Genetic Counselling

Version 8.3

A patient database for institutions that perform Genetic Counselling

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Summary

The database application

Genetic Counselling, version 8.3

Developed for Departments and Clinics at hospitals that undertake Genetic Counselling.

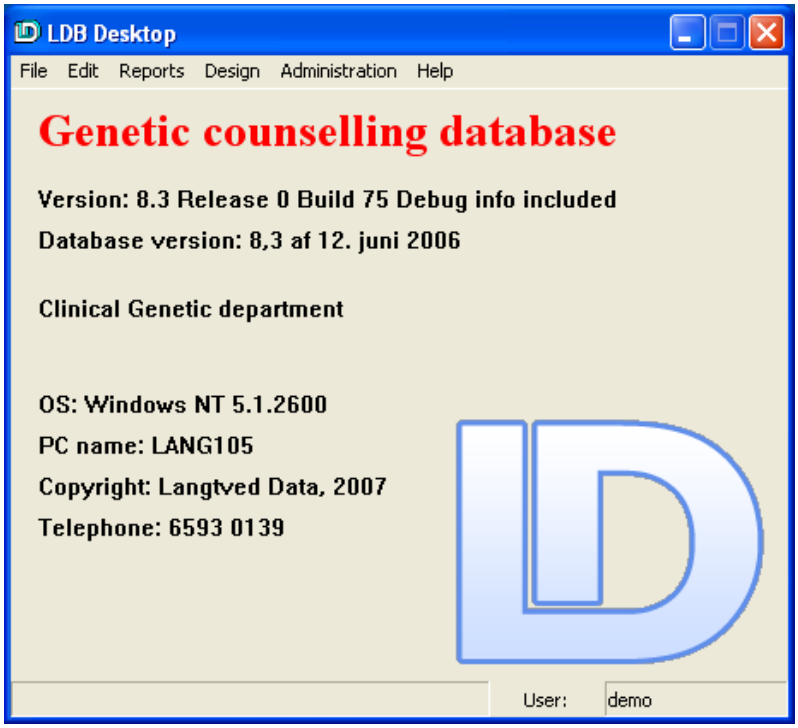
Genetic Counselling, version 8.3 is made under the framework of LDB Desktop, which enables users and developers – without the need to program - to customize the system to fulfil a number of requirements and wishes, and to maintain security and performance automatically. This framework enables us to respond fast on new requirements and deliver the products at low prices (A separate document describes the features of LDB Desktop).

Genetic Counselling, version 8.3 has the following functionalities:

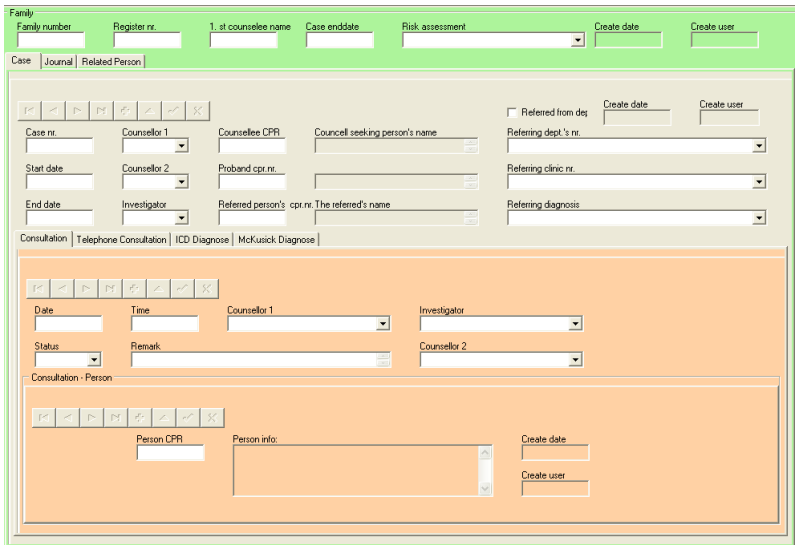
A. Separate data entry areas for the lab and counselling.

B. Access control and customization for every possible use-case and user–roles, including technicians, laboratory managers, employees responsible for answers and counsellers.

C. The data-model encompasses cytogenetics, any number of DNA analyses, FISH, Fragile X, Methylation and lot of administrative functions such as answering, copies of answers, external answers and family relations.



Genetic Counselling, version 8.3 start-up window



Example of family view

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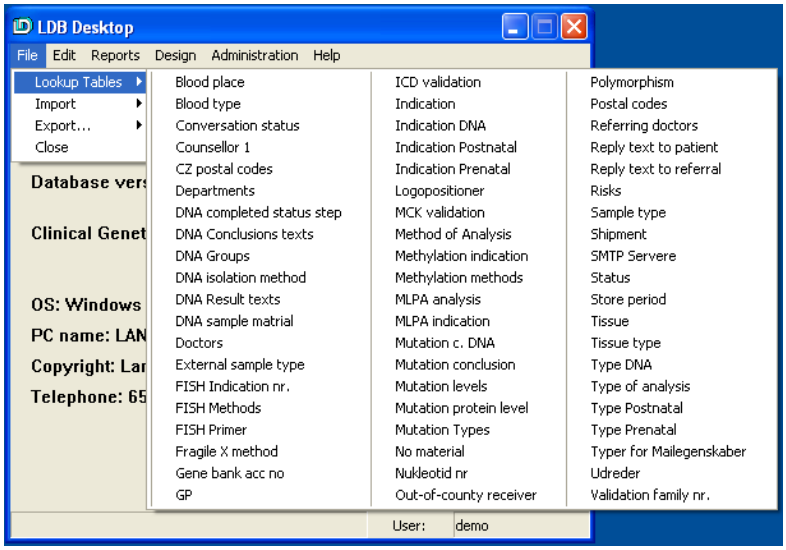
Genetic Counselling version 8.3 functionalities continued:

D. At this point there are more than 12 data entry points and monitoring screens with more than 37 related reports. In addition more than 60 reports and more than 100 templates for standard letters.

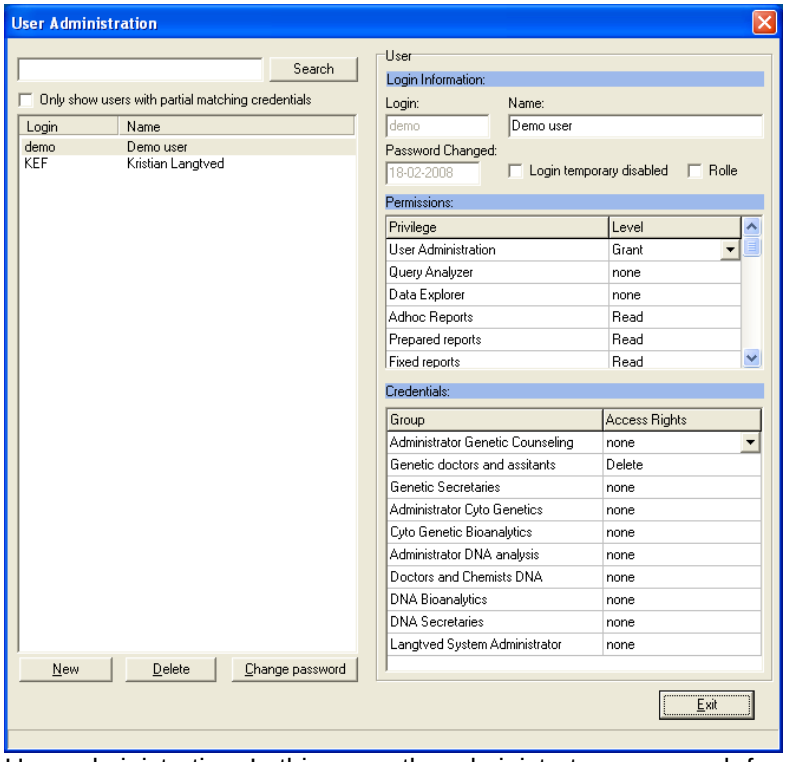
E. Built-in validation and lookup on more than 60 data objects, ranging from postal numbers to practitioner to DNA-analyses.

F. Options to make your own build of ad-hoc and fixed reports, exports and screens.

G. The counselling subsystem contains built-in storage of all written communication and journaling including transcripts of conversations and telephone calls.



Example of look-up tables; Custom tables can be added if needed.



User administration. In this menu the administrator can search for, view, add, and delete users.

User Administration

In the user administration it is possible to assign rights for custom defined user groups. (Which data or reports each user group can view and/or change) is possible for custom defined user groups.

Users can also get access to the database without using *Genetic Counselling, version 8.3*, however, this requires ODBC.

Accessing data outside *Genetic Counselling, version 8.3* will not be stored in the log file!

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The DataBrowser

The databrowser may be used for business monitoring and data entry and manipulation of work-in-progress, for example:

1. Data entry of referrals.
2. Lists of referrals with no test results or answers.
3. Lists of referrals with external analyses.
4. Lists of patients covered / not covered by out-of-region agencies.
5. Booked meetings and telephone conversations.
6. Printouts of partially filled-in worksheets for the lab and the clerical staff.

The data browser is tailored to the person logged-in and has three panels.

The query panel contains the queries (use-cases) that the user or her user group has in her profile (a).

The result panel contains the result of the currently selected query (b).

The forms panel contains the forms and subforms that are connected with the query with data from the patient or family selected in the result panel (c) + (d).
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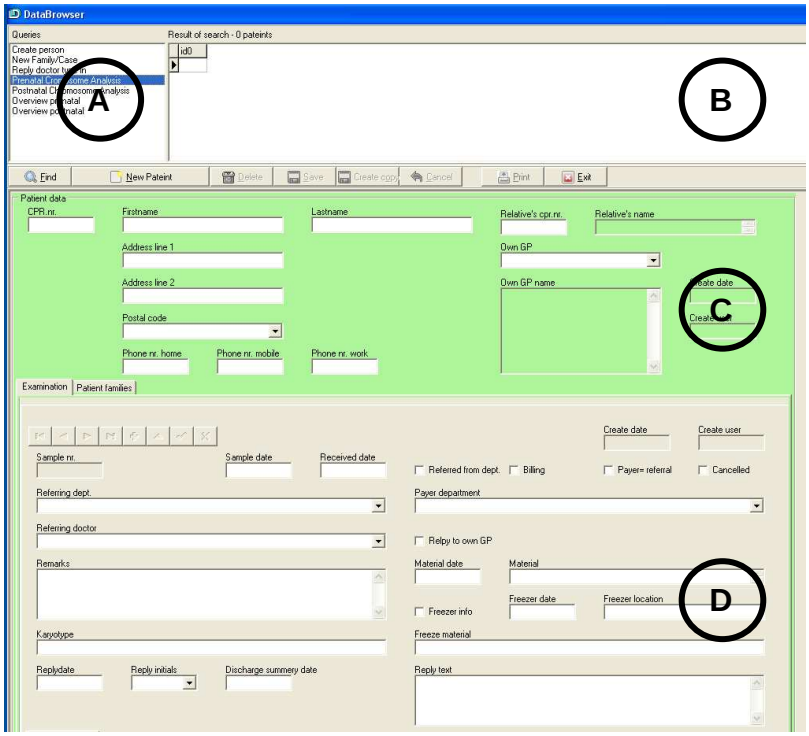

The databrowser. The top view shows the queries (a) and search results (b), the mid view (c) shows the person data and the bottom view (d) show data related to person or family.

When a query is selected (a) the search result (b) is displayed automatically. When a row in the results window (b) is selected the window below (c + d) shows the relevant data.

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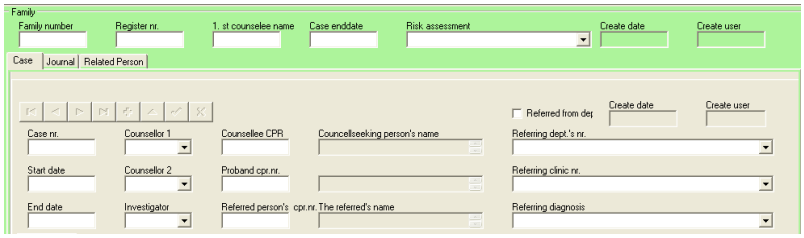
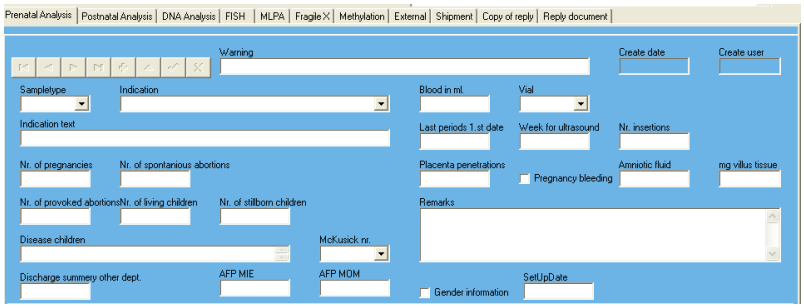
The top window bar lists active details of the patient or family selected.



Family view. The top view show the family entry (green), the bottom View (grey) show the cases associated with the family.

In the forms, panel tabs are used to handle lots of data, both for multiple concurrencies of the same data, for instance tests or answer copies or different entities such as tests, FISH analyses and family relations. This saves space on the screen and improves the general overview. For screen images that take up more space than the screen's physical size, scrolling up and down and sideway may be done. Furthermore, the panels can be eliminated and brought in with just a click.



Example of dialog for entering relevant data associated to pre- and posts natal analysis, as well as, other analysis such as FISH, Fragile X and methylation.

Navigation in the forms may be done with or without a mouse. Fields are in a Tab order. Nearly all data entry fields may be left using either TAB or ENTER to go to the next field in the Tab order.

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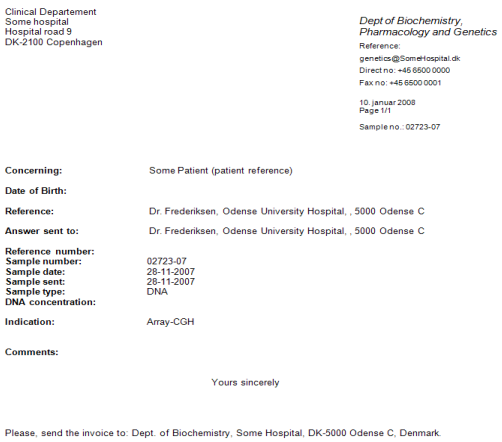
Documents

Fields may contain all kinds of data. In *Genetic Counselling, version 8.3*, Microsoft Word documents are used for storage of letters, notes and journals. All documents may be configured with any number of templates to receive database information in designated fields in the document template.

It is also possible to print answer templates for the different types of examinations and analysis.



Clinical Departement
Some hospital
Hospital road 9
DK-2100 Copenhagen

Dept of Biochemistry, Pharmacology and Genetics
Reference:
genetics@SomeHospital.dk
Direct no: +45 6500 0000
Fax no: +45 6500 0001

10. januar 2008
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Sample no.: 02723-07

Concerning: Some Patient (patient reference)

Date of Birth:

Reference: Dr. Frederiksen, Odense University Hospital, , 5000 Odense C

Answer sent to: Dr. Frederiksen, Odense University Hospital, , 5000 Odense C

Reference number:
Sample number: 02723-07
Sample date: 28-11-2007
Sample sent: 28-11-2007
Sample type: DNA
DNA concentration:

Indication: Array-CGH

Comments:

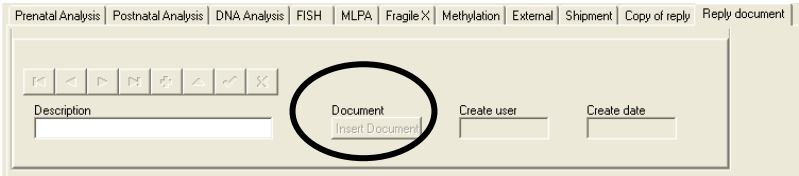
Yours sincerely

Please, send the invoice to: Dept. of Biochemistry, Some Hospital, DK-5000 Odense C, Denmark.

Example of an automatic generated document (invoice)

When the **Insert document** button is clicked, the user is given a choice of which template to use and the document of the preferred type is inserted and populated with data from the current active object.

Other documents may be stored such as spreadsheets and pictures.

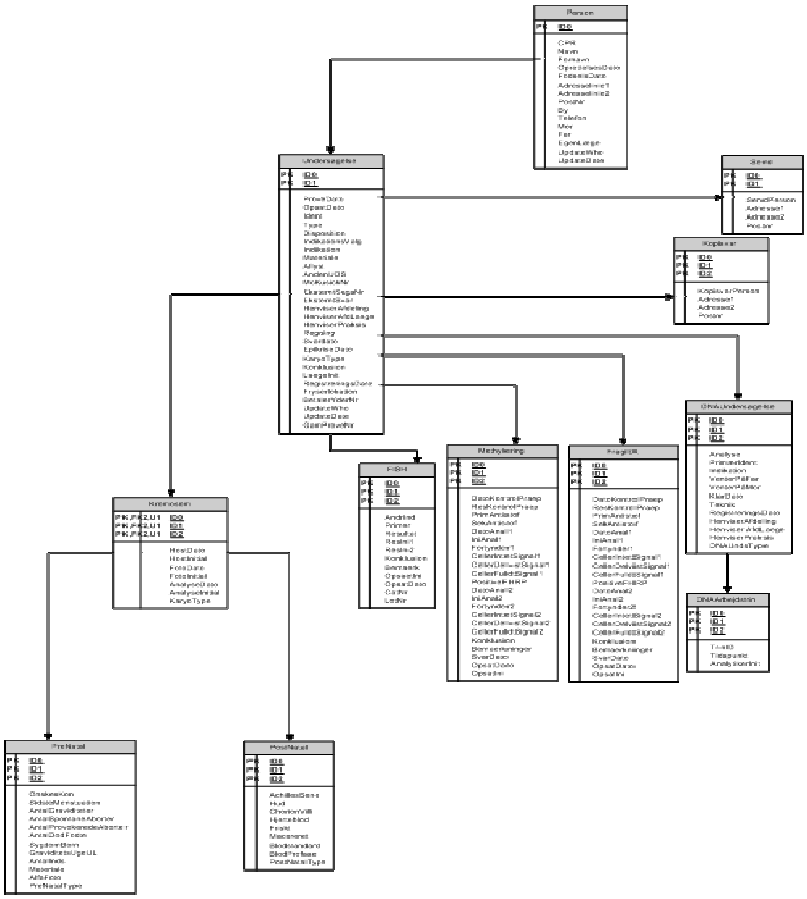


Dialog for generating new documents

Data Model.

The data model corresponds to the tabs describing different attributes or methods in the data browser, e.g. FISH, Methylation or DNA. Every tab of this kind is a table in the database.

All patients and their base data are registered in a table normally called "Person" or PERSON. This table is at the very top of the hierarchy of the database, and all other tables are subordinate to it.



Part of data model describing *Genetic Counselling, version 8.3*

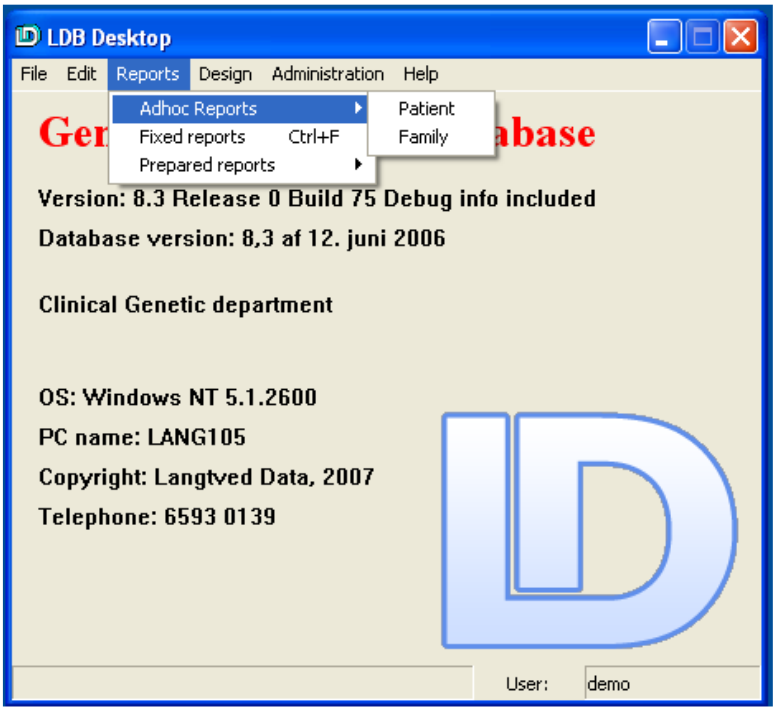
Reporting

A. Included ad-hoc report generator

B. Prepared reports.

C. SQL-queries.

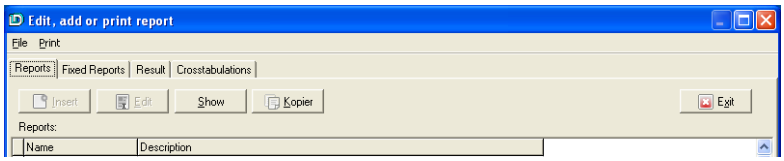
The ad-hoc report generator offers the user the possibility to formulate custom queries and receive the result as tables on paper or as comma or TAB delimited files, allowing the user to import the retrieved data into a spreadsheet or other tool (such as a statistic software). In addition the ad-hoc report generator acts as a "wizard" that helps the user to find relevant data, including connecting tables automatically. **The user needs no programming or database skills to design custom ad-hoc reports.**



Ad-hoc reports. A number of different reports can be accessed, Created and viewed from the Reports menu.

The tab button is used to navigate between definitions and results of an ad-hoc report.

Each user can define individual queries and views. Each view definition can be related to any number of reports.



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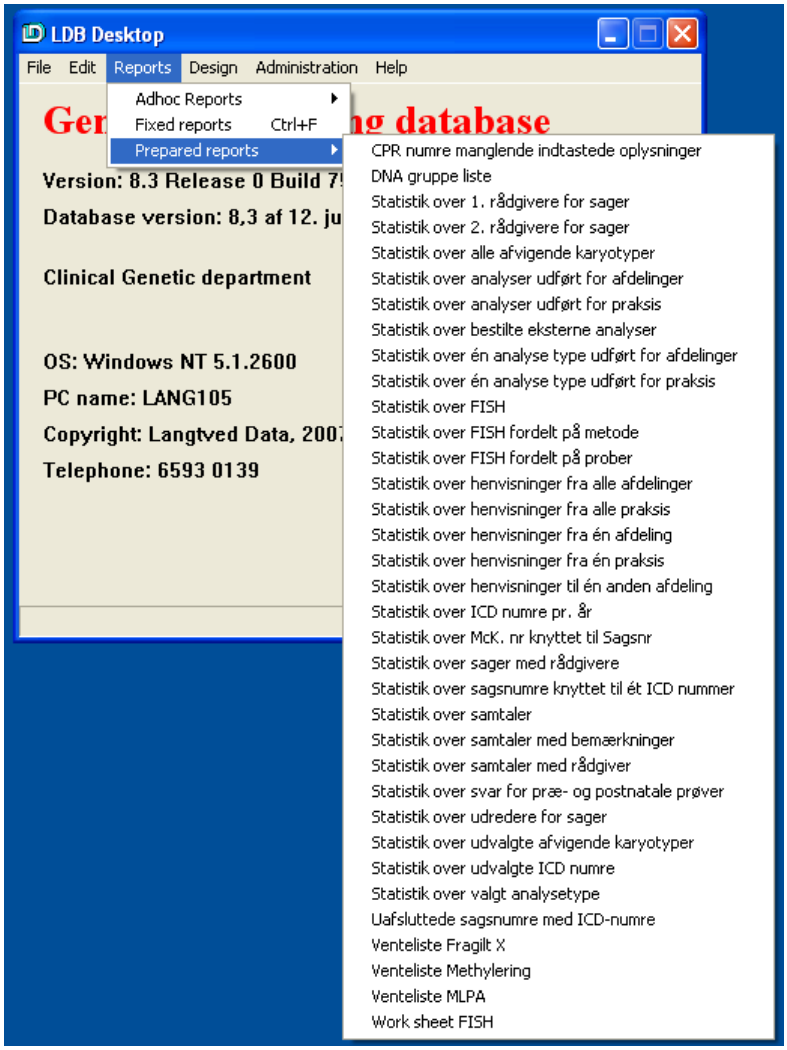
Prepared Reports. In this menu many of the reports visible in the databrowser are available. However, reports not related to single persons as families can also be accessed here.

As an additional feature, graphs can be included in the reports. The reports can be printed or saved as PDF files. Reports saved as PDF files allow the user to distribute the report by e-mail.



Prepared reports. All prepared reports are easily accessible through the Reports menu

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The reporting includes:

- Calculation of response time of both known and new mutations on both test and control sample.
- Follow-up lists on results not signed or commented
- Number of samples per time unit sorted on types or referral
- Pending answers from foreign laboratories

It is also possible to search and calculate statistics on laboratory analysis.

Udskrift af alle afvigende Karyotyper (01-01-2007 til 10-01-2008) - Side 1 - 10. januar 2008

Prøvenr	Fornavn	Efternavn	CPR	Karyotype	Prøvetype	Prøve dato
00033-07				47,XX,+mar[15]/46,XX[15].ish +der(9)(M-FISH,wcp9+),+der(19)(M-FISH,wcp19+)	ovs	08-01-2007
00068-07				45,X	ovs	11-01-2007
00095-07				47,XX,+21	ovs	15-01-2007
00093-07				inficeret	ovs	15-01-2007
00153-07				Prøve kasseret	ovs	22-01-2007
00301-07				47,XY,+21	ovs	05-02-2007
00722-07				45,XY,der(13;14)	ovs	26-03-2007
00784-07				47,XY,+22	ovs	02-04-2007
00856-07				MLPA: Normal. Køn: Pige	ovs	12-04-2007
00991-07				46,XX,inv(12)(p12.3p13.3)pat	ovs	26-04-2007
00993-07				47,XX,+21	ovs	26-04-2007
00992-07				47,XY,+21	ovs	26-04-2007
01019-07				46,XX. Homozygot for Krabbes syndrom	ovs	02-05-2007
01044-07				47,XY,+21	ovs	03-05-2007
01084-07				46,XX,inv (9)(p11q13)	ovs	10-05-2007
01119-07				47,XY,+21	ovs	11-05-2007
01370-07				48,XY,+7,+21	ovs	18-06-2007
01578-07				47,XY,+21	ovs	09-07-2007
01665-07				Ingen at angive.	ovs	20-07-2007
01667-07				47,XX,+21	ovs	23-07-2007
01681-07				47,XX,+13	ovs	25-07-2007
01747-07				46,XY,t(9;12)(q22;q24.2)	ovs	09-08-2007
01840-07				47,XX,+21	ovs	17-08-2007
01838-07				mos 47,XY,+5[8]/46,XY[42]	ovs	17-08-2007
01848-07				47,XX,+21	ovs	20-08-2007
01938-07				46,XX.ish 7q11.23(ELNx2)	ovs	29-08-2007
01954-07				47,XX,+16	ovs	30-08-2007
02218-07				mos 46,XY[31]/46,XX[77]	ovs	24-09-2007
02244-07				Ingen karyotype, se svartekst.	ovs	26-09-2007
02253-07				47,XY,+16	ovs	27-09-2007
02418-07				47,XX,+21	ovs	18-10-2007
02676-07				47,XY,+21	ovs	21-11-2007
02730-07				47,XY,+21	ovs	29-11-2007
02806-07				47,XX,+21	ovs	05-12-2007
02837-07				MLPA: Normal. Køn: Pige	ovs	10-12-2007
02879-07				MLPA: Normal. Køn: Dreng	ovs	13-12-2007

Example of a karyotype report on all patients (patients are not shown)

In general the *ad-hoc report generator* offers the user facilities to produce statistics on all information's stored in the database, such as all families or persons stored in the database, samples per year, distribution of diagnosis, time units, medical personnel and so forth.

Udskrift af FISH fordelt på metoder (01-01-2007 til 10-01-2008) - Side 1 - 10. januar 2008

Metode	Antal
FISH paint med Vysis WCP probe	3
FISH centromer-staining med Vysis CEP probe	46
FISH med Vysis LSI probe eller Vysis TelVysion probe	42
FISH paint med Vysis WCP probe og Oncor Cotasome Total Chromosome probe	9
FISH paint med Oncor Cotasome Total Chromosome probe	3
FISH arm-paint med AL-Technologies probe	1
FISH centromer-staining med Cytocell alpha satellite probe	5
FISH paint med 24 Color SKY probe	0
PRINS Reaktion	0
FISH arm-paint med Li Biomedical Corporation probe	0
FISH centromer-staining med Oncor classical satellite eller alpha satellite probe	0
FISH med Vysis AneuVysion probe	1
FISH med locus specifik Yac probe	0
FISH m-BAND med Metasystems XCYTE probe	3
FISH M-FISH med Metasystems 24 XCYTE probe	3
FISH arm-paint med Q-BIOgene probe	0
FISH med Vysis AneuVysion probe (ny metode pr. 12.02.04)	2
Direkte FISH på leucocytter	1
FISH paint med MetaSystems XCP probe	0
FISH med Cytocell Aquarius Microdeletion syndrome probe	0
FISH paint med Oncor Cotasome Total Chromosome DNA probe	0
FISH paint med Metasystems XCP probe og Oncor Cotasome Total Chromosome probe	1
PGD	16
Anden metode	0

Simple statistics on number of FISH analysis distributed by methods

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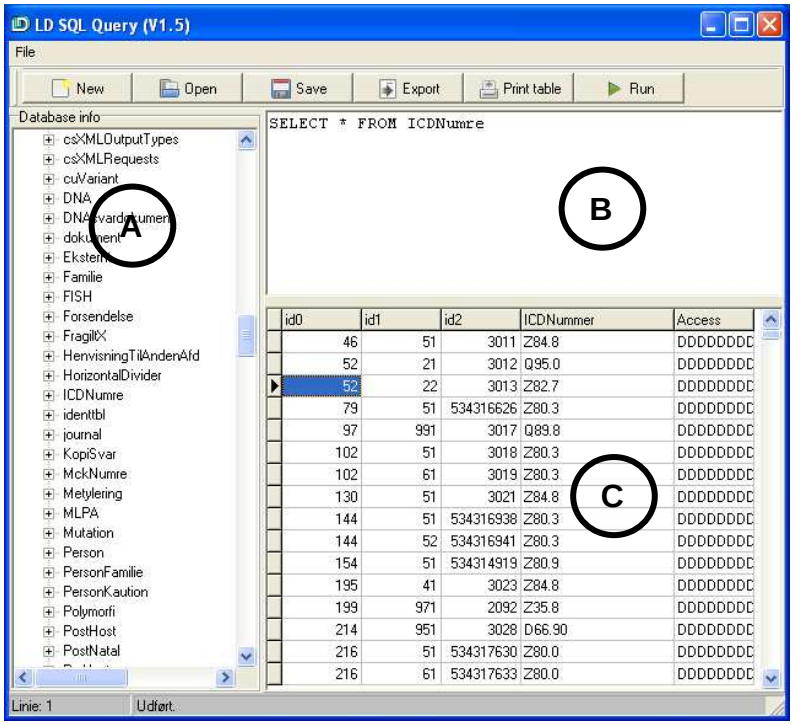
SQL-queries

Technically experienced users have the option of constructing SQL queries themselves. This requires that the user is familiar with the syntax used for SQL-queries. To assist the user in defining a query the “path-finder” can be used on available tables. It is the users own responsibility that the custom defined SQL-query return the correct data. A good knowledge of databases and SQL is highly recommended. It is important to note that only the administrators have write access using this option.



SQL query window. The left view show the tables in the database (a), the top right box allow the user to enter a query (b), and the bottom right view show the result of the query (c).

System performance

Two reports supply statistics on the performance of the system itself, including response times and client and server resource consumption

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Langtved Data A/S provides the health sector with IT-solutions adapted to the Danish Healthcare System or other hospitals. We provide specific systems that are fully 'Board of Health' compliant and tailored to meet local needs. Customer satisfaction is central to our business, and we achieve this by being highly receptive to customer requirements and feedback.

We have implemented a large number of clinical databases. These databases cover a wide variety of information such as:

* Genetic Counselling
* Hip surgery and rehabilitation therapy
* Life quality research in relation to treatment
* Lung cancer
* Mammography screening
* Out of county patient placements

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