

UNIVERSITY OF DELAWARE AMINO ACID RACEMIZATION DATABASE
(AARDB) REVISION HISTORY AND INSTRUCTIONS FOR USE

Initial upload to Delaware Geological Survey Website as Open-File Report

January 2015

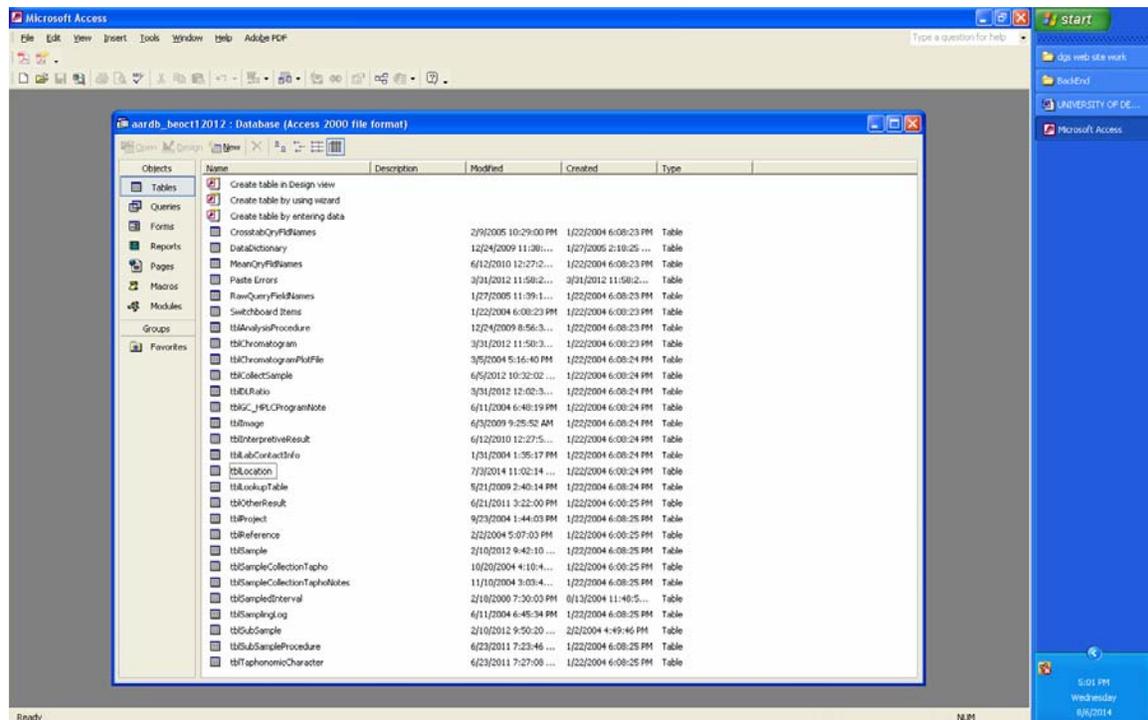
Initial file name: AARDB_2015_01

Revision history:

INSTRUCTIONS:

AARDB was created with MS Access 2000, hence it should open with any recent version of MS Access. The contents of AARDB are shown in this image, which shows the different inter-related components of AARDB. The most important of these for most purposes will be the following tables (tbl):

Location
Collect sample
Sample
Subsample
Chromatogram
DLRatio



The information embedded in AARDB is linked so that, if one opens any line in the Location file, one will see the following information (example):

The screenshot shows a Microsoft Access database window titled "tblLocation : Table". The main table has the following columns: UDAMS, Repository, LocalityID, Map100k, Lat, Long, Coordinate_precision_m, SurfaceElevation_m, and Notes and/or Reference. The data includes various localities such as Cape Henry Lighthouse, Seashore State Park, Hog Island Beach, and Kiptopeke Borehole. A detailed view of a sample analysis is shown for locality 06204 (Kiptopeke Borehole), collection JW94-222, sample JW94-222-1. The analysis was performed on 12/19/1994 using HPLC. The results show DLRatio values of ~0.39 and ~0.45 for allo-isoleucine, measured by peak area and height ratios, respectively. The analysis was conducted by Harris in 2000.

UDAMS	Repository	LocalityID	Map100k	Lat	Long	Coordinate_precision_m	SurfaceElevation_m	Notes and/or Reference
* 06193		cape henry lighthouse	Norfolk	36.93	-76.03			
* 06194		Seashore state park	Norfolk	36.926	-76.044			
* 06195		Hog Island beach	Chincoteague	37.43	-75.677			general loc Krantz c
* 06196		Parramore Island Beach	Chincoteague	37.59	-75.61			Radiocarbon South
* 06196a		North Parramore	Chincoteague	37.545	-75.619			McCeehan
* 06196b		South Hog Island	Cherton	37.5	-75.2			McCeehan VERY v
* 06197		R/V C HENLOPEN	DE shell	38.77	-75.04			general loc multiple
* 06198		Chincoteague Beaches	Chincoteague	37.89	-75.34			general loc
* 06199		Big Bathal Pt BB	Norfolk	37.075	-76.433			see 06040
* 06200		Point Farm, Va PF	Norfolk	36.8	-75.9			loc not known need
* 06201		Gomez Pt	Norfolk	36.78441	-76.1971			
* 06202a		Parramore 93NP1	Chincoteague	37.576953	-75.609693			Radiocarbon
* 06202b		Parramore 93NP2	Chincoteague	37.575905	-75.604651			Radiocarbon
* 06202c		Parramore 93NP3	Chincoteague	37.571681	-75.600279			Radiocarbon
* 06202d		Parramore 93NP4	Chincoteague	37.56764	-75.601749			Radiocarbon
* 06203		Wallops I	Chincoteague	37.639	-75.483			general location
* 06204		Kiptopeke Borehole	Cherton	37.138	-75.965			approx location 200

This is showing that for locality 06204 (Kiptopeke Borehole), a collection exists (JW94-222) and that from this collection (which could represent a large number of shells), individual shells were analyzed. The particular example is JW94-222-1, which was analyzed by HPLC on Dec. 19, 1994, yielding D-alloisoleucine/L-isoleucine values of ~0.39 and ~0.45 by peak area and height ratios measurements, respectively.

There are many blank spaces in AARDB, either because samples (collections) do not exist or because data do not exist, even if samples have been collected. As of Oct. 2014, AARDB is virtually complete as far as Quaternary shell collections from North and South American sites studied at the University of Delaware. Missing results are for other studies that are not linked to the localities listed in AARDB.

Other sites may have much more information. For example, site 07534 (MLD-01) has a large number of collections that represent different depths in this long core obtained from the North Carolina coastal plain. If one opens the line for collection JW2003-156 one will see five samples listed; opening the line for JW2003-156-003 will reveal many subsample identifications. These represent different, separate fragments from the very same shell, all analyzed at different times, for extent of racemization or, in this case, radiocarbon (other analyses include Sr-isotopes, U-series, thin section, or C & O isotopes). The table "Other result" should be referred to for data other than AAR.

Delving further into AARDB, one can see that under sample JW2003-156-002, subsample 2004090 lists eight different chromatograms developed between May 4, 2004 and May 25, 2004. Opening any one of these chromatogram lines will reveal the raw data for that analysis; if any data are “flagged” that means that there was some reason to reject the result based on visual examination of the chromatogram. Unflagged results are all combined by the front end of AARDB into a grand mean for all the analyses of that particularly subsample. Digital copies of all chromatograms are available for examination if necessary.

Other tables of value in AARDB:

Note that many of these tables are nearly blank. They were created during development of AARDB with the thought that this information would be useful in the future. Populating AARDB with this information is ongoing.

Analysis procedure
Image
LookupTable
Other result
Reference
SampledInterval
Subsample procedure
TaphonomicCharacter

Information about these and other tables is found in the file titled “AARDB structure”