Gating strategies for MRD detection in AML

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**Conflict of Interest Disclosure**

In accordance with criterion 24 of document UEMS 2012/30 "Accreditation of Live Educational Events by the EACCME" we herewith declare to have submitted a Conflict of Interest Disclosure Form to ESCCA.

This COI Disclosure Form can be viewed at the ESCCA 2019 Conference website www.escca.eu/norway2019 - Programme section / Accreditation page

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**Designing LAIP based MRD studies**

- Identification of LAIP
- Definition of patient-specific "immunologic fingerprint"
- Immunologic fingerprint used during follow-up

**Backbone markers in screening panel for AML**

- The parameters and files must be similar regarding acquisition settings
  - The software will try to adjust the scales and will show a warning.
- A series of common parameters that allow to unequivocally identifying the population of interest.
- The common markers used in the panel must be marked with the same fluorochrome.
- The rest of the antibodies to be used in our study will be included in fluorescences not occupied by common parameters.

**Automatic Population Separator (APS)**

- Automatic separation of the events, analysing all the different choices of parameter combinations, based on Principal Component Analysis.
- The parameters represented in these APS graphs are not a real measured parameter.
MRD determination after consolidation cycle

Male, 28 yrs, diagnosis of AML with RUNX/RUNX1T1 translocation, LAIP at diagnosis
POST CONSOLIDATION MRD EVALUATION

Male, 28 yrs, diagnosis of AML with RUNX/RUNX1T1 translocation, LAIP at diagnosis

0.002%

POST CONSOLIDATION MRD EVALUATION

RT-qPCR RUNX1-RUNX1T1 223.8 copies

0.4% + 0.0002%

POST CONSOLIDATION MRD EVALUATION

0.778%

POST CONSOLIDATION MRD EVALUATION

RT-qPCR RUNX1-RUNX1T1 223.8 copies

0.4% + 0.002%

TAKE HOME MESSAGES 1

• LAIPs are DfN abnormalities in the vast majority of cases, and the difference between these two approaches is likely to disappear if an adapted, sufficiently large panel of antibodies (preferably ≥ 8 colors) is utilized.

• We recommend that the advantages of both approaches be combined to best define MFC MRD burden, allowing detection of new aberrancies emerging at follow-up, and monitoring patients when there is an absence of diagnostic information.

• New definition of “LAIP-based DfN approach”
TAKE HOME MESSAGES 2

• At every time-point try all the possible combination of markers in the dot plots to allow a better discrimination of the heterogeneity of the leukemic clone
• Look carefully at empty spaces and unusual populations with distinctive features as compared to normal maturation curve
  • New abnormal population may occur during treatment course.
• Be not mislead by loss of single markers but keep a general vision on clone heterogeneity and complexity
  • If the residual LAIP is still relevant to define the population as abnormal go ahead...