EuroFlow LST EQA scheme 2026

Contents

The EuroFlow LST EQA scheme

The Lymphoid Screening Tube (LST) external quality assessment (EQA) scheme is designed to mimic routine sample preparation, data acquisition, and data analysis as used for local diagnostic samples. The LST scheme is intended for laboratories that use EuroFlow's hematological malignancies diagnostic and classification panels in their routine diagnostics according to the related EuroFlow standard operating procedures (SOPs).

For each LST round, peripheral blood samples of 3 healthy donors are taken locally in each participating laboratory (note that no samples are provided by ESLHO). The samples should be treated in the same manner as routine samples. Participants stain the samples with the EuroFlow LST antibody panel (van Dongen et al. 2012) and measure them on the local flow cytometer, following the EuroFlow SOP for sample preparation and the EuroFlow SOP for instrument set-up and compensation, which can be accessed via https://app.euroflow.org/downloads/public. The flow cytometry standard (FCS) files are recommended to be analyzed in BD Infinicyt™ software, using a provided EQA profile and a recommended gating strategy. Participants may use alternative analytical software, however, it should be noted that in such case it will not be possible to provide the participant with the graphical representation of their individual performance in relation to other participants, as these are generated from the CYT files (i.e., Infinicyt-generated output file). Participants report the median fluorescence intensity (MedFI) values of selected markers and upload their analyzed CYT files via an online results form in the ESLHO EQA Portal.

As EQA provider, ESLHO offers the LST scheme in collaboration with the EuroFlow EQA Committee. The EuroFlow EQA Committee is composed of members of the EuroFlow Consortium (www.euroflow.org).

Two rounds of the LST scheme are offered in 2026: one in spring and one in autumn.

Data analysis, reference values, and participant performance

Data analysis, scoring participant performance, and preparation of the reports are carried out by qualified and experienced experts within the EuroFlow Consortium.

Individual results

MedFI values reported by the participants are compared to the reference dataset (Kalina et al., 2015, 2019) using performance score metrics. The p-score for each reported numerical value is calculated using the below function,

$$p-score=\frac{\log_{10}MedFI-\log_{10}qaMedFI}{D^{max}}$$

where qaMedFI is the median of the MedFIs in the reference data set and D^{max} is the maximal allowed difference from qaMedFI. D^{max} is determined by calculating the 5th and 95th percentiles (or the 10th and 90th percentiles for less uniform markers) of the differences between all MedFI values in the reference dataset and qaMedFI. These two percentiles are expressed as absolute values, and the larger value is used as D^{max}.

The absolute value of the p-score equals or exceeds the value ’1’ when the maximum allowed difference from the reference dataset is exceeded. In such case, the reported value is considered out of range and therefore incorrect. Based on the calculation of D^{max}, it is expected that 90 – 95% of the p-scores fall within the acceptable range (or 80 – 90% for less uniform markers). Thus, the performance of participants with a maximum of 3 incorrect values (out of 33 reported values) is scored as **successful with a perfect score**. Participants with 4 to 7 incorrect values are scored as **successful with an acceptable score** and those with more than 7 incorrect values as **unsuccessful**.

In summary, performance in the LST scheme is scored as follows:

- **Successful (perfect score)**: 30, 31, 32, or 33 correct values
- **Successful (acceptable score)**: 26, 27, 28, 29 correct values
- **Unsuccessful**: 25 or less correct values

In case all 3 reported values for a given marker are incorrect, this indicates a systematic error in that marker.

Group results

For those participants who provided their analyzed CYT files, results are also compared to all other participants in the round. The experts will create a graphical representation of the MedFI values of the markers of interest in all these CYT files. In this graphical representation, each CYT file is assigned a unique number, which is only disclosed to the participant who uploaded the file. This allows participants to visually compare their results with others in the round in a pseudonymized fashion. In this representation, compensation issues are also visible. Note that participants using alternative

analysis software will not be able to provide CYT files. Consequently, their results cannot be included in the graphical representation.

Each participating laboratory will be provided with an EQA certificate that shows their performance, a summary of the round's results, general information regarding the round, and an overview of common mistakes. Note that individual performance is specific to and only provided to the individual participant.

Educational meeting

All EuroFlow schemes' EQA rounds offered in 2026 will be concluded with an online educational meeting, which will include all rounds performed throughout the year. During the meeting, the rounds' results will be shown (anonymized), possible problems and pitfalls will be discussed, and there will be the opportunity to receive direct feedback from the experts involved. More information regarding the educational meeting, including dates and times, will be announced at the end of 2026.

Timelines

Activity	Date
Registration for rounds 1 & 2 (spring & autumn)	5 Jan – 30 Jan 2026 (23:59 CET)
Round 1: Release of round instructions	2 Feb 2026
Round 1: Reporting of results	2 Feb – 27 Feb 2026 (23:59 CET)
Round 1: Release of certificates (v1)	May 2026
Round 1: Appeals period	21 calendar days following release of certificates (v1)
Round 1: Release of certificates (final)	Jun – Jul 2026

Activity	Date
Registration for round 2 (autumn)	1 Jun – 28 Aug 2026 (23:59 CEST)
Round 2: Release of round instructions	31 Aug 2026
Round 2: Reporting of results	31 Aug – 25 Sep 2026 (23:59 CEST)
Round 2: Release of certificates (v1)	Jan 2027
Round 2: Appeals period	21 calendar days following release of certificates (v1)
Round 2: Release of certificates (final)	Feb - Mar 2027

Registration

Registering for the EuroFlow LST EQA scheme 2026 can be done via the ESLHO EQA Portal.

Appeals

Appeals regarding performance results can be submitted within 21 calendar days following the release of the EQA certificate (v1) via the ESLHO EQA Portal. A clear description of the appeal should be included and providing illustrating images is recommended.

Complaints

Complaints related to ESLHO's EQA program, or specifically to the EuroFlow LST EQA scheme, can be submitted at any time via the Complaints form that is available on the ESLHO EQA Portal.

Participation fees

- Participation in one LST round: **€ 270,-**
- Participation in both LST rounds: **€ 490,-**
- Participation with an additional certificate (e.g. for additional instruments): **€ 110,- per additional certificate**.
- Participation is free for participants of the EuroFlow Consortium.

Organization

The LST scheme is organized by ESLHO in collaboration with the EuroFlow EQA Committee. The laboratory at the Charles University, Prague, Czech Republic, operates as the lead expert laboratory of the LST scheme, with Prof. Dr. Tomáš Kalina in the role of lead subject-matter expert.

Name	Organization/Institute	Role	Tasks
ESLHO			
Prof. Dr. Jacques J. M. van Dongen	ESLHO, Zutphen, NL	EQA Program Coordinator	Final responsibility over EuroFlow EQA program; authorizes the LST round report.
Evelien Rijkers	ESLHO, Zutphen, NL	EQA Officer (lead)	Overall responsible for organization and operation of the LST scheme by ESLHO.
Dr. Bart Lubbers	ESLHO, Zutphen, NL	EQA Officer	Supports in the organization and operation of the LST scheme.
Lead expert laboratory			
Prof. Dr. Tomáš Kalina	Charles University, Prague, CZ	Lead subject-matter expert	Designed the original LST scheme. Post-round: Provides expert input on/review of the results and the summary. Responds to participants´ inquiries about the technical aspects of the scheme, and participant results. Provides targeted help to participants.
Dr. Naděžda Brdičková	Charles University, Prague, CZ	Subject-matter expert	Pre-round: Supports preparation of the rounds. Post-round: Cleaning and analysis of the submitted results, preparation of the EQA certificate, and preparing the round summary with feedback to the participants.

For more information or in case you have questions about the LST scheme, or other EuroFlow EQA schemes, please contact EuroFlow.EQA@eslho.org.