

SUGGESTIONS FOR THE USE OF LUCID INTERACTIVE KEYS

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(<http://herbarium.lsa.umich.edu/malpigh>)

A LUCID key presents a list of features (characters) and states (character states) to the left and a list of entities (taxa) to the right. When you select a state that applies to your plant, the entities lacking that state are discarded from the list of possible determinations. For example, if the list of entities comprises five genera, three with red petals and two with white petals, and you score the petals as red, the two white-petaled genera are moved down to the lower section of discarded entities and the three red-petaled genera are left. You continue scoring states and eliminating possible entities until only one entity is left, and that is the determination. Features may be scored in any order, and you can identify material in any condition (flower, fruit, even sterile) if the necessary differentiating features are present. The suggestions below are intended to make this process as convenient and efficient as possible.

1. The LUCID Player opens with a rather small window. This can be enlarged by dragging the lower right corner. That will help you see more features and entities in cases where the key is long. Similarly, the Features and Entities panels are divided horizontally by a bar, which can be dragged down to enlarge the upper section, and there is a vertical bar separating the Features and Entities panels that can be moved to give more space to one panel at the expense of the other.
2. There are two ways of viewing the features. The default in our keys is Tree view, in which features may have nested subfeatures, terminating ultimately in states. Each state is preceded by a checkbox. If that state applies to your plant, check the box; if you change your mind, check the box again to deselect that state. To expand a set of features and subfeatures, click the triangle or box to its left. To expand the whole set of features at once, click the expansion icon in the toolbar, which is fourth from the left. To condense the whole set of features, click the icon to the left of the expansion icon. The other way to view the features is as a list; to convert to that, click Lists at the bottom of the Features panel.
3. Some states are preceded by a media icon, indicating that one or more images are attached. To see those images, click that icon. A viewing box will open; if the image is too large for the box, resize the box by dragging the lower right corner. Below the image is its caption, and below that is a list of captions of all the images attached to that feature. To see additional images, click on their captions in that list. When you are finished viewing the images, close the viewing box.

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4. If your key has a feature for geographic distribution, score that first. For most Malpighiaceae, if you have a choice between flowers and fruits, score fruit features before flower features, because they are easy to observe and often differentiate between genera.
5. After you have scored at least one feature and eliminated at least one of the possible entities, go to the Features pull-down menu and select Prune redundant features, which will eliminate from the list of features all those that do not differentiate between the remaining entities. Then from the same menu select Find best feature, which will tell you which of the remaining features will most efficiently differentiate between the remaining entities. If that feature cannot be scored for your plant, select from the same menu Find next best feature (all three of these tools, Prune redundant features, Find best feature, and Find next best feature, are also represented in the tool bar by icons). Repeated use of these tools will make keying much faster—they help to guide your choices in a way analogous to what is done for you by the author of a traditional dichotomous key. Using the same Features pull-down menu you can choose to automate Pruning and Finding best, so that one or both functions happen automatically each time you select a state. If Best is automated and you need to select several states for a feature, hold down the Control key, which will pause AutoBest until all the states have been selected. [AutoPrune and AutoBest do not seem to work consistently in the current Player, so it may be necessary to do those functions manually.]
6. From the Features menu, and also represented on the tool bar by an icon, is a tool called Shortcuts. This finds all the states represented only once among the remaining entities. If one of those shortcut states is identifiable in your plant, your work is over. Shortcuts is an extremely helpful function at all stages, but the set of shortcuts becomes shorter and easier to consider as the list of remaining entities is reduced.
7. If you are left with two or more entities after scoring all possible states, go to the Entities pull-down menu and select Differences (also represented by an icon on the tool bar). LUCID will then display a list of all the features in which the entities differ, arranged with the best differentiators at the top, and in the lower panel it will give the states for each feature in the entities being compared. By comparing your plant to that list you may be able to make a choice between the remaining entities.