- 9h-9h30 : New classification: Pascale De Paepe, AZ Sint Jan, Brugge
- 9h30- 10h00 : Hodgkin lymphoma: M. André, CHU UCL Namur
- 10h00- 10h45: Diffuse Large B cell Lymphoma (incl. PTLD and DHL): Daan Dierickx, UZLeuven

- 10h45-11h15: coffee break

- 11h15-11h50: Other aggressive lymphoma (BL, PCNS, MCL): Virginie De Wilde, HUB Erasme
- 11h50-12h30: T and NK cell lymphoma: Sylvia Snauwaert, AZ Sint Jan, Brugge

Session Hodgkin and Aggressive B-cell Lymphomas

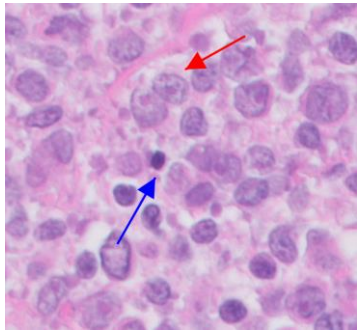
BHS

2 new classification systems in 2022

Pascale De Paepe

AZ St Jan Brugge

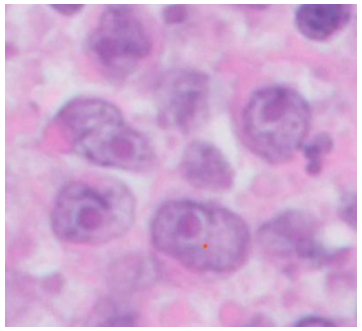
“Aggressive” versus “large cell”

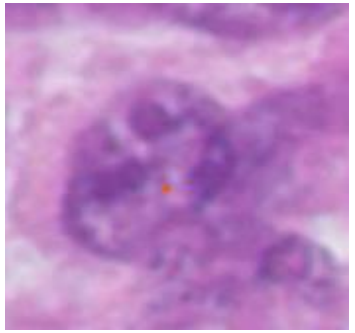


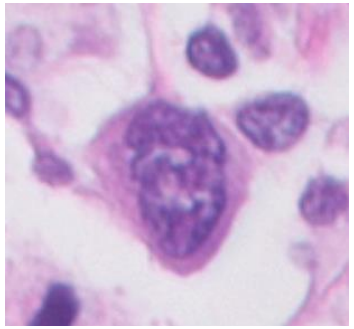
“Aggressive”	biological behaviour
“Large cell”=> cell size	size > 2x normal lymphocyte
“high grade”	need for intensified therapy

In ICC 2022: “large B-cell” lymphomas and “high grade” B-cell lymphomas (BL , DHL & HGBCL, NOS)

Morphology: heterogeneous







Some “large cell” lymphomas are more indolent (eg. LBCL with IFR4 rearrangement)

Some aggressive lymphomas have a small to medium sized morhology (eg. blastoid variants of MCL)

Lymphomas

Heterogenous group

neoplastic large cell population

historically subdivided into Hodgkin and non-Hodgkin Lymphomas

- *Hodgkin lymphomas:* *Classical Hodgkin lymphoma vs Nodular lymphocyte predominant Hodgkin lymphoma*:

⇒ an abundant reactive background with a minority of intermingled “large atypical cells” aka Hodgkin cells, Reed-sternberg cells (CHL) or popcorn cells (NLPHL)

⇒ B-cell proliferations

- *Non-Hodgkin Lymphomas* : *B-and T/NK cell lymphomas*

⇒ Most present with sheets of small, intermediate or large cells

⇒ Sometimes only minority of large cells (e.g. HTRBCL)

⇒ Sometimes in blood vessels (intravascular B-cell lymphoma), around blood vessels and in sinusses (e.g. ALCL)

⇒ Nodal and extranodal

Principles of Classification

- **CLINICAL CHARACTERISTICS:** Age and location!
- **MORPHOLOGY :** architecture and cytological variation
- **IMMUNOPHENOTYPE:** characteristic but often not unique
- **GENETIC FEATURES:** characteristic but often not unique
- **POSTULATED CELL OF ORIGIN**

INTO DISTINCT CLINICOPATHOLOGICAL ENTITIES

REAL CLASSIFICATION (1995)
WHO CLASSIFICATION (2001-2008-2017-2022)
ICC (2022)

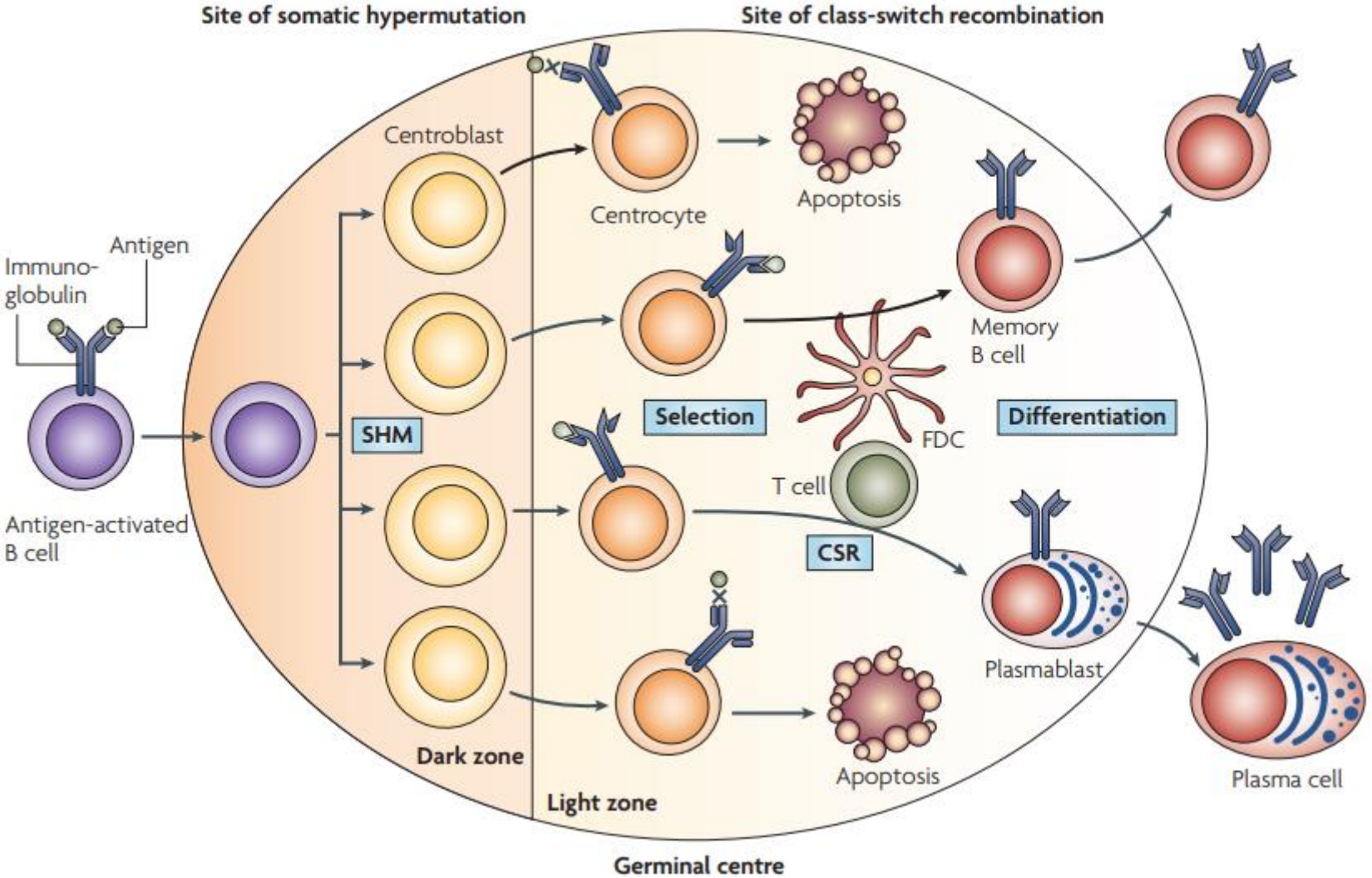
CD5:	CLL, MCL, DLBCL, LPL
CD10:	FL, BL, DLBCL, AITL
CD23:	CLL, FL, LPL
CD138:	MM, Plasmablastic lymphoma
CD30:	CHL, ALCL, AITL, …

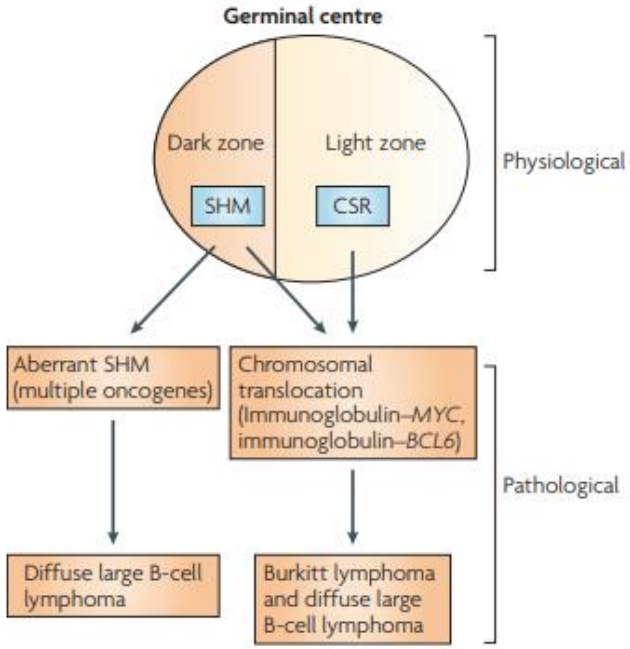
Translocations

ALK:	ALK+ ALCL
	ALK+ DLBCL
	myofibroblastic tumor
bcl2:	follicular lymphoma
	de novo DLBCL
Myc:	BL
	DLBCL
	HGBL

Mutations

MYD88 mutation: LPL (90% of cases)
DLBCL, SMZL, DLBCL leg type…





Somatic hypermutations: Germinal centre derivation

Except B-ALL, MCL: most B-NHL are GC derived

Nature Reviews Immunology **volume 8**, pages22–33 (2008)

Leukemia

www.nature.com/leu

REVIEW ARTICLE OPEN

Check for updates

LYMPHOMA

The 5th edition of the World Health Organization Classification of Haematolymphoid Tumours: Lymphoid Neoplasms

Rita Alaggio[1], Catalina Amador[2], Ioannis Anagnostopoulos[3], Ayoma D. Attygalle[4], Iguaracyra Barreto de Oliveira Araujo[5], Emilio Berti[6], Govind Bhagat[7], Anita Maria Borges[8], Daniel Boyer[9], Mariarita Calaminici[10], Amy Chadburn[11], John K. C. Chan[12], Wah Cheuk[12], Wee-Joo Chng[13], John K. Choi[14], Shih-Sung Chuang[15], Sarah E. Coupland[16], Magdalena Czader[17], Sandeep S. Dave[18], Daphne de Jong[19], Ming-Qing Du[20]✉, Kojo S. Elenitoba-Johnson[21], Judith Ferry[22]✉, Julia Geyer[11], Dita Gratzinger[23], Joan Guitart[24], Sumeet Gujral[25], Marian Harris[26], Christine J. Harrison[27], Sylvia Hartmann[28], Andreas Hochhaus[29], Patty M. Jansen[30], Kennosuke Karube[31], Werner Kempf[32], Joseph Khoury[33], Hiroshi Kimura[34], Wolfram Klapper[35], Alexandra E. Kovach[36], Shaji Kumar[37], Alexander J. Lazar[38], Stefano Lazzi[39], Lorenzo Leoncini[39], Nelson Leung[40], Vasiliki Leventaki[41], Xiao-Qiu Li[42], Megan S. Lim[21], Wei-Ping Liu[43], Abner Louissaint Jr.[22], Andrea Marcogliese[44], L. Jeffrey Medeiros[33], Michael Michal[45], Roberto N. Miranda[33], Christina Mitteldorf[46], Santiago Montes-Moreno[47], William Morice[48], Valentina Nardi[22], Kikkeri N. Naresh[49], Yasodha Natkunam[23], Siok-Bian Ng[50], Ilske Oschlies[35], German Ott[51]✉, Marie Parrens[52], Melissa Pulitzer[53], S. Vincent Rajkumar[54], Andrew C. Rawstron[55], Karen Rech[48], Andreas Rosenwald[3], Jonathan Said[56], Clémentine Sarkozy[57], Shahin Sayed[58], Caner Saygin[59], Anna Schuh[60], William Sewell[61], Reiner Siebert[62]✉, Aliyah R. Sohani[22], Reuben Tooze[63], Alexandra Traverse-Glehen[64], Francisco Vega[33], Beatrice Vergier[65], Ashutosh D. Wechalekar[66], Brent Wood[36], Luc Xerri[67] and Wenbin Xiao[53]

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WHO Blue Book 5th edition, beta version online

blood

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The International Consensus Classification of Mature Lymphoid Neoplasms: A Report from the Clinical Advisory Committee

The International Consensus Classification of Mature Lymphoid Neoplasms: A Report from the Clinical Advisory Committee

Elias Campo [1,*#], Elaine S Jaffe [2*#], James R Cook [3#], Leticia Quintanilla-Martinez [4#], Steven H Swerdlow [5#], Kenneth C Anderson [6], Pierre Brousset [7], Lorenzo Cerroni [8], Laurence DeLeval [9], Stefan Dirnhoffer [10], Ahmet Dogan [11], Andrew L Feldman [12], Falko Fend [4], Jonathan W Friedberg [13], Philippe Gaulard [14,15], Paolo Ghia [16], Steven M Horwitz [11], Rebecca L King [12], Gilles Salles [17], Jesus San-Miguel [18], John F Seymour [19], Steven P Treon [6], Julie M Vose [20], Emanuele Zucca [21], Ranjana Advani [22], Stephen Ansell [23], Wing-Yan Au [24], Carlos Barrionuevo [25], Leif Bergsagel [26], Wing C. Chan [27], Jeffrey I Cohen [28], Francesco d'Amore [29], Andrew Davies [30], Brunangelo Falini [31], Irene M Ghobrial [32,6], John Goodlad [33], John G Gribben [34], Eric D Hsi [35], Brad S Kahl [36], Won-Seog Kim [37], Shaji Kumar [23], Ann S LaCasce [6], Camille Laurent [7], George Lenz [38], John P Leonard [39], Michael P Link [40], Armando Lopez-Guillermo [41], Maria Victoria Mateos Manteca [42], Elizabeth Macintyre[43], Ari M Melnick [44], Franck Morschhauser [45], Shigeo Nakamura [46], Marina Narbaitz [47], Astrid Paulovsky [48], Stefano A Pileri [49], Miguel Piris [50], Barbara Pro [51], Vincent Rajkumar [12], Steven T Rosen [52], Birgitta Sander [53], Laurie Sehn [54], Margaret A Shipp [6], Sonali M Smith [55], Louis M Staudt [56], Catherine Thieblemont [57], Thomas Tousseyn [58], Wyndham H Wilson [56], Tadashi Yoshino [59], Pier-Luigi Zinzani [60], Martin Dreyling [61#], David W Scott [54#], Jane N Winter [62#], Andrew D Zelenetz [11,63#]

ICC 2022: Virchows Archiv: annual review issue

Volume 482, issue 1, January 2023

Annual Review Issue: Advances in the classification of myeloid and lymphoid neoplasms as revealed in the International Consensus Classification

Issue editors

Daniel A Arber, Elias Campo & Elaine S. Jaffe

20 articles in this issue

- 1 22ICC CLL
- 2 22ICC FL and MZL
- 3 22ICC plasma cell neoplasm
- 4 22ICC DLBCL
- 5 22ICC Burkitt and High grade
- 6 22ICC Hodgkin and NLPBL
- 7 22ICC EBV associated B and T LPD
- 8 22ICC Extranodal T and NK
- 9 22ICC nodal T NK
- 10 22ICC cutaneous lymphoma
- 11 22ICC ALL
- 12 22ICC AML
- 13 22ICC eosinophilic
- 14 22ICC JMML germline predisposition ...
- 15 22ICC mastocytosis
- 16 22ICC MDS
- 17 22ICC MDS MPN
- 22ICC guidelines genomic profiling lymp...
- 22ICC guidelines genomic profiling myel...
- 2022 ICC classification lymphoid
- 2022 ICC classification myeloid

WHO-HAEM5 en ICC 2022 Classifications are overlapping for the majority of entities:

- based on the WHO 4th edition
- based on same literature
- both written by experts

“differences” in approach of follicular lymphoma and EBV related/ immunodeficiency related diseases

nomenclature : NLPHL ↔ NLPBL

Fluid-overload LBL (may be EBV!)↔ HHV8 neg/EBV neg primary effusion- based lymphoma

HGBL with MYC and BCL6 rearrangement recognised only in ICC

High grade B-cell lymphoma with 11q aberration ↔ LBCL with 11q aberration (prov entity)

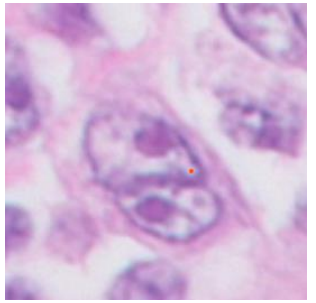
High grade lymphomas of immune priviliged sites ↔ prim CNS and prim testicular DLBCL

WHO HAEM5 ICC

Table 4. Distinctive features of primary large B-cell lymphomas of immune privileged sites.

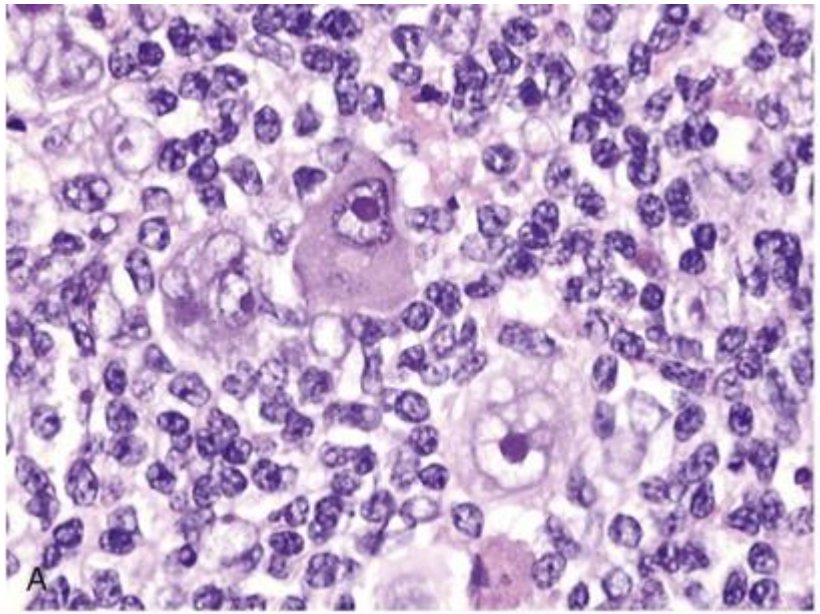
Subtypes	Primary large B-cell lymphoma of the CNS
	Primary large B-cell lymphoma of the vitreoretina
	Primary large B-cell lymphoma of the testis
Clinical	Usually in adults over age of 60 years
	Lymphoma tends to “home” to other immune privileged sites: vitreoretina tumour may occur concurrently with or follow CNS tumour; testicular tumour tends to relapse in CNS or contralateral testis
	Aggressive tumours with generally poor prognosis
Morphology	Large B-cell lymphoma
Immunophenotype	Activated B-cell immunophenotype: Usually CD10-, MUM1+, BCL6+
	EBV negative
Mutational profile	Concomitant *MYD88* and *CD79B* mutations
	Immune evasion: genetic inactivation of MHC class I and II and *B2M* (β_2-microglobulin) with subsequent loss of protein expression
	Showing DLBCL genomic signature C5/MCD/MYD88

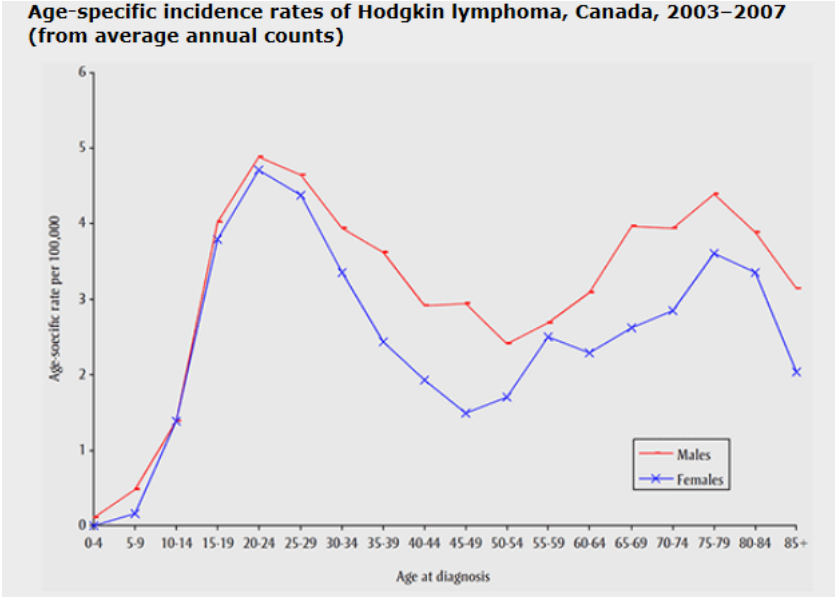
Classical Hodgkin Lymphoma



ICD-O	WHO 2017	WHO 2022	ICC 2022
	Hodgkin lymphomas		
9659/3	NLPHL	NLPHL	**nodular lymphocyte predominant B-cell lymphoma***
9650/3	CHL	CHL	CHL
9663/3	NS CHL	NS CHL	NS CHL
9651/3	LR CHL	LR CHL	LR CHL
9652/3	MC CHL	MC CHL	MC CHL
9653/3	LD CHL	LD CHL	LD CHL

	CHL	NLPHL
Architecture	Nodular (NS and LR) Diffuse (MC)	Nodular
Neoplastic cells	Classic RS cells Lacunar cells (NS)	LP (L & H) cells
Phenotype	CD15^{+}, CD30^{+}, CD20$^{-/+}$, CD45^{-}, EMA^{-}, PAX5^{+} (weak), CD79a^{-}, J chain^{-}, Oct-2$^{-/+}$, EBV$^{+/-}$	CD20^{+}, CD79a^{+}, Oct-2^{+}, J chain^{+}, CD45^{+}, EMA$^{+/-}$, CD30^{-}, CD15^{-}, BOB.1^{+}, EBV^{-}
Background	T cells (NS and MC) Small B cells (LR nodular) FDC$^{+/-}$ (LR, some NS)	B cells, CD57/PD-1^{+} cells, FDC^{+}





Lymphomas of the mediastinum

Primary mediastinal B-cell lymphoma	Grey zone lymphoma	Classical Hodgkin lymphoma
Mediastinal mass	Mediastinal mass	Often mediastinal & nodal disease
Preserved B-cell program	Preserved B-cell program	Crippled B-cell program
High tumor density	High tumor density Spectrum between CHL and PMBCL	Minority of HRS cells
Diffuse fibrosis, clear cytoplasm, sometimes HRS like cells	HRS like cells, sometimes clear cell, fibrosis	Often fibrotic, nodular
Female predominance, young adults	Male predominance, young adults	Female, young adults
CD30+, CD23+, MAL1+	CD30+, CD15+/-	CD30+, CD15+, IMP3+, GATA3+, PAX 5 weak
EBV -	EBV –/+ (< 5%)	EBV -/+ (< 25%)
Variable prognosis	Poor prognosis	Good prognosis

Amplification of 9p24,1 (*PDL1, PDL2, JAK*), *REL* amplification, mutations in NF-κB pathway genes

Under “large B-cell lymphomas” in ICC

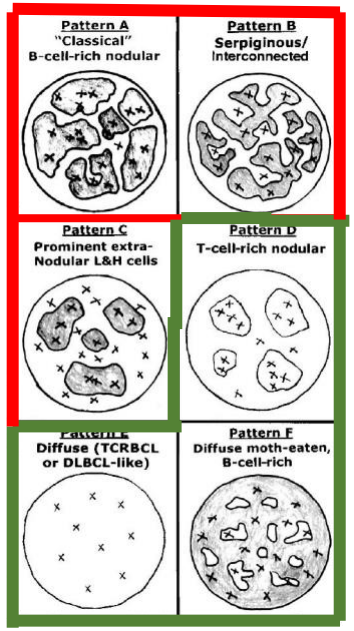
Nodular lymphocyte predominant BCL/HL

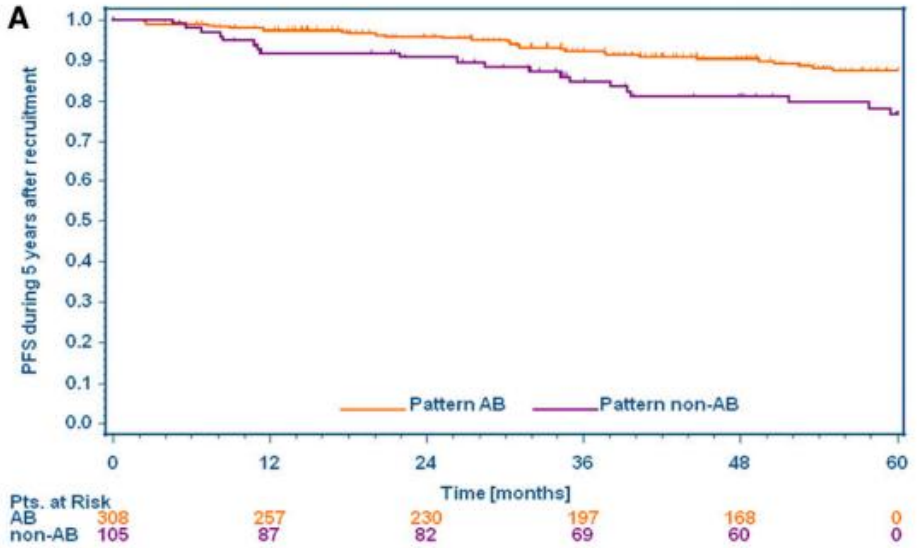
ICD-O	WHO 2017	WHO 2022	ICC 2022
	Hodgkin lymphomas		
9659/3	NLPHL	NLPHL	**nodular lymphocyte predominant B-cell lymphoma***
9650/3	CHL	CHL	CHL
9663/3	NS CHL	NS CHL	NS CHL
9651/3	LR CHL	LR CHL	LR CHL
9652/3	MC CHL	MC CHL	MC CHL
9653/3	LD CHL	LD CHL	LD CHL

	CHL	NLPHL
Architecture	Nodular (NS and LR) Diffuse (MC)	Nodular
Neoplastic cells	Classic RS cells Lacunar cells (NS)	LP (L & H) cells
Phenotype	$CD15^+$, $CD30^+$, $CD20^{-/+}$, $CD45^-$, EMA^-, $PAX5^+$ (weak), $CD79a^-$, J chain$^-$, Oct-$2^{-/+}$, $EBV^{+/-}$	$CD20^+$, $CD79a^+$, Oct-2^+, J chain$^+$, $CD45^+$, $EMA^{+/-}$, $CD30^-$, $CD15^-$, $BOB.1^+$, EBV^-
Background	T cells (NS and MC) Small B cells (LR nodular) $FDC^{+/-}$ (LR, some NS)	B cells, $CD57/PD\text{-}1^+$ cells, FDC^+

Typical

variant





Am J surg Pathol 2003 Fan
Blood 2013 Hartmann

Large B-cell lymphomas

	ICD-O	WHO 2017	WHO 2022	ICC 2022
		Large B-cell lymphomas		
	9680/3	DLBCL, NOS	DLBCL, NOS	DLBCL, NOS
	9680/3	GCB subtype	GCB subtype	GCB subtype
	9680/3	ABC subtype	ABC subtype	ABC subtype
Location	9680/3	primary DLBCL of CNS	Primary Large B-cell lymphomas of immune-priviliged sites	primary DLBCL of CNS
			Primary Large B-cell lymphomas of immune-priviliged sites	primary DLBCL of testis
	9680/3	Primary cutaneous DLBCL, leg type	Primary cutaneous DLBCL, leg type	Primary cutaneous DLBCL, leg type
EBV+	9680/3	EBV positive DLBCL	EBV positive DLBCL	EBV positive DLBCL
	9680/1	EBV-positive mucocutaneous ulcer	EBV-positive mucocutaneous ulcer	EBV-positive mucocutaneous ulcer
	9766/1	Lymphomatoid granulomatosis grade I-II	lymphomatoid granulomatosis	lymphomatoid granulomatosis
	9766/3	Lymphomatoid granulomatosis grade III		
Inflammation/ fluid	9680/3	DLBCL associated with chronic inflammation	DLBCL associated with chronic inflammation	DLBCL associated with chronic inflammation
	9680/3	fibrin associated DLBCL	fibrin associated DLBCL	fibrin associated DLBCL
	9678/3		Fluid overload-associated large B-cell lymphoma (+/- EBV!!)	HHV8 and EBV negative PEL
Mediastinum	9679/3	primary mediastinal (thymic) LBCL	primary mediastinal LBCL	primary mediastinal (thymic) LBCL
	9596/3	B-cell lymphoma, unclassifiable, with features intermediate between DLBCL and CHL	Mediastinal grey zone lymphoma	Mediastinal gray zone lymphoma
Terminal B-cell	9737/3	ALK-pos LBCL	ALK-pos LBCL	ALK-pos LBCL
	9735/3	plasmablastic lymphoma	plasmablastic lymphoma	plasmablastic lymphoma
	9738/3	HHV-8 + DLBCL, NOS	KSHV/HHV8+ DLBCL	HHV-8 + DLBCL, NOS
	9678/3	primary effusion lymphoma	primary effusion lymphoma	primary effusion lymphoma
Other	9712/3	intravascular LBCL	intravascular LBCL	intravascular LBCL
	9688/3	T-cell/histiocyte rich large B-cell lymphoma	T-cell/histiocyte rich large B-cell lymphoma	T-cell/histiocyte rich large B-cell lymphoma
	9687/3	Burkitt-like lymphoma with 11q aberration	high grade B-cell lymphoma with 11q aberration	large B-cell lymphoma with 11q aberration

HIGH GRADE LYMPHOMAS

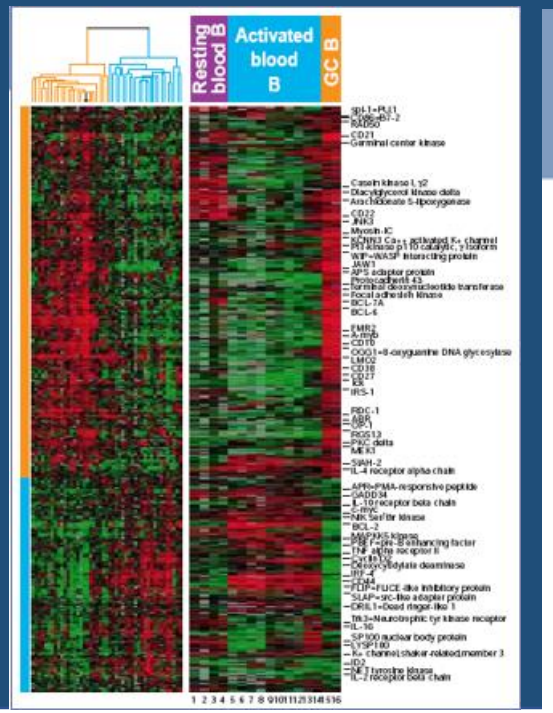
ICD-O	WHO 2017	WHO 2022	ICC 2022
9687/3	Burkitt lymphoma	Burkitt lymphoma	Burkitt lymphoma
9680/3	HGBCL with MYC and BCL2 and /or BCL6 rearrangements	HGBCL with MYC and BCL2 rearrangement	HGBCL with MYC and BCL2 rearrangement
			HGBCL with MYC and BCL6 rearrangement
9680/3	HGBCL, NOS	HGBCL, NOS	HGBCL, NOS

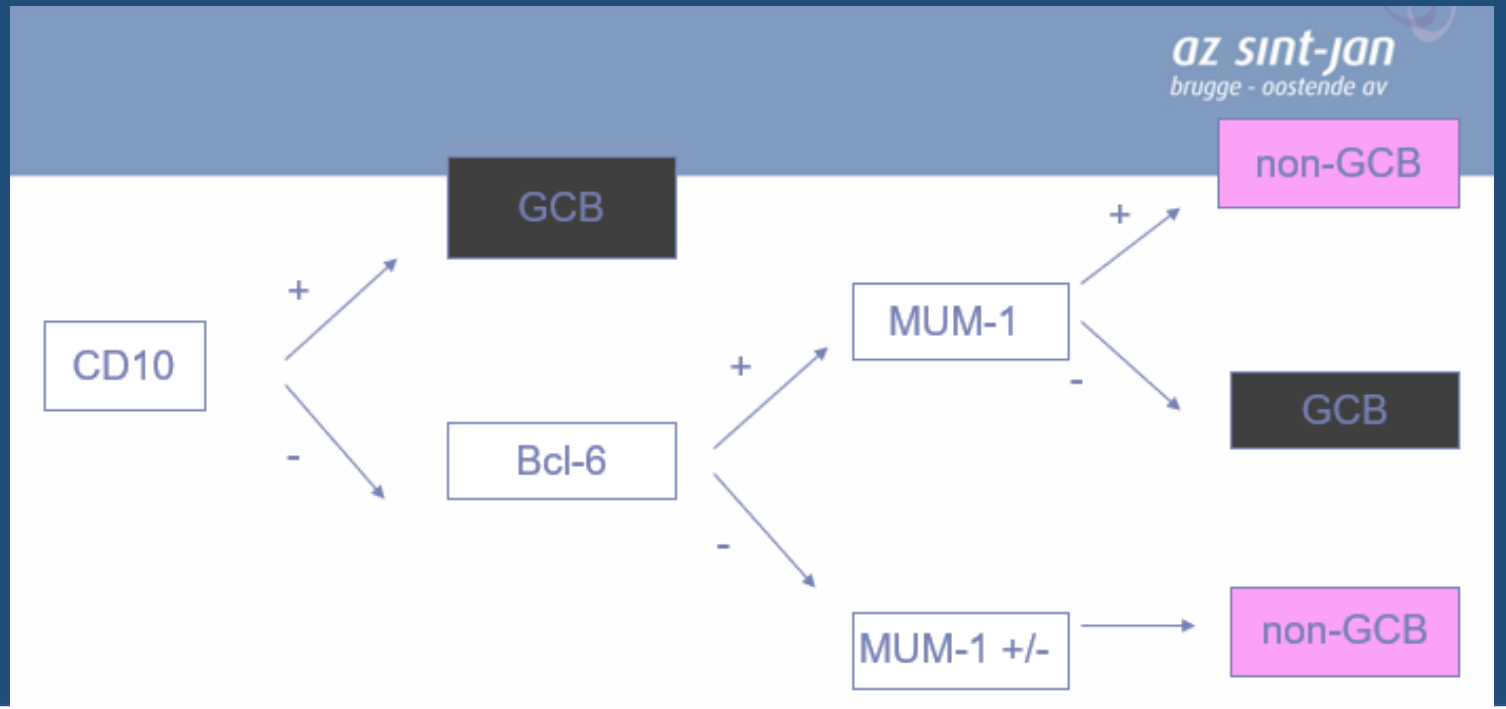
LPD and Lymphomas associated with IDD

ICD-O	WHO 2017	WHO 2022	ICC 2022
9971/1	non destructive LPD : plasmacytic hyperplasia PTLD - infectious mononucleosis PTLD - florid follicular hyperplasia PTLD	hyperplasias arising in IDD	non destructive LPD : plasmacytic hyperplasia PTLD - infectious mononucleosis PTLD - florid follicular hyperplasia PTLD
9971/1	polymorphic LPD	polymorphic LPD arising in IDD	polymorphic LPD
9680/1	EBV + mucocutaneous ulcer	EBV + mucocutaneous ulcer	EBV + mucocutaneous ulcer
code as type of lymphoma	monomorphic PTLD - Classical Hodgkin lymphoma PTLD	lymphomas arising in IDD	monomorphic PTLD - Classical Hodgkin lymphoma PTLD
code as type of lymphoma		Inborn errors of immunity-associated LPD and lymphomas	

ICD-O	WHO 2017	WHO 2022	ICC 2022
	Large B-cell lymphomas		
9680/3	DLBCL, NOS	DLBCL, NOS	DLBCL, NOS
9680/3	GCB subtype	GCB subtype	GCB subtype
9680/3	ABC subtype	ABC subtype	ABC subtype

40% of all NHL
Treatment: R/CHOP
Morphological variants : no prognostic or predictive impact
COO: GCB versus ABC (GEP, immunohistochemical classifier Hans algorithm)





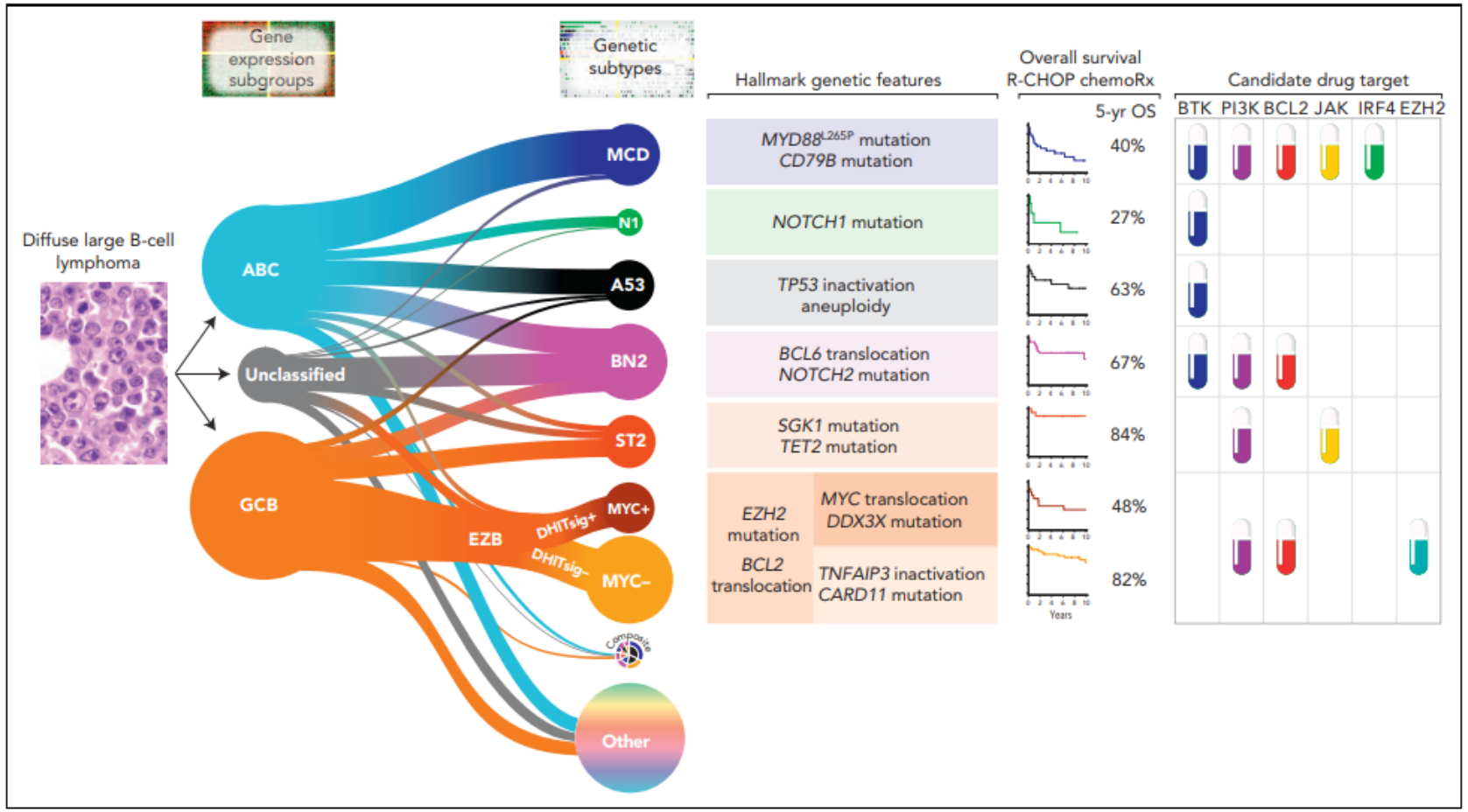
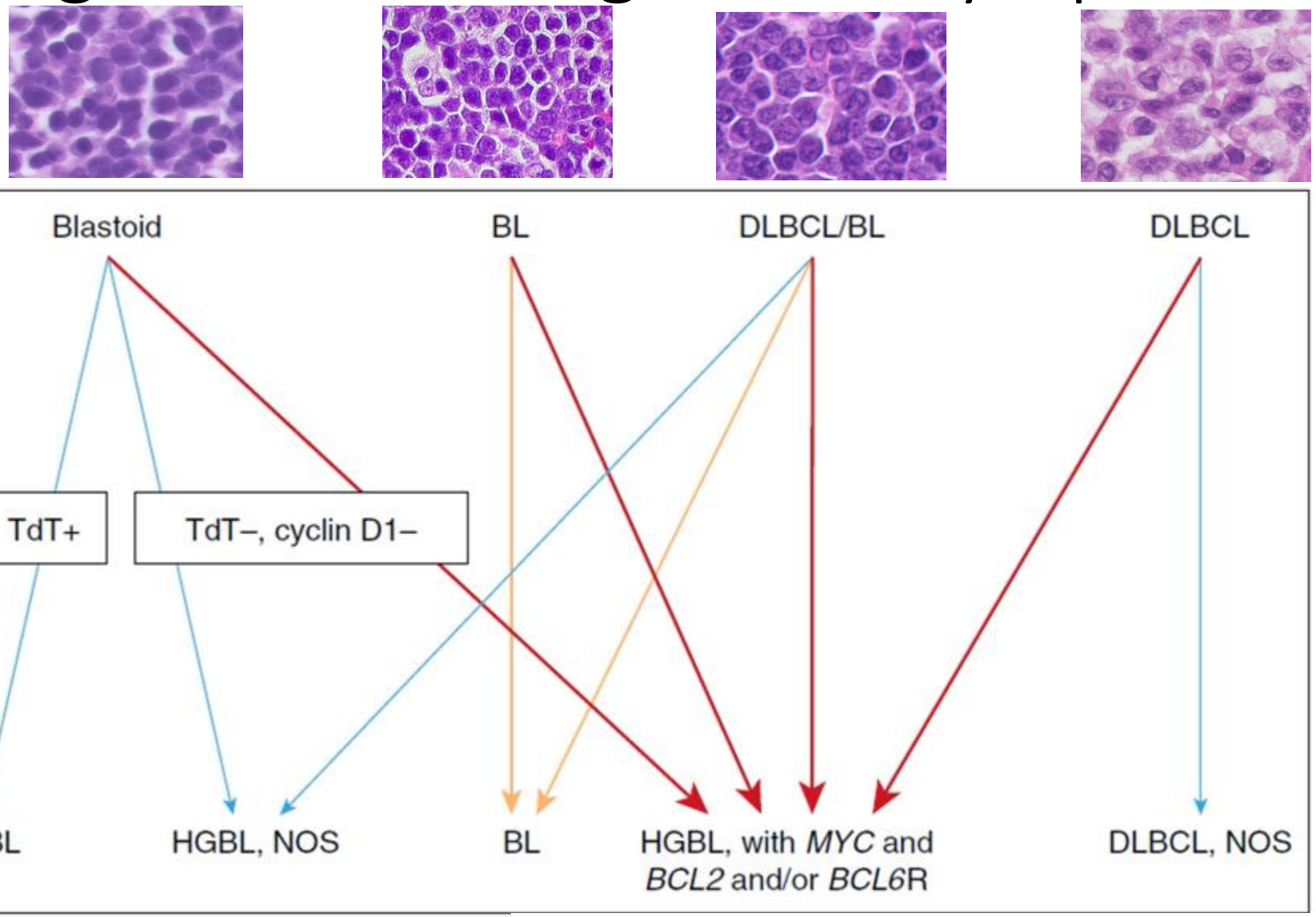


Figure 3. Genetic subgroups of DLBCL illustrated using the LymphGen algorithm. The relationships between COO and the probabilistic assignments to genetics-based subgroups are shown. The size of the subgroup circles approximates the proportions of patients in each group, with the prevalence based on Schmitz et al,[185] adjusted for a population-based distribution of COO subgroups. Tumors assigned with high confidence to ≥2 subgroups are assigned to the composite group, while ~37% of tumors are not assigned to any subgroup with sufficient confidence (other). The hallmark genetic features are those frequent within that subgroup but are not required for that assignment. OS following R-CHOP chemoimmunotherapy along with inferred drug targets are shown. GCB, germinal center B-cell–like.

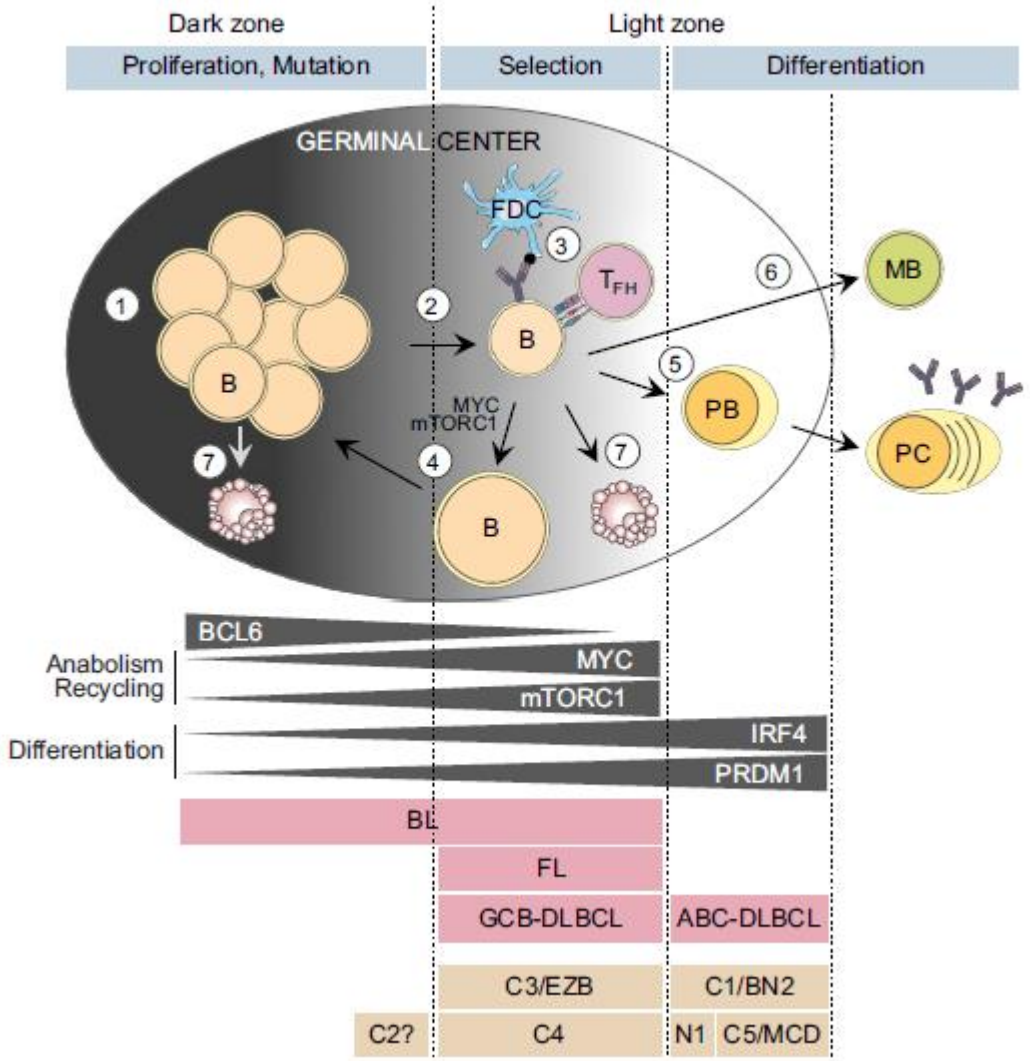
Blood 2022 140

De Leval et al

WHO 2017 algorithm for large B-cell lymphomas



Swerdlow et al. The 2016 revision of the WHO classification. *Blood* 2016



Immunological Reviews. 2019;288:214–239.

Burkitt lymphoma:

Dark zone germinal center B-cell

Sporadic (sBL) –endemic (eBL) – immunodeficiency (iBL)

eBL: young male patients, extranodal, EBV+, malaria

sBL: male, broader age group, abdominal & extranodal, EBV+/-

iBL: HIV, BM& CNS involvement, more plasmacytoid morhology, EBV+/-

Rare cases: granulomatous hiding the tumorcells, EBV+, more favorable prognosis

R/ intensified therapy + CNS prophylaxis/R

Hallmark: MYC/ IG translocation

MYC/IGH (80%) , MYC/IGK (15%), MYC/IGL (5%)

Cases with TdT expression: classify as B-ALL with MYC rearrangement

BL look alike: large BCL with 11q aberrations

=> *MYCr* negative, MYC ihc partial or weak+

=> telomeric 11Q loss and proximal 11Q gain

=> children (localised disease I/II) and adults

=> in IDD setting (PTLD and ATM germline mutations)

=> TP53 mutation in adults: aggressive

=> clue: coarser phagocytosed apoptotic bodies, less monomorphic

=> other mutational landscape than BL (~GC DLBCL)

=> favorable prognosis in comparison to HGBCL

Provisonal entity in ICC, entity in WHO HAEM5

MYC/BCL 2 (HGBCL-DH-BCL2) *	MYC/BCL6 double hit lymphomas (HGBCL-DH-BCL6)
80% of DH/TH lymphomas	10-20% of DH/TH lymphomas
Adults, 60Y, M>F	More extranodal involvement, heterogeneous
Advanced stage disease (III-IV), poor prognosis	
Variable morphology	DLBCL / large cell morhology
Sometimes TdT expression, CD34-	Sometimes TdT expression, CD34-
De novo; transformed FL	
Germinal center B-cell derived (Hans & GEP)	GCB and ABC
MYC/IG and MYC/non-IG (40%), complex KT Mutational landscape overlaps with BL and DLBCL	MYC/IG and MYC/non-IG, pseudoDH (MYC/BCL6) 30% Mutational landscape more heterogeneous
Uniform group derived from FL-like cells: entity in WHO HAEM5 and ICC	Provisional entity in ICC

*except: Foll NHL (grade I-IIIa) and B-ALL/LBL with DH cytogenetics

GEP: Double hit signature (DHsig) –molecular high grade (MHG): ~ dark zoneGCB, aggressive biology

50% of DHsig were HGBCL-DH-BCL2

30% of non-HGBCL-DH-BCL2 MYC or BCL2 rearrangements were found (cryptic to FISH)

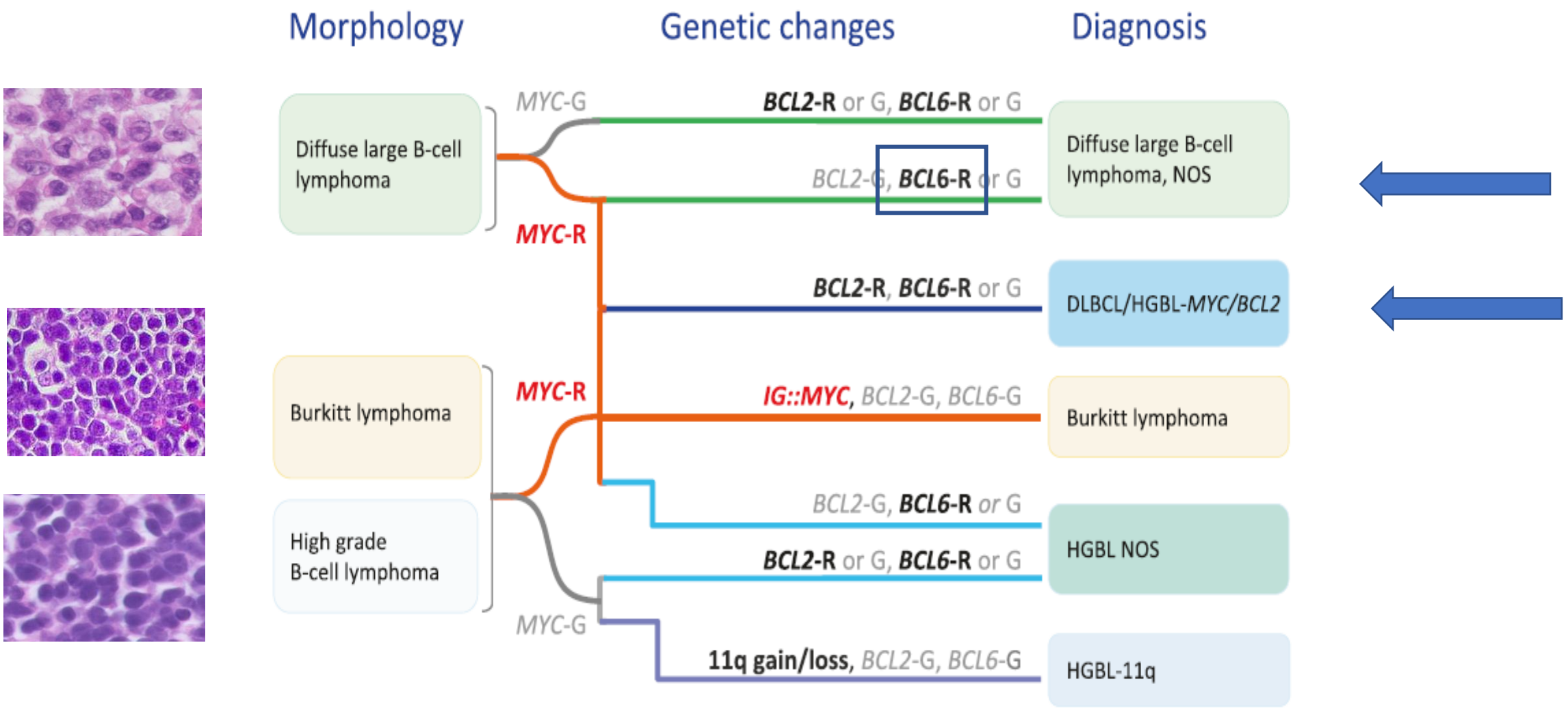
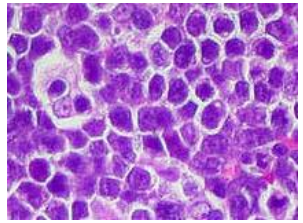
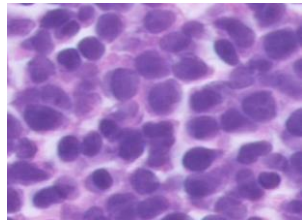
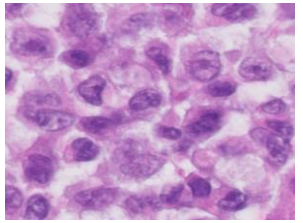


Fig. 4 Algorithm for classification of aggressive B-cell lymphomas in WHO-HAEM5 in the light of *MYC*, *BCL2* and *BCL6* rearrangement and complex 11q gain/loss patterns. HGBL high grade B-cell lymphoma, R rearrangement, G germline configuration.

WHO-HAEM5 2022 algorithm

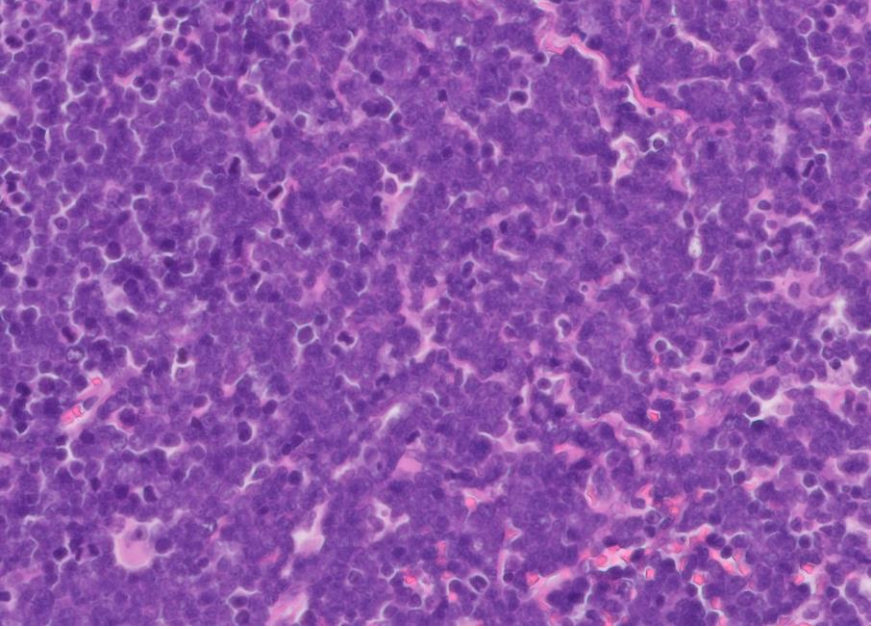


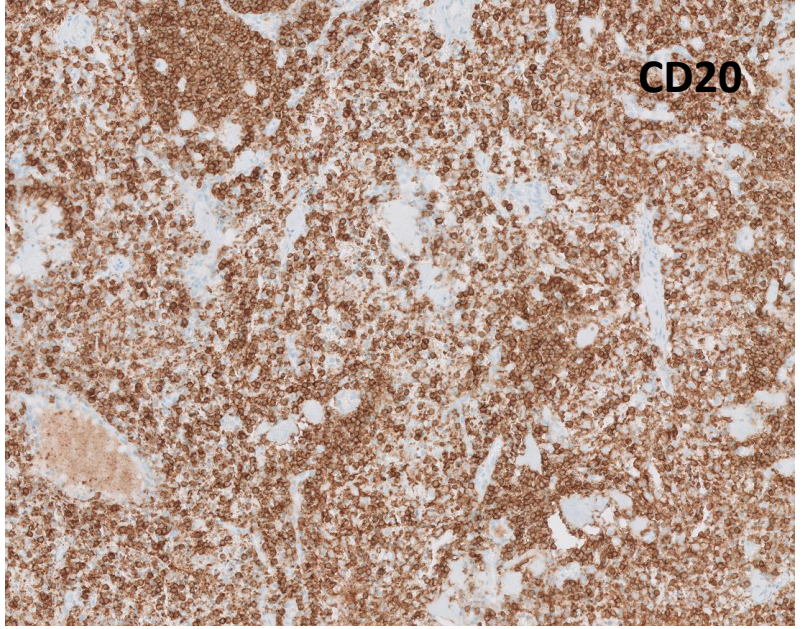


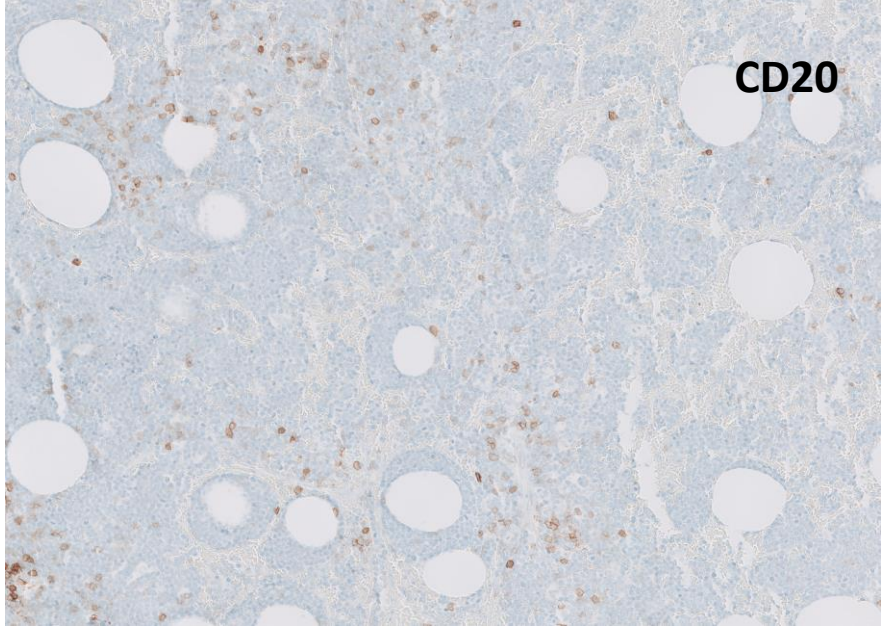


Morphology	Burkitt-like		Blastoid		DLBCL-like	
Cytogenetics	*MYC* R No *BCL2* or *BCL6* R	Any except DH	*MYC* R & *BCL2* R	*MYC* R & *BCL6* R	Any except DH	Any except DH
Diagnosis	Burkitt lymphoma	HGBCL, NOS	HGBCL with *MYC* & *BCL2* R (DH)	HGBCL with *MYC* & *BCL6* R (DH)	B-LBL	DLBCL, NOS
CD34	-	-			+/-	-
TdT	-	-/+			+	-

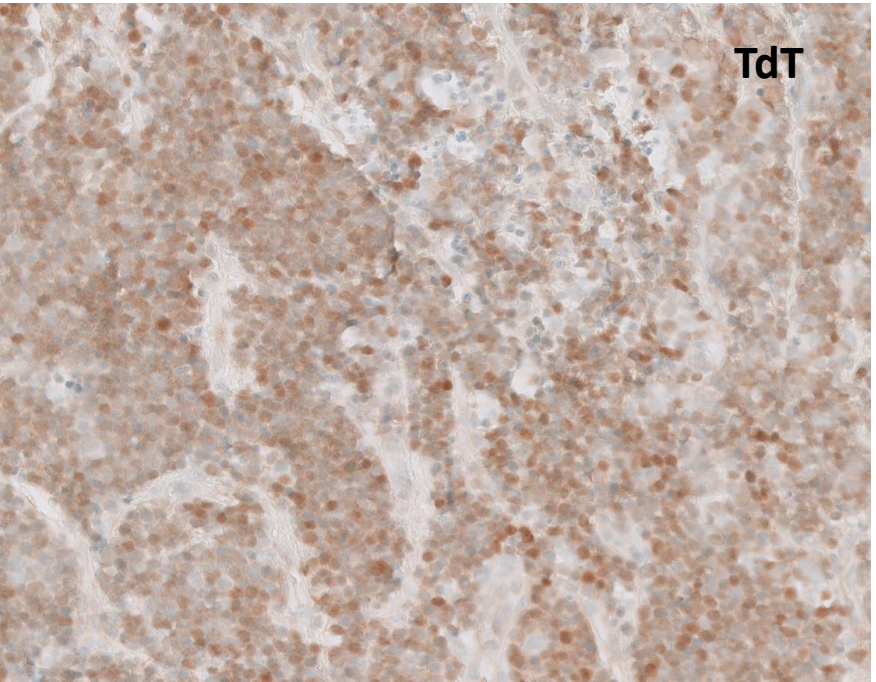
ICC 2022 algorithm, Virchow 2023 King

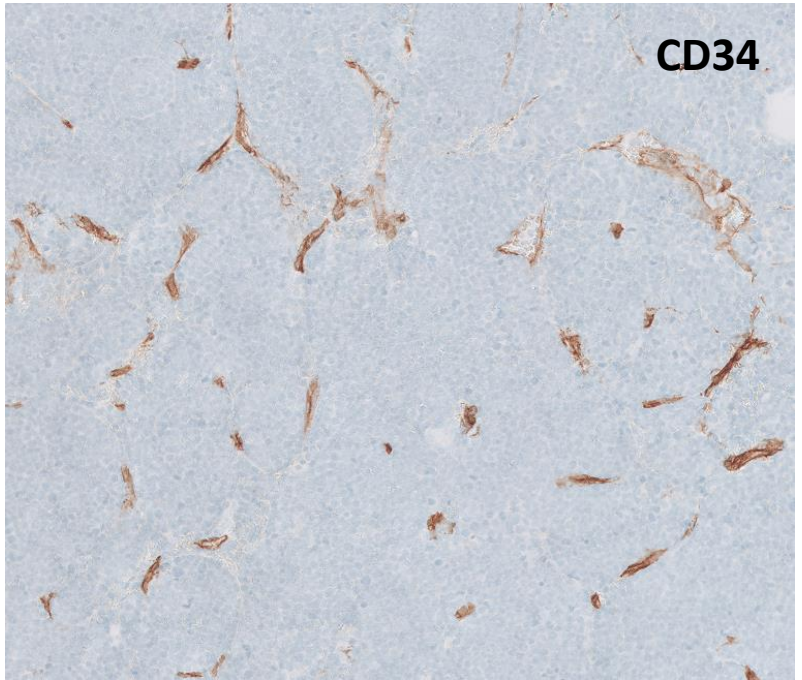


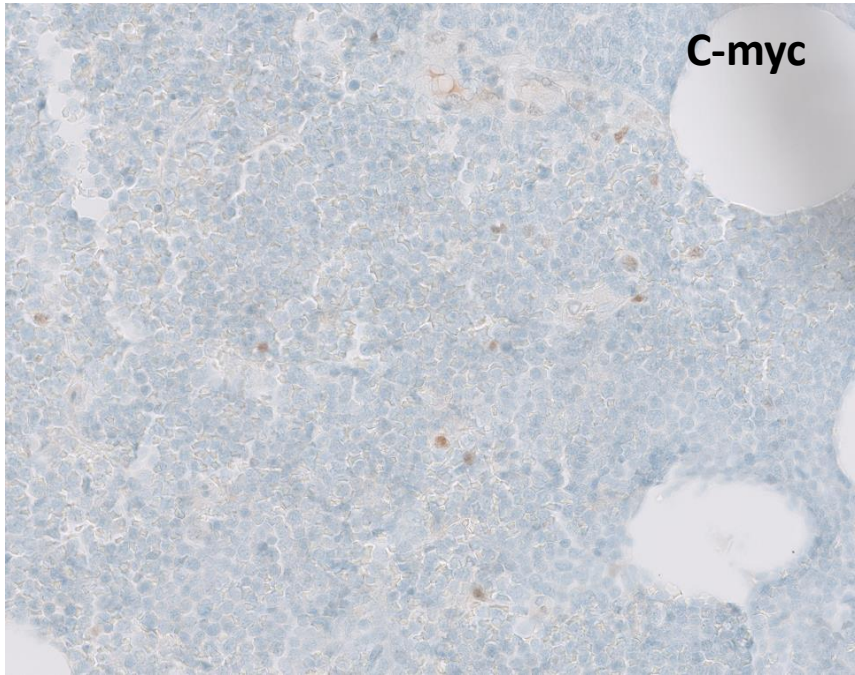




HGBL with TdT expression







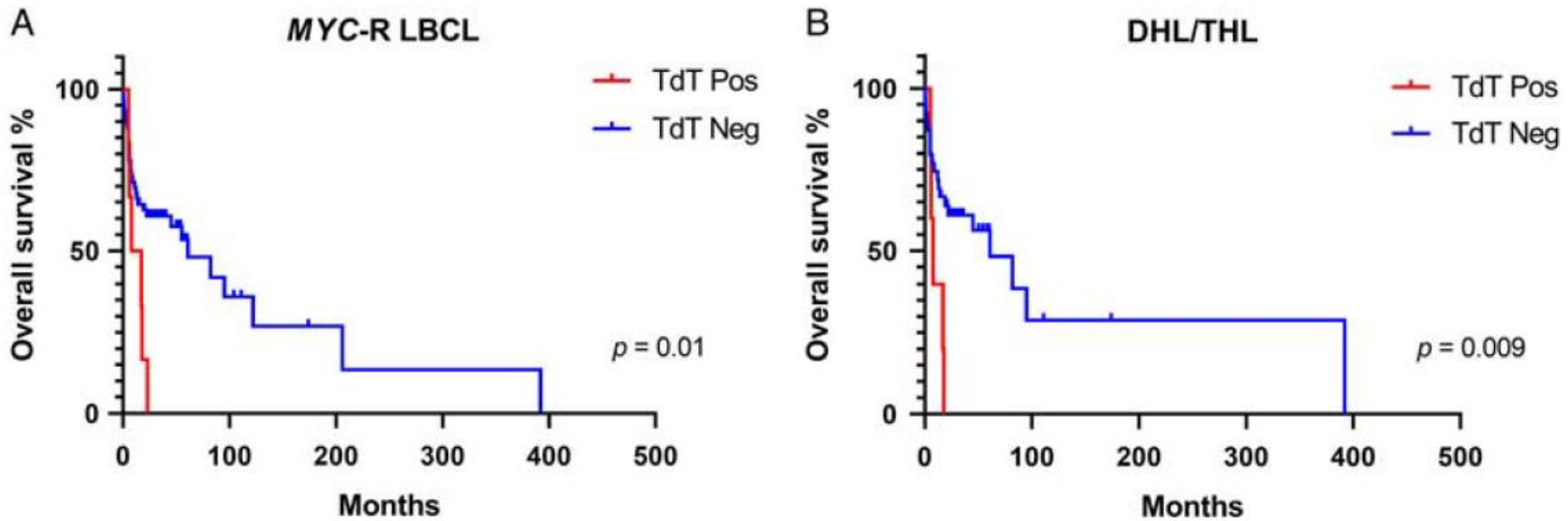
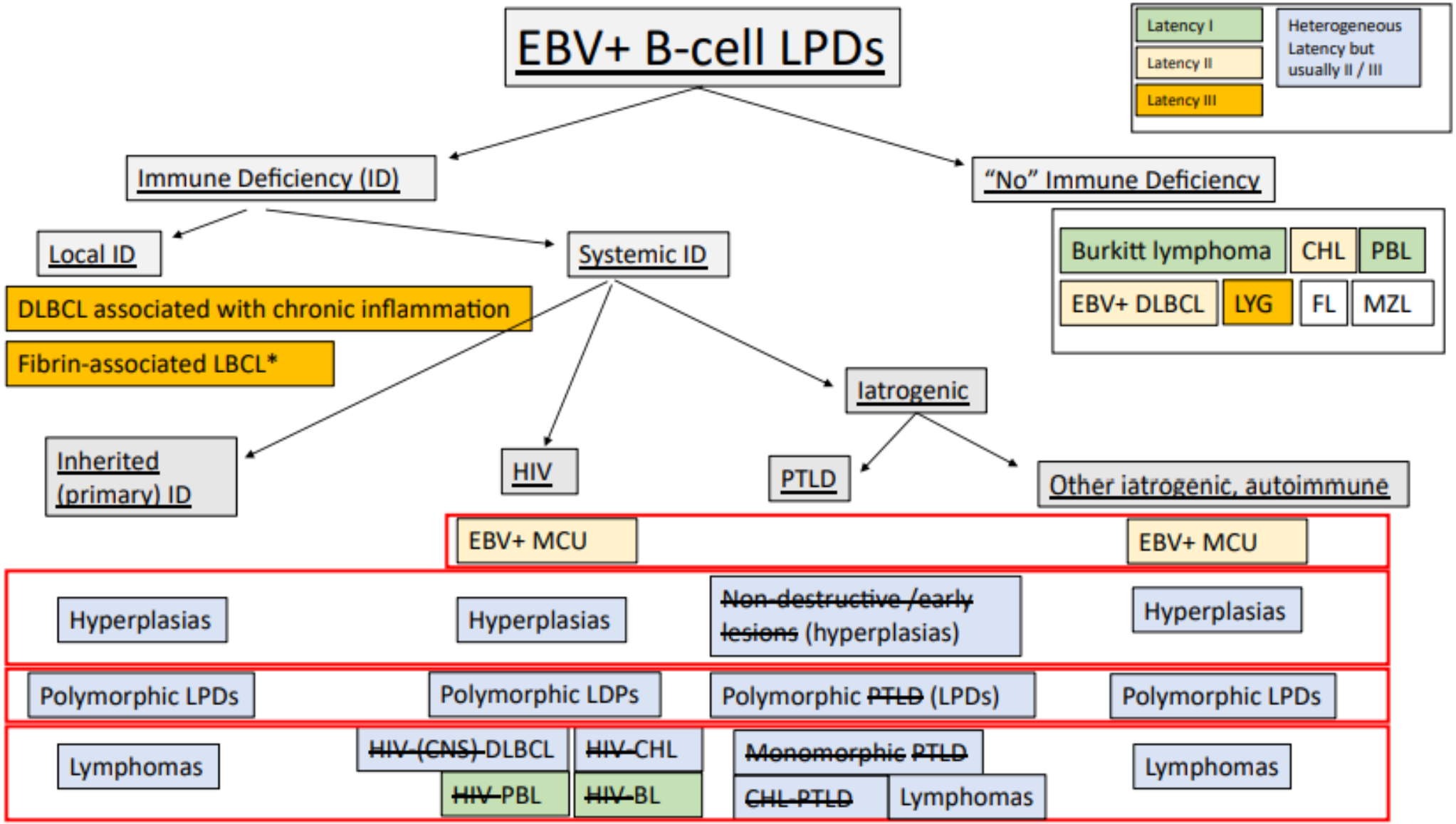


FIGURE 3. A, Survival comparison of TdT^+ (n = 6, median survival-12.5 months) and TdT^- (n = 59, median survival-61 months) *MYC* rearranged LBCL from UPMC. B, Survival comparison of TdT^+ (n = 5, median survival-8 mo) and TdT^- (n = 39, median survival-61 mo) DHL/THL from UPMC.

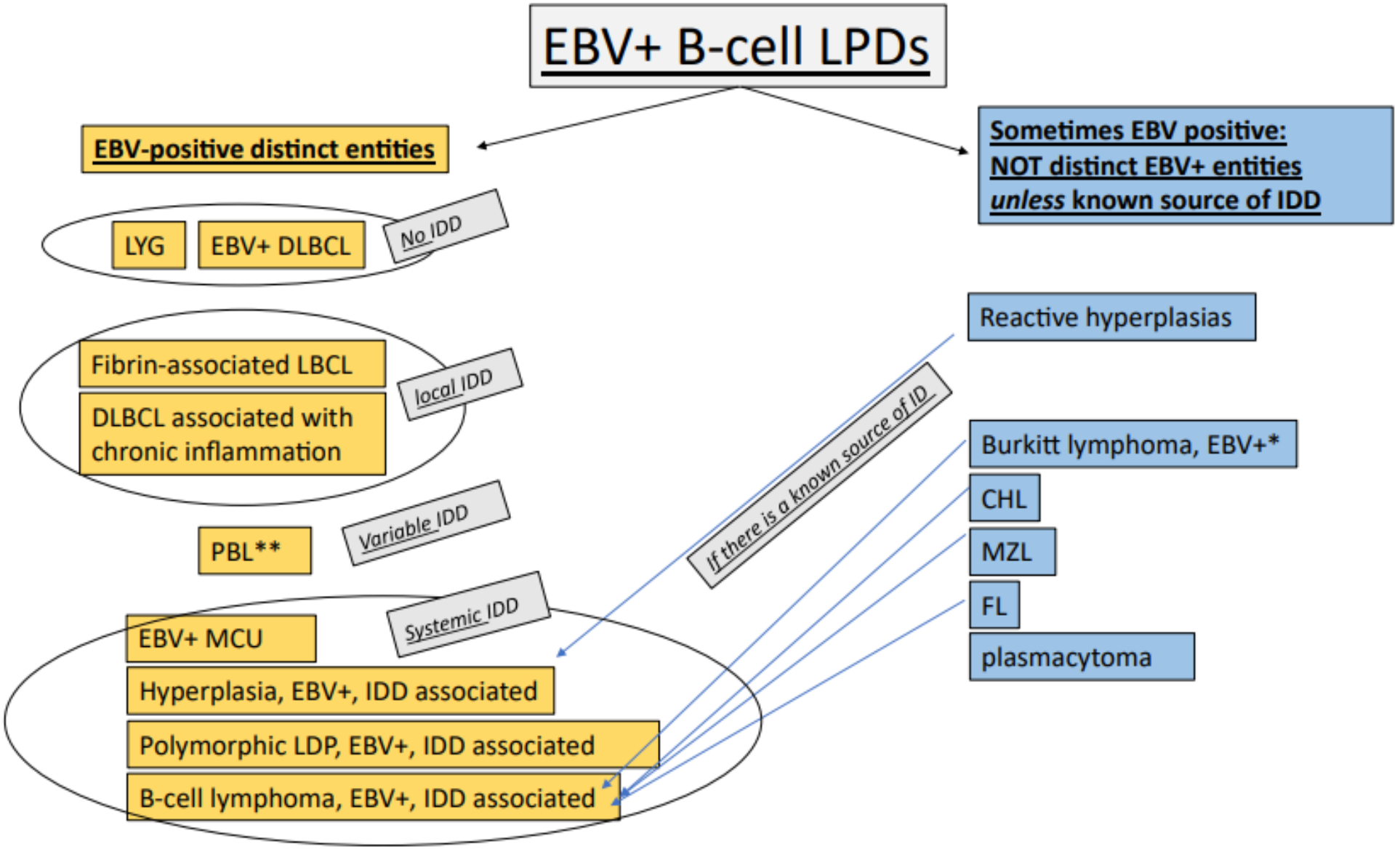
Standardised nomenclature for all IDD-LPD's

Histologic diagnosis	Virus(es)	Specific immune deficiency/dysregulation setting
Hyperplasia Polymorphic LPD EBV+ mucocutaneous ulcer Lymphoma (classify as for immunocompetent patients)	EBV+/- KSHV/HHV8 +/-	Posttransplant HIV infection Auto-immune disease/therapy related Immune senescence Inborn errors of immunity

e.g.
Extranodal MZL, EBV+, RA/MTX
Primary effusion lymphoma, KSH/HHV8+, EBV+, HIV setting
Polymorphic lymphoproliferative disorder, EBV+, giant cell arteritis/Medrol



Surgical Pathology Clinics 2023, Chapman, in press



Surgical Pathology Clinics 2023, Chapman, in press

ICD-O	WHO 2017	WHO 2022	ICC 2022
	Large B-cell lymphomas		
9680/3	DLBCL, NOS	DLBCL, NOS	DLBCL, NOS
9680/3	GCB subtype	GCB subtype	GCB subtype
9680/3	ABC subtype	ABC subtype	ABC subtype
9688/3	T-cell/histiocyte rich large B-cell lymphoma	T-cell/histiocyte rich large B-cell lymphoma	T-cell/histiocyte rich large B-cell lymphoma
9680/3	primary DLBCL of CNS	**Primary Large B-cell lymphomas of immune-priviliged sites**	**primary DLBCL of CNS**
		Primary Large B-cell lymphomas of immune-priviliged sites	**primary DLBCL of testis**
9680/3	Primary cutaneous DLBCL, leg type	Primary cutaneous DLBCL, leg type	Primary cutaneous DLBCL, leg type
9680/3	EBV positive DLBCL	EBV positive DLBCL	EBV positive DLBCL
9680/1	EBV-positive mucocutaneous ulcer	EBV-positive mucocutaneous ulcer	EBV-positive mucocutaneous ulcer
9680/3	DLBCL associated with chronic inflammation	DLBCL associated with chronic inflammation	DLBCL associated with chronic inflammation
9680/3	fibrin associated DLBCL	fibrin associated DLBCL	fibrin associated DLBCL
9678/3		**Fluid overload-associated large B-cell lymphoma (+/- EBV!!)**	**HHV8 and EBV negative PEL**
9766/1 9766/3	Lymphomatoid granulomatosis grade I-II Lymphomatoid granulomatosis grade III	lymphomatoid granulomatosis	lymphomatoid granulomatosis
9679/3	primary mediastinal (thymic) LBCL	primary mediastinal LBCL	primary mediastinal (thymic) LBCL
9596/3	B-cell lymphoma, unclassifiable, with features intermediate between DLBCL and CHL	**Mediastinal grey zone lymphoma**	**Mediastinal gray zone lymphoma**
9712/3	intravascular LBCL	intravascular LBCL	intravascular LBCL
9737/3	ALK-pos LBCL	ALK-pos LBCL	ALK-pos LBCL
9735/3	plasmablastic lymphoma	plasmablastic lymphoma	plasmablastic lymphoma
9687/3	Burkitt-like lymphoma with 11q aberration	**high grade B-cell lymphoma with 11q aberration**	**large B-cell lymphoma with 11q aberration**

ICD-O	WHO 2017	WHO 2022	ICC 2022
	HHV8 -associated LPD		
none	multicentric Castleman disease	multicentric Castleman disease	multicentric Castleman disease
9738/3	HHV-8 + DLBCL, NOS	KSHV/HHV8+ DLBCL	HHV-8 + DLBCL, NOS
9738/1	HHV8+ germinotropic lymphoproliferative disorder	KSHV/HHV8+ germinotropic lymphoproliferative disorder	HHV8+ germinotropic lymphoproliferative disorder
9678/3	primary effusion lymphoma	primary effusion lymphoma	primary effusion lymphoma
	High grade lymphomas		
9687/3	Burkitt lymphoma	Burkitt lymphoma	Burkitt lymphoma
9680/3	HGBCL with MYC and BCL2 and /or BCL6 rearrangements	**HGBCL with MYC and BCL2 rearrangement**	**HGBCL with MYC and BCL2 rearrangement** **HGBCL with MYC and BCL6 rearrangement**
9680/3	HGBCL, NOS	HGBCL, NOS	HGBCL, NOS
	Hodgkin lymphomas		
9659/3	NLPHL	NLPHL	**nodular lymphocyte predominant B-cell lymphoma***
9650/3	CHL	CHL	CHL
9663/3	NS CHL	NS CHL	NS CHL
9651/3	LR CHL	LR CHL	LR CHL
9652/3	MC CHL	MC CHL	MC CHL
9653/3	LD CHL	LD CHL	LD CHL
	Lymphoid proliferations and lymphomas associated with immune deficiency and dysregulation		
9971/1	non destructive LPD : plasmacytic hyperplasia PTLD - infectious mononucleosis PTLD - florid follicular hyperplasia PTLD	hyperplasias arising in IDD	non destructive LPD : plasmacytic hyperplasia PTLD - infectious mononucleosis PTLD - florid follicular hyperplasia PTLD
9971/1	polymorphic LPD	**polymorphic LPD arising in IDD**	**polymorphic LPD**
9680/1	EBV + mucocutaneous ulcer	EBV + mucocutaneous ulcer	EBV + mucocutaneous ulcer
code as type of lymphoma	monomorphic PTLD - Classical Hodgkin lymphoma PTLD	lymphomas arising in IDD	monomorphic PTLD - Classical Hodgkin lymphoma PTLD
code as type of lymphoma		**Inborn errors of immunity-associated LPD and lymphomas**	
			in ICC: PTLD separate from other iatrogenic IDD

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