



**ESCCA**

European Society  
for Clinical Cell Analysis

**EUROPEAN CERTIFICATE FOR CYTOMETRY SPECIALISTS -**

**HEMATO-ONCOLOGY**

**GUIDELINES AND SUGGESTED EDUCATIONAL RESOURCES**

**[www.escca.eu](http://www.escca.eu)**

**ESCCA EUROPEAN CERTIFICATE FOR CYTOMETRY SPECIALISTS – HEMATO-ONCOLOGY:  
GUIDELINES AND RESOURCES**

## **1. BACKGROUND**

The European Society for Clinical Cell Analysis (ESCCA) is committed to promote high quality education in Cytometry. Since its foundation more than 10 years ago, ESCCA has fostered its own ongoing Educational Program, coordinated by the Education and Accreditation Committee. In addition, ESCCA collaborates with other institutions in the diffusion of educational activities of relevance in Cytometry and related fields.

The ESCCA Education and Accreditation Committee is aware of the technical complexity and constant evolution of cytometry instrumentation and its applications, requiring continuous training and education. These issues have been covered traditionally by the Education Activities incorporated in the ESCCA Conferences and, more recently, by the ESCCA International and Local Schools on Cytometry.

The final goal of the educational efforts of ESCCA is to help ESCCA members, and especially the young ones, to attain excellence in their work in cytometry, be it in the clinical or in the basic fields. In order to attest the level of excellence of cytometrists, as evidenced by their knowledge and abilities, the ESCCA Education and Accreditation Committee has created the European Cytometry Certificate.

## **2. THE EUROPEAN CYTOMETRY CERTIFICATE**

The European Cytometry Certificate has two levels of certification:

### **A. The European Certificate for Cytometry Operators:**

This first level of certification may be attained after evaluation of the candidate's knowledge about basic flow cytometry as described in ESCCA Certificate Guidelines for Cytometry Operators. Applicants should demonstrate a minimum of three years of experience in cytometry. The first level of ESCCA Certificate Examination is available online and open for applications.

### **B. The European Certificate for Cytometry Specialists - Hemato-oncology:**

This second level of certification may be attained after evaluation of skills and knowledge of the candidate about clinical flow cytometry-hemato-oncology. Eligible candidates should meet the following requirements:

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- a. Baccalaureate and/or Master degree and/or Doctorate from an accredited/approved educational institution in biological/life science, physics, engineering or an appropriately related field;
- b. European Certification for Cytometry Operators;
- c. Minimum of three years acceptable laboratory experience in cytometry (clinical, research, industry or veterinary) in a laboratory accredited under ISO 15189, by JCI, CAP or authorized by a governing regulatory association or Ministry.

Certification consists of a written examination, analysis/interpretation of practical cases and revision of the candidate's CV by the ESCCA Education and Accreditation Committee.

**3. THE EUROPEAN CERTIFICATE FOR CYTOMETRY SPECIALISTS – HEMATO-ONCOLOGY:  
RULES**

1. The European Certificate for Cytometry Specialists - Hemato-oncology is available for ESCCA members only.
2. The examination language is English.
3. The fee for the examination and certification is €100 (price level 2023).
4. Eligible candidates should demonstrate a minimum of three years acceptable laboratory experience in clinical cytometry in an accredited/approved laboratory under ISO 15189, by JCI, CAP or authorized by a governing regulatory association or Ministry. A CV and an official attestation of the number of years of experience, issued by the director of the employing facility or other entitled authority should be uploaded in the online registration form.
5. The examination consists of 100 multiple choice questions, analysis/interpretation of 3 practical cases and will last two hours.
6. The examination will be considered as passed if at least 60 questions are correctly answered including the practical cases.
7. The contents of the examination and examples of questions are described later in this document.
8. Candidates who successfully pass the examination will receive a certificate stating their status and will be enlisted in a special page in the ESCCA website site and, when convenient, in the site of the ESCCA-affiliated society.
9. Certification will expire after three years, and can be renewed upon proof of continuous education and/or practice in cytometry, according to the guidelines for ESCCA certification renewal.

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**4. THE EUROPEAN CERTIFICATE FOR CYTOMETRY SPECIALISTS - HEMATO-ONCOLOGY:  
PRACTICAL ASPECTS**

1. The examination for the European Certificate for Cytometry Specialists will be proceeded online through the Moodle platform of the ESCCA website anytime during the year, except during public holidays.
2. The application process is as follows:
  - The candidate should apply for the examination via the [ESCCA membership section](#) by completing the online registration form in the section 'ESCCA Certification Exam'.
  - A CV and an official attestation of the number of years of experience of the candidate, issued by the director of the employing facility or other entitled authority, should be uploaded in the online registration form.
  - The exam can take place from Monday - Friday between 09.00 - 16.00 hrs. CET. All international public holidays are excluded.

Two dates must be selected in the registration form: the preferred date and a back-up date. The exam can take place from 1 month after the submission of the application. Confirmation of the date is subject to the availability of the exam supervisors. The final date will be confirmed in the notification of acceptance.
  - The registration fee of €100 can be paid by iDeal (Dutch candidates only) or credit card.
  - After submission of the registration your application will be reviewed by the Exam Committee. The candidate will receive a notification of acceptance or rejection by email within 2 weeks after submission of the registration form.
  - In case the application is rejected, the registration fee will be reimbursed.
  - If a candidate fails the exam, the registration fee cannot be reimbursed.

Detailed instructions for the completion of the online registration form is available in the membership section.

**5. THE EUROPEAN CERTIFICATE FOR CYTOMETRY SPECIALISTS - HEMATO-ONCOLOGY:  
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**A. Examination content areas:**

1. Myeloproliferative neoplasms
2. Myeloid/lymphoid neoplasms with eosinophilia and rearrangement of PDGFRA, PDGFRB, or FGFR1, or with PCM1-JAK2
3. Myelodysplastic/myeloproliferative neoplasms
4. Myelodysplastic syndrome
5. Acute myeloid leukaemia and related disease

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6. Blastic plasmacytoid dendritic cell neoplasm
7. Acute leukemias of ambiguous lineage
8. B-lymphoblastic leukemia/lymphoma
9. T-lymphoblastic leukemia/lymphoma
10. Mature B-cell lymphoid neoplasms
11. Mature T- and NK- cell neoplasms
12. Hodgkin lymphoma
13. Posttransplant lymphoproliferative disorder
14. Histiocytic and dendritic cell neoplasms
15. Inherited and acquired red blood cell disorders
16. Inherited and acquired platelet disorders
17. Inherited and acquired disorders of the complement system

**B. Examples of questions**

**Most of the T-LGL (T-cell Large Granular Leukemia) with CD4+ CD8± CD56+ phenotype and Vbeta 13.3 restriction display a TCR specific for:**

- a. EBV
- b. CMV**
- c. HHV6
- d. HHV8

**The phenotype expected in T-cell large granular lymphocytic leukemia (T-LGL) is:**

- a. CD2+, CD3+, CD4-, CD5+, CD8+, CD57+
- b. CD2+, CD3+, CD4-, CD5-, CD8-, CD57+
- c. CD2+, CD3+, CD4+, CD5+, CD8±, CD57+
- d. All the previous ones**

**The target of the therapeutic MoAb Daratumumab is the following antigen:**

- a. CD20
- b. CD38**
- c. SLAMF7/CD319
- d. CD138

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**6. SUGGESTED BIBLIOGRAPHY AND RESOURCES AVAILABLE IN THE INTERNET**

**A. ESCCA COURSES educational materials**

These are available in the [membership section](#) under 'Courses'

**B. JOURNALS**

- Clinical Cytometry part B, Clinical Cytometry
- International Journal of Laboratory Hematology
- Leukemia
- Blood

**C. BOOKS**

Clinical Flow Cytometry: Principles & Application. K.D. Bauer, R.E. Duque, T. V. Shankey, editors. Williams & Wilkins, Baltimore, 1993

Diagnostic Applications of Cytofluorimetric Methods Using Monoclonal Antibodies. B. Brando, J.E. O'Connor, editors. European School of Transfusion Medicine, 1994

Flow Cytometry and Clinical Diagnosis. D. F. Keren, C. A. Hanson, P. E. Hurtubise, eds. American Society of Clinical Pathologists Press, Chicago, 1994

Flow Cytometry: Principles for Clinical Laboratory Practice. M. A. Owens, M. R. Loken. Wiley-Liss, 1995

Introduction to Diagnostic Flow Cytometry: An Integrated Case-Based Approach (Pathology and Laboratory Medicine). S. David, M. Hudnall, editors. Humana Press, 2000

Immunophenotyping. C.C. Stewart, J.K.A. Nicholson, editors. John Wiley & Sons, 2000

Flow Cytometry: A Practical Approach. Michael Ormerod. Oxford University Press. 2000

Flow Cytometric Analysis of Hematologic Neoplasms: A Color Atlas & Text 2nd Edition. T Sun. Lippincott, Williams & Wilkins, 2002

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Flow Cytometry in Hematopathology: A Visual Approach to Data Analysis and Interpretation. DT Nguyen, LT Diamond, RC Braylan. Springer, 2007

Flow Cytometry in Clinical Diagnosis. Carey John L. American Society of Clinical Pathologists Press, editor, 2007

Flow Cytometry and Immunohistochemistry for Hematologic Neoplasms. T Sun. Lippincott Williams & Wilkins, 2008

Cellular Diagnostics. Basic Principles, Methods and Clinical Applications of Flow Cytometry. Ulrich Sack, Atila Tárnok, Gregor Rothe, editors. Karger, 2008

Flow Cytometry in Neoplastic Hematology: Morphologic-Immunophenotypic Correlation. W Gorczyca, CRC Press, 2010

Flow Cytometry of Hematological Malignancies. C Ortolani. Wiley-Blackwell, 2011

Practical Flow Cytometry in Haematology Diagnosis. M Leach, M Drummond, A Doig. Wiley-Blackwell, 2013

Practical Flow Cytometry in Haematology: 100 Worked Examples. M Leach, M Drummond, A Doig, P McKay, B Jackson, BJ Bain, Wiley-Blackwell, 2015

Multiparameter Flow Cytometry in the Diagnosis of Hematological Malignancies. Anna Porwit, Marie Christine Béné, Cambridge University Press, 2018

Clinical Flow Cytometry. J. Kurzer, O. Weiberg. Nova Science Pub Inc. 2019