

# Classifynder™

An intelligent assistant to the palynologist

[www.classifynder.com](http://www.classifynder.com)

## Classifynder Users Newsletter # 1 September/October 2011

This is the first of an occasional series of informal newsletters directed at those who are currently working with Classifynders. It is now seven months since the AutoStage workshop held here in the School of Engineering and Advanced Technology at Massey University. Since the workshop, we have supplied seven machines to users around the world. We are now currently assembling a batch of three more machines of which one is pre-ordered, and we are in discussion with several probable purchasers. We are also in discussion with a potential manufacturer.



### AutoStage to Classifynder...

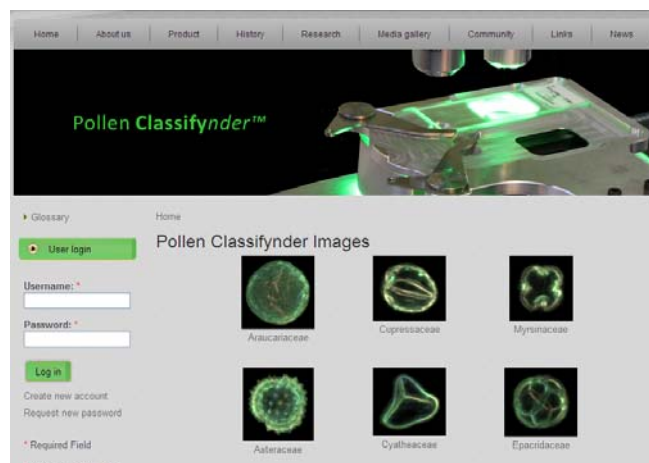
Some months ago we changed the name of the AutoStage as we were unable to gain trademark registration for the original name because it has too many connotations to automobiles! After many iterations, Colin Plaw suggested the name 'Classifynder', and in the absence of a better suggestion, this suggestion was thankfully adopted. The name 'Classifynder' is now registered in several key countries.

### What are you up to?

The team at Massey are particularly keen to get news of projects and tests that you have underway or are considering with your Classifynder machines. We are particularly keen to learn of any improvements that you have made, or novel ways of using the machines. It was always our intention that we work in collaboration with users of the machines for our mutual benefit. The majority of the suggestions made at the workshop have since been incorporated into the software supplied with the machines or with the new release currently being developed. If you have any further suggestions, please get them to us ASAP.

### Classifynder Website Facilities

The Classifynder website has facilities to allow registered users to contribute images. We would like to have examples of your best images captured with your machines, as well as images of mystery pollen that have eluded identification. A second facility at the site, 'Community' allows for discussion between users. We would be very pleased to see this facility used. Please also give us feedback on the website; how could it be made more attractive and useful to both established and potential users of the machines.



## Latest Activities of the Massey team

Work is now in progress towards a new release of software for the series 3 machines that will incorporate a number of improvements, including:

- All measurements reported in microns and images dimensioned in microns and will include a scale.
- Simplification of user controls
- The addition of a 'Calibration Wizard' that guides the user through the process of calibrating the offset between the two cameras.
- After each complete scan of a slide, the system will make a fine adjustment of the camera-to-camera offset. This adjustment is based on the accumulated statistics of the actual offset recorded for all the objects on each slide.
- Before the system will scan a slide the user is prompted to supply a name or label. This name is then used as the source of the images captured from the slide.
- Track and trace information tagged to every image captured, i.e. the location coordinates and slide of origin, to facilitate checking of problem grains. A drag-and-drop system has been introduced which operates by the system requesting the slide of origin for any captured image when the mouse is placed over it. It will then locate the original grain under the high-resolution camera for re-examination.
- An email notification system has been introduced that will notify the user when a slide scan has been completed.

## Improving the performance of the Classifynder

The feature set and neural network classifier were developed using slides of modern pollen. When applied to ancient pollen, the system performance is limited by the presence of broken and damaged pollen. We have been investigating ways of improving the performance of the existing classifier and feature set and we have also been working on an interface to openCV, an Intel public domain library of image processing software that includes a wide range of alternative classifiers. The classifiers include 'Random Forests', an approach favoured by some groups. The improvements to the existing classifier are to be incorporated in the new release of software for the Series 3 machines scheduled for later this year. We will also share the interface to open CV when it is operating satisfactorily. We will shortly be emailing all owners of Series 3 machines with a 'white paper' describing the algorithms we have developed.

## Update from Kat

Kat has now returned from her UK-Europe adventure, and would like to extend an extra-big thank you to those who hosted her during her travels. Kat is now pleased to announce that a paper presenting the results of Gary Allen's tests on the Series 1 machine has now been published in the journal *Review of Palaeobotany and Palynology*. The paper, entitled "Progress towards an automated, trainable pollen location and classifier system for use in the palynology laboratory" can be accessed here: <http://www.sciencedirect.com/science/article/pii/S0034666711001205>

Also, Kat and Keith Bennett (QUB) have proposed a session entitled 'Progress and future direction in automated palynology' for the upcoming IPC/IOPC conference to be held in Japan next year (23 – 30 August). The proposal has made it through the pre-proposal round and they are now preparing a full proposal which they hope will be accepted by the organising committee. So please put the conference in your diary now, as it will be an excellent opportunity for the growing Classifynder community to get together and share their advances.