



DNA Pro-FILES

Forensic DNA Laboratory Management System



The firm Synchronie InfoSystème developed the Forensic DNA Management System for the Biology Department of the Laboratoire de sciences judiciaires et de médecine légale (Québec Government DNA forensic lab) in Montréal. Synchronie InfoSystème has been involved in the development of management systems in the scientific field for several years. It is accredited as an associate member of FileMaker Solution Alliance.

Integration

DNA Pro-FILES manages all the processes necessary for DNA analysis of elements of evidence submitted by police forces. The genetic profiles obtained are analysed and transferred directly for the creation of expert reports. Since its debut of operation in 2001, the system has been in constant evolution in order to adapt to the implementation of new technologies.

Increase in the productivity

The use of DNA Pro-FILES enables forensic biology departments to respond to increasing requests for DNA analysis. DNA Pro-FILES uses a barcode system allowing identification and tracking of the samples throughout the analysis procedure. The system accelerates data entry by eliminating redundant captures and by reducing the risk of errors to a minimum. The organization of work analysis in the laboratory is managed by the system in order to maximize resources; worksheets may be produced automatically or manually for greater flexibility. DNA Pro-FILES transfers the data to the analysis equipment in order to avoid manual entry of information. The results of these analyses are recovered by DNA Pro-FILES in order to be validated by a forensic expert. It is also easy to consult all the analyses carried out for a specific case file, thus making it possible to quickly answer an applicant's request. Moreover, the production of statistical reports ensures a follow-up of the operations in the laboratory.

Flexibility

DNA Pro-FILES may be easily adapted to the requirements of each laboratory. It is possible to integrate it with the databases (ODBC-compliant) currently used. Moreover, the system consists of several modules and each stage of the analysis is independently managed. It is thus easy to modify this system according to needs.

Technology used :

- User friendly
- Easy customization
- Windows and Macintosh compatible
- Low Total Cost of Ownership (TCO) in comparison to the industry average
- Integration with MS Office suite (Word and Excel)
- Communicate with existing database systems (ODBC-compliant)
- Precise access rights management
- Image integration
- Data import/export
- Each database can store up to 8 terabytes of information



FileMaker® Server 7 is high-performance server software that efficiently manages shared database solutions.

Support the following platforms :

- Windows XP Pro
- Windows 2000 Server & Windows 2003 Server
- Mac OS X and Mac OSX Server
- Allow up to 250 users to simultaneously connect to a hosted database
- Hosts up to 125 database files per server including thousands of tables
- Take advantage of large amounts of RAM using sophisticated caching
- Easy to install and administer

DNA Pro-FILES makes it possible to manage the following elements:

- Details of the case file
 - Type of event
 - Event date and time
 - Case number
 - Police force and investigator addresses
 - Information concerning: victim(s) and/or suspect(s)
- Evidence elements to be analysed
 - Results of preliminary observations
 - Serological tests
 - Forensic expert notes and comments
 - Images insertions
 - Samples creation
 - Labeling with barcodes
- DNA Extraction
 - Barcode identification of samples to be extracted
 - Generation of extraction lists
 - Acquisition of dosage results and automated extrapolative calculations
 - Dosage result reports for forensic experts
- DNA Amplification
 - Identification of DNA samples to be amplified using barcodes
 - Production of amplification lists
- Chromatography
 - Production of sample sheets using amplification lists (for gels or 96 well plates)
 - Data preparation and transfer for: Applied Biosystems Prism® 3100 GENETIC ANALYSER
- Genetic profiles analysis
 - Importation of genetic profiles resulting from DNA fragment analyses by Genescan®/Genotyper®
 - Exclusion probability calculations
 - Frequency calculations
 - Paternity testing
 - Search for a specific profile in the database (quality control)
- Expert reports
 - Produced from the system's data
 - Exported directly in a report-style conceived in Word, via XML exportation using predefined XSLT style sheets
- ISO 17025
 - Compliance with the ISO 17025 Accreditation Standard is in progress



• Eliminate redundant data entry • Accelerate DNA analysis procedures • Realize an increase in productivity

Case file

- Event details
- Victim(s), suspects(s)
- Case file status
- Police force and investigator addresses
- Forensic expert notes

Case: 02-888CCH

EVENT
 Category: HO - Hom. murder attempt
 Event type: Homicide
 Date: 100902
 October 09, 2002
 Time: 8:00h
 Case No Org: 6666

VICTIM(S)
 Add
 Total: 1
 First Name: Bob, Last Name: Valley

SUSPECT(S)
 Add
 Total: 1
 First Name: Tom, Last Name: Robinson

INVESTIGATOR
 TIDE: Capt., Prefe: Mr.
 First Name: Paul, Last Name: Patterson
 Address: LSJML-Montréal, 1701, rue Parthéasais, 12 étage Montréal, (Québec) H2K 3S7
 Phone: 514-555-9455 • 555

Case file associated evidences 02-888CCH

Evidence No	Reception Date	Label No	Kit	Brief Description	#Sample	Autoris. M
02-888CC1	10/17/02	H-89883	<input type="checkbox"/>	Coat	5	<input type="checkbox"/>
02-888CC3	10/17/02	H-23232	<input type="checkbox"/>	Black glove	1	<input type="checkbox"/>
02-888CC4	10/17/02	H-23233	<input type="checkbox"/>	Sweater	1	<input type="checkbox"/>

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Evidence and samples

- Details of evidence to be analyzed
- Results of preliminary testing
- Image insertion
- Multiple samples for each evidence

Evidence No: 02-888CC4
 Case No: 02-888CCH

DETAILS
 Evidence #: 02-888CC4
 Analyze date: 030303
 March 03, 2003
 Reception date: 101702
 October 17, 2002
 Labels No: H-23233
 ID Evidence: 4
 Suffix: sweather
 Evidence desc: sweather
 No suspect stains

WHITE SUBSTANCE
 Preserved in file: sec.
 Bn: Positive Negative

RED SUBSTANCE
 Preserved in file: sec.
 Bn: Positive Negative

Sample No: 02-888CC4
 Case No: 02-888CCH

DETAILS
 Sample No: 02-888CC4
 Evidence No: 02-888CC4
 Date available for extraction: 112404
 November 24, 2004
 Labels No: H-23233
 Sample desc: sweather front stain
 Tubes number: 1
 Category: TE
 Ref. Duplicata: Create Duplicata:
 Assistant tech: ID bar code: 20166

Extraction proto:
 A Blood, Epithelial cells
 B Differential extraction
 C Sperm only, hair, nail
 D Ovarian

Reference Source:
 Voluntary, Sexual assault vict.
 Mandat
 Abandoned subst., vict. dead
 Non-available

DILUTIONS

Selection	Dil. No	Dilution
<input type="checkbox"/>	1	1
<input type="checkbox"/>	2	10
<input type="checkbox"/>	3	100

SAMPLES FOR EVIDENCE NO: 02-888CC4

List	Tube No	Sample No	Description	M	Sample Type	Extrac. Protoc.	Aut.
<input checked="" type="checkbox"/>	1	02-888CC4	sweather front stain	Litige	A	<input type="checkbox"/>	

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FREQUENCY CALCULATIONS
 Sample No: 02-888CC4
 Case No: 02-888CCH

DETAILS
 Sample No: 02-888CC4
 Evidence No: 02-888CC4
 Description: sweather front stain
 Population type: Caucasian
 Theta: 0.01
 Combined Frequency: 1/1.6419e+15

Genetic profile frequency

Allele 1	Allele 2	Frequency
CC4	D3S1358	12 1 / 454
CC4	vWA	16 88 / 450
CC4	FGA	21 79 / 448
CC4	D8S1179	11 41 / 452
CC4	D21S11	28 74 / 453
CC4	D18S51	12 62 / 452
CC4	D5S818	11 168 / 452
CC4	D13S317	9 26 / 452
CC4	D7S820	8 60 / 444
CC4	D16S539	9 52 / 460
CC4	TH01	9.3 185 / 586
CC4	TPOX	8 242 / 460
CC4	CSF1PO	11 161 / 460
CC4	AMEL	X Y

PATERNITY TESTING - TRIO ANALYSIS

INFOS
 Tests: 12
 Date: 041210
 Status: Trio
 Description: Exemple B

Child profile
 Case No: 02-8888
 Sample No: 02-888CC7
 Blood

Mother profile
 Case No: 02-8888
 Sample No: 02-888CC8
 Blood

Father profile
 Case No: 02-8888
 Sample No: 02-888CC9
 Blood

Site STR	Allele 1	Allele 2	Formula
D3S1358	18 q	18 q	1/2
vWA	18 q	20 p	1/2a
FGA	19 q	20 p	1/2p+2q
D8S1179	13 q	14 p	1/2a
D21S11	35 q	35 q	1/2a
D18S51	17 q	17 q	1/2a
D5S818	12 p	13 q	1/2a
D13S317	11 q	11 q	1/2a
D7S820	8 q	9 p	1/2p+2q
D16S539	10 p	11 r	1/2a
TH01	7 p	7 p	1/2a
TPOX	8 q	8 q	1/2
CSF1PO	11 p	12 q	1/2p+q
AMEL	X	Y	

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EXTRACTION REPORT
 Extraction list No: 04-365
 Extraction Date: 041109

REFERENCES

Tube No	Sample No	Sample	Label No	Type	Lyse Prot.	Max. Total Vol. (µL)	Dilution	Total Dil. (µL)	Dos. Qty (ng)	[ADN] (ng/µL)	Vol. restant (µL)	ADN Total (ng)	Box #	
410	04-888C13	Sweather	n-5012	L	0	1	24	1	7.95	3.98	20	79.30	04-5074	
								10	3	795	0.40	34	13.53	04-5074
								100	2	0892	0.03	38	1.31	04-5074
								1	2	0	0.00	180	0.00	04-5074
								10	2	00928	0.00	34	0.34	04-5074
								100	2	3.82	1.93	38	72.58	04-5074
								1	1	298	148.00	176	3088.00	04-5074
								10	10	29.6	14.80	30	444.00	04-5074
								100	2	2.96	1.48	34	50.32	04-5074
								1000	2	296	0.15	38	5.62	04-5074

104.90 million 1
 104.90 million 1

Created by Claude Chamberland, 3 January 2005 @ 18h12

Analysis and validation of the genetic profiles observed

- The genetic profiles imported from Genotyper® are validated for each STR site
- Frequency calculations and paternity calculations are produced from in-house or other populations studies tables

Extraction results report

- DNA results quantification forwarded to the forensic expert
- Used for the creation of amplification lists (barcode selection)



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