

# DataMinder

An Electronic Data Organizer  
for Molecular Biologists

**DataMinder (DM)** is a Hypercard-based system for organizing data. Experience with Hypercard is useful but by no means essential for using this program. Online help and balloon help is provided to help you understand how **DM** works and to provide documentation of specific formulae and algorithms that **DM** uses.

## Requirements:

**DataMinder** requires a Macintosh with a hard disk and Hypercard (version 2.0 or above).

**DM** is fully System 7.0 compatible and requires at least System 6.0.5 to run. For most **DM** operations 1 MB of RAM is sufficient but for some operations more memory is required. To allocate more space in memory, quit **DataMinder**, find your Hypercard application icon, select it and type Command-I. You can then increase the application memory size by typing the new size into the appropriate field in the Get Info Dialog Box.

## DataMinder Design:

In Hypercard parlance, individual files are called stacks and are indicated by the stack icon:

The **DataMinder** "package" consists of nine such stacks. Each stack is a collection of cards, either data cards containing individual data items, function cards which can be used to carry out specific operations such as oligonucleotide analysis or settings cards that store user preferences.

### DM Database Stacks

Oligos  
Clones  
Cells  
Reagents  
Notes  
Sequences

### Other DM Stacks

Home  
DataMinder Help  
Calculator

All the **DM** stacks are located within the **DM** folder. The **DM** database stacks are located in the **Database Stacks** folder within the **DM** folder.



In addition to the nine **DataMinder** stacks, a number of other files are provided for use with **DM**. The **DM References** folder contains a series of PICT files that can be accessed by choosing the appropriate menu option from the **Reference** menu in **DM**. You can add your own PICT files and modify the Reference menu to include your the names of your own PICT files or to delete any PICT file already in the system. The **DM Restriction Maps** folder contains PICT files of the restriction maps of the plasmids used as examples in the **Clones** database. As with the **Reference** menu items, you can add or delete PICT files in this folder. These PICT files are accessed from the **Clones** database when you click on the **Show Map** icon on the appropriately named data card. The **DM Fonts** folder contains 3 fonts that you might find useful. Iconfont is a derivative of the original Iconfont created by Nigel Perry. This font is needed for the correct display of information in the **DM Help** stack. DM Subscripts and DM Superscripts are fonts that I use to work around the lack of subscripts and superscripts in Hypercard. These allow you to create text that appears sub or superscripted. You are limited to a single font (Courier) for these "text styles". These fonts must be transferred to your system folder.

### **Using DataMinder:**

To navigate about **DM**, or to carry out specific operations such as data storage or a calculation of some sort, you can click on the icons and buttons provided or where appropriate use the menu options or keystroke equivalents.

For users with small screens a card mover button is provided. Clicking on this button will move the stack into the bottom left hand corner of the screen. Clicking on the "Grow" box that is then revealed at the top right hand side of the **DM** window will return the window to its original position.

The **Home** stack is the base from which you launch the six **DM** data stacks. The **DM Home** stack can also be used to launch most non-DataMinder Hypercard stacks. To return to the **Home** stack at any time type "H" with the commandkey down, use the **Home** menuoption in the **Go** menu or click on the **Home** icon. To return to the first card in a stack use the **Home** icon or the appropriate menu item in the **Go** menu.

The databases are accessed by clicking on the appropriately labeled tab at the top of each card. Individual data items in a database can be accessed by clicking on one of the **Database Contents** icons at the top right hand side of each card. The **Oligos, Sequences, Clones** and **Reagents** stacks each are comprised of a single database. The **Oligos** stack also contains an **Oligo**

**Analysis** card that permits the evaluation of oligonucleotides for use as primers or probes and the choice of primer pairs from a given sequence.

The **Cells** and **Notes** stacks each contain two minidatabases. The **Cells** stack contains a database for the storage of data about prokaryote cells and a database for the storage of information about eukaryote cells. The **Notes** stack is divided into two sections, a **Methods** section, for the storage of protocols, and a **Lab Notebook**. The last time a protocol in the **Methods** section is modified the date is recorded in a date field at the top right hand side of each card. The start date and last modification date are recorded automatically for each card in the **Lab Notebook** section. The current date is also entered automatically into the data field when new data is entered.

Data cards and report fields can be printed out using the printer icon. Space is provided on all data cards except those in the **Sequences** and **Notes** databases for the user to record the place of storage of the item. In the **Oligos**, **Clones** and **Cells** databases this information is stored in a field that is revealed when the **Storage** icon is pressed.

In the **Reagents** stack a small notepad is provided on each data card for recording of information such as sterilization and storage conditions. The **Reagents** stack contains a **Catalog** card in which you can store catalog information about commonly used lab items. The card is designed to facilitate ordering of items primarily from N.I.H. stock. A **Solutions Worksheet** is also provided that allows rapid calculation of components of buffers etc that can then be stored in the Reagents database.

You can reach the **Reagents Catalog**, the **Solutions Worksheet** or the **Oligo Analysis** card from anywhere within **DataMinder** by choosing the appropriate menu option in the **Go** menu.

The scientific calculator stack acts as a desk accessory. It can be accessed from the **Special** menu or by using the **Calculator** icon.

Data entry into the **DataMinder** databases is simple. You must be at userlevel **User** or **Superuser** to enter new data. At either of these userlevels a new data card is created automatically when you click on the **Database Contents** icon at the top of each card and then click on the New button in the displayed **Database Contents** dialog box, or when the **Store** button on the **Oligocalculator** in the **Oligos** stack is clicked. The user is prompted for the name of the data item. **DM** checks that the name is not already present in the database and that it is a valid Hypercard name. Database item names should be 30 characters or less, should contain at least one nonnumeric character and should not contain a comma. If the name fails any one of these tests the user will be given the option of canceling

the data entry or entering a new name for the data

item. When a new data card is created the name of the new data item added to a list of the data items in the database.

The name of any data item in the databases can be changed and the database list will be updated automatically to reflect this change. Once again **DM** checks to make sure that a valid name is used. If the name is not valid, an alert message is generated and the invalid data name will be replaced with the last valid name stored.

A data item can be deleted using the **TRASHCAN** icon/command-D/Delete card menu option. When a card is deleted, the database list entry is automatically deleted.

The list of database items is limited to 30 000 characters, so you should limit the length of the name you assign to a new data item if possible. You can import items for inclusion in a particular database and export the contents of each database stack (see the section on Exporting and Importing Data).

You can use any of the fonts in your System folder to customize your data presentation. You also have a range of font styles from which to choose. Unfortunately Hypercard does not provide for the use of subscripts and superscripts. To get around this problem I have created 2 special fonts called **DM Subscripts** and **DM Superscripts** which are versions of the Courier font that act as subscripts and superscripts respectively.

With these fonts installed in your system folder you can create a sub or superscript in the same way as you do in a word processing program such as Microsoft Word by selecting the desired text and typing "-" or "+" with both the commandkey and shiftkeys held down. You can also use the **DM Subscripts** or **DM Superscripts** menu options in the **Font** menu. To make use of these fonts you will need to install the fonts provided in the **DM Font** folder into your System folder.

Unfortunately the sorting and formatting routines in **DM** do not support text styles such as italics etc and text using styled options will be converted to plain text when these routines are used.

You can search any database for occurrences of a userspecified keyword by typing "F" with the commandkey down or using the **Find** icon:

**DM** will generally keep track of where a stack, file or application that you access from within **DM** is stored on your computer. Initially you might be asked where a specified file / application / stack is, using the standard Macintosh file dialog

box. Simply choose the desired file in the normal Mac way. **DM**  
will then will "remember" the location of



that file. If that file is moved, **DM** will not be able to find the file and you will have to repeat the "teaching" process.

Using Balloon Help (in System 7) or holding the option key down while moving the cursor over an icon or button displays a windoid containing information about the function of that object. The **DM Help** Stack provides more detailed information. You can access this stack from the **Apple** menu at any time. The stack will appear in a new window on your screen.

Unlike other Macintosh applications, Hypercard does not allow you to revert to the original version of a stack on closing (i.e. by choosing not to save changes). Therefore be careful when doing any editing, since any changes that you make are permanent unless immediately corrected by using the **Undo** command in the **Edit** menu. If you are nervous you may want to choose the **Browse** or **User** options from the **Special** menu. **Browse** allows you to view data and carry out simple functions but does not allow you to alter or add any data items. A **User** can make alterations to the text on existing data cards, and create new data cards. A **Superuser** can alter, add and delete data cards. You can also generate a copy of each stack using the appropriate menu option from the **File** menu and work on the copy instead. Make frequent backups!!!!

See the online help for more specific information about the use of this program.

**DataMinder** is certainly not a polished product. It was built on an *ad hoc* basis to meet certain of our laboratory needs. While **DM** suffers from certain obvious limitations, it provides a useful framework for implementation of more sophisticated routines should you need them.

The usual disclaimers apply to the use of this software. **Use at your own risk.**

**Important Note: DataMinder** makes use of two shareware XFCNs from Differential Development (the FieldToRTF and RTFToField XFCNs). The authors of this shareware ask for a \$12.00 shareware fee to be sent to:

Differential Development  
P.O. Box 1044  
Harvard Square Station  
Cambridge, MA 02238

If you like DataMinder please drop me a note. This would enable me to provide you with improvements to the program as they become available.