# Assessing research paper quality

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| 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 writtenData not providedInsufficient replication of findingsNo (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 calculatedProcessed data files are provided | All reagents, and strains are listed. Program and data versions providedAll raw data deposited in a permanent repository | Links to extended protocols providedAll code deposited in a permanent repository with a docker implementation, extensive documentation and toy datasets Unit level data providedRandomized design was used in experimentsSample size calculations performedFindings verified by multiple different approaches |
| Ethics | Unethical studyPlagiarized resultsFake Data | Study has no ethical violationsData 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, spellingLong and rambling, hard to followText in inappropriate locationDiscussion simply repeats the resultsNo analysis providedNo insight providedSoft or no conclusionsInsufficient detail or does not describe data properlyUses incorrect references or omits key papersOnly references own workNo or incorrect labelling of figures and tablesText too small to see in figuresColors a problematic for colorblind individuals | Has a logical flowCites relevant references and puts work in context of previous findingsAll text and figures properly labelledProvides sound arguments and solid conclusionsFollows journal guidelines (a bit hard to assess in a preprint!) | Concise writingNuanced, water-tight, arguments presentedVery firm conclusions  | No unnecessary phrasesWritten in an accessible manner, so can be read by a general science audienceMarshals data to provide brilliant insight into a biological questionDraws references from multiple disciplinesExcellent visual presentation of figures that clearly demonstrate points |