



**Figure S1** Assembly of extended *matA1* scaffold from *lam1* supercontigs. The first column lists the names of supercontigs from the *lam1* genome assembly; the second column shows orientation of these contigs in the top scaffold; the third column shows the length of each of the sequences in base pairs. The arrows below the top scaffold show the genes according to current annotation of *lam1* genome by Broad Institute (except *prA1*, which was absent from the annotation and was added by us). Note that for brevity the original gene names “MVLG\_0xxxx” were shortened to xxxx, where xxxx are gene numbers shown on the figure. The two homeodomain genes involved in mating type determination are shown by their names (HD1 and HD2) and correspond to Broad Institute gene numbers MVLG\_07141 and MVLG\_07150, respectively.