

# **GenoProof<sup>®</sup> Suite**

## Your all-in-one solution for efficient forensic DNA analyses

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Available with the expert modules:  
Mixture, Kinship and Matching

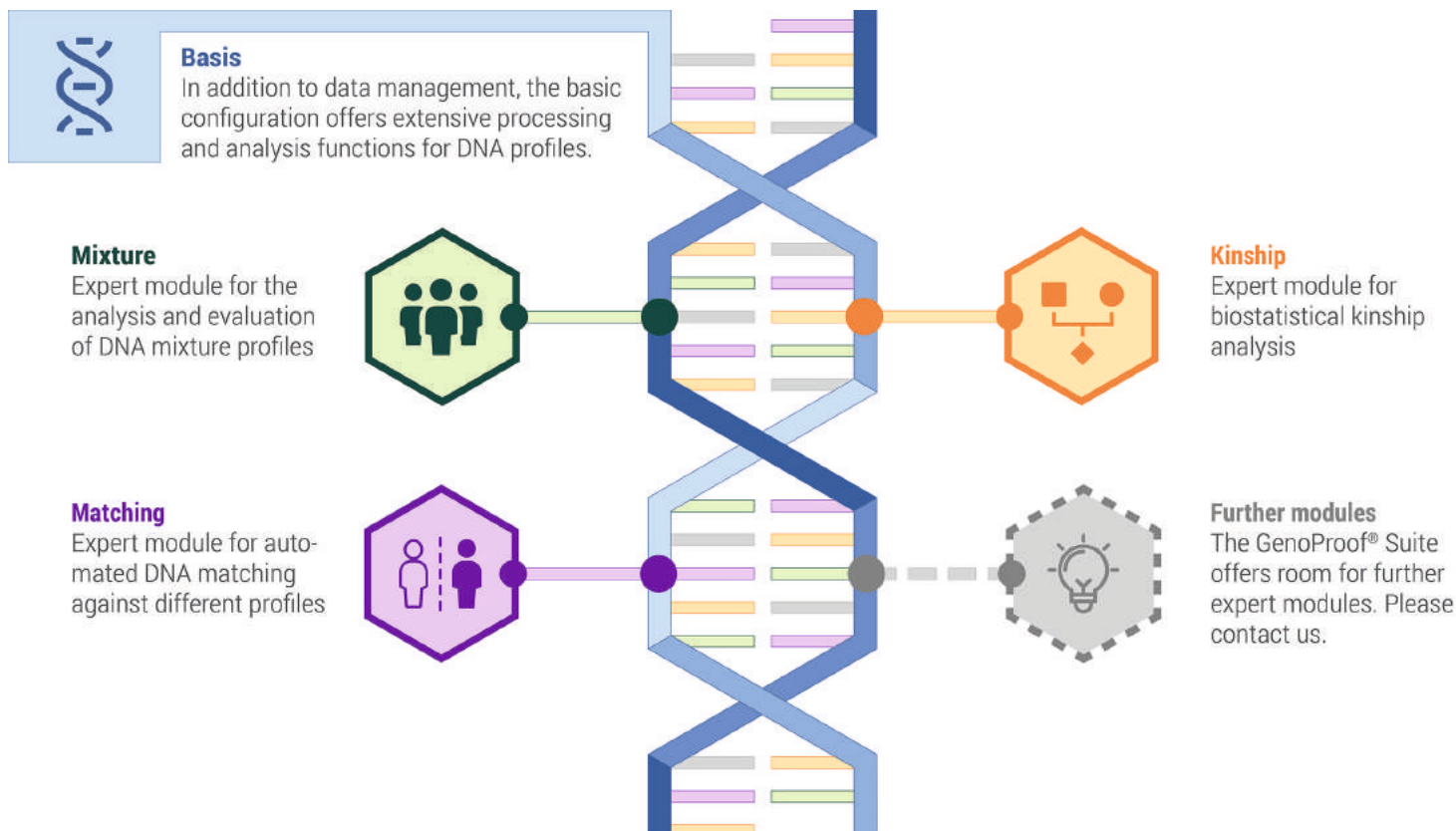


Our quality management system is  
certified according to ISO 9001:2015.

# GenoProof® Suite | Your modular all-in-one solution

**G** GenoProof® Suite is a professional all-in-one solution for efficient DNA analyses in the field of forensic molecular genetics. The application allows you to put together an individual solution by selecting special expert modules and to expand it later if required. As a complete solution, it ensures seamless cross-departmental collaboration without media discontinuity.

Even the basic configuration of the GenoProof® Suite offers you a whole range of functionalities for the genotyping of DNA samples. In the current version, the expert modules *Mixture* for the analysis and evaluation of DNA mixtures, *Kinship* for kinship analysis and *Matching* for automated DNA profile matching are available to extend this functionality.



## Molecular genetics requirements



### Increasing demand for information

GenoProof® Suite: Integration of specific expert modules and tools for the challenges in forensic and parentage analysis



### High requirements for data interpretation

GenoProof® Suite: innovative tools and visualization options for the interpretation of increasingly complex data



### Optimal organisation of data

GenoProof® Suite: efficient, intuitive data handling and a user interface that is consistently focused on the analysis case

## Quality and reliability

The GenoProof® Suite is the result of many years of experience in the software development of professional solutions for DNA analysis and forensics.

Not only numerous forensic institutions, private laboratories, clinics and research institutes, but also a number of German State Criminal Investigation Offices rely on the quality and reliability of our applications.

# Basis | Your basic set up for DNA analyses



Even in its basic configuration, the GenoProof® Suite impresses with its intuitive user interface, high flexibility in data processing and impressive performance. In addition to the convenient management, processing and handling of your data, it offers you, among other things, an allele- and size calling algorithm as well as a great variety of DNA evaluation tools.

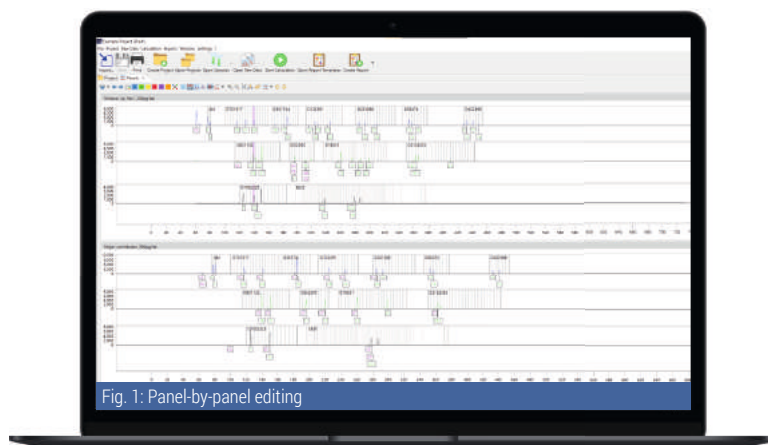


Fig. 1: Panel-by-panel editing

## Powerful analyses

- User-friendly import of analysed data from ABI PRISM® Genetic Analyzer, Applied Biosystems SeqStudio™ and Promega Spectrum Compact CE system
- Integrated dataset of STR kit and population data as well as an easy import of bin and panel files
- Allele- and size calling algorithm
- Quality check of allele- and size calling
- Create own analysis methods for allele calling
- Multi-user and client-server

## User-friendly handling

- Import of FSA and HID files
- Data from GeneMapper® and GeneMarker® as well as CODIS format and CSV files
- Simple file management via drag and drop
- Varied analysis tools for the EPG, such as panel-by-panel editing, artefact labelling, display of further information and a marker-centric view
- Assembling genotypes
- Calculation of genotype frequency for single-source
- Easy organisation of data in analysis projects

## Efficient evaluation

- Intuitive user interface with practical analysis workflow
- User-defined display of EPG incl. scalability of axes
- Comprehensive artefact display of spectral overlaps, stutter peaks, off-ladder peaks etc.
- Dynamic profile and fragment table
- Generation of individual result reports for complete documentation
- Easy and fast export of results for further processing

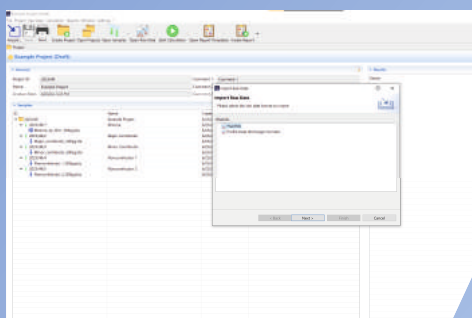


Fig. 2: Data import

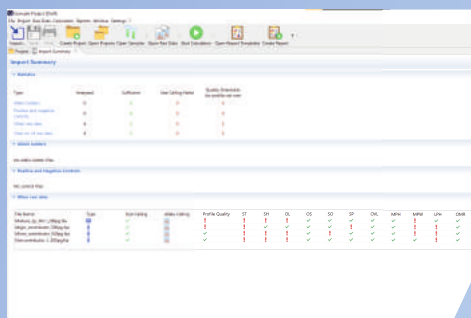


Fig. 3: Quality check

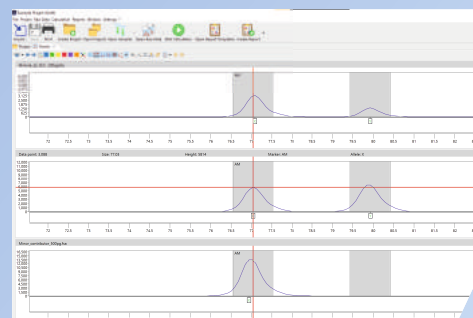


Fig. 4: Marker-centric view

# Mixture | Your expert module for the analysis of mixtures



The expert module Mixture is your solution for the analysis of complex DNA mixtures. Among other things, current biostatistical methods, such as the completely continuous LR calculation, are available to you for this purpose. Due to its consistent orientation towards user needs, Mixture fits seamlessly into your laboratory routine for forensic stain analysis.

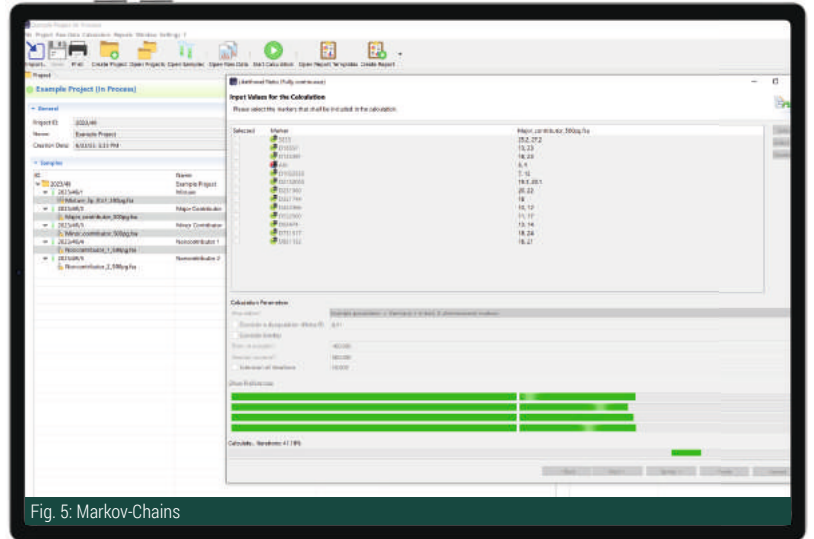


Fig. 5: Markov-Chains

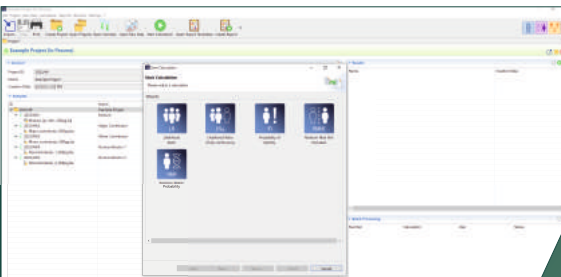


Fig. 6: Likelihood ratio calculations

## User-friendly handling

- Ready for use: no training of MCMC parameters necessary
- Smooth import of frequency data, including STRidER data
- Time-efficient processing of LRfc calculations through batch mode
- Summary report of the calculation results

## Efficient evaluation

- Display EPG and perform calculations simultaneously
- Comprehensive LRfc report with sample information, convergence diagrams, raw data, profiles, etc.
- Calculation using PCR replicates from different STR kits
- Traceability of changes in the system via integrated audit trail

## Powerful analyses

- Wide range of biostatistical interpretation methods for DNA mixtures
- Fully continuous model for LR calculation
- Deconvolution of mixtures and separation of mixture components
- Preliminary stutter consideration
- Evaluation of laboratory-specific dropin values
- Use of panel-specific detection limits for LRfc calculations
- Automatic adjustment of the iteration phase according to the applicable quality criteria
- Display of the analysis methods that were used
- Regular development validation corresponding to the guidelines for probabilistic systems

User	Status	Progress	Created Date	Started Date	Finished Date	Error
Multi User	Processing	10%	Jun 23, 2023, 5:48:34 PM	Jun 23, 2023, 5:48:35 PM		
Multi User	Finished	100%	May 24, 2023, 4:01:05 PM	May 24, 2023, 4:01:05 PM	May 24, 2023, 4:06:12 PM	
Multi User	Finished	100%	May 23, 2023, 12:56:46 PM	May 23, 2023, 12:56:46 PM	May 23, 2023, 12:57:11 PM	
Multi User	Finished	100%	May 23, 2023, 12:42:29 PM	May 23, 2023, 12:42:29 PM	May 23, 2023, 12:43:25 PM	
Multi User	Cancelled	45%	May 23, 2023, 12:31:58 PM	May 23, 2023, 12:31:58 PM		
Multi User	Finished	100%	May 23, 2023, 12:10:00 PM	May 23, 2023, 12:10:00 PM	May 23, 2023, 12:10:58 PM	
Multi User	Finished	100%	May 23, 2023, 9:51:41 AM	May 23, 2023, 9:51:42 AM	May 23, 2023, 9:56:14 AM	
Multi User	Finished	100%	May 16, 2023, 2:37:01 PM	May 16, 2023, 2:37:02 PM	May 16, 2023, 2:38:33 PM	
Multi User	Finished	100%	May 11, 2023, 11:15:29 AM	May 11, 2023, 11:15:30 AM	May 11, 2023, 11:16:34 AM	
Multi User	Failed	100%	May 4, 2023, 10:39:22 AM	May 4, 2023, 10:39:22 AM	May 4, 2023, 10:43:22 AM	java.lang.RuntimeException
Multi User	Finished	100%	May 2, 2023, 12:29:59 PM	May 2, 2023, 12:29:59 PM	May 2, 2023, 12:30:16 PM	
Multi User	Failed	100%	Apr 28, 2023, 11:13:00 AM	Apr 28, 2023, 11:13:00 AM	Apr 28, 2023, 11:13:57 AM	java.lang.NullPointerException
Multi User	Finished	100%	Apr 20, 2023, 4:18:13 PM	Apr 20, 2023, 4:20:17 PM	Apr 20, 2023, 4:20:55 PM	

Fig. 7: Batch processing

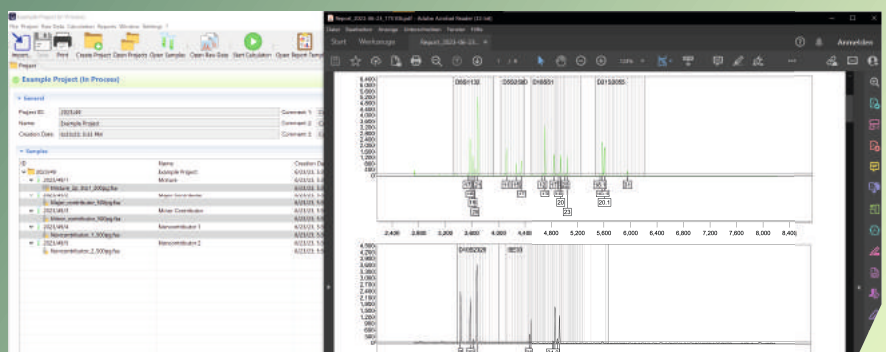


Fig. 8: Report

# Kinship | Your expert module for relationship analysis



The expert module Kinship offers you a wide range of possibilities to explain kinship relationships biostatistically and to map complex pedigrees - from ancestry and output of pedigrees to forensic biostatistics with identity probabilities and contamination control.

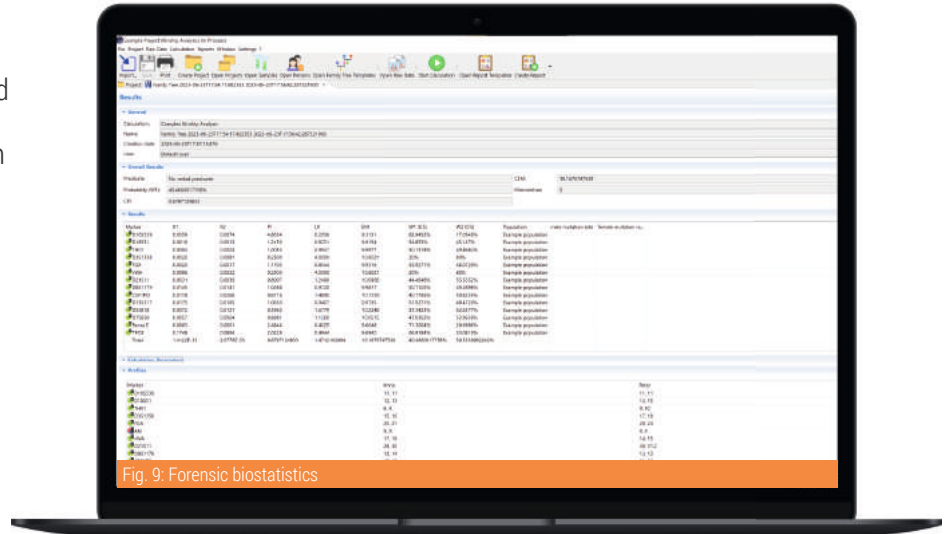


Fig. 9: Forensic biostatistics

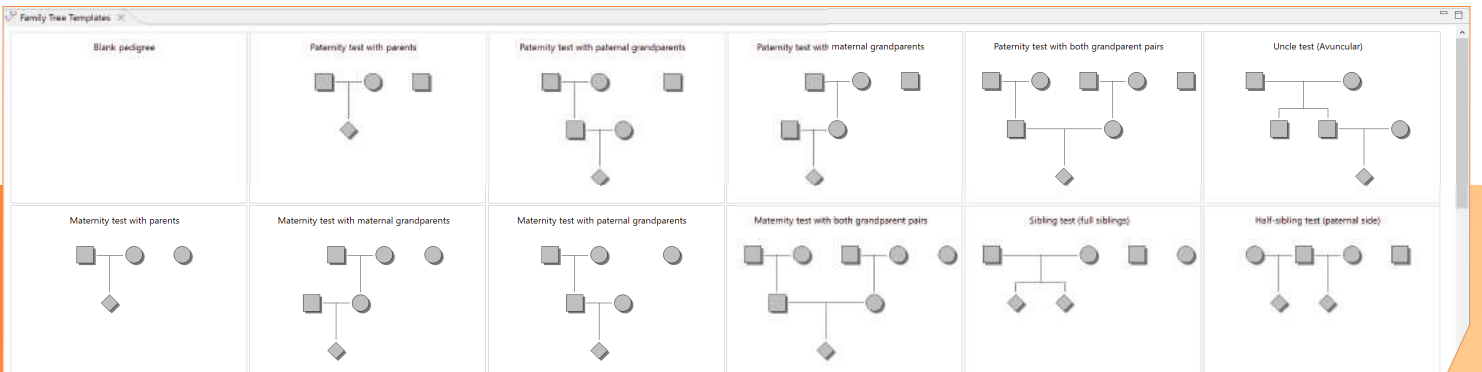


Fig. 10: Family tree templates

## Powerful analyses

- Calculation of complex scenarios
- Create pedigrees quickly and easily
- Ongoing performance optimisation for the calculation algorithms
- Continuous optimization of biostatistical procedures validated according to applicable guidelines

## User-friendly handling

- Convenient „drag and drop“ to add samples or persons to a pedigree
- Catalogue of pedigree templates for the calculation
- Create your own pedigrees
- Intuitive editing of pedigrees in the analysis project
- Customizable report templates

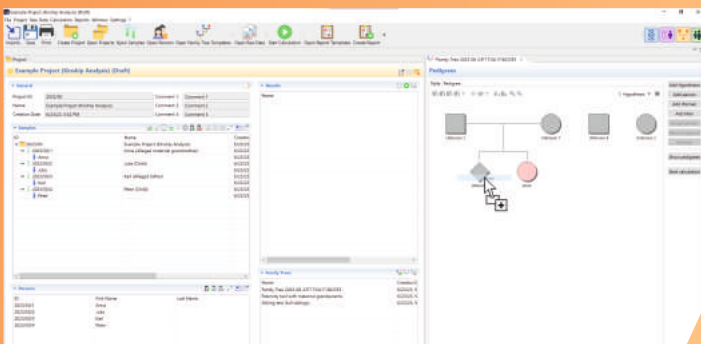


Fig. 11: Assignment of person via „drag and drop“

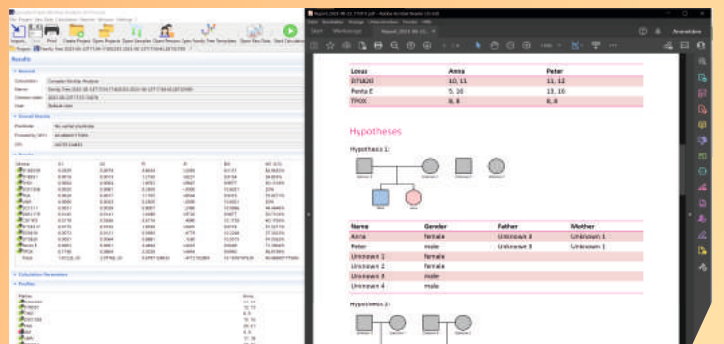


Fig. 12: Report

# Matching | Your expert module for automated DNA matching



The expert module Matching is an application for automated DNA matching. It is particularly suitable for use cases such as DVI or serial examinations, in the context of which a large number of DNA profiles of different origins have to be matched.

In addition to identity matching between DNA profiles (sample or mixture), searches for potential relatives up to the 3rd degree of relationship are also possible.

## Your turbo for DNA matching

Matching allows you to automatically match your DNA profiles against specific search criteria in a locally managed database. This speeds up this time-consuming process many times over: the application is able to carry out a match or potential relationship check on, for example, one million stored profiles in just 30 seconds.

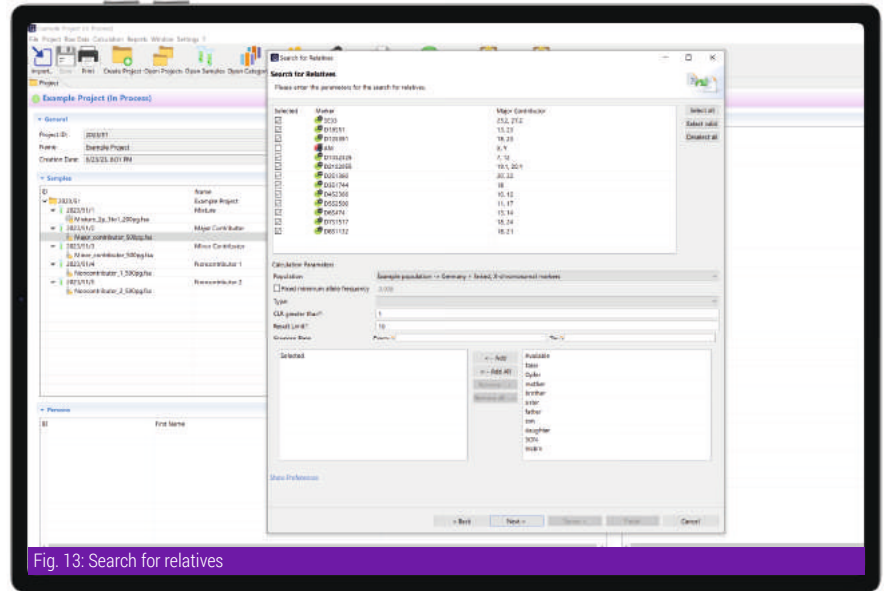


Fig. 13: Search for relatives

## Powerful analyses

- Comparison against single source as well as mixed profiles
- Search for potential relatives up to 3rd degree of relationship
- Further analysis of match database profiles in the Expert modules MIXTURE and KINSHIP
- Export of results
- Import of match profiles of further analysis into the analysis project

## User-friendly handling

- Configurable user settings and user authorisation concept
- Categorized database queries
- Queries with STR and SNP profiles
- Clear presentation of results

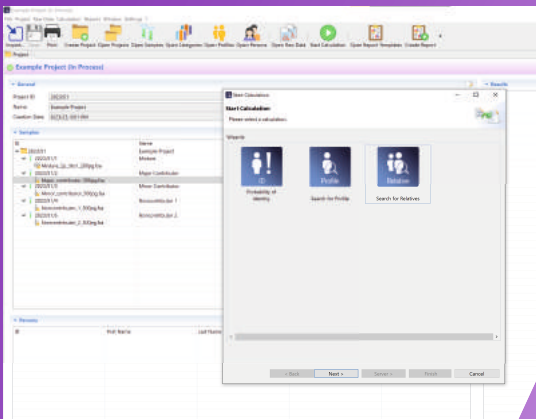


Fig. 14: Start search

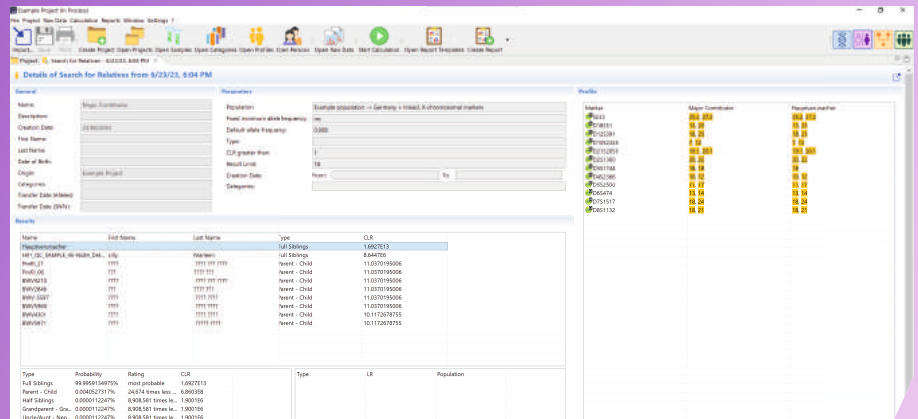


Fig. 15: Detailed results

# Your direct line to us

Are you interested in the GenoProof® Suite? Would you like to test it free of charge and without obligation? Then please do not hesitate to contact me. I look forward to answering any questions you may have or to setting up your personal test account.

## Contact

Dr. Corina Schanzenbach  
Account Manager

+ 49 351 8838 2833  
c.schanzenbach@qualitype.de



We invite you to test GenoProof® Suite free of charge and without obligation.



## Maintenance and support

IT solutions are dynamic products that often evolve in the course of their use. Regular maintenance ensures the long-term usability of your purchased software. For example, your software is adapted to external changes: These can be new regulations and laws, but also new hardware or updates of databases, programming languages and operating systems used.

Your software is also continuously perfected through maintenance perfected: Errors are corrected, improvements and new functions are implemented. Software is thus an investment that constantly maintains its added value through new versions.

Do you have questions about maintenance and support? We will be happy to answer your questions and provide you with a maintenance offer for the GenoProof® Suite that is attractive for your use and application.

## Education and training

We are happy to support you! A targeted training programme provides a quick introduction to work with the GenoProof® Suite and its expert modules.

Please simply contact us. We will be glad to send you our training offers.



## About us

qualitype GmbH is your software partner for digital laboratory processes. Since more than 20 years, our customers have benefited from the expertise of our specialists in IT, biology, mathematics, forensics and physics. We focus on the development of specialized products and the implementation of individual software projects.

Our core competencies lie in the areas of laboratory and case management systems, special solutions for DNA analysis, software development for laboratory equipment and medical devices and quality monitoring. You can rely on our promise of service and quality - from consulting to development and validation support to training.



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