BDIAP 108th Symposium on Haematopathology
Joint Meeting of the BDIAP and BLPG
at-Bristol, Anchor Road, Harbourside, Bristol BS1 5DB
15th - 17th May 2014

Approach to Core Biopsy Specimens

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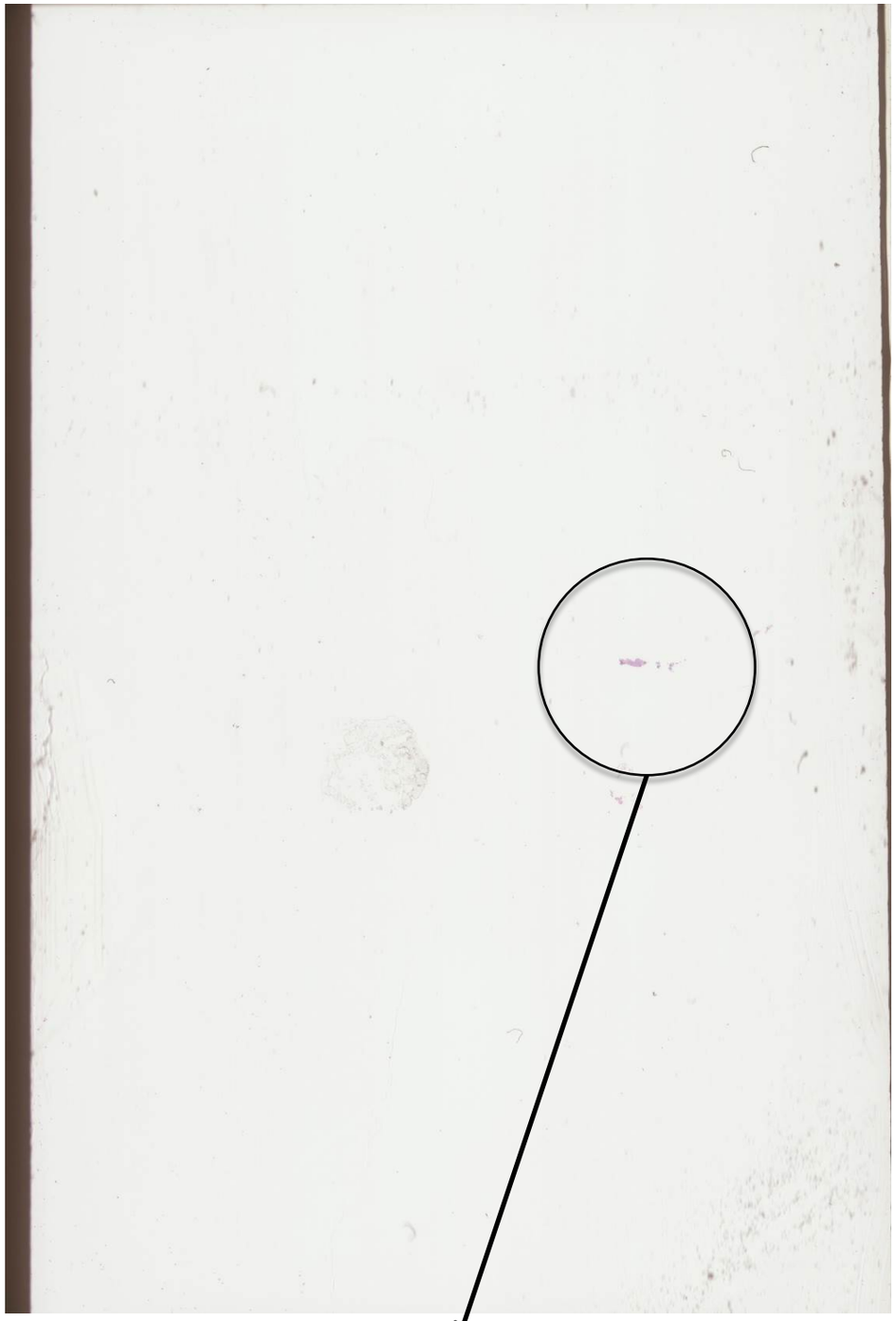
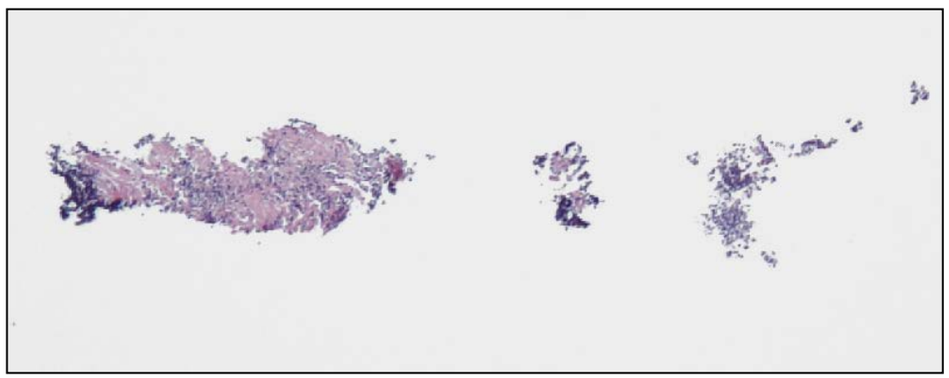
Changing Patterns in Clinical Approach to Tumour Diagnosis

- Increased use of less invasive biopsy techniques
  - Cost
  - Patient convenience
    - Convenience for clinicians
    - Co-morbidities - Local anaesthesia
- Increased use of core needle Bx for diagnosis of lymphoma



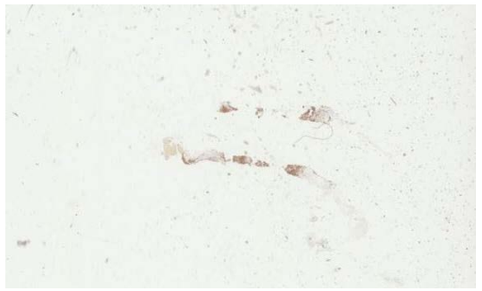


Use of Core Needle Biopsy Guidance

Lack of clarity in guidance for pathologists and clinicians

- BCSH for FL: “…Lymph node excision or adequate core biopsy is required for the diagnosis of follicular lymphoma…”
- “Interference” of other guidance (Head and neck cancer)
- How to biopsy
- Significant variability in processing
- Interpretational issues

CD20



CD3

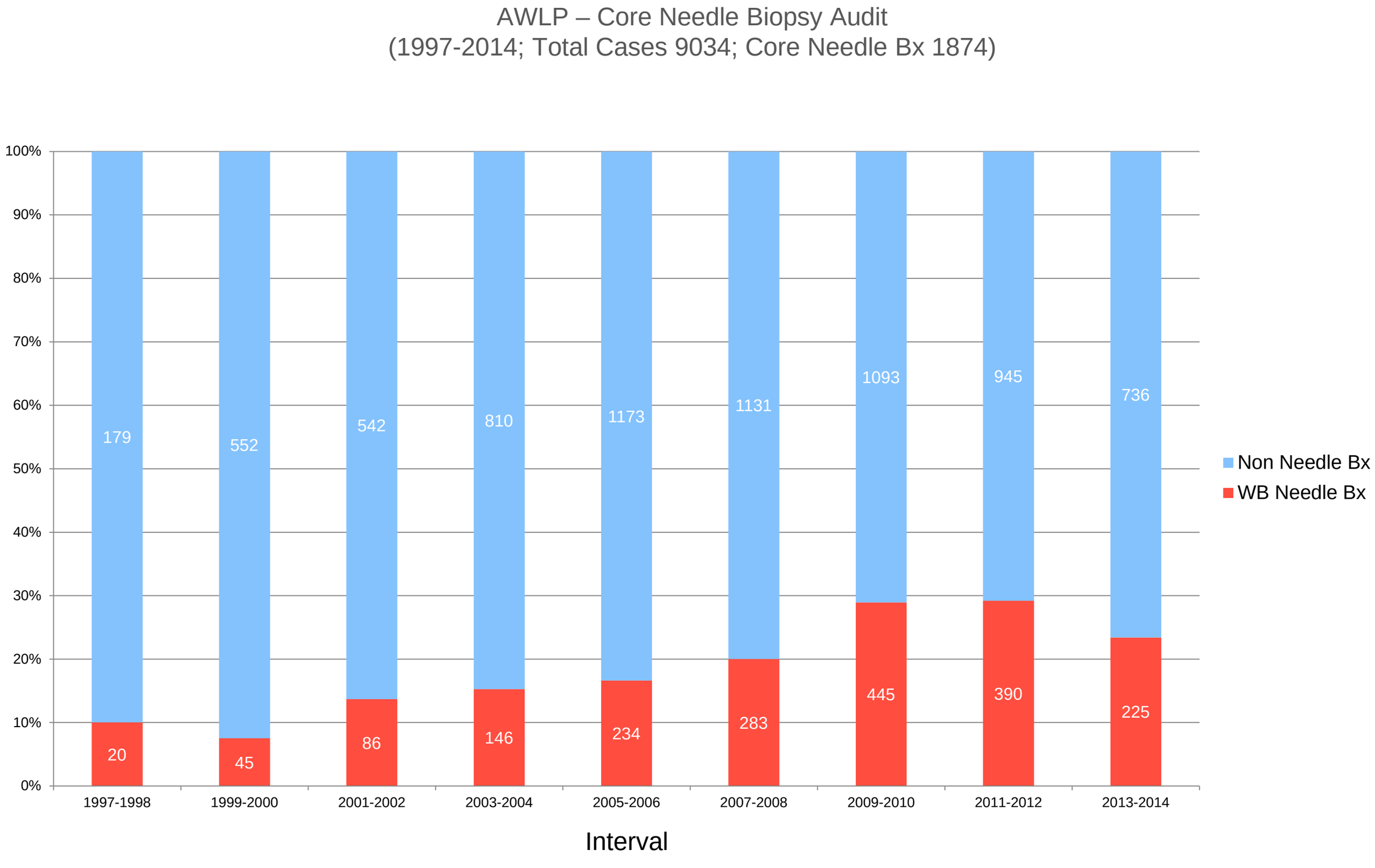
CD10

BCL2

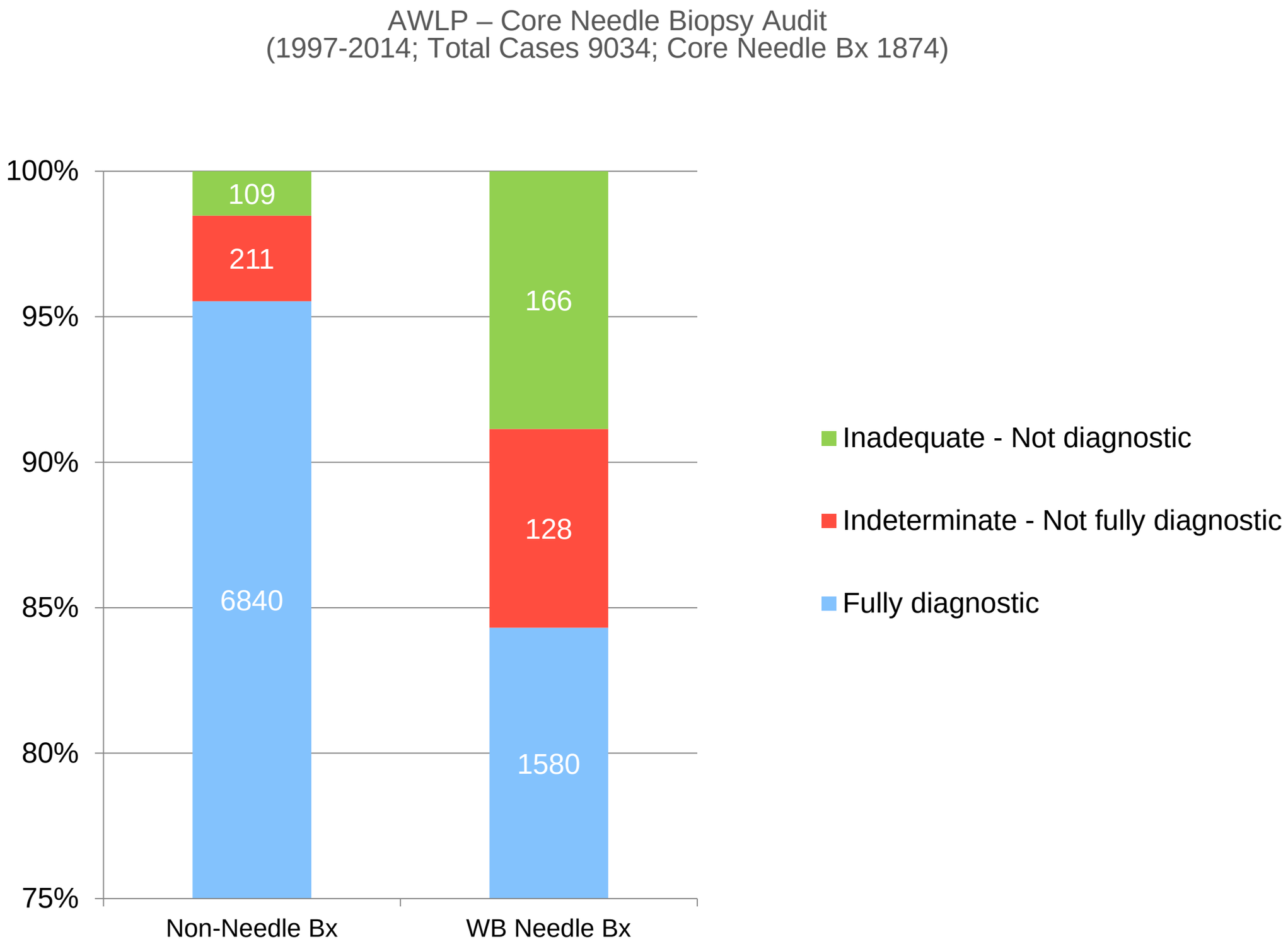
Is there a problem?

- BLPG initiative to look into core biopsy practice - Audit
- UK data
  - Published audit data
  - All Wales Lymphoma Panel Practice

Proportion of Core Needle Bx in Diagnostic Practice
Core Needle Bx 20.7%



Proportion of Non Diagnostic Core Needle Bx
Inadequate/Indeterminate Core Needle Bx n=294 (15.7%)



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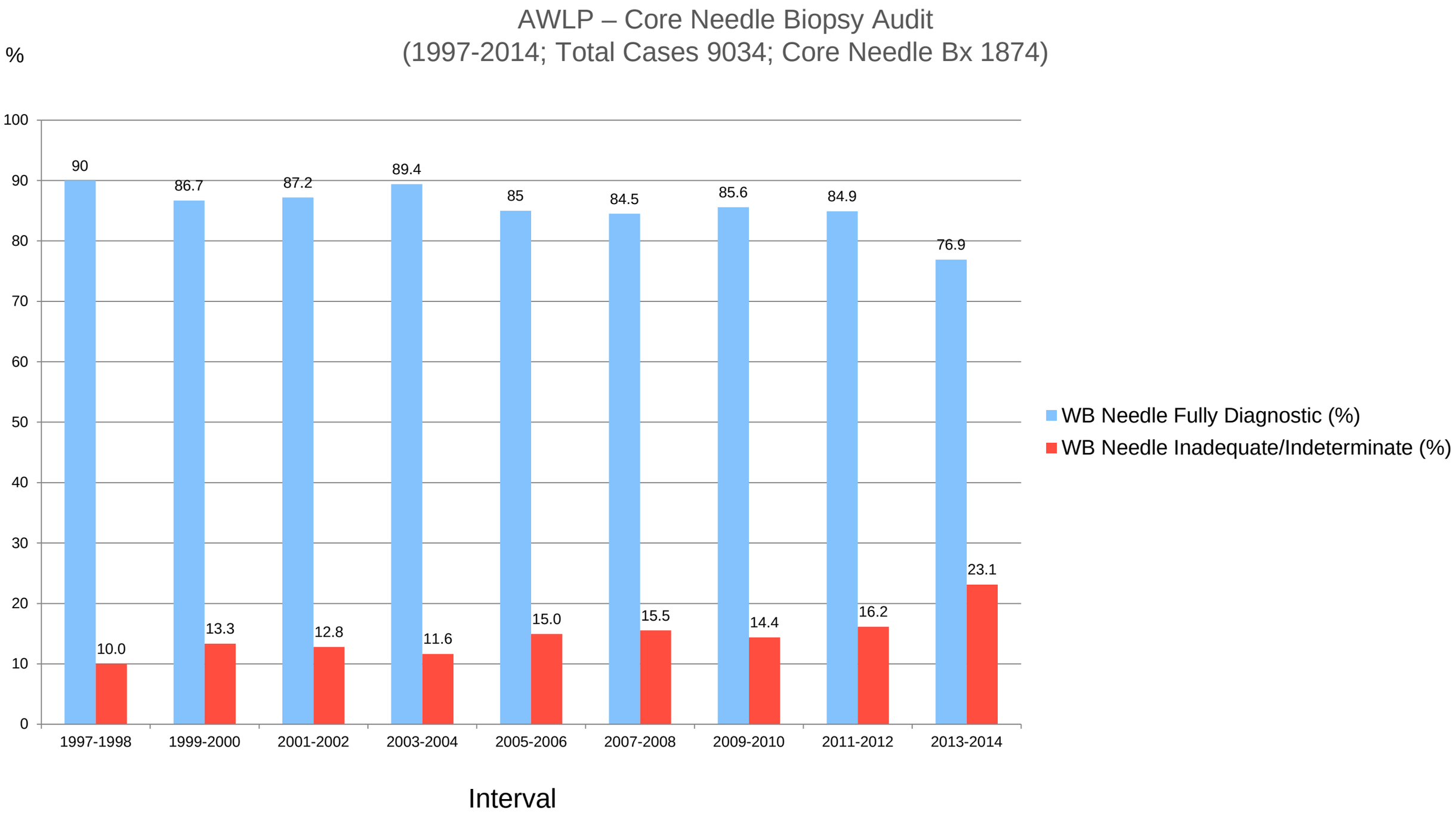
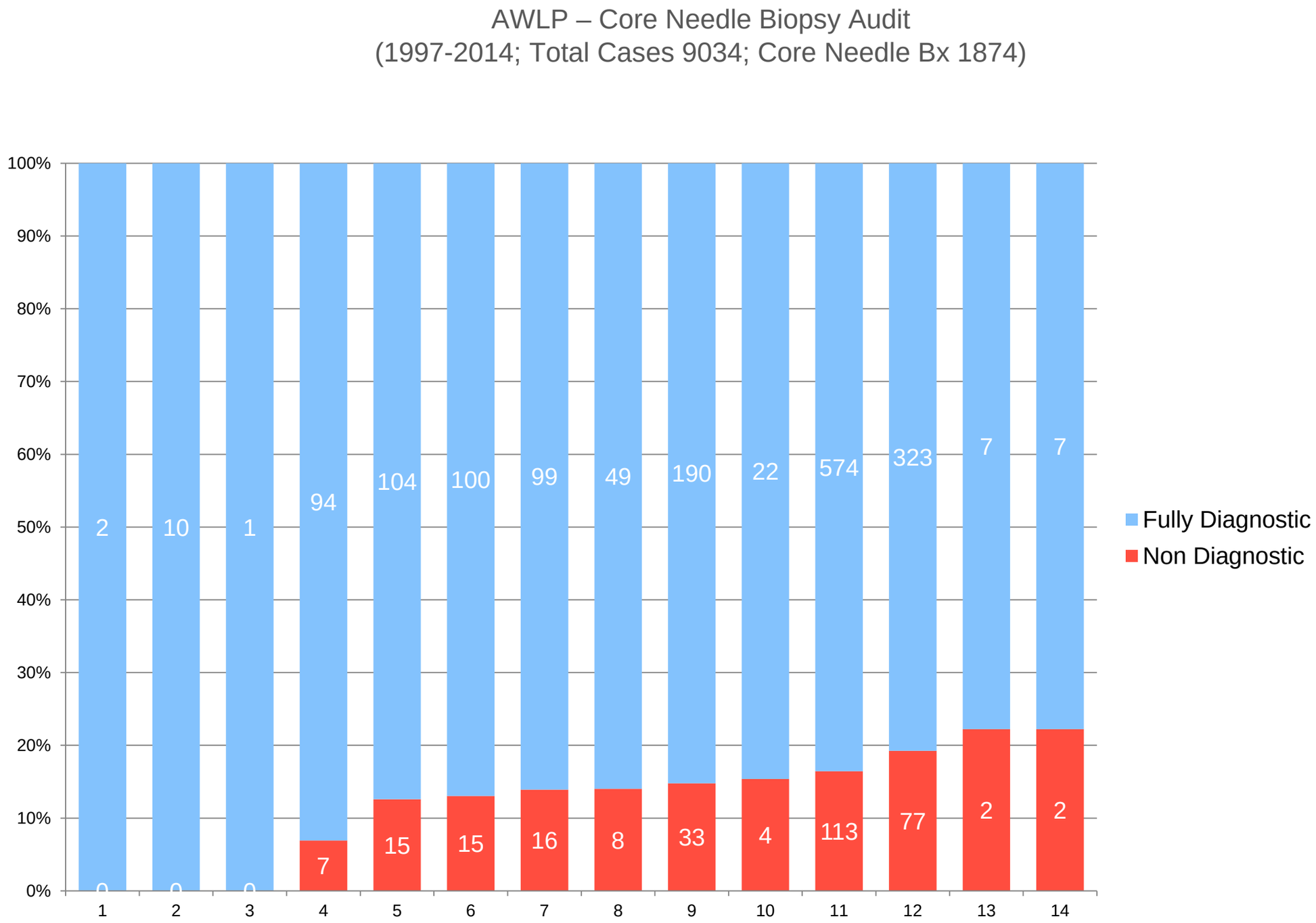


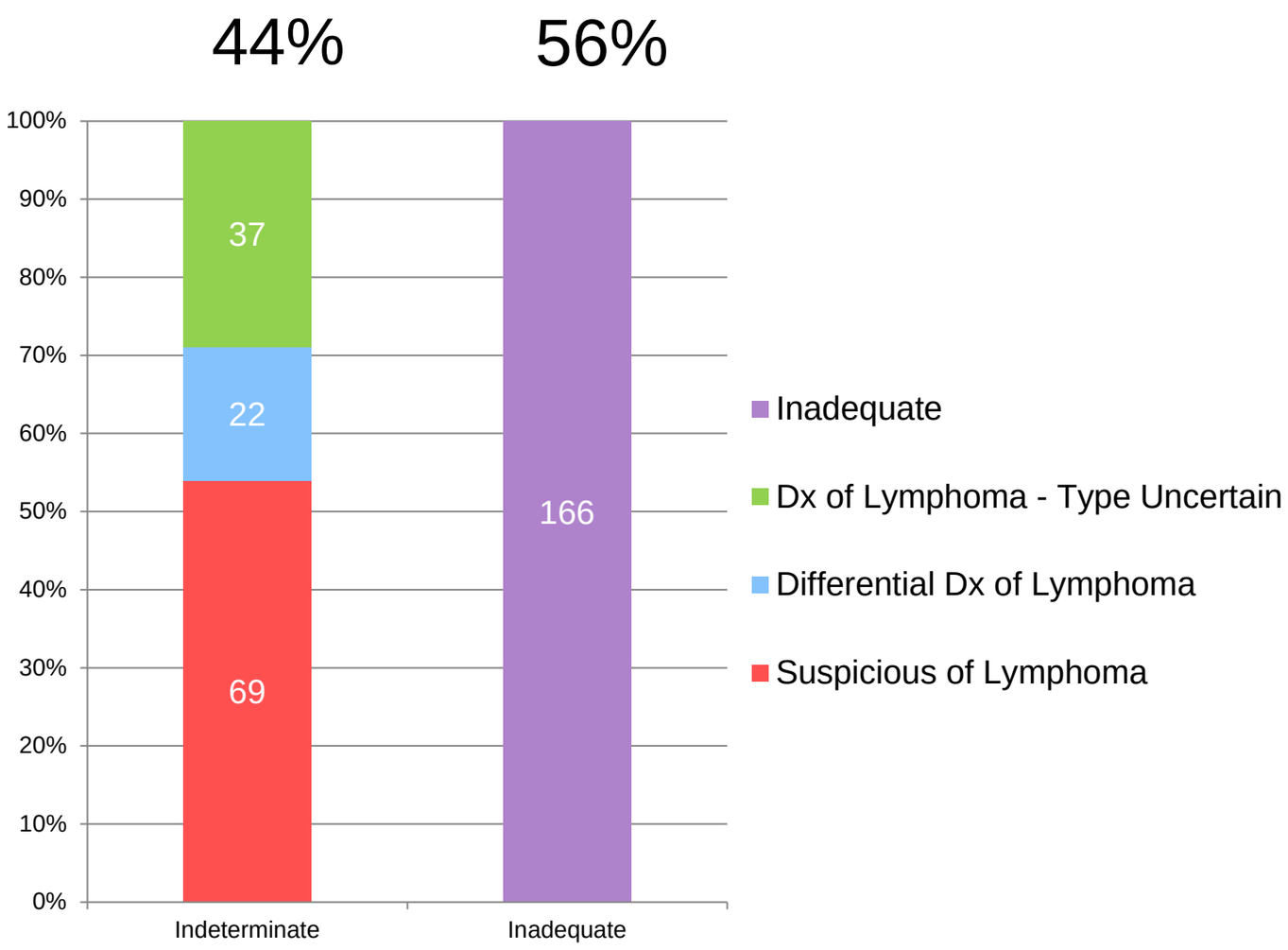
Reduction of gauge by ~1 17 to 18 and 19

Referring Institutions - Core Needle Bx Diagnostic Rates
Inadequate/Indeterminate ~7-22%



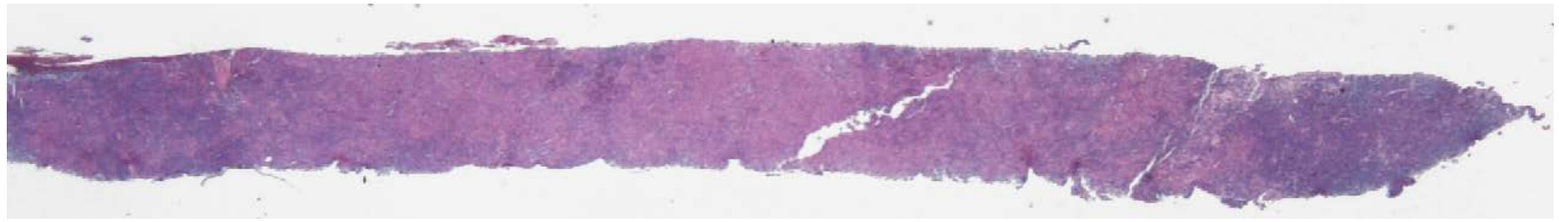
Non Diagnostic Core Needle Bx
Inadequate/Indeterminate Core Needle Bx n=294 (15.7%)

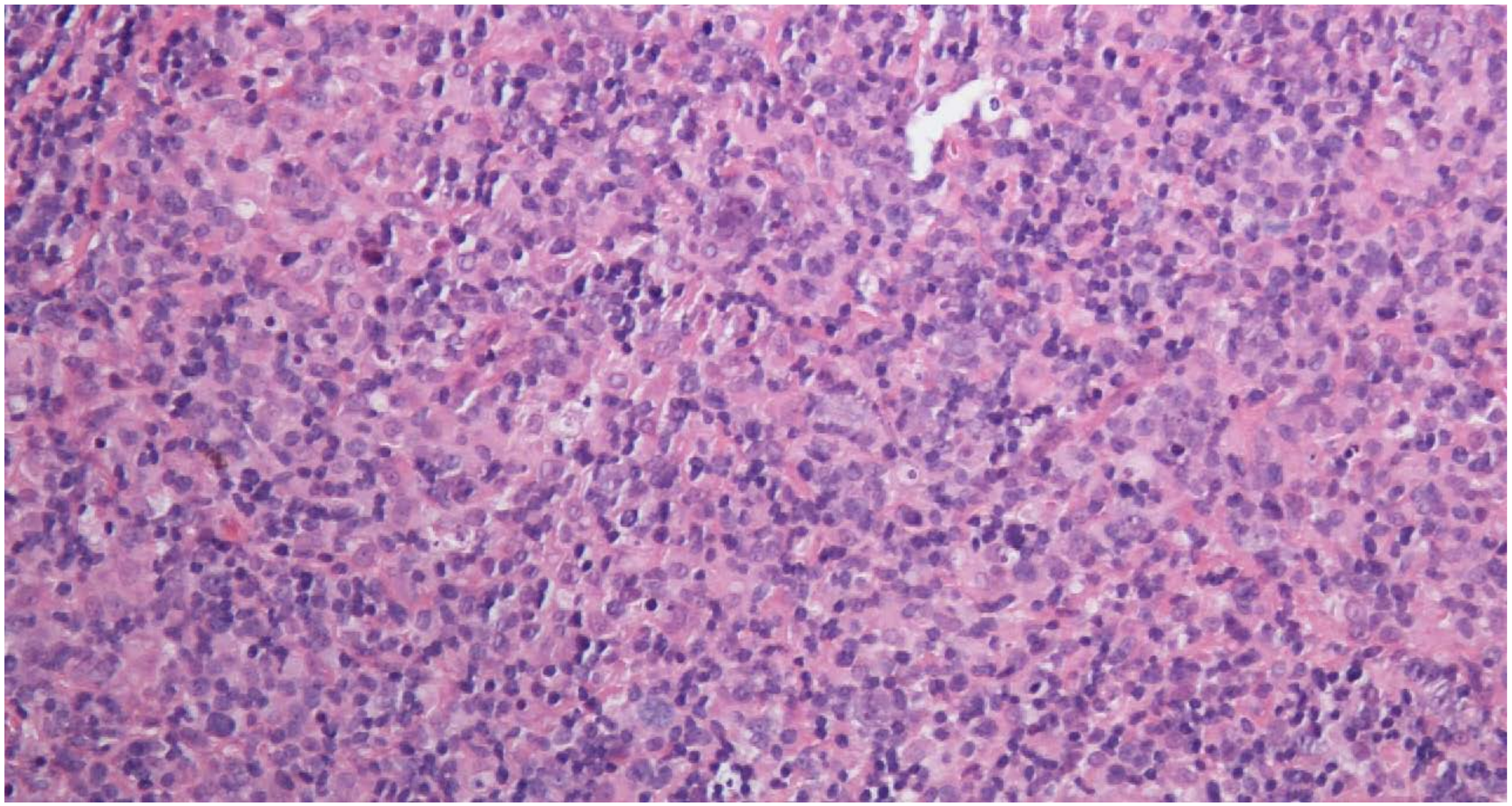
AWLP – Core Needle Biopsy Audit
(1997-2014; Total Cases 9034; Core Needle Bx 1874)

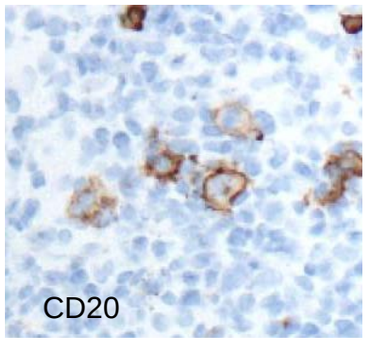


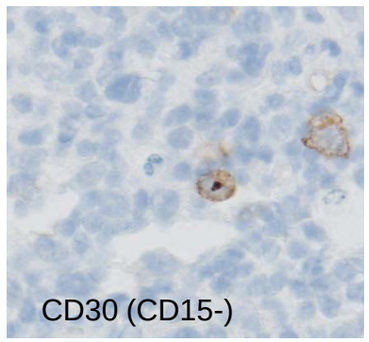
Common differential Dx:

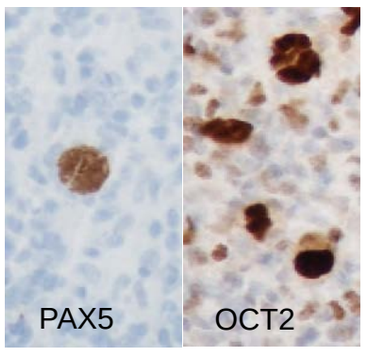
- Small B-cell NHLs
  - CLL/SLL or other
  - FL or MZL
  - MZL or LPL
- DLBCL or FL
- TCRBCL or NLPHL
- TCRBCL or cHL






CD20

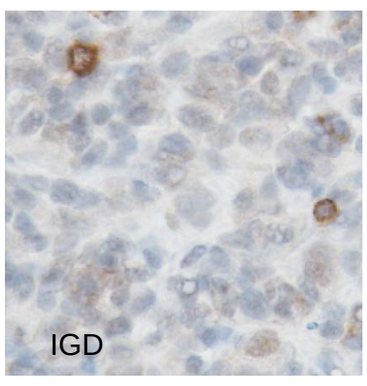

CD30 (CD15-)

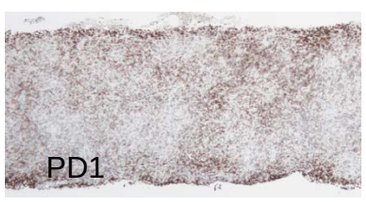

PAX5
OCT2

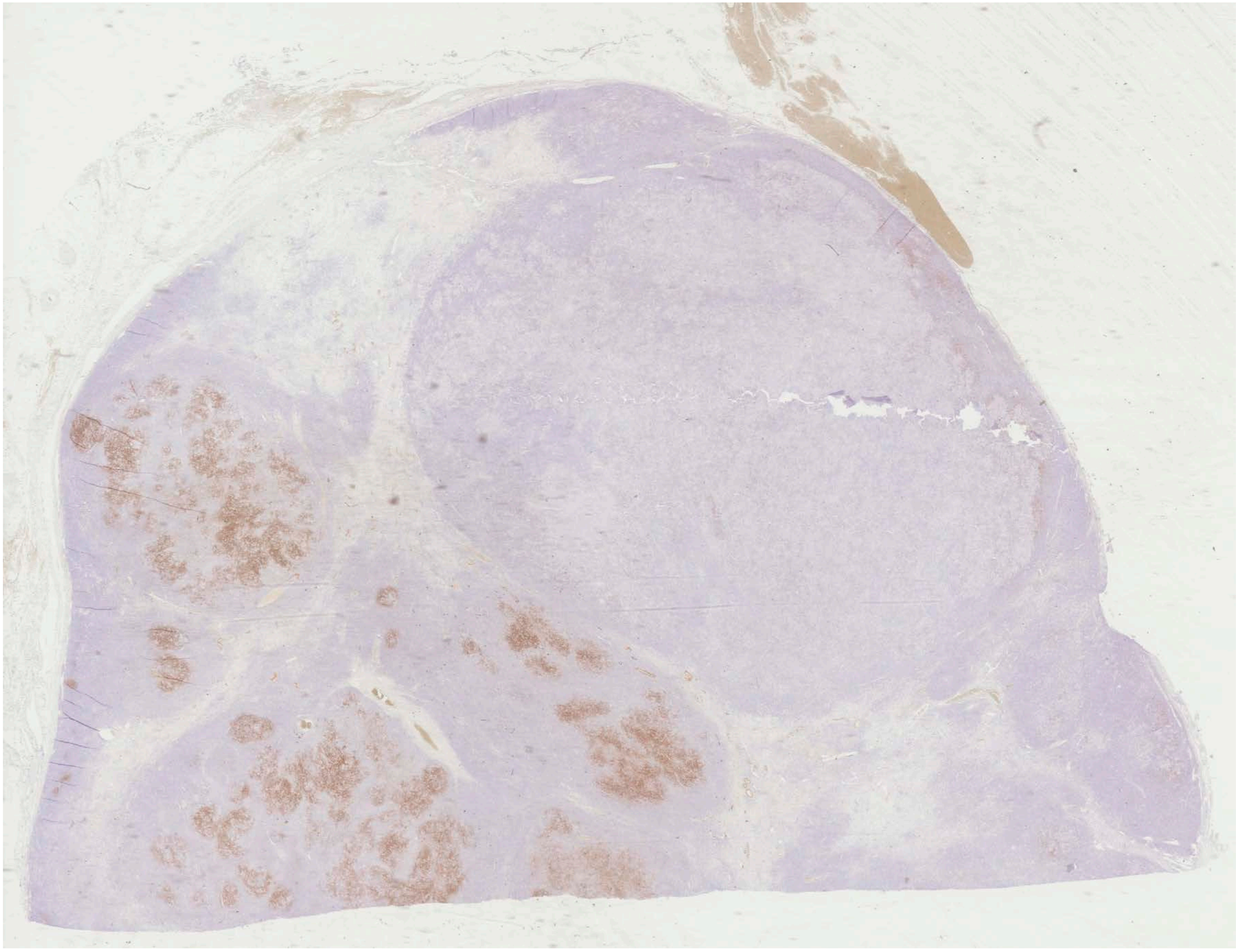

CD3


CD21


CD57


IGD


PD1



CD21

Biopsy Repeats
n=173 (59%)

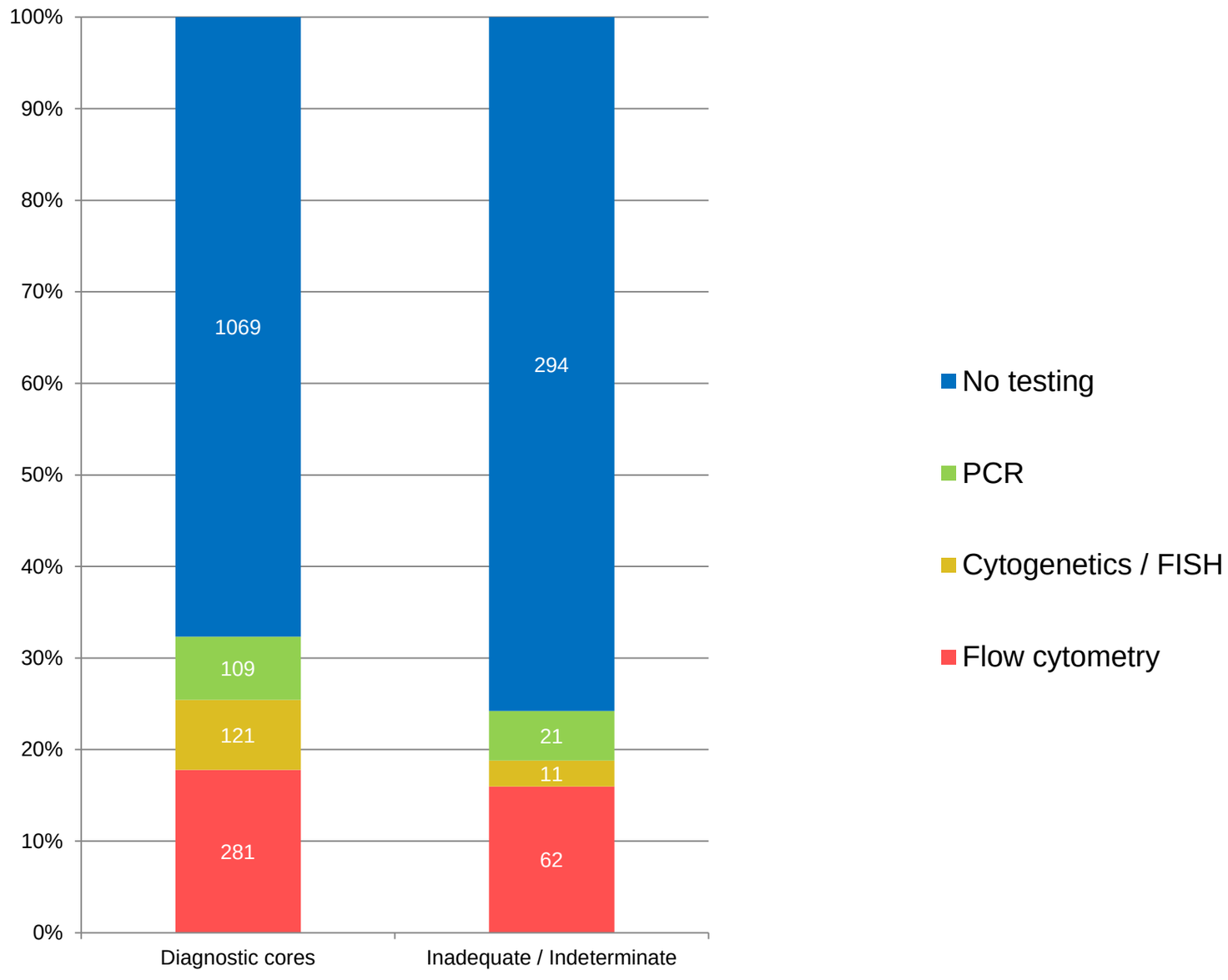
AWLP – Core Needle Biopsy Audit
(1997-2014; Total Cases 9034; Core Needle Bx 1874)

Diagnosis	N	%
Reactive	37	21
DLBCL	42	24
FL	23	13
cHL	34	20
FLIS	1	<1
MZL (MALT+nodal)	13	7
NLPHL	6	3
TCRBCL	6	3
MLBCL	1	<1
BCLU HL/DLBCL	1	<1
Plasmacytoma	1	<1
PTCL (NOS)	7	4
ALCL ALK-	1	<1
AIL	2	1
FDC sarcoma	1	<1
NHL NOS	5	3
Inadequate	1	<1
Suspicious	1	<1

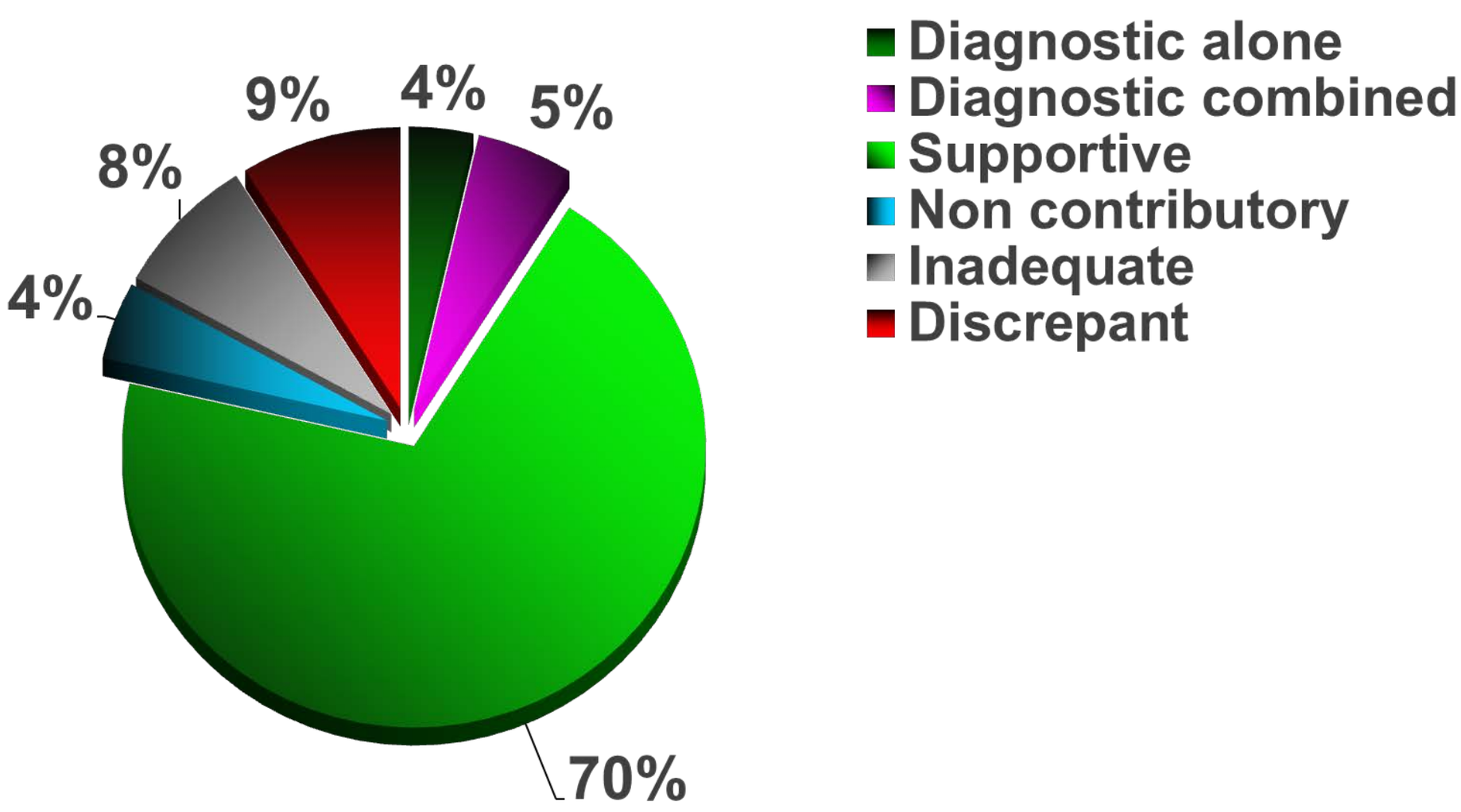
Frequency of diagnoses – needle and other Bx modalities
Diagnostic sensitivity of Core Needle Bx

Diagnosis	N Needle Bx	% Needle Bx	N Non-Needle Bx	% Non-Needle Bx	N Re-biopsy	Needle Bx sensitivity (%)
Reactive	**246**	**-**	**1707**	-	37	79
Lymphoma	**1308**		**4949**			
Diffuse large B-cell lymphoma	593	45.3	1430	28.9	42	93
T-cell-rich B-cell lymphoma	15	1.1	56	1.1	6	71
Burkitt lymphoma	10	0.8	58	1.2		
Follicular lymphoma G1-3A	245	18.7	852	17.2	21	92
Follicular lymphoma (grade 3B)	5	0.4	27	0.5	2	
Follicular lymphoma - diffuse variant	3	0.2	4	0.1		
Classical Hodgkin lymphoma	139	10.6	550	11.1	34	80
Nodular lymphocyte predominant Hodgkin lymphoma	3	0.2	84	1.7	6	33
CLL / SLL	79	6.0	325	6.6		
Mantle cell lymphoma	36	2.7	159	3.2		
Mantle cell lymphoma - pleomorphic variant	2	0.2		0.0		
Mantle cell lymphoma (Blastoid variant)	2	0.2	17	0.3		
Marginal zone lymphoma - MALT type	21	1.6	195	3.9		
Marginal zone lymphoma – NOS	31	2.4	144	2.9	13	82
Marginal zone lymphoma (nodal)	9	0.7	57	1.2		
Peripheral T-cell lymphoma (NOS)	27	2.1	163	3.3	7	79
Angioimmunoblastic T-cell lymphoma	1	0.1	66	1.3	2	
Anaplastic large cell (T/null) – NOS	1	0.1	31	0.6		
Anaplastic large cell (T/null) ALK1-	2	0.2	18	0.4	1	
Anaplastic large cell (T/null) ALK1+	5	0.4	26	0.5		
B-cell unclassifiable intermediate between DLBCL and Burkitt	1	0.1	6	0.1		
Mediastinal large B-cell lymphoma	10	0.8	9	0.2		
Plasmablastic lymphomas	4	0.3	24	0.5		
Precursor B-cell leukaemia/lymphoma	2	0.2	19	0.4		
Precursor T-cell lymphoma/leukaemia	4	0.3	20	0.4		
Plasmacytoma/Myeloma	25	1.9	91	1.8		

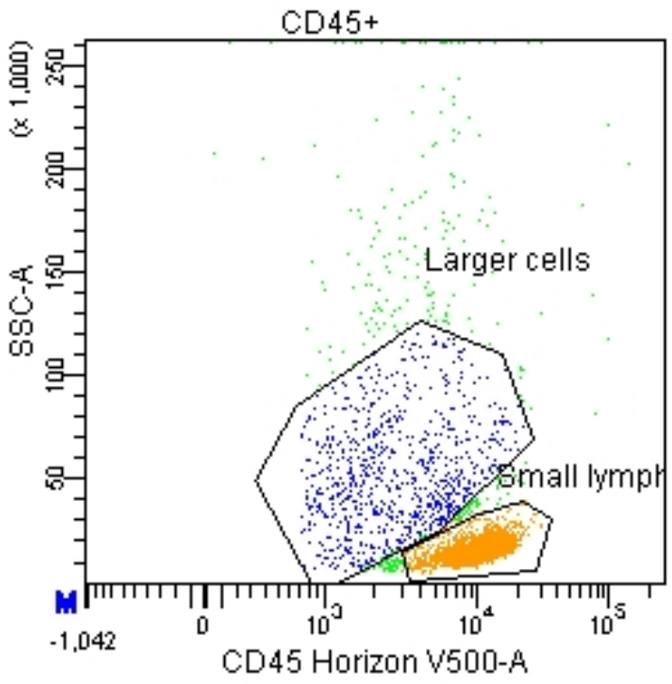
Integrated Lab. Diagnosis – Core Needle Biopsies (n=1874)

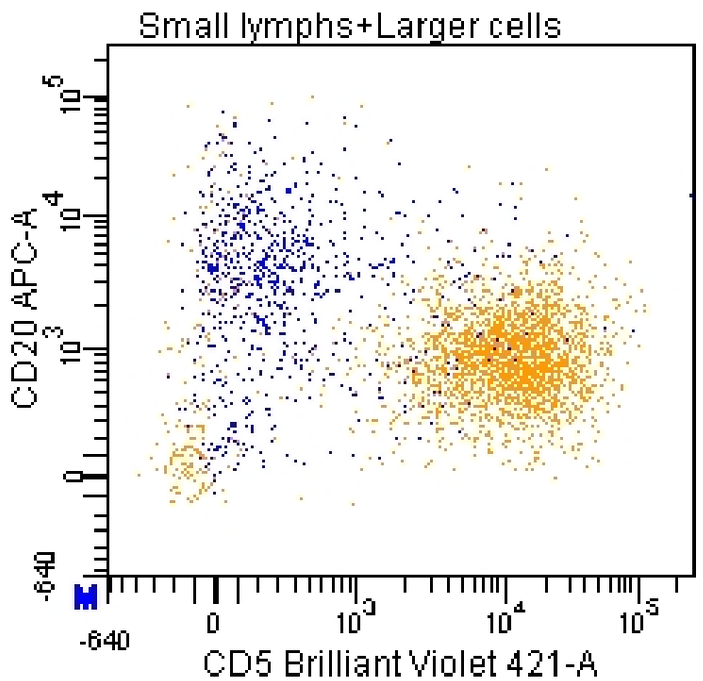


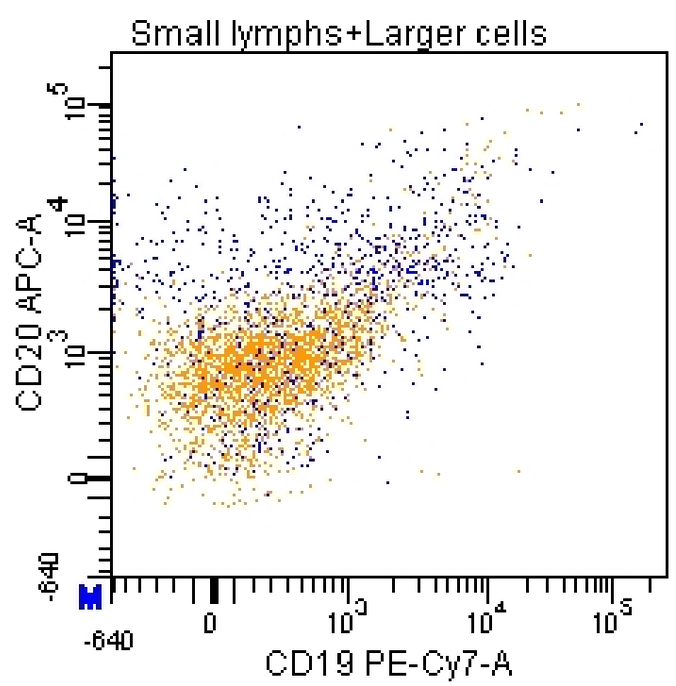
DIAGNOSTIC CONTRIBUTION: FLOW CYTOMETRY (n=112)

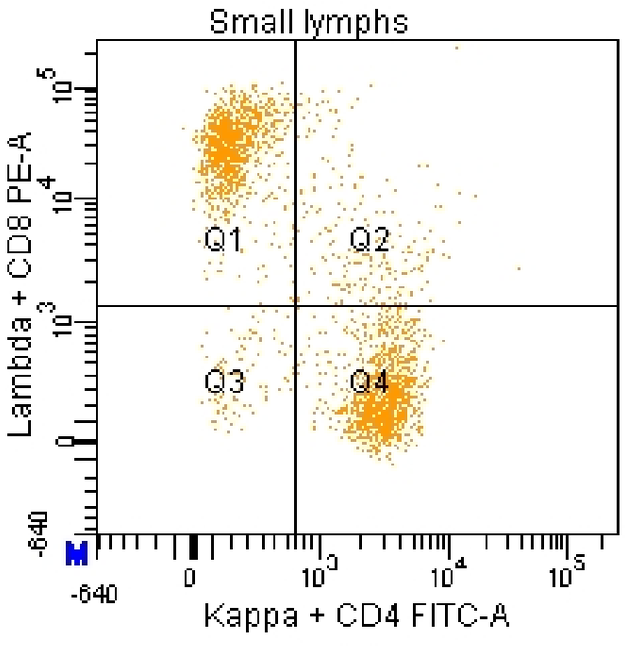


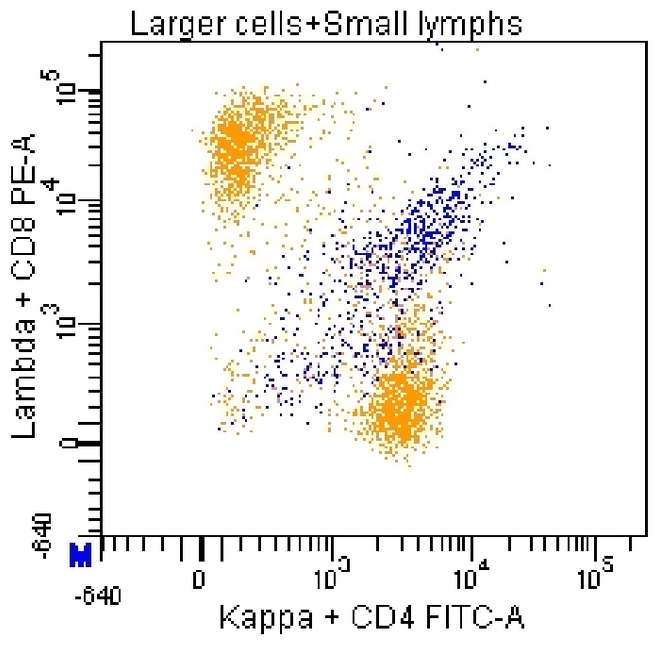
Core Bx – “Wash” in Transfer Fluid

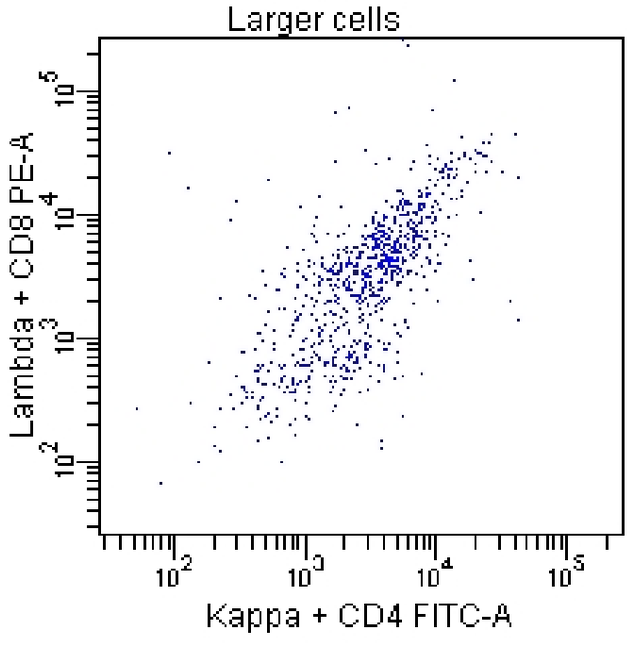












Other data on core Bx use in lymphoma diagnosis

McIlwane S, Sah S, Venkatraman L, RCPath Bulletin 166: 117-124, 2014 (n=204)

Audit and re-audit (2004-2008; 2008-2012)
57-68% Definitive lymphoma typing

BLPG National Core Bx Audit (n=277)

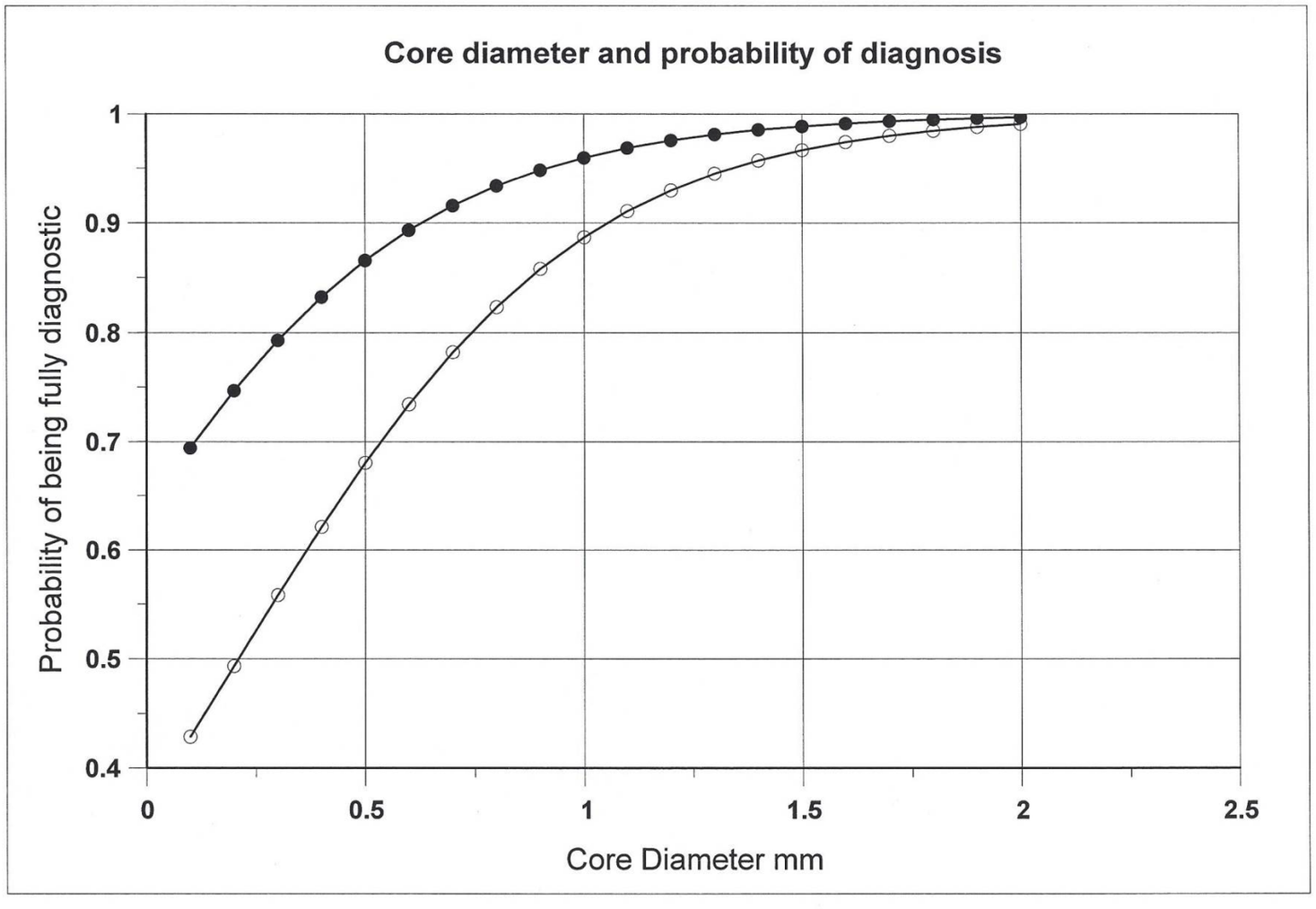
Cores represent 30-70% of workload

62% superficial sites
73% fully diagnostic
27% not diagnostic

4% NOT DIAGNOSTIC BUT TECHNICALLY ADEQUATE
ARCHITECURE REQUIRED FOR DIAGNOSIS
DLBCL vs FL
cHL vs DLBCL
TCRBCL vs cHL
TCRB vc NLPHL

BLPG Core Bx Audit
Core Diameter and Probability of Definitive Diagnosis (n=277)

Diameter 0.75mm (G19-G18)
Length 17 mm
Number 3



• Deep sites
o Superficial sites

Summary

Use of core Bx for diagnosis of lymphoproliferative processes is increasing and this trend is likely to continue (30% workload at present)

There is a consistent rate of non-diagnostic samples (currently 23-31%); this is showing an increasing trend

Core Bx is here to stay and will increase in use

Optimising use of core biopsies requires intervention at several levels

Clinical

- Careful consideration of clinical context (ENT setting)
- Perform biopsy in conjunction with the local specialist pathway
- Use of appropriate gauge (< G17)
- Acquisition of multiple cores (at least 2)
- “Fresh tissue pathway”

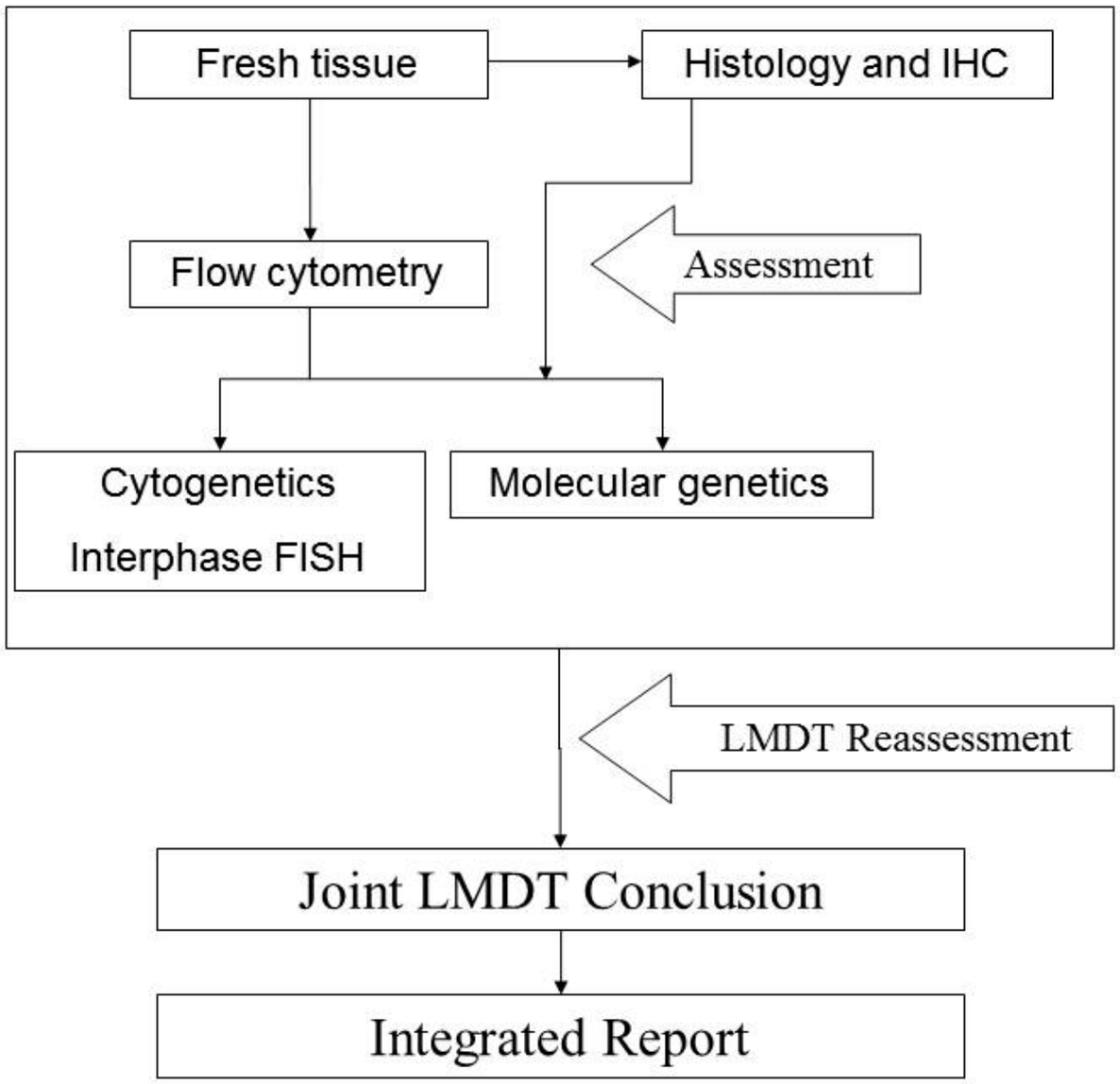
Optimising use of core biopsies requires intervention at several levels

Laboratory processing

Protocol for referring centres (RCPath Lymphoma Minimum Dataset)

- All cores separately embedded
- NO LEVELS; NO UNSOLICITED UPFRONT ICC
- Only HE for referral service
- Use of all available diagnostic modalities

RCPath datase for lymphoma reporting and laboratory integration



- Figure 1 provides an example of integrated tissue flow through a number of laboratories in the process of integrated laboratory reporting. Upon receipt, fresh tissue is assessed, placed for routine processing and if sufficient amount is deemed available, one part is forwarded to flow cytometry laboratory where cells are disaggregated. An aliquot is forwarded to central molecular and genetic services for DNA/RNA isolation, cell culture and storage. These materials are available for further testing which is indicated by pathologists based on the H&E appearances, immunohistochemistry and/or flow cytometry. If formalin fixed material only is available, paraffin sections are forwarded for molecular investigations after initial assessment of HE sections +/- immunohistochemistry. Once all investigations have been completed, the members of the Laboratory Multidisciplinary Team (LMDT) discuss the results and agree on their interpretation. All the results are amalgamated into a single pathology report and final interpretation and conclusion is provided by the pathologist.

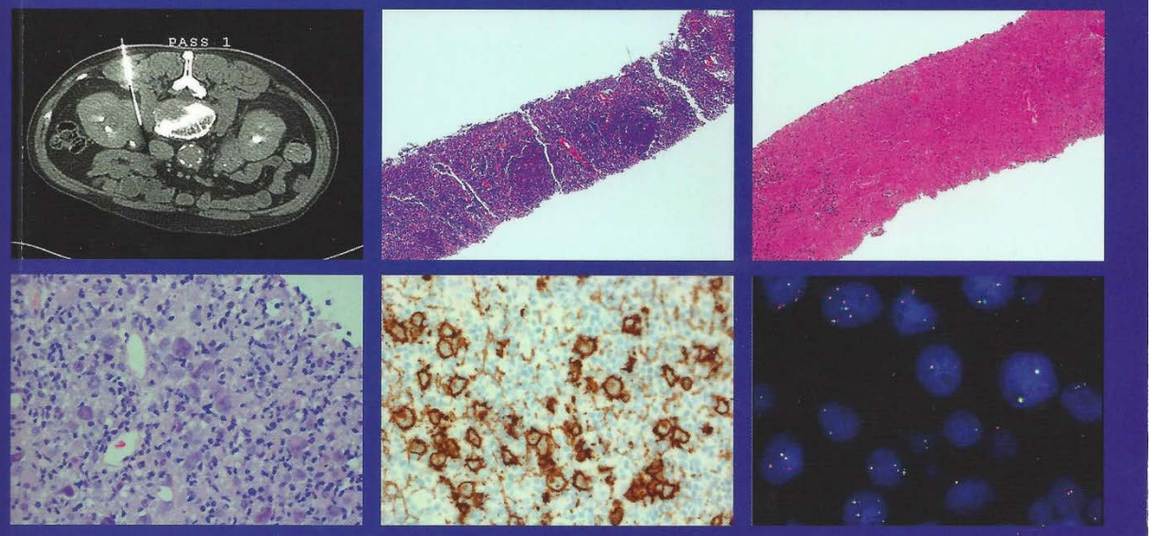
Optimising use of core biopsies requires intervention at several levels

Interpretative

- Low diagnostic sensitivity:
  - TCRBCL
  - NLPHL
  - MZL
  - PTCL
  - cHL

Needle Core Biopsy of Lymph Nodes

An Atlas of Hematopathological Disease



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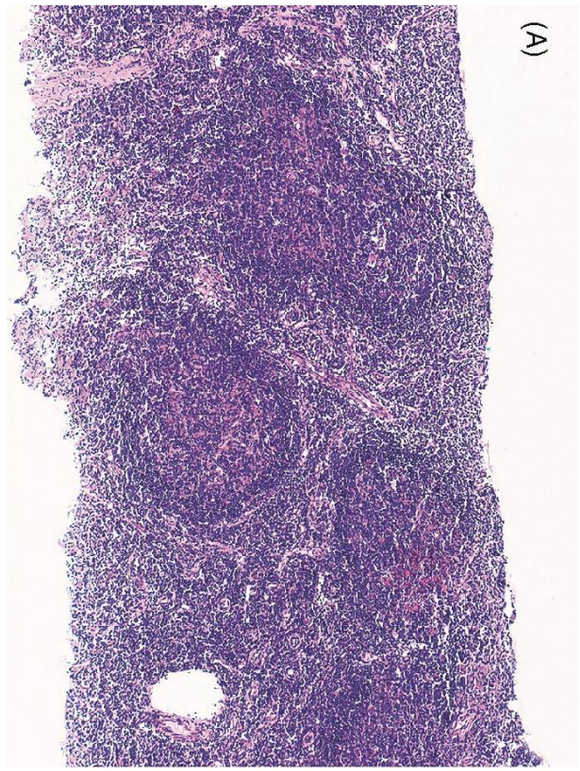
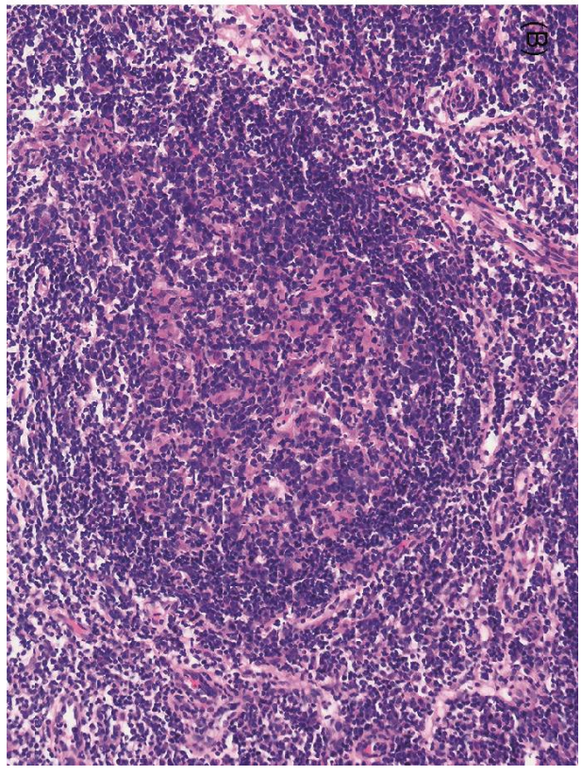
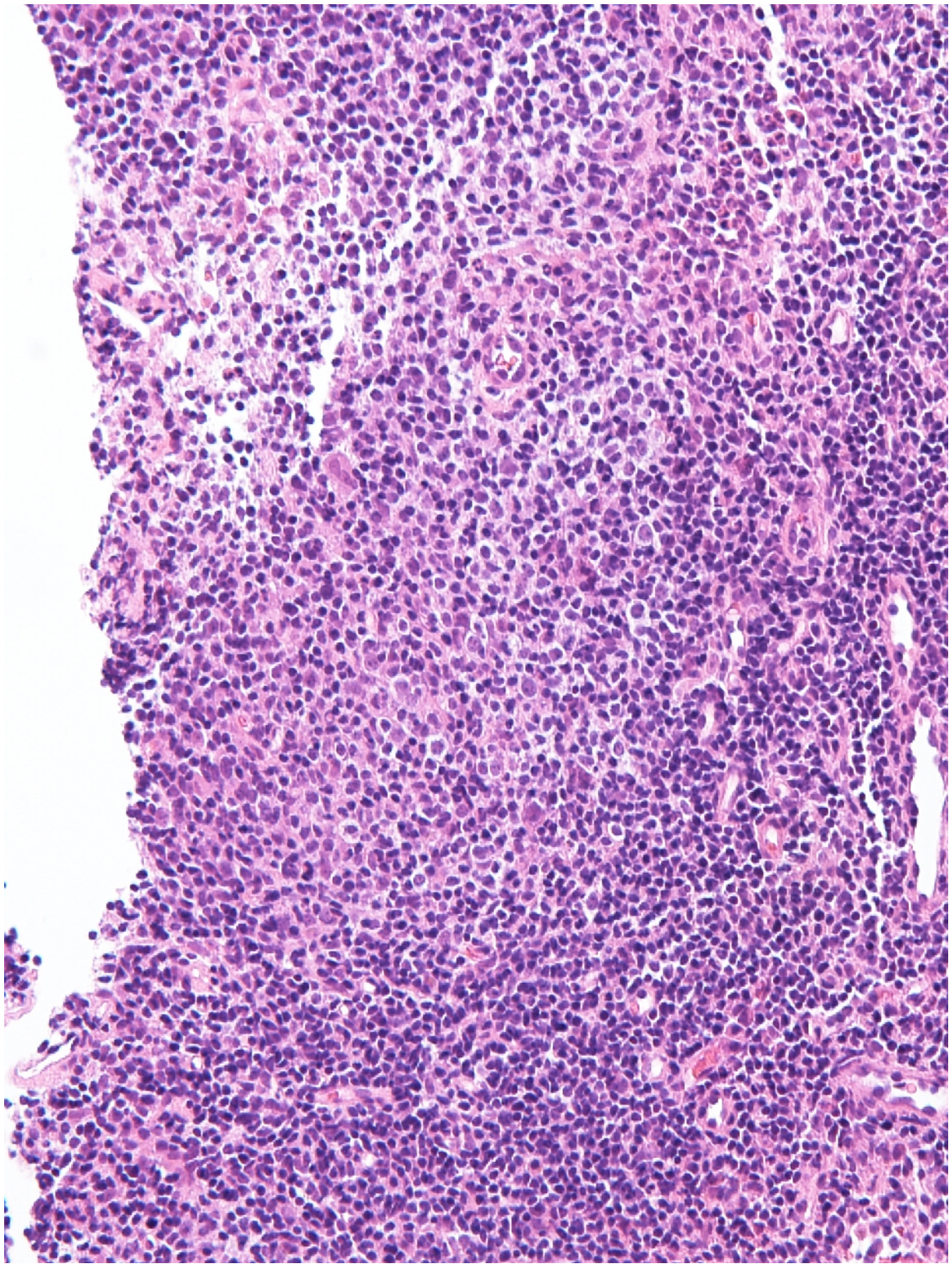
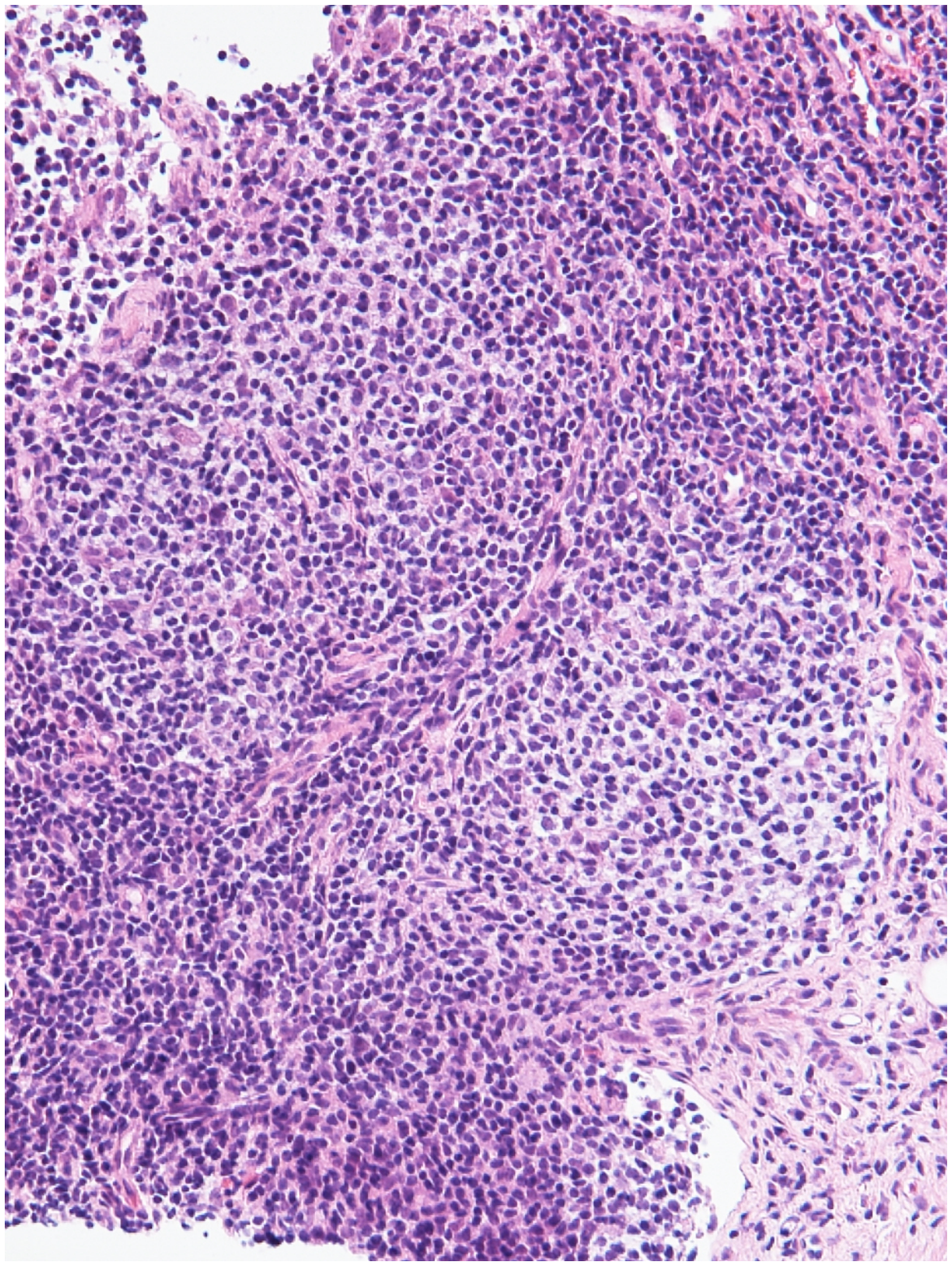
Medicine





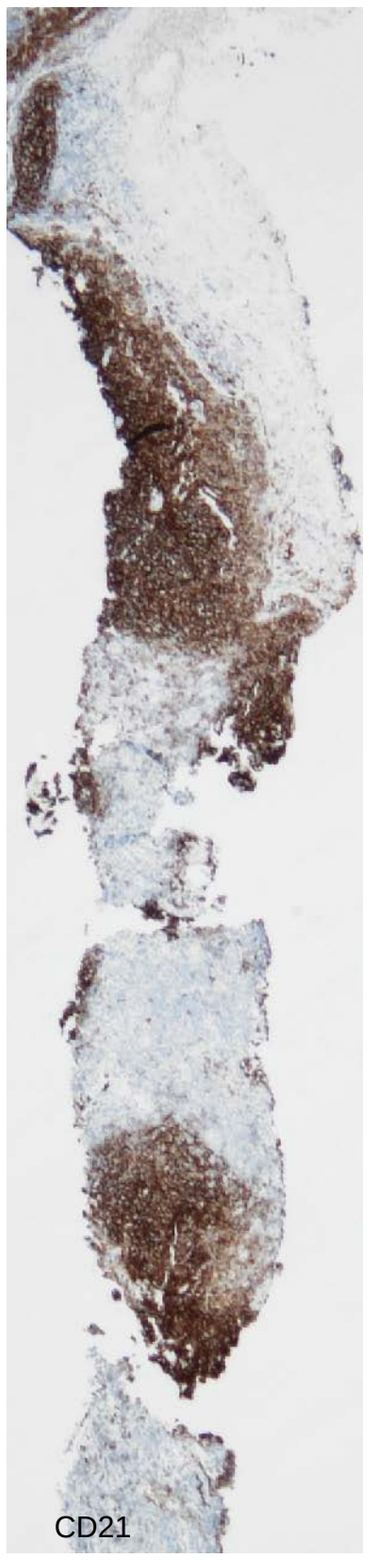


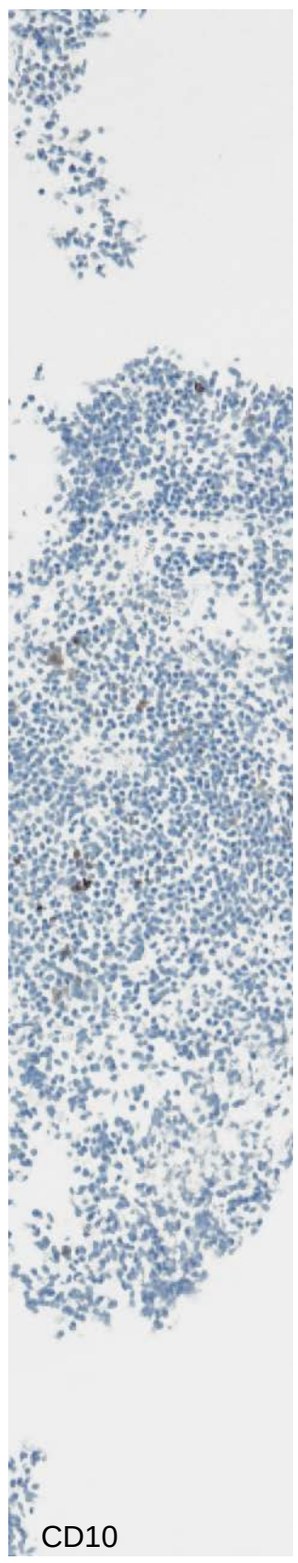


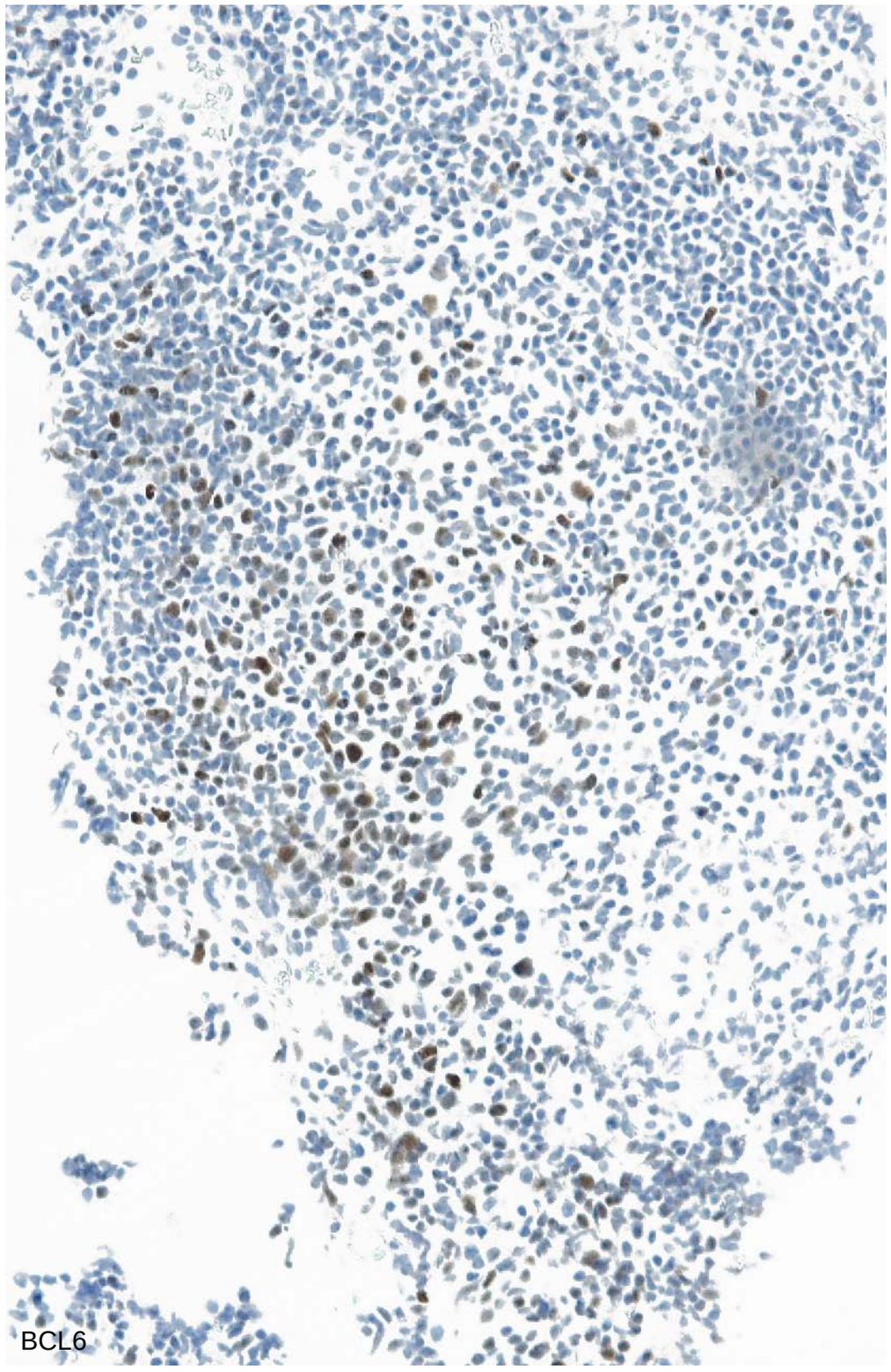

CD20

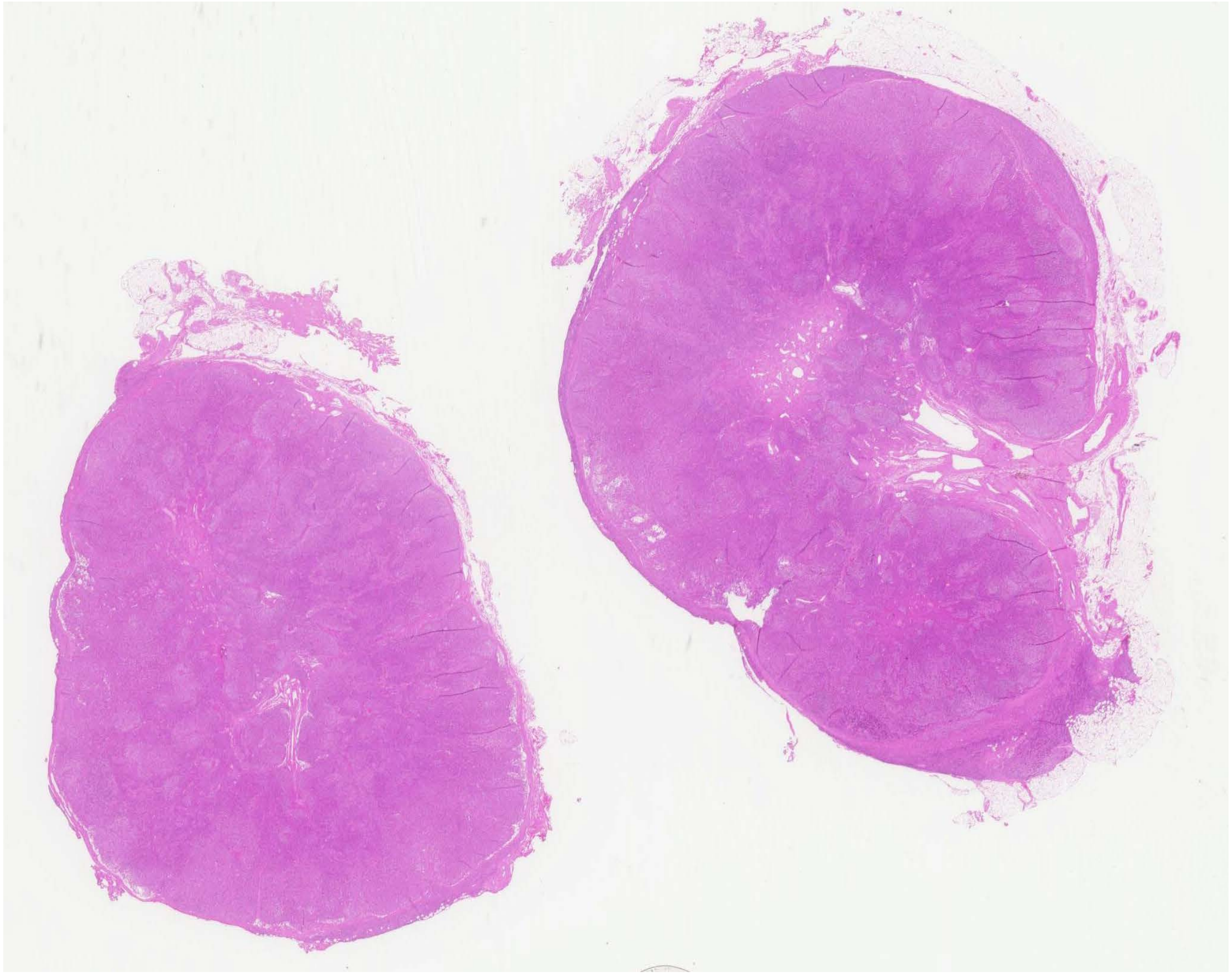

CD3

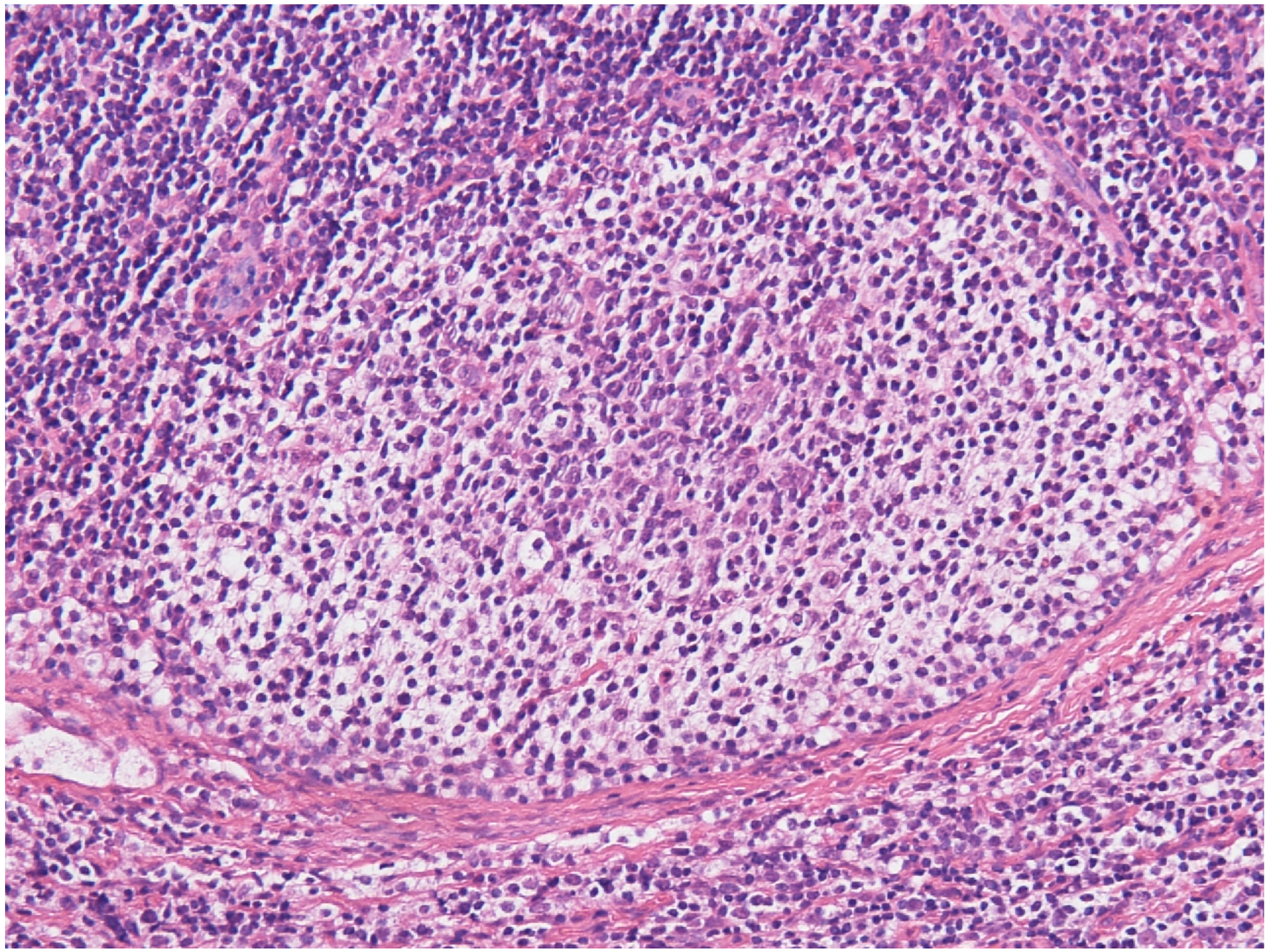

BCL2

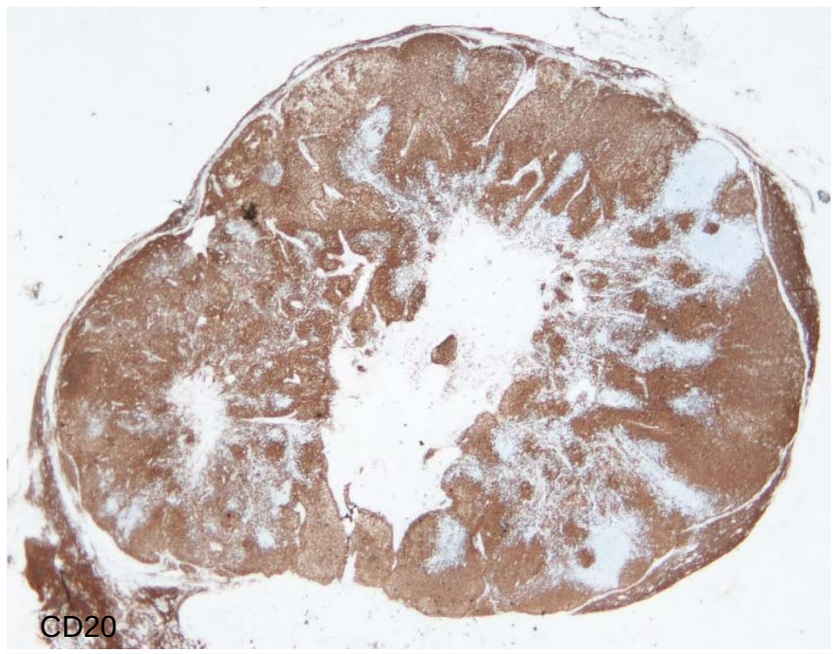

CD21

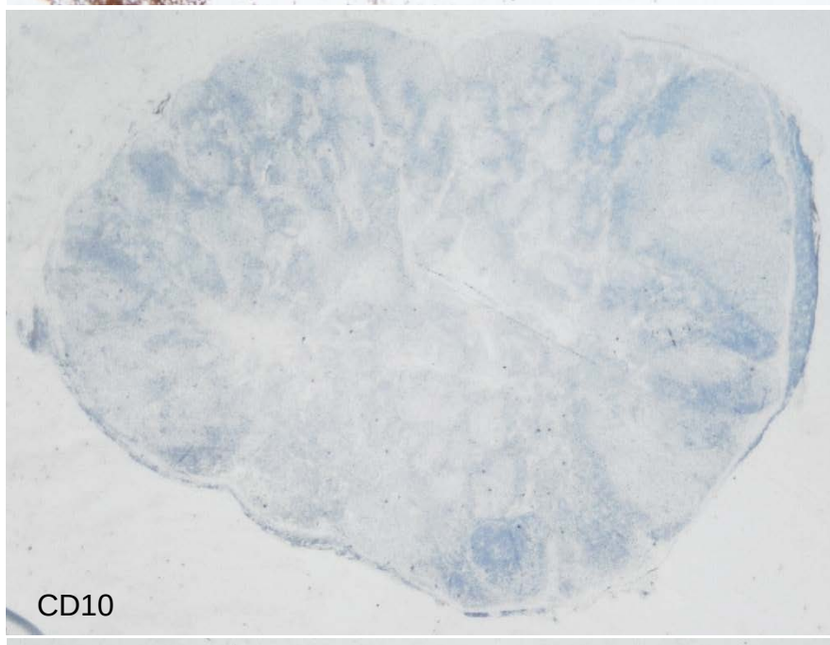

CD10

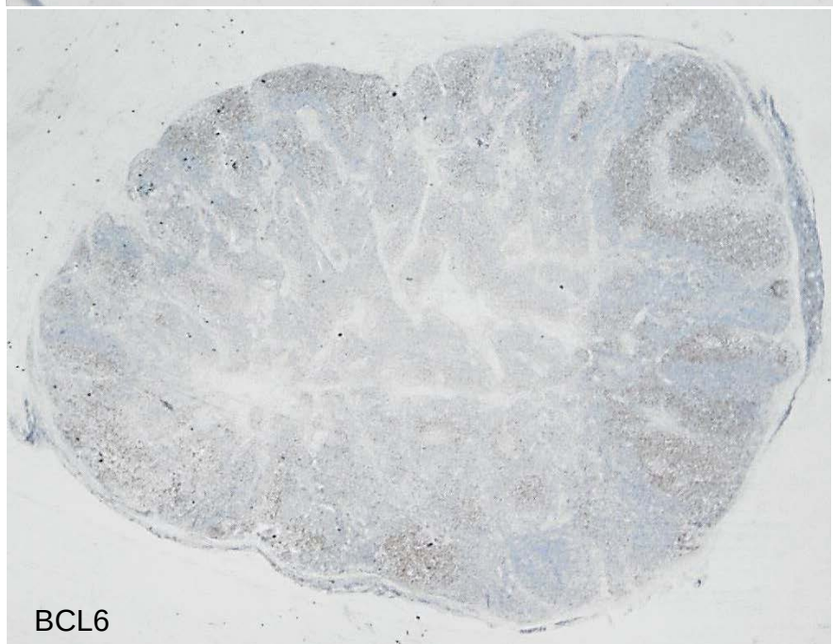

BCL6











No BCL2 rearrangement by FISH