

Gating-ML Compliance Test Suite

This test suite is intended to determine/verify Gating-ML compliance of third party analytical software in terms of:

- (i) being able to read Gating-ML compliance files,
- (ii) being able to apply gates on list mode data files,
- (iii) being able to perform appropriate data transformations for gates described on transformed data, and
- (iv) obtaining correct events membership results for described gates.

The test suite contains 32 sets of tests (Gating-ML files) totaling 461 different gates, appropriate list mode data files, and detailed expected event membership information for each of the gate. Each test set is intended to test a particular gate type, transformation type, or Gating-ML feature, as indicated by the name of the test set.

Files in this test suite are organized as follows:

- The `Summary.csv` file contains an overview of all tests/gates. Each line represents a gate. Columns provide the name of the test set, the identifier of the gate, the name of the Gating-ML file, the name of the corresponding list mode data file, and the number of events expected to be found inside the gate.
- The `Gating-ML Files` folder contains all Gating-ML files. Each of the files represents a single test set.
- The `List-mode Data Files` folder contains FCS data files (`name.fcs`) and their descriptions (`name.pdf`). List-mode data files are shared among several test sets.
- The `Expected Results` folder contains a subfolder for each of the test sets. The name of the subfolder corresponds to the name of the test set. Each of these folders contains several text-based result files – one for each gate. The name of the file corresponds to the name of the gate (with the `.txt` extension). First line in the text file repeats the gate identifier. An ordered sequence of 0/1 follows, one number per line. This sequence corresponds to the order of events appearing in the appropriate list mode data file. The value zero (0) indicates that the event is not in the gate, the value one (1) indicates that the event is in the gate.

Please note that some of the files contain a single number. This is as some of the gates are intended to be tested against a data file containing a single event only.

In addition, some of these folders contain a `.csv` file. This is included in test sets that include transformations. The `.csv` file provides a reference of the calculated transformed data.



The work may be used under the terms of the *Creative Commons Attribution-ShareAlike 3.0 Unported* license. You are free to share (copy, distribute and transmit), and adapt the work under the conditions specified at <http://creativecommons.org/licenses/by-sa/3.0/legalcode>.

This work is supported by NIH grant EB005034

Revision History

This section summarizes significant changes since the first published version of the Gating-ML Test Suite version 1.5.080410:

Version 1.5.081007

- Expected results for the following gates have been updated: prt_p08, prt_p09, prt_23, prt_08, prt_02, prt_19 and prt_03 (all these gates are in 17ParentIdTest.xml and they are related to rounding errors effecting events close to the boundary of an ellipsoid gate that is not "straight" with the coordinate system).
- This test suite is for Gating-ML version 1.5.081007 while the previous one was for Gating-ML 1.5.080311. Gating-ML 1.5.080311 was ambiguous in the definition of the *sinh* transformation (Eq. 23 did not correspond to definition in XML schema and documentation from MathML Central) and therefore tests using *sinh* could have been considered wrong depending on which definition of *sinh* has been used. Eq. 23 has been fixed in 1.5.081007, which implicitly "fixes" related tests without changes to the expected values of *sinh* related transformations and gates.
- Typos have been corrected in parameter names in the LComb_4 transformation within the 19TrCombination.xml file.
- A non-significant lowercase/uppercase typo has been corrected in a parameter name in the 17ParentIdTest.xml file.

Version 1.5.081020

- The following Gating-ML files have been corrected (affected gates and/or transformations enumerated in brackets): 09Ellipsoids.xml (Ellipsoid_14i, Ellipsoid_15i, Ellipsoid_17o, Ellipsoid_20o), 10PolytopeGates.xml (polytope_18i), 28TrEH.xml (TrEH_G6), 30TrInvSplitScale.xml (ISpSc_G1), 24TrExp.xml (TrExp_1, TrExp_2, TrExp_3, TrExp_4, TrExpG1, TrExpG2, TrExpG3, TrExpG4), 01Rectangular.xml (EqualToMinAndMax, MinGreaterThanMax – these gates have been removed from the tests since – if both the *min* attribute and the *max* attribute are present then the value of the *min* attribute shall be smaller than the value of the *max* attribute according to the current version of the Gating-ML specification).
- Ellipsoid_19i.txt has been added to the expected results (the file was missing in the previous distribution).
- The offset information in the text segment of the int-10_events_8_parameters.fcs has been corrected (the value of the \$BEGINDATA did not match the offset information in the header segment)
- Detailed expected results have been updated for the comp2G5 gate (comp2G5.txt in 32TrCompensation2)