Assessing research paper quality

Aspect	Weak	Good	Very good	Outstanding
Novelty	Reproduces a particular biological finding in a new species.	Demonstrates a small (incremental) advance in knowledge about a specific biological process.	An important new finding	Opens up a new area of research or overturns an existing dogma
Interest	Limited value	Important to a small niche (e.g. Non-photochemical quenching)	Will be read by many scientists within a broad discipline (e.g. Plant Science)	Important implications for society or health. Of broad interest (i.e. a fundamental biological process that is relevant to multiple domains of life such as the function of the ATP synthase)
Soundness	Methods incomplete or poorly written Data not provided Insufficient replication of findings No (or incorrect) statistical analysis performed	Methods are complete (including duration and parameter values) so authors can make an attempt at repeating the experiments. Statistical significance is calculated Processed data files are provided	All reagents, and strains are listed. Program and data versions provided All raw data deposited in a permanent repository	Links to extended protocols provided All code deposited in a permanent repository with a docker implementation, extensive documentation and toy datasets Unit level data provided Randomized design was used in experiments

				Sample size calculations performed Findings verified by multiple different approaches
Ethics	Unethical study Plagiarized results Fake Data	Study has no ethical violations Data is honestly provided and new		Full ethical approval provided by a recognised committee which is named along with the guidelines followed
Writing and presentation	Poor grammar, spelling Long and rambling, hard to follow Text in inappropriate location Discussion simply repeats the results No analysis provided No insight provided Soft or no conclusions Insufficient detail or does not describe data properly Uses incorrect references or omits key papers	Has a logical flow Cites relevant references and puts work in context of previous findings All text and figures properly labelled Provides sound arguments and solid conclusions Follows journal guidelines (a bit hard to assess in a preprint!)	Concise writing Nuanced, water-tight, arguments presented Very firm conclusions	No unnecessary phrases Written in an accessible manner, so can be read by a general science audience Marshals data to provide brilliant insight into a biological question Draws references from multiple disciplines Excellent visual presentation of figures that clearly demonstrate points

	Only references own work No or incorrect labelling of figures and tables Text too small to see in figures Colors a problematic for colorblind individuals			