

MLL News

June 28, 2022

The New WHO Classification – What to Expect

Five years have passed since the WHO classification of hematologic neoplasia was last updated. Since then, a great deal of knowledge has been gained – specifically in relation to genetic alterations. Each time the WHO classification is updated, purely morphological criteria recede more and more into the background, while genetic parameters have become increasingly relevant. MLL has been able to contribute its expertise to the new WHO classification. Recently, two publications appeared in advance, presenting the most important innovations in the classification of myeloid ([Khoury et al. 2022](#)) and lymphatic ([Alaggio et al. 2022](#)) neoplasia. We have briefly summarized the most important facts for you.

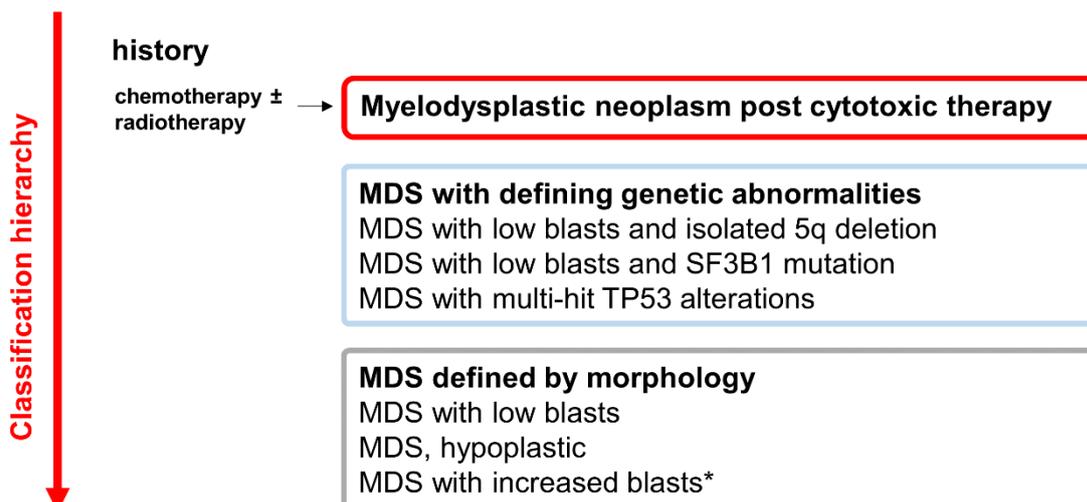
New: Precursor Lesions of Myeloid Neoplasia

In the myeloid neoplasia group, precursor lesions were included as entities for the first time: clonal hematopoiesis with a special definition of **clonal hematopoiesis of indeterminate potential (CHIP)** and **clonal cytopenia of undetermined significance (CCUS)**. This has produced a globally uniform definition, which will allow better comparability for future studies.

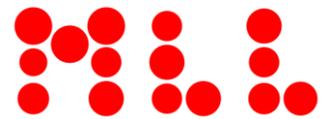
Myelodysplastic Syndromes Are Now Myelodysplastic Neoplasia

Myelodysplastic syndrome has been renamed myelodysplastic neoplasia to make it clear in the name as well that it is a neoplasia and to harmonize with myeloproliferative neoplasia (still myeloproliferative diseases/syndromes in 2001) – even so, the abbreviation MDS has been retained. MDS is further divided into two major groups: MDS with defining genetic changes and morphologically defined MDS, whereby the morphological criteria have been standardized and the number of entities reduced.

Myelodysplastic Neoplasm

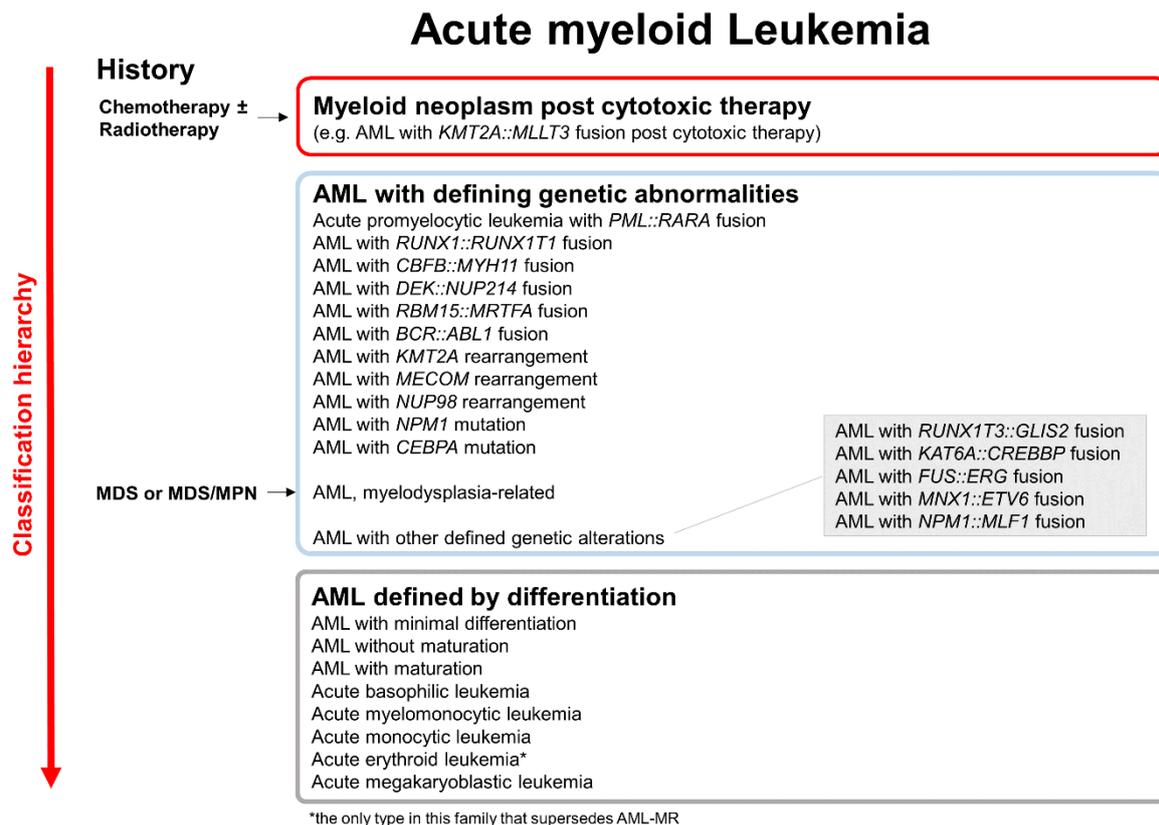


*Exclude AML with defining genetic abnormalities as relevant



Acute Myeloid Leukemia – Predominantly Genetically Defined

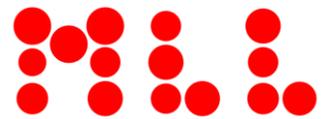
With **acute myeloid leukemia**, AML with defining genetic alterations is distinguished from AML classified based on morphology by differentiation. The number of genetically defined entities has once again increased compared to the 2017 version. Genetic differentiation in myeloid/lymphoid neoplasia with eosinophilia has been refined as well.



Lymphoid Neoplasia Now Taking Genetics More into Account as Well

While genetic parameters are still not being used for classifying T-cell line **acute lymphoblastic leukemia (ALL)**, several new genetically defined subtypes have been added for B-cell line ALL. The latest findings of transcriptome sequencing have already been taken into account here. It is therefore necessary to incorporate RNA sequencing in the routine diagnosis of B-cell line ALL. MLL will be proposing a diagnostic algorithm for this purpose. The vast majority of lymphoma entities continue to be defined histologically and by their immunophenotype.

MLL is currently making all of the preparations necessary for diagnosing according to the new WHO classification. It helps that, for each entity, both the essential as well as the desirable diagnostic criteria have been defined very specifically by the WHO. As soon as the 5th edition of the WHO classification is published in its entirety as an online book – probably in fall 2022 – we will also implement it in our findings. To make the transition as easy as possible for all of us, we will be holding several training sessions on this topic. The first seminar will be held on **07/27/2022, 4:00 – 6:00 p.m. on site at MLL**. Participating virtually will be possible as well. We will also provide detailed information about the new WHO classification on our **mll.com** website.



As far as we are concerned, the update of the WHO classification represents a major step forward, as this makes a more detailed biological definition of the entities possible, taking into account the genetic parameters. This is the most important prerequisite for personalized medicine.

References

Alaggio R et al. The 5th edition of the World Health Organization Classification of Haematolymphoid Tumours: Lymphoid Neoplasms. *Leukemia* 2022.

Khoury JD et al. The 5th edition of the World Health Organization Classification of Haematolymphoid Tumours: Myeloid and Histiocytic/Dendritic Neoplasms. *Leukemia* 2022.

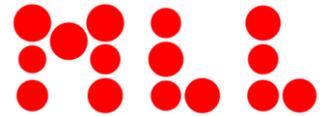
Authors: Prof. Dr. med. Claudia Haferlach, Prof. Dr. med. Dr. phil. Torsten Haferlach

MLL Introduces Itself: Our HR Department

Every day, the MLL team focuses its combined efforts on making it possible for patients around the world to receive the best therapy thanks to quick and targeted leukemia diagnostics. But what exactly does the day-to-day work of the more than 200 employees look like? What departments and areas are there? Our magazine series, “MLL Introduces Itself”, provides you with an insight into our laboratory, with the fourth section introducing you to our HR Department.



The Human Resources Department (also HR) is the central point of contact for the concerns of all MLL employees. We see our role a little like that of “la Mamma” of an extended family: She is understanding and caring, always has a sympathetic ear, offers advice and support, and provides for all family members – in our case from the working student to the manager. In addition to smooth personnel administration and payroll, our main responsibilities also include finding new team members and keeping the existing ones happy. We place job



advertisements, organize job shadowing days plus further and advanced training sessions, ensure professional onboarding, and also provide assistance with questions and problems of all kinds.

The Team

The HR team consists of three employees who complement each other perfectly: a business economist, a pedagogue, and a lawyer. Together, we see ourselves as confidential advisors for all employees. Since we also represent different stages of life, we are able to empathize with all of our colleagues – from interns and graduates to experienced experts. We combine experience from a wide range of industries – regional to international – and like to think outside the box. There is no such thing as impossible. We always think of something.

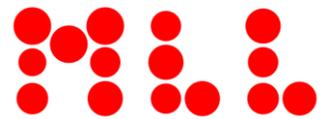
Even though we ourselves are hardly in direct contact with our referring clinics and practices or with the patients in MLL MVZ, it fills us with pride to work in support of those who are there every day and to be there for them.

No Two Days Are Alike

There is no such thing as a typical working day for the HR Department. And yet every single one of them is fun, no matter whether we are

- maintaining contact with schools for medical laboratory scientists,
- designing job advertisements together with the division/department heads and publishing them after selecting the appropriate channels,
- thoroughly reviewing the applications received,
- conducting interviews with exciting candidates,
- planning introduction days with applicants,
- conducting feedback interviews with existing employees,
- introducing new benefits for employees,
- drawing up contracts,
- planning individual career steps and possible further training and education,
- conducting internal and external surveys,
- coordinating the outsourced payroll department,
- or preparing a career fair and supervising it on site at the booth.

At the end of April, for example, we teamed up with colleagues from our diagnostic areas and were live on site at the **MTA Next** career congress of Deutscher Ärzteverlag in Essen. There, we had an opportunity to enter into personal discussions with many highly motivated students studying to be medical laboratory scientists, introduce MLL as an employer, and make important contacts.



People are always at the center of our work.

The Labor Market of Tomorrow

We see ourselves as an important part of MLL’s continued success and growth. After all, motivated, satisfied, excellently trained, and continuously well-educated employees are an important factor. The last two years with COVID-19 have had a strong impact on the labor market, especially that of medical personnel. Since we are continuing our strong growth trend, we are looking for new team members every day who share a passion for providing our patients with the best possible diagnostics and therapy. That is why it is more important than ever to inspire these candidates with new ideas and approaches, an authentic and modern look, and attractive working conditions on the labor market – including the international market.

Author: Giulia Catana

Events at MLL – Looking Back

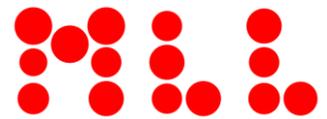
Our goal is to continuously advance and develop leukemia diagnostics in order to make the best possible therapy available to patients worldwide. The exchange of information with (inter)national experts and partners, joint research projects, and the provision of all relevant data and latest findings play a significant role. To this end, we regularly host events at MLL – both virtual and on-site. In this article, we want to report on our latest events, including all highlights: the MLL Academy and the mid-term meeting of “INTERCEPT-MDS.”

MLL Academy 2022

During the week of April 25-29, 2022, we were fully focused on the topic of “State of the art diagnostics in hematological malignancies.” The MLL Academy was held as a virtual event with international participants. For the first time, it was also possible for 39 continuing education points from the Bavarian Medical Association (BLÄK) to be certified for participation.

With 18 lecturers from MLL and 15 participating physicians, scientists, and specialists from Sweden, the Netherlands, Germany, and Austria, there was an in-depth exchange on the state of the art and current developments in hematological diagnostics.

The program included the following topics:



- A detailed overview of leukemias and lymphomas
- Explanations of the methods of modern hematological diagnostics, from cytomorphology and immunophenotyping to genetics and bioinformatics
- Workshops and practical exercises
- Profound insight into all the work processes of MLL
- A virtual lab tour

Special content highlights of the MLL Academy were the use of artificial intelligence and whole genome sequencing in hematologic diagnostics along with an outlook on future developments in the classification of hematologic neoplasia. Interactive program points such as case reviews, discussions, and quiz questions were particularly appreciated by the participants and enabled an intensive exchange with the MLL Academy lecturers. We are pleased with having been able to provide a comprehensive impression of what makes MLL a unique laboratory and workplace.

MLL would like to thank the participants for their interest in future-oriented hematological diagnostics, the close interaction, and the extremely positive feedback, and it is looking forward to hosting another five-day MLL Academy once again next year. As soon a date has been confirmed, it will naturally be published on our [website](#) and announced in our newsletter.

INTERCEPT-MDS

In the first week of May, MLL hosted the mid-term meeting of the innovative training network “INTERCEPT-MDS.” The network includes 11 PhD students and 14 project leaders from ten different countries. The meeting was held in a hybrid format to allow all project leaders to participate. **INTERCEPT-MDS** is financed by the **European Union’s Horizon 2020** research and innovation program and relies on a multidisciplinary approach to identify biomarkers and molecular processes using “omics” technologies on the individual cell level to enable early detection and possible treatment of clonal myeloid diseases.



The huge amount of data generated requires thorough bioinformatics and statistical analysis. In order to optimally prepare the students for their upcoming work, they were taught bioinformatics and statistical basics by Dr. Ana Conesa of the **Institute for Integrative Systems**



Biology (I2SysBio) in Valencia in a three-day workshop, which specifically apply to transcriptome and gene expression analysis.

In various scientific lectures, the students also gained insights into the clinical application of “multi-omics” methods, big data analyses, and artificial intelligence. Prof. Torsten Haferlach spoke about the application of artificial intelligence in hematological diagnostics and the integration of such models into MLL workflows. Dr. Carsten Marr, group leader at the Institute for Computational Biology and director at the Institute for AI in Healthcare, provided exciting and detailed insights into the application of machine learning methods for classifying myeloid diseases. Prof. Claudia Haferlach brought the series of lectures to a satisfying conclusion with her presentation on clinical diagnostics for **MDS**. In addition, there was an emphasis on the topic of project communication. A workshop organized by MLL Corporate Communications dealt with the target group-specific communication of content and results using appropriate channels.

The program was complemented by various activities outside of the scientific discussions, such as a joint dinner at Brenner Operngrill and participation in a scavenger hunt (Escape Game) in the Munich city center.

Authors: Dr. Bettina Balk & Dr. Wencke Walter

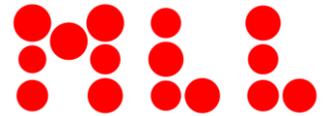
Events

The New WHO Classification – Advanced Training Event

What’s new? What’s the same?

Implementation in everyday diagnostic practice and clinical consequences

A new WHO classification for hematologic neoplasia will be published this year, which will require an adjustment to the diagnostic and – in part – the therapeutic approach. But what is new? What is staying the same? That is why we want to invite you to the event “The new WHO classification – implementation in everyday diagnostic practice and clinical consequences”, which will take place on 07/27/2022 from 4:00 – 6:00 pm. The event will take place both on-site at MLL and virtually. The deadline for registration is 07/20/2022. All information about the program and registration can be found [here](#).



Einladung

DIE NEUE WHO-KLASSIFIKATION

Fortbildungsveranstaltung des MLL Münchner Leukämielabors

Was ist neu? Was bleibt?
Umsetzung im diagnostischen Alltag und klinische Konsequenzen

27. Juli 2022

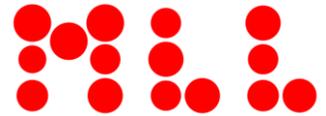
16:00 – 18:00 Uhr

Virtuell oder vor Ort im
MLL Münchner Leukämielabor
Max-Lebsche-Platz 31
81377 München

Wissenschaftliche Leitung
Dr. med. Christian Pohlkamp

Most Recent Publications with MLL Involvement

- Adema V et al. Pathophysiologic and clinical implications of molecular profiles resultant from deletion 5q. EBioMedicine. 2022.
[🔍 Open publication](#)
- Arock M et al. Clinical Impact and Proposed Application of Molecular Markers, Genetic Variants and Cytogenetic Analysis in Mast Cell Neoplasms: Status 2022. J Allergy Clin Immunol. 2022.
[🔍 Open publication](#)
- Baer C et al. CCL22 mutations drive natural killer cell lymphoproliferative disease by deregulating microenvironmental crosstalk. Nat Genet. 2022.
[🔍 Open publication](#)
- Fuhrmann I et al. AML, NOS and AML-MRC as defined by multilineage dysplasia share a common mutation pattern which is distinct from AML-MRC as defined by MDS-related cytogenetics. Leukemia. 2022.
[🔍 Open publication](#)
- Gotlib J et al. Proposed ECRM-AIM Response Criteria in Advanced Systemic Mastocytosis. J Allergy Clin Immunol Pract. 2022.
[🔍 Open publication](#)
- Khoury JD et al. The 5th edition of the World Health Organization Classification of Haematolymphoid Tumours: Myeloid and Histiocytic/Dendritic Neoplasms. Leukemia. 2022.
[🔍 Open publication](#)
- Lyons JJ et al. Incorporating tryptase genotyping into the workup and diagnosis of mast cell diseases and reactions. J Allergy Clin Immunol Pract. 2022.
[🔍 Open publication](#)



- Rehberger M et al. The Nuclear Proteins TP73 and CUL4A Confer Resistance to Cytarabine by Induction of Translesion DNA Synthesis via Mono-ubiquitination of PCNA. *Hemasphere*. 2022.
[🔍 Open publication](#)
- Sotlar K et al. Standards of Pathology in the Diagnosis of Systemic Mastocytosis: Recommendations of the EU-US Cooperative Group. *J Allergy Clin Immunol Pract*. 2022.
[🔍 Open publication](#)
- Valent P et al. Global Classification of Mast Cell Activation Disorders An ICD-10-CM-Adjusted Proposal of the ECNM-AIM Consortium. *J Allergy Clin Immunol Pract*. 2022.
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- Wästerlid T et al. Application of precision medicine in clinical routine in haematology - challenges and opportunities. *J Intern Med*. 2022.
[🔍 Open publication](#)
- White HE et al. Standardization of molecular monitoring of CML: results and recommendations from the European treatment and outcome study. *Leukemia*. 2022.
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