable image annotations
- Customisable image and table display options
- User-definable colour display options
- Zoom control for image viewing
- Print preview
- Automatic PDF report generator
- Ruler options to display lane names, numbers and MWs
- Import lane profiles
    - Agilent CSV
    - MegaBACE
    - Beckman
- Analysis protocols for automatic analysis of multiple gels
- Wizard to create user-definable additional lane data fields
- Comprehensive image annotations
- Zoom control for image and profile viewing
- Lane reordering to allow flexible viewing

System Access

- Uses Windows security model to restrict access to software (User names and passwords)
- User logon required when starting the software
- Three levels of access, Supervisor, User and Viewer enabled by IT administration
- Password copying disabled on logon screen

Data Integrity and Security

- Data stored in Secure Storage Area which can be set up by IT administration
- Data stored as human readable xml files
- Software will not analyse or store corrupted data (altered outside of the software system)
- No analysis possible on non 21 CFR Part 11 module data
- No analysis possible on images being analysed by another user
- Archiving option to backup entire experiment data and history
- Multiple versions of experiment can be stored
- Any version of experiment retrievable for read only viewing

Audit Trails

- Security Audit trail records all administration tasks and user logons, logoffs and approval signatures. Logon success and failures recorded
- Version Control Audit trail records all global experiment actions such as storing a version of the experiment, approving an experiment and analysing the image
- Experiment Audit report records all the actions required to repeat the experiment (lane creation, band detection etc.)
- Audit trails include the name of the user together with time and date of action

Electronic Signatures

- Supervisors can approve completed experiments
- Approval requires re-entering of password details (an electronic signature)
- Analysis reports state whether experiment approved or not
- Name, date, time and reason for approval is recorded with sign off

Validation Documentation

- Design document describing map between software and 21 CFR Part 11 rule to aid validation of software
- Audit response document to answer standard audit questions

Hardware and Software Requirements

Operating systems: Windows 2000, Windows XP, Windows Vista and Windows 7

(Please note: you require Administrator privileges for installation. To use the software you do not need Administrator privileges).

Processor: 1.4 GHz

Memory: Minimum 256Mb, recommended 512Mb

Free hard disk space: Recommended 5Gb

- Minimum and recommended specifications are important in order to provide good software performance and reduce installation and operational issues.
- A general rule to note is that with running any software the more RAM a system has the better
- For optimal performance in higher end products or where users may be pushing systems to the limit use the “recommended” specifications