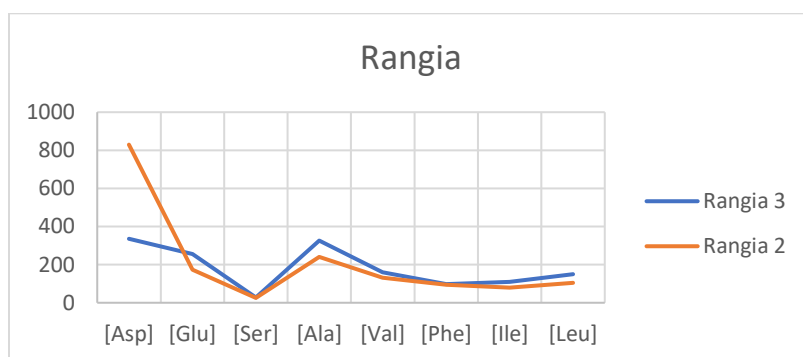


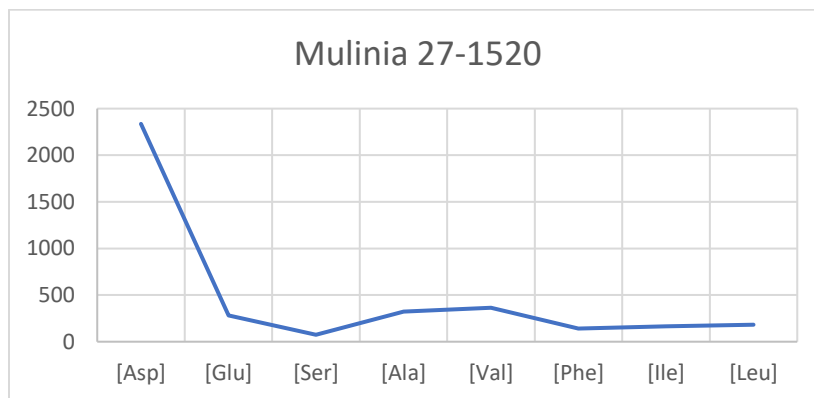
Appendix E: Summary of quantitative amino acid abundances in molluscan taxa

Multiple graphs are presented, showing the abundance of all analyzed amino acids in representative samples of *Astarte*, *Mercenaria*, *Mulinia*, *Rangia*, and *Spisula*. All results are from the RP method; raw data are in SOM 3. These figures show that the relative abundance of amino acids varies from one genus to another. In all cases Aspartic acid (ASP) is the most abundant, but it is dominant in *Mulinia*. The less abundant amino acids are considered less useful in for aminostratigraphic applications involving their D/L values – for the RP method, this is particularly true for leucine and isoleucine because of the elution time of these amino acids. Comments about each figure are included, but it is particularly useful to compare multiple graphs. Y-axis lists picomole/mg of shell. Mean values for multiple shells from a specific site or group of sites are plotted. The mean D/L GLU values for different groups of samples are cited, if relevant, to distinguish groups of different ages.

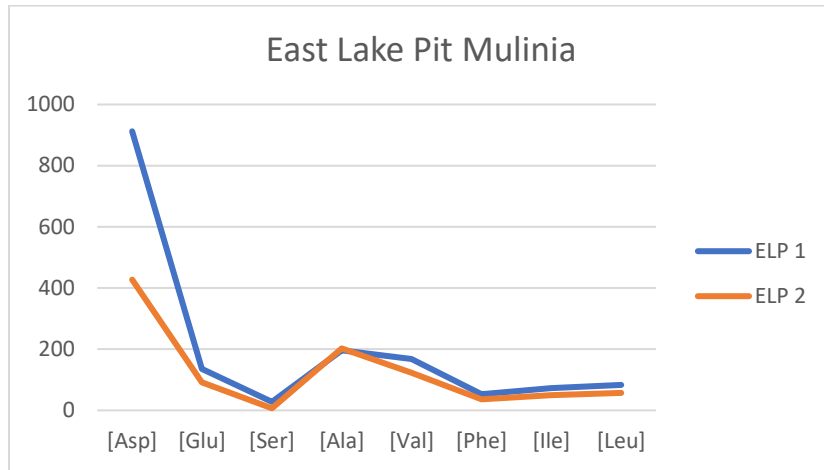
- 1) *Rangia* data from R2 and R3 (see text). D/L GLU values are 0.27 and 0.45, respectively. [Asp] decreases with increasing age (increasing D/L).



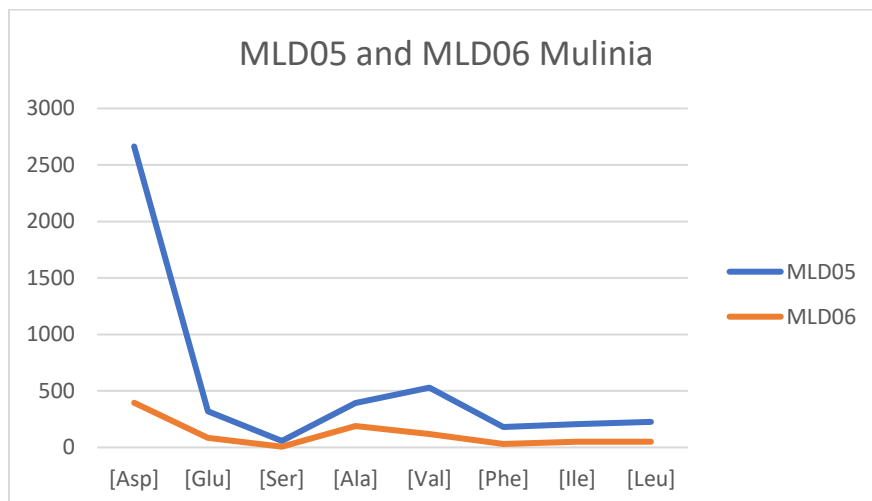
- 2) *Mulinia* from MGS 271-1520. This core has the most analyses of this genus of all the cores studied. Note large relative abundance of [Asp]. Mean D/L GLU for this group is 0.188, for comparison with other *Mulinia* data in following figures.



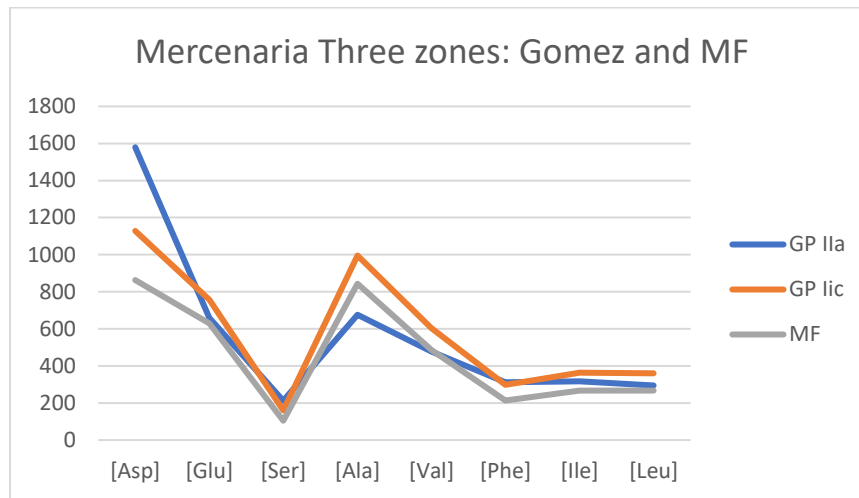
- 3) East Lake Pit *Mulinia* data. Two superposed aminozones. Mean GLU D/L values for ELP 1 and ELP 2 are 0.28 and 0.59, respectively. As above, ASP abundance decreases with age.



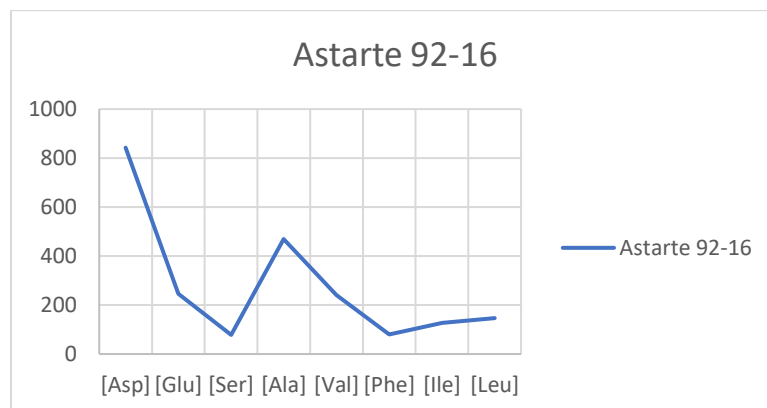
- 4) *Mulinia* from MLD05 and MLD06. Two aminozones: D/L Glu values 0.24 and 0.56, respectively. Asp abundance decreases with age. The MLD06 group is likely equivalent to the ELP 2 group, above. MLD06 and ELP are within 1.5 km of each other (northeast NC): see Wehmiller et al., 2010.



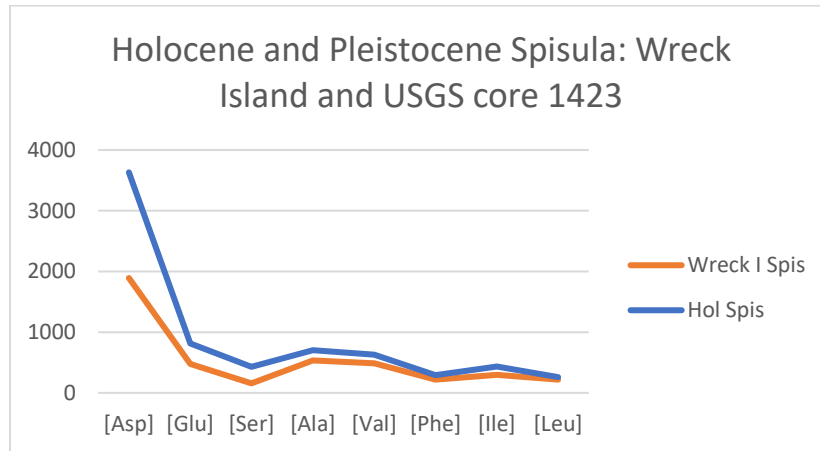
- 5) *Mercenaria* from two amino zones at Gomez Pit (IIa and IIc are equivalent to M2 and M3, respectively) and from the older amino zone (M4) at Matthews Field. D/L Glu values 0.22, 0.38 and ~0.50, respectively (there is a fairly wide range for MF)



- 6) *Astarte* from DGS 92-16; relatively high abundance of ALA (and ALA D/L values in *Astarte* are always low compared with ALA D/L's in other taxa). Perhaps an indication that ALA D/L values in *Astarte* are less vulnerable to products of decomposition of other amino acids.



- 7) Comparison of Holocene and Pleistocene *Spisula*: average of Wreck Island *Spisula* (Pleistocene) data and average of offshore core 1423 data (Holocene): younger samples have more amino acids, and a larger proportion of ASP.



- 8) Data for the inner and outer layers of *Spisula* sample LY92-015, from Parramore Island. This shell has a >44 ka ¹⁴C result. The outer layer is chalky, thereby having a lower abundance of amino acids. D/L values for the outer, leached layer are generally lower than those from the inner layer, consistent with the assumption that leaching preferentially removes more extensively-racemized amino acids [D/L Asp, Glu and Ala 0.434, 0.183, and 0.386 (outer) vs. 0.519, 0.200, and 0.435 (inner)].

