**Supplemental File S1. Definitions of terms as used in the present article.**

**Title of article:** Triplication: an important component of the modern scientific method.

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| **Term.** | **Usage in the present article.** |
| "Study" (or "Investigation") | A piece of primary research as an experiment or associational investigation leading to one result or a set of results within a particular variable construct. An article might have several studies and a study might have several part-studies necessary to contribute to one result. |
| "Relevant variable construct" | Defined in Figure 1. |
| "Plant science" | Plant science does not only involve the study of plants. In the present article this also includes studies of any organism found in the plant science journals given in Supplemental Files. There is no indication whatsoever that different replication protocols are consistently applied to different plant science sub-categories (apart from with quantitative RNA work). |
| "Protocol" | The fundamental methodology by which a hypothesis is tested and validated, including replication model, to a state at which inductive inference is allowed from the result for further (different) hypothesis generation. (In the plant sciences this mostly occurs before publication; but in other sciences this might not necessarily be the case.) |
| "Subject" | Plant or other organism (non-interacting: the present article is concerned with investigations with non-interacting subjects or where parameters of interest are not affected by inter-subject interactions.). (This word might have a different meaning in other contexts.) |
| "False positive" | A positive result which incorrectly contributes to assessment of a hypothesis as being true (Type I error, due to random and/or systematic, error). |
| "Confounder = nuisance parameter" | Here, a confounder (= nuisance parameter) is a source of systematic error (=bias) which might, or might not, give a false positive. |
| "Unknown confounder" | This term applies to both known unknown or unknown unknown confounders unless stated. A known unknown confounder would be a parameter which is known to exist but which is not known to act as a confounder. An unknown unknown confounder would be a parameter which is not known to exist. |
| "Replicate"a | "Replicate", and all similar terms, refer in the present article to study replication. A replicate, here, is an independent batch of biological subjects, e.g., plants and analysis. |
| "Replication"a | Umbrella term including study (biological) repetition, reproduction, and other types. Replication could occur either in time (consecutively), space (in parallel) or with groups of organisms, in that the study or part-study for the comparison being evaluated occurred more than once, including a new set of plants (or other organisms). Replication necessarily has (inherent or enhanced) resetting of (unforeseen, known or unknown) systematic error values. In the present article only biological replication is considered, unless stated. (Gómez et al. [1]: has 18 classifications; 10 fields; 79 overlapping types, but these are not considered here.) |
| "Result replication"a | Study replication where results from individual replicates are given several times or a representative result is presented. (See "replication".) |
| "Method replication"a | Replication resulting in a "global" classification, in which there is clearly replication in the methods, but results are pooled, often using a global statistic. "Global" is a catch-all classification, designed to include all studies in which some form of replication has occurred (perhaps in a part-study which contributes to a study result), but from which there are no presented replicated results. Extremes in this classification could include a study conducted in three fields with all results pooled or where an entire investigation was performed three times consecutively, but then only pooled results were presented. (See "replication".) |
| "Global protocol" | See "Method replication". |
| "Repetition"a | A repeat is a study using a new subject group, i.e., biological repetition, either at another time or in parallel, by the same researcher/apparatus/site following the resetting of some possible sources of systematic errors. (Similar to "Internal replication" [1] or "Literal replication" [2] from other sources.) |
| "Reproduction"a | A replicate study by other researchers following the same protocol (automatically or deliberately resetting some sources of systematic error). Similar to "External replication" [1] or "Operations" replication" [2] from other sources. Precisely: from Gomez et al. [1], i.e., at different sites/researchers/apparatus. (See "replicate".) |
| "Replication errors" | Statistical errors among study replicates: either standard errors, variances or standard deviations. (See "replicate".) |
| "Partial result" | Result which hasn't been triplicated. |
| "Full result" | Triplicated result. |
| "Systematic error" = "bias" | Norena et al. [3] have given a mathematical definition of systematic error; allow at least some systematic errors to be given a probability density function (pdf); and total systematic error to be calculated by quadratic addition of individual components. They state that nuisance parameters are found by identifying the science "that is invariant under arbitrary rescalings of the nuisance quantities". (From this mathematical definition some nuisance parameters might give overall symmetric effects i.e. only overall affect random error, depending on the definition of the latter.) Many systematic errors have their own random component which does not preclude some having constant values in particular replicates. Source(s) of systematic error (= bias) are recognised when an average offset to a main result appears within a particular replicate which is not due to the main effect parameter or random error, or where a nuisance parameter (= confounder) consistently gives a (perhaps varying) offset as it is varied. A source might include known unknown confounders and/or combinations of confounders. A systematic error is the offset given by a confounder, to a result or individual datapoint. |

aAll counts of replication terms include first study set in count e.g. three repeats means three instances.

**References.**

1. Gómez OS, Juristo N, Vegas S. Replications types in experimental disciplines. In: Proceedings of the 2010 ACM-IEEE International Symposium on Empirical Software Engineering and Measurement. New York, NY, USA: Association for Computing Machinery; 2010. p. 1–10. (ESEM ’10).

2. Lykken DT. Statistical significance in psychological research. Psychological Bulletin. 1968;70(3, Pt.1):151–9.

3. Noreña J, Verde L, Jimenez R, Peña-Garay C, Gomez C. Cancelling out systematic uncertainties. Monthly Notices of the Royal Astronomical Society. 2012;419(2):1040–50.