NAME

Changes made to *MASE*

November, 1987

Variables:

Added Variable CONSENSUS-THRESHOLD for function CONSENSUS
Added Variable HIGHLIGHT-DIFFERENCES for main editing mode

Intrinsic Functions:

CONSENSUS: references variable CONSENSUS-THRESHOLD

Main editing mode (Introduction section)

References variable HIGHLIGHT-DIFFERENCES; *MASE* can now highlight all bases that differ from a reference sequence (the reference sequence may be the consensus sequence).

December 1, 1987

Intrinsic Functions:

OUTPUT:

If consensus has been calculated, it will be printed
in the output file.

The output file will reflect
HIGHLIGHT-DIFFERENCES.

December 3, 1987

Serious error fixed in *DELETE-COLUMNS* (within file ‘‘ins-del.c’’

February 4, 1988

DOCUMENTATION

Added ‘‘Tutorial’’ document.
General refinement of some phrases

VIEW-COMMENTS

You can now pass arguments to ‘‘grep’’.

February 8, 1988

Fixed ‘‘Output-Aligned’’ handling of the Output-Use-Formfeed variable (it did not work before).

February 9, 1988

Pattern-Highlight and Search share their history list

February 10, 1988

Cleaned up documentation to work better with ‘‘TROFF’’

February 11, 1988

Added Function ‘‘Create Locus’’ to make a new locus or copy an existing one.

Function ‘‘Consensus’’ looks at the aliasing characters (the current character set) rather than the real characters. This will make moderately ‘‘degenerate’’ consensus sequences to be formed.

Modified the behavior of the ‘‘Highlight Differences’’ feature. It compares the aliased (displayed characters) rather than the real characters - to reduce the less significant highlighting.

February 22, 1988

Fixed problem in the configuration file ‘‘colors.la100.patterns’’ the escape sequence lacked an ‘‘m’’ for the field ‘‘2’’.

February 23, 1988

Oops in display.c (line 38) - numbers displayed for modified sequence names were invalid (reflect line number rather than sequence number.

March 1, 1988

Added the ‘‘CREATE-LOCUS’’ function. Has provisions to copy or translate from an existing locus.

March 16, 1988

Added mouse support for X-Windows and SunTools (and anything else, I guess). Mouse data should be in the following form:

C-XC-@([124] x y)

where left button is ‘‘1’’, middle button is ‘‘2’’, and the right button is ‘‘4’’, and x,y is the mouse position in CHARACTERS (NOT pixels). (C-X is control-x (octal \030), and C-@ is octal \000.) Currently, LEFT-MOUSE sets cursor position, MIDDLE-MOUSE sets cursor position, then inserts a gap, and MIDDLE-MOUSE sets cursor position, then deletes a gap. If you are on X-Windows, you need ‘‘mouse_type’’ running in your window. If you are on SunTools, MASE must be run under ‘‘emacstool’’ - the mouse trap used by GNU-EMACS (via ‘‘emacstool -rc mase’’, or ‘‘emacstool -rc csh’’, then running ‘‘mase’’ in that shell.

Happy Mousing!!

March 18, 1988

Added two mouse functions:

Shift-Middle-Mouse: Open Rectangle

Shift-Right-Mouse: Close Rectangle

Improved the X-Windows driver for the mouse.

April 11, 1988

Many changes - trying to get *MASE* in shape for a *‘‘real’’* distribution!.

Support for function *MAIL-NOTES* being removed.

Added color curses support for *PATTERN-HIGHLIGHT*

COLUMN-CORRELATION function enhanced. Can now use fixed ‘‘p’’ value via *COLUMN-CORRELATION-FIXED-P*. Can use one sequence as the model via *COLUMN-CORRELATION-MODEL.* Suggested by Jurek Jurka at Linus Pauling Institute.

Improved the *SAVE* function: It displays file names as they are written, ‘‘empty’’ files (like when you have *MOVE-LOCUS-FILE* ed away all of the locus) are not written, and MULTIPLE backups are saved.

WRITE-TO-FILE function added - write specified loci to specified file.

The generic *‘‘Open File’’* interface allows you to *‘‘Backup’’*.

All occurrences of *‘‘HOMOLOGY’’* have been changed to *‘‘SIMILARITY’’*.

Added the ability to do one-letter translations to *CREATE-LOCUS*

Added some support for window size changes - seems to be O.K. for making windows BIGGER.

On ‘‘cold’’ startup, *MASE* asks if you want to read a file or create a new locus.

Beep when there are *PROTECT* violations.

The string handed to *VIEW-COMMENTS* can actually be a pipe.

April 14, 1988

Improved the refreshing mechanism; MASE should be better about not trying to refresh the screen if there are unused key strokes waiting to be read.

April 15, 1988

OUTPUT-ALIGNED can now generate output like *HIGHLIGHT-DIFFERENCES.*

April 21, 1988

Added function *HIGHLIGHT-DIFFERENCES* with interactive and batch hooks.

Fixed glitch with screen not being refreshed on startup.

April 27, 1988

PATTERN-HIGHLIGHT, SEARCH, and *SEARCH-AGAIN* reference the new variable *PATTERN-IGNORE-GAPS* and *SEARCH-IGNORE-GAPS* (they are synonyms). When this variable is set, gaps will be ignored for highlighting patterns and for executing searches for regular expressions. Searches and highlighting will be slightly slower when this mode is enabled. This was suggested repeatedly by MANY people (hence it's inclusion!).

Many functions and variables were renamed. The old names will continue to be available for the near future. These changes are:

Functions:

Old Name	New Name
Delete-Columns	Del-Columns
Edit-Comments	Comments-Edit
Insert-Columns	Ins-Columns
Matrix	Similarity-Matrix-Load
Swap-Windows	Cursor-Other-Window
Synchronize-Windows	Window-Synchronize
View-Comments	Comments-View

Variables:

Old Name	New Name
Ignore-Case-For-Searches	Search-Ignore-Case and Pattern-Ignore-Case
Ignore-Selves-In-Similarity	Similarity-Ignore-Selves
Use-Gap-For-Consensus	Consensus-Use-Gaps

These changes were made to increase consistency.

May 4, 1988

Added functions *MODE-ALIGNMENT, MODE-DNA, and MODE-PROTEIN* with aliases *ALIGNMENT-MODE, DNA-MODE, and PROTEIN-MODE* to switch the environment. This is probably better than the ‘‘TAKE =/keys.dna’’ stuff. This opens the way to use some command tail switches to set up parts of the environment. Suggested by Jurek Jurka at Linus Pauling Institute.

May 19, 1988

Improved automatic window shifting behavior: when *LOCK-WINDOWS* is *ON,* the cursor is in the second window, and you execute a jump into the beginning of the sequence, the windows are shifted in a manner that is more expected.

August 5, 1988

Added several variables to better control display and some utilities, as *DISPLAY-ALTERNATE-CHARACTER-MAP,*

Added the function *CONSENSUS-ALTERNATE.*
Added the variable *OUTPUT-SUPPRESS-LOCUS-NUMBERS.*
Enhanced *PATTERN-HIGHLIGHT* to work better in batch mode by adding variables *PATTERN-ASK-CLEAR* and *PATTERN-DEFAULT-CLEAR.*
Added variable *SIMILARITY-DISCARD-GAPS.* Suggested by Ela Holsztynska and Jurek Jurka.
Added function *SEQUENCE-SLAVE-SYNCHRONIZE.* Suggested by Ela Holsztynska.
Started to implement changes for UNIX System V compatibility

August 8, 1988

Added function *RENAME-LOCUS* to manually rename just one locus Suggested by Jurek Jurka at Linus Pauling Institute.
Added function *UN-HIGHLIGHT-POSITION* to complement *HIGHLIGHT-POSITION.* Suggested by Terry Webster at MBCRR.
Added function *JUMP-TO-POSITION-ABSOLUTE* Suggested by Jurek Jurka at Linus Pauling Institute.

September 1,

Added anchor functions: *ANCHOR-CHECK, ANCHOR-CREATE, ANCHOR-SYNCHRONIZE, DEL-COMPENSATED-BACKWARD, DEL-COMPENSATED-FORWARD, INS-COMPENSATED-BACKWARD,* and *INS-COMPENSATED-FORWARD.*

The ‘‘effective position’’ or ‘‘offset ignoring gaps’’ routine has been modified to treat periods as gaps

The routine for *AUTO-INSERT* has been modified to strip the high bit before inserting the character.

October 12, 1988

Added aliasing functions: *ALIAS, ALIAS-LOAD,* and *ALIAS-SAVE.* The only way to access these is via ‘‘M-A’’ inside the string menu handler.

Added *REPEAT* function. This lets you repeat a macro-character multiple times.

For menu-mode input - if you type ‘‘*’’, it looks for the string at any point in the menu items. Use M-n to go to the next match. Use M-p to go to the previous match.

October 13, 1988

Added the function *ALIGN-ON-PATTERN*. Given a pattern, insert gaps (either at the beginning of the sequence, or after the most recent period (anchor point)) to align all occurences of that pattern. No allowance is made to do this for just some subset of sequences (sigh!). If a given locus doesn't have the specified pattern pattern, user will be notified, and the sequence will be untouched. Suggested by Temple Smith at MBCRR and others.

October 25, 1988

Added variable *PROTECT-ASK-OVERRIDE* to allow one-time override of protection violations. Suggested by Kersti MacInnes at LANL/GenBank.

Enbled the Import function inside *CREATE-LOCUS* so one can import loci from external files.

Added *WRITE-REGION-TO-FILE* function to dump some region from a set of loci to a file. Suggested by Kersti MacInnes at LANL/GenBank and others.

October 26, 1988

The delete routine will treat anchors (‘‘.’’) as gaps with regards to *PROTECT.*

Added functions *ANCHOR-DELETE* and *ANCHOR-STRIP.* Suggested by Kersti MacInnes at LANL/GenBank.

October 27, 1988

Batch interface to *PATTERN-HIGHLIGHT* puts pattern specified into the pattern / search history list.

SEQUENCE-SLAVE-SYNCHRONIZE will now synchronize anchor points (‘‘.’’) as well as gaps (‘‘-’’).

November 1, 1988

Modified the display and pattern highlight routines. Now, sequences which had one or more matches to the *most recent PATTERN-HIGHLIGHT* will be displayed with an asterisk (‘‘*’’) in the left hand margin. This provides a mechanism to rapidly see which sequences contain a given pattern. Suggested by Jurek Jurka at Linus Pauling Institute.

Added wild-card mechanism for *MENU INTERFACE.* If you type an asterisk (‘‘*’’) then some letters, the first menu item containing that string will be selected. Select the next match by M-n. Select the previous match by M-p. Suggested by Temple Smith at MBCRR and others.

November 23, 1988

Fixed small glitch - - locus name displayed wrong when a locus was modified.

SIGWINCH handled properly: you can change the size of the MASE window, and it will adjust accordingly.

January 19, 1989

Release 1.6

March, 1989

Extended the mouse handler to allow the MIT-MOUSE sequences that *xterm* can generate.

Implemented an *UNDO* function that will undo the effects of inserting, deleting, creating, and zapping.

Extended the key stroke model to allow *PREFIX* keys. This is far more flexible than just *META.* It allows to have prefixes of arbitrary length. Thus, ˆIˆIa could be bound to *AUTO-INSERT,* while ˆIˆRa could be bound to *OVER-TYPE,* and ˆUˆEa could be bound to *INS-COMPENSATED-FORWARD,* ad nauseaum.

Added function *DYNAMIC-HIGHLIGHT* that will search for matches to a matrix (weighted search)

Added *LOAD-FUNCTION* to dynamically load subroutines. This lets a *MASE* user use his own functions within *MASE* without having to modify the main *MASE* source code.

Attempted to increase System V UNIX compatibility - different pattern numbers will be represented with different representations, and tried to take advantage of other System V curses inhancements. The signal handlers seem to be working, but there may still be problems.

Modified *CREATE/TRANSLATE* to allow specifying any frame and to squeeze out gaps before translation. Also added ability to import sequences.

Added functions to store and retreive highlights. *This should not be considered a*

Expanded the highlight model with variable *HIGHLIGHT-MERGE-METHOD* to and, or, add, or replace.

Fixed small problem when reading in files with FormFeeds (ˆL) for enhanced compatibility with files generated by IntelliGenetics suite.

If environmental variable *MASE_DIR* is set, this directory will be used for run-time lookups for help, extra files ...

March 1989

Added function *SQUEEZE-OUT-GAPS-RESTRICTED* to do the squeeze only in a sub region.
Suggested by Jurek Jurka at Linus Pauling Institute.

Added function *VERIFY* which works like *AUTO-INSERT,* except that it verifies the key rather than inserting it. If *VERIFY-PAUSE* is set (default case), program will pause.
Suggested by Jurek Jurka at Linus Pauling Instute.

Added variable *CONSENSUS-USE-STAR*, which works like *CONSENSUS-USE-GAP*.
Suggested by Jeff Lawrence at LANL/GenBank and others.

Added *OVER-TYPE* function, analagous to *AUTO-INSERT*, but types over old sequence rather than inserting. When deleting under, obeys *PROTECT.*
Suggested by Jurek Jurka at Linus Pauling Institute and others.

Added *SEARCH-BACKWARDS* and *SEARCH-BACKWARDS-AGAIN*, like *SEARCH* commands, but searches from the cursor backwards in the sequence.
Suggested by Randy Linder at LANL.

April 5, 1989

Cleaned up lots of little points in the code.

Renamed all functions with lower case letters and spaces rather than dashes, to make it more readable.

Deleted obsolete names:
DELETE-COLUMNS
EDIT-COMMENTS
IGNORE-CASE-FOR-SEARCHES
IGNORE-SELVES-IN-SIMILARITY
INSERT-COLUMNS
MATRIX
SWAP-WINDOWS
SYNCHRONIZE-WINDOWS
USE-GAP-FOR-CONSENSUS
VIEW-COMMENTS

Added functions *INS-NEXT-CHARACTER* and *OVERTYPE-NEXT-CHARACTER.*

Renamed *OVER-TYPE* to be *AUTO-OVERTYPE.*

Fixed bug in *CONSENSUS:* If some sequences were shorter than others, towards the end, the percent was calculated on the number of original sequences, not just the sequences which had data at this position.
i.e. with *CONSENSUS-THRESHOLD* set at 0.5, and sequences:

ONE actgactg
TWO actgac
THREE actccc

would have given consensus of "actgac??", but will now give "actgactg".

Fixed bug in *CONSENSUS:* threshold value was rounded incorrectly.

April 19, 1989

Added a set of YANK functions: *YANK-LAST-DELETE, COPY-TO-YANK, APPEND-TO-YANK,* and *SHOW-YANK-BUFFER.*
When you delete positiions, the deleted bases will be placed into a yank buffer. Adjacent deletions will concatenate into one contiguous yank. You can artificially place things into the yank buffer via

APPEND-TO-YANK and *COPY-TO-YANK. APPEND-TO-YANK* will append *MULT* positions to the yank buffer. *COPY-TO-YANK* will replace the current contents of the yank buffer with the next *MULT* sequence positions. *SHOW-YANK-BUFFER* will tell you how many characters are in the yank buffer, and will display as much of the yank buffer as will fit on one line.

NOTE: All delete functions affect the yank buffer. The yank buffer will be cleared before each non-adjacent deletion.

The YANK functions were suggested by Yurek Yurka.

Added function *BIND-ALL-ALPHA* to bind all alpha characters with some modification to a function.