

<b>System</b>	<b>Variable</b>
<b>Skin</b>	TELANGIECTASIA
	NASAL ULCERS
	ORAL ULCERS
	RAYNAUD
	SKIN HAND SWELLING HISTORY
	SKIN HAND SWELLING OBSERVED
	SCLERODACTYLY
	PITTING
	ALOPECIA
	MALAR RASH
	DISCOID RASH
	SKIN RASH
	PHOTOSENSITIVITY
	CALCINOSIS
	PROXIMAL SCLERODERMA
	SICCA
	<b>Muscle</b>
MYALGIA	
ARTHRALGIA	
OBSERVED PROXIMAL WEAKNESS	
HISTORY PROXIMAL WEAKNESS	
MUSCULAR HAND SWELLING SPECIFIC	
MUSCULAR HAND SWELLING GENERAL	
MUSCULAR HAND SWELLING HISTORY	
MUSCULAR HAND SWELLING OBSERVED	
<b>Joints</b>	AVASCULAR NECROSIS
	MORNING STIFF
	JOIN TENDER
	SYNOVITYS
	JOIN SWELLING HISTORY
	JOIN SWELLING OBS
	SWELLING JOINTS > 3
	SYMMETRIC SWELLING
	JOINTS PAIN
	JOINTS DEFORMITY
	RHEUM NODULE
<b>Lymph nodes</b>	ANY LYMPHADENOPATHY
	LYMPNODES SWELLING
	NECK LYMPNODE SWELLIN
	AXILA LYMPNODE SWELLIN

	GROIN LYMPHNODE SWELLING
<b>Gastro</b>	GASTRIC REFLUX
<b>Blood</b>	ANEMIA
	ANEMIA HEMOLYTIC
	LEUKOPENIA
	LYMPHOPENIA
	THROMBOPENIA
	THROMBOSIS
<b>Heart</b>	PLEURITIS
	PERICARDITIS
	PLEURITIS and/or PERICARDITIS
	VENOUS CLOT
	ARTERIAL CLOT
	ANY CLOT
	MYOCARD INFARCTION
	VALVULAR DISEASE
	VALVULAR DISEASE SITE
	NUMB VALVULAR
<b>Lung</b>	PULMONARY HYPERTENSION
	PULMONARY VASCULAR LESION
	PULMONARY FIBROSIS
	EVIDENCE OF LUNG DISEASE
<b>Kidney</b>	EVIDENCE OF RENAL DISEASE
	RENAL CELL CAST
	RENAL PROTEINURIA
	RENAL HEMATURIA
	RENAL CLOT
	RENAL ARTERY STENOSIS
<b>Neuro</b>	SEIZURE
	PSYCHOSIS
	NEUROPATHY
	NEUROPSYCHIATRIC
	STROKE
	CHOREA
<b>Metabolic Panel</b>	GLUCOSE
	UREANITROGEN (BUN)
	CREATINE
	SERUM CREATINE
	BUN/CREATINE RATIO
	SODIUM
	POTASSIUM
	CHLORIDE
	CARBON DIOXIDE

<b>Lab tests - Met</b>	CALCIUM
	TOTAL PROTEIN
	ALBUMIN
	GLOBULIN
	ALBUMUN/GLOBULIN
	BILIRUBIN
	ALKALINE PHOSPHATASE
	AST
	ALT
	CREATINE KINASE
<b>Urinalysis</b>	URINE GLUCOSE
	URINE PROTEIN
	URINE WBC
	URINE RBC
	URINE SQUAMOS EPLITHELIAL CELLS
	URINE BACTERIA
	HYALINE CAST
<b>Lab tests - Hematology</b>	WBC COUNT
	RBC COUNT
	HEMOGLOBIN
	HEMATOCRIT
	MCV
	MCH
	MCHC
	RDW
	PLATELET COUNT
	ABSOLUTE NEUTROPHILS
	ABSOLUTE LYMPHOCYTES
	ABSOLUTE MONOCYTES
	ABSOLUTE EOSINOPHILS
	ABSOLUTE BASOPHILS
	NEUTROPHIL %
	LYMPHOCYTE %
	MONOCYTE %
	EOSINOPHYL %
	BASOPHILS %
	ANA +
	ANTI-RNP +
	ANTI-SM ABS +
	ANTI-DNA ABS +
	DNA ELEVATED
	FANA TITER
	FANA_PATTR
	SSA_RESULT
	SSB_RESULT
	SCL_RESULT

## Lupus Specific lab tests

ANTI-PHOSPHO-LIPID ABS +

ANTI CARDOLIPIN ANTIBODY

ANTICARDIOLIPIN IGG LEVEL

ANTICARDIOLIPIN IGG +

ANTICARDIOLIPIN IGM LEVEL

IGM ANTICRD +

ANTICARDIOLIPIN IGA LEVEL

IGA ANTICRD+

C3 COMPLEMENT LEVEL

C3\_LOW

C4 COMPLEMENT LEVEL

C4\_LOW

ESR

ESR\_ELEVATED

C REACTIVE PROTEIN

CRP\_ELEVATED

RF LATEX TITER

RF ELISA IGM TITER

RF ELISA IGG TITER

CPK LEVEL

CPK ELEVATED

BAFF

BAFFR

TACI

BCMA

IFNG

TNFA

SCD40L

IL12P40

IL12P70

IL23

IL17A

IL17AF

IL17F

## test

**Experimental Lab**

IL11
IL21
IL22
IL33
E-SELECTIN
NGAL
IGM ANTI-U1A (196-203) TITER
IGM ANTI-SME (63-70) TITER
IGM ANTI-SMF (46-53) TITER
IGM ANTI-U1C (90-97) TITER
IGM ANTI-U1-70K (337-344) TITER
IGM ANTI-SMB (83-90) TITER
IGM ANTI-SMG (1-8) TITER
IGM ANTI-SMD3 (20-27) TITER
IGM ANTI-SMF (77-84) TITER
IGM ANTI-U1A (112-119) TITER
IGM ANTI-SMD2 (14-21) TITER
IGM ANTI-SMD1 (22-29) TITER
IGM ANTI-U1A (178-185) TITER
IGM ANTI-U1-70K (325-332) TITER
IGM ANTI-U1C (66-73) TITER
ELISA ANTI-SNRNP
IMMUNOBLOT ANTI-70KD
IMMUNOBLOT ANTI-SM
IMMUNOBLOT ANTI-U1-A

<b>Definition</b>
SKIN TELENGECTASIA OBSERVED
SKIN NASAL ULCERS OBSERVED
SKIN ORAL ULCERS OBSERVED
RAYNAUD: A PATTERN OF COLOR CHANGES IN THE FINGERS AS FOLLOWS: PALE/WHITE FOLLOWED BY BLUE THEN RED WHEN THE HANDS ARE WARMED; COLOR CHANGES ARE USUALLY PRECEDED BY EXPOSURE TO COLD OR EMOTIONAL UPSET
HAND SWELLING BY HISTORY
HAND SWELLING OBSERVED
SKIN SCLERODACTYL / ACROSCLEROSIS
SKIN DIGITAL PITTING
SKIN ALOPECIA-PATCHY OR GENERALIZED
SKIN MALAR RASH- FIXED ERYTHEMA, FLAT OR RAISED, OVER THE MALAR EMINENCES, TENDING TO SPARE THE SOLABIAL FOLDS
SKIN DISCOID RASH- ERYTHEMATOUS RAISED PATCHES WITH ADHERENT KERATOTIC SCALING AND FOLLICULAR PLUGGING. ATROPHIC SCARING SEEN IN OLDER LESIONS
SKIN RASH OTHER BY HISTORY OR EXAM
SKIN PHOTSENSITIVITY- SKIN RASH AS A RESULT OF UNUSUAL REACTION TO SUNLIGHT BY HISTORY OR EXAM
SKIN CALCINOSIS OBSERVED
SKIN PROXIMAL SCLERODERMA / EXTEND AT or ABOVE WRIST
SKIN SICCA- XEROPHTHALMIA AND XEROSTOMIA
MYOSITIS
MYALGIA-SUBJECTIVE MUSCLE ACKING INVOLVING PROXIMAL MUSCLES
ARTHRALGIA
ANY OBJECTIVE WEAKNESS IN THE PROXIMAL MUSCLES
A SUBJECTIVE HISTORY OF ANY PROXIMAL MUSCLE WEAKNESS
AT LEAST ONE AREA SWOLLEN IN A WRIST, MCP, OR PIP JOINT
MUSCULAR HAND SWELLING
SWELLING OF THE HAND BY HISTORY
SWELLING OF THE HANDS OBSERVED
AVASCULAR NECROSIS
MORNING STIFNESS LASTING AT LEAST 1 HOUR BEFORE MAXIMAL IMPROVEMENT
JOINT TENDERNESS OBSERVED
SYNOVITIS
HISTORY OF JOINT SWELLING
JOINT SWELLING OBSERVED
SWELLING OF 3 OR MORE JOINTS (PIP, MCP, WRIST, ELBOW, KNEE, ANKLE AND MTP)
SYMETRIC SWELLING OBSERVED
JOINTS PAIN
JOINTS DEFORMITY
OBSERVED RHEUMATOID NODULE- SUBCUTANEOUS NODULES OVER BONY PROMINENCES OR EXTENSOR SURFACES, OR IN JUXTAARTICULAR REGIONS
ANY LYMPHADENOPATHY
LYMPNODES SWELLING
NECK LYMPNODE SWELLIN
AXILA LYMPNODE SWELLIN

GROIN LYMPHNODE SWELLIN
GASTRIC REFLUX AS DIAGNOSED BY PATIENT SYMPTOMS OF HEARTBURN, ACID REFLUX OR CHEST PAIN AND RADIOGRAPHIC STUDIES AND/OR ENDOSCOPY
ANEMIA
HEMOLYTIC ANEMIA
LEUKOPENIA
LYMPHOPENIA, Total lymphocyte count < 1500/mm
THROMBOCYTOPENIA
THROMBOSIS
CONVINCING HISTORY OF PLEURITIC PAIN OR RUBBING HEARD BY A PHYSICIAN OR EVIDENCE OF PLEURAL EFFUSION
PERICARDITIS: DOCUMENTED BY ECG OR RUB OR EVIDENCE OF PERICARDIAL EFFUSION
PLEURITIS and/or PERICARDITIS: either or both of two above described
VENOUS CLOT
ARTERIAL CLOT
ANY CLOT
MYOCARDIO INFARCTION
VALVULAR HEART DISEASE
AORTIC, MITRAL TRICUSPID, PULMONIC
BASED ON THE VALVULAR DISEASE TYPE
PULMONARY HYPERTENSION $\geq 40$ mmHg RVSP
PULMONARY VASCULAR DISEASE BY BIOPSY OR AUTOPSY
PULMONARY FIBROSIS BASED ON CHEST XRAY OR CT SCAN
LUNG DISEASE DEFINED BY pHTN (Clin-P1) + AND/OR PULMONARY FIBROSIS (Clin-P3)
RENAL DISEASE DEFINED BY ACRRENAL + AND/OR RENAL BIOPSY
RENAL CELLULAR CAST- RED, HEMOGLOBIN, GRANULAR, TUBULAR, OR MIXED
RENAL PROTEINURIA- PERSISTENT > 0.5 GRAMS/24HRS OR > 3+
RENAL HEMATURIA- > 5 RBC PER HIGH POWERED FIELD
REPORTED RENAL CLOT
REPORTED RENAL ARTERY STENOSIS
SEIZURE IN THE ABSENCE OF OFFENDING DRUGS OR KNOWN METABOLIC DERANGEMENTS
PSYCHOSIS IN THE ABSENCE OF OFFENDING DRUGS OR KNOWN METABOLIC DERANGEMENTS
ANY NEUROPATHY
NEUROPSYCHIATRIC
STROKE
CHOREA
GLUCOSE NORMAL RANGE: 65-99 MG/DL
UREA NITROGEN (BUN) NORMAL RANGE: 7-25 MG/ML
CREATINE NORMAL RANGE: 0.5-1.4 MG/DL
SERUM CREATINE
BUN/CREATINE RATIO NORMAL RANGE: 6-25 CALC
SODIUM NORMAL RANGE: 135-146 MMOL/L
POTASIUUM NORMAL RANGE: 3.5-5.3 MMOL/L
CHLORIDE NORMAL RANGE: 98-110 MMOL/L
CARBON DIOXIDE NORMAL RANGE: 21-33 MMOL/L

CALCIUM NORMAL RANGE: 8.5-10.4 MG/DL
TOTAL PROTEIN NORMAL RANGE: 6-8.3 G/DL
ALBUMIN NORMAL RANGE: 3.7-5.1 G/DL
GLOBULIN NORMAL RANGE: 2.2-4.2 G/DL
ALBUMUN/GLOBULIN NORMAL RANGE: 0.8-2 CALC
BILIRUBIN NORMAL RANGE: 0.2-1.5 MG/DL
ALKALINE PHOSPHATASE NORMAL RANGE: 20-125 MG/DL
AST NORMAL RANGE: 3-35 MG/DL
ALT NORMAL RANGE: 3-40 U/L
CREATINE KINASE NORMAL RANGE: 0-165 U/L
URINE GLUCOSE NORMAL RANGE: 0
URINEPROTEIN NORMAL RANGE: 0
URINE WBC NORMAL RANGE: </= 5
URINE RBC NORMAL RANGE: </= 5
URINE SQUAMOS EPLITHELIAL CELLS NORMAL RANGE: </= 5
URINE BACTERIA NORMAL RANGE: 0
HYALINE CAST NORMAL RANGE: 0
WBC COUNT NORMAL RANGE: 3.8-10.8 THOUS/MCL
RBC COUNT NORMAL RANGE: 4.20-5.80 MILL/MCL
HEMOGLOBIN NORMAL RANGE: 13.2-17.1 G/DL
HEMATOCRIT NORMAL RANGE: 38.5-50%
MCV NORMAL RANGE: 80-100 FL
MCH NORMAL RANGE: 27-33 PG
MCHC NORMAL RANGE: 32-36 G/DL
RDW NORMAL RANGE: 11-15%
PLATELET COUNT NORMAL RANGE: 140-400 THOUS/MCL
ABSOLUTE NEUTROPHILS NORMAL RANGE: 1500-7800 CELLS/MCL
ABSOLUTE LYMPHOCYTES NORMAL RANGE: 850-3900 CELLS/MCL
ABSOLUTE MONOCYTES NORMAL RANGE: 200-950 CELLS/MCL
ABSOLUTE EOSINOPHILS NORMAL RANGE: 15-500 CELLS/MCL
ABSOLUTE BASOPHILS NORMAL RANGE: 0-200 CELLS/MHC
NEUTROPHIL % NORMAL RANGE: 35-80%
LYMPHOCYTE % NORMAL RANGE: 18-44%
MONOCYTE % NORMAL RANGE: 0-10%
EOSINOPHYL % NORMAL RANGE: 0-3%
BASOPHILS % NORMAL RANGE: 0-1%
ANA
ANTI-RNP AT HEMAGGLUTINATION TITER > 1:1600
SM NORMAL RANGE: 0-20
DSDNA TITER NORMAL RANGE: 5-9 IU/ML
ELEVATED DNA IF ≥ 10 IU/ML
FANA TITER NORMAL RANGE: <320
FANA PATTERN. HOMO , SPECKLED NUCLEOLAR, HOMO/SPECKLED, MIXED , SPECKLED/MIXED, NO-SPECIFIC
SSA NORMAL RANGE: < 20 EU/ML
SSB NORMAL RANGE: < 20 EU/ML
SCL NORMAL RANGE: < 20 EU/ML



ANTI-PHOSPHOLIPID ABS + IF > 10 GPL U/ML
ANTI CARDOLIPIN ANTIBODY IF > 10 GPL U/ML
ANTICARDIOLIPIN IGG NORMAL RANGER: < 10 GPL U/ML
ANTICARDIOLIPIN IGG + IF > 10 GPL U/ML
ANTICARDIOLIPIN IGM NORMAL RANGER: < 10 GPL U/ML
IGM ANTICRD + IF > 10 GPL U/ML
ANTICARDIOLIPIN IGA NORMAL RANGER: < 10 GPL U/ML
IGA ANTICRD+ IF > 10 GPL U/ML
C3 COMPLEMENT NORMAL RANGE: 90 – 180 MG/DL
C3_LOW IF < 90 MG/DL
C4 COMPLEMENT NORMAL RANGE: 16 – 47 MG/DL
C4_LOW IF < 16
ESR NOMAL RAMNGE: < 10 MG/DL
ESR_ELEVATED IF >10 MG/DL
C REACTIVE PROTEIN NOMAL RANGE: 1.0 MG/DL
CRP_ELEVATED FI . 1.0 MG/DL
RF LATEX TITER NORMAL RANGE: 14 IU/ML
RF ELISA IGM TITER NORMAL RANGE: < 20 IU/ML
RF ELISA IGG TITER NORMAL RANGE: < 20 IU/ML
CPK NORMAL RANGE: < 165 U/L
CPKELEAVTED: > 165 U/L
BAFF NORMAL CYTOKINE LEVEL < 1.19 NG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
BAFFR NORMAL CYTOKINE LEVEL < 0.09 NG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
TACI NORMAL CYTOKINE LEVEL < 0.02 NG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
BCMA NORMAL CYTOKINE LEVEL < 1.64 NG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
IFNG NORMAL CYTOKINE LEVEL < 13.13 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
TNFA NORMAL CYTOKINE LEVEL < 7.58 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
SCD40L NORMAL CYTOKINE LEVEL < 1959.30 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
IL12P40 NORMAL CYTOKINE LEVEL < 61.68 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
IL12P70 NORMAL CYTOKINE LEVEL < 18.77 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
IL23 NORMAL CYTOKINE LEVEL < 348.34 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
IL17A NORMAL CYTOKINE LEVEL < 3.88 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
IL17AF NORMAL CYTOKINE LEVEL < 19.40 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
IL17F NORMAL CYTOKINE LEVEL < 38.00 PG/ML

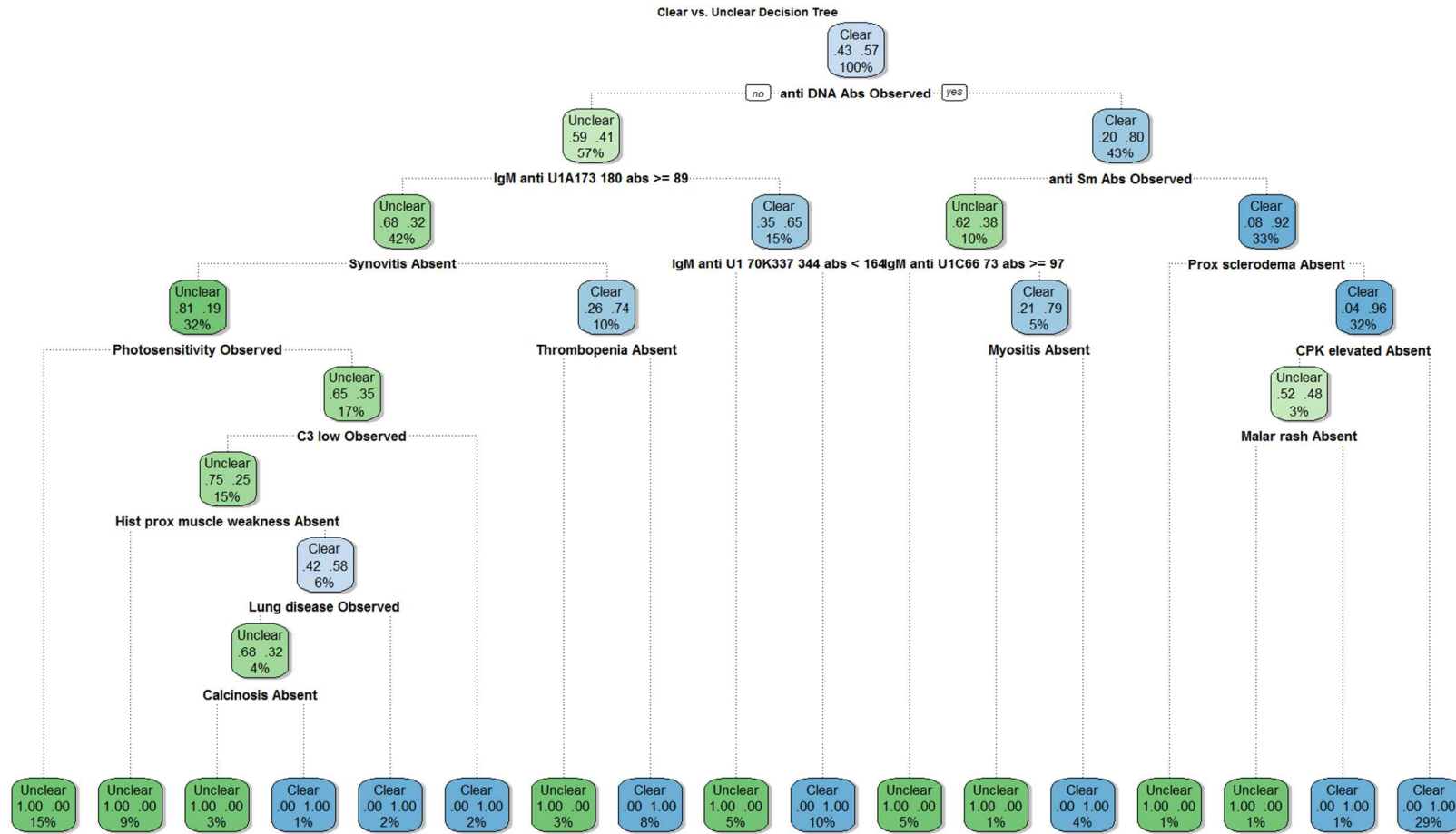
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
IL21 NORMAL CYTOKINE LEVEL < 13.5 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
IL22 NORMAL CYTOKINE LEVEL < 31 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
IL33 NORMAL CYTOKINE LEVEL < 12.3 PG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
ESELECTIN NORMAL CYTOKINE LEVEL < 23.63 NG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
NGAL NORMAL CYTOKINE LEVEL < 79.10 NG/ML
(BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP)
P1-IGM AVERAGE NORMAL RANGE: 0-100
P2-IGM AVERAGE NORMAL RANGE: 0-100
P3-IGM AVERAGE NORMAL RANGE: 0-100
P4-IGM AVERAGE NORMAL RANGE: 0-100
P5-IGM AVERAGE NORMAL RANGE: 0-100
P6-IGM AVERAGE NORMAL RANGE: 0-100
P7-IGM AVERAGE NORMAL RANGE: 0-100
P8-IGM AVERAGE NORMAL RANGE: 0-100
P9-IGM AVERAGE NORMAL RANGE: 0-100
P10-IGM AVERAGE NORMAL RANGE: 0-100
P11-IGM AVERAGE NORMAL RANGE: 0-100
P12-IGM AVERAGE NORMAL RANGE: 0-100
P13-IGM AVERAGE NORMAL RANGE: 0-100
P14-IGM AVERAGE NORMAL RANGE: 0-100
P15-IGM AVERAGE NORMAL RANGE: 0-100
BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP
BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP
BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP
BASED ON HEALTHY GROUP AVERAGE + SD OF HEALTHY GROUP

Tissue		Variable
C L I N I C A L  M A N I F E S T A T I O N S	SKIN	Telangiectasia
		Nasal ulcers
		Oral ulcers
		Hist hand swelling
		Obs hand swelling
		Sclerodactyly
		Pitting
		Alopecia
		Rash
		Photosensitivity
		Discoid rash
		Raynaud's
		Calcinosis
		Prox sclerodema
		SICCA
	MUSCLE	Myositis
		Myalgia
		Arthralgia
		Hist prox muscle weakness
		Obs prox muscle weakness
Hist hand swelling		
Obs hand swelling		
Low extremety swelling		
JOINTS	Facial swelling	
	Morning stiff	
	Tender	
	Synovitys	
	Hist swelling	
	Obs swelling	
	Swelling (>3)	
	Symmetric sweeling	
	Pain	
Deformity		
LYMPH NODES	Any lymphadenopathy	
	Swelling	
	Neck swelling	
	Axila swelling	
	Groin swelling	
	Rheumatoid nodule	
GASTRO	Gastric reflux	
DOD	Anemia	
	Hemolytic anemia	
	Leukopenia	

L A B O R A T O R Y	BLC	Lymphopenia
		Thrombopenia
		Thrombosis
	HEART	Pericarditis
		Pleuritis
		Pericarditis/pleuritis
		Any clot
		Venous clot
		Valvular disease
		Avascular necrosis
		Myocardial infarction
		Stroke
		LUNG
	Vascular lesions	
	Fibrosis	
	Lung disease	
	KIDNEY	Proteinuria
		Hematuria
		Clot
		Arterial stenosis
		Cell cast
		Renal disease
	NERVOUS	Neuropathy
		Psychosis
		Chorea
	URINALYSIS	Glucose +
		Protein +
		WBC +
		RBC +
		squamos eplithelial cells +
		Hyaline cast +
	ADDITIONAL FOR LUPUS	Sm level
		Sm +
dsDNA titer		
DNA +		
DNA elevated		
FANA titer		
FANA +		
SSA +		
C3 level		
C3 low		
C4 level		
C4 low		
ESR		

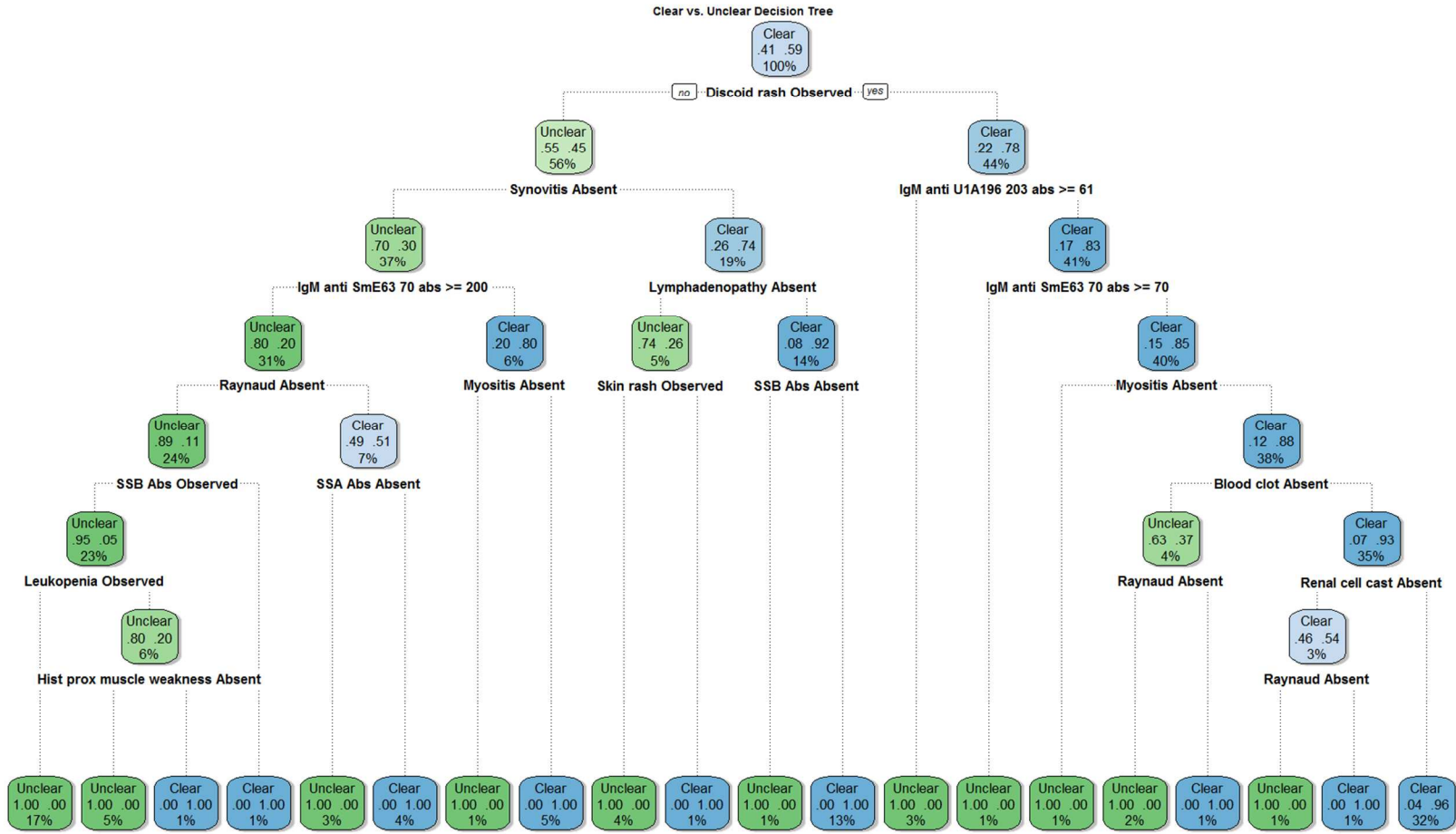
E S T S	TRAD	ESR elevated
		CRP
		CRP elevated
		IgM-RF ELISA titer
		IgM-RF +
		IgG-RF ELISA titer
		IgG-RF +
		CPK level
		CPK elevated
		IL17A
	EXPERIMENTAL	IgM-U1A ELISA (112-119)
		IgM-U1A ELISA (196-203)
		IgM-SmD2 ELISA (14-21)
		IgM-SmD2 ELISA (14-21)

### Unclear SLE vs MCTD patients: Decision tree 1



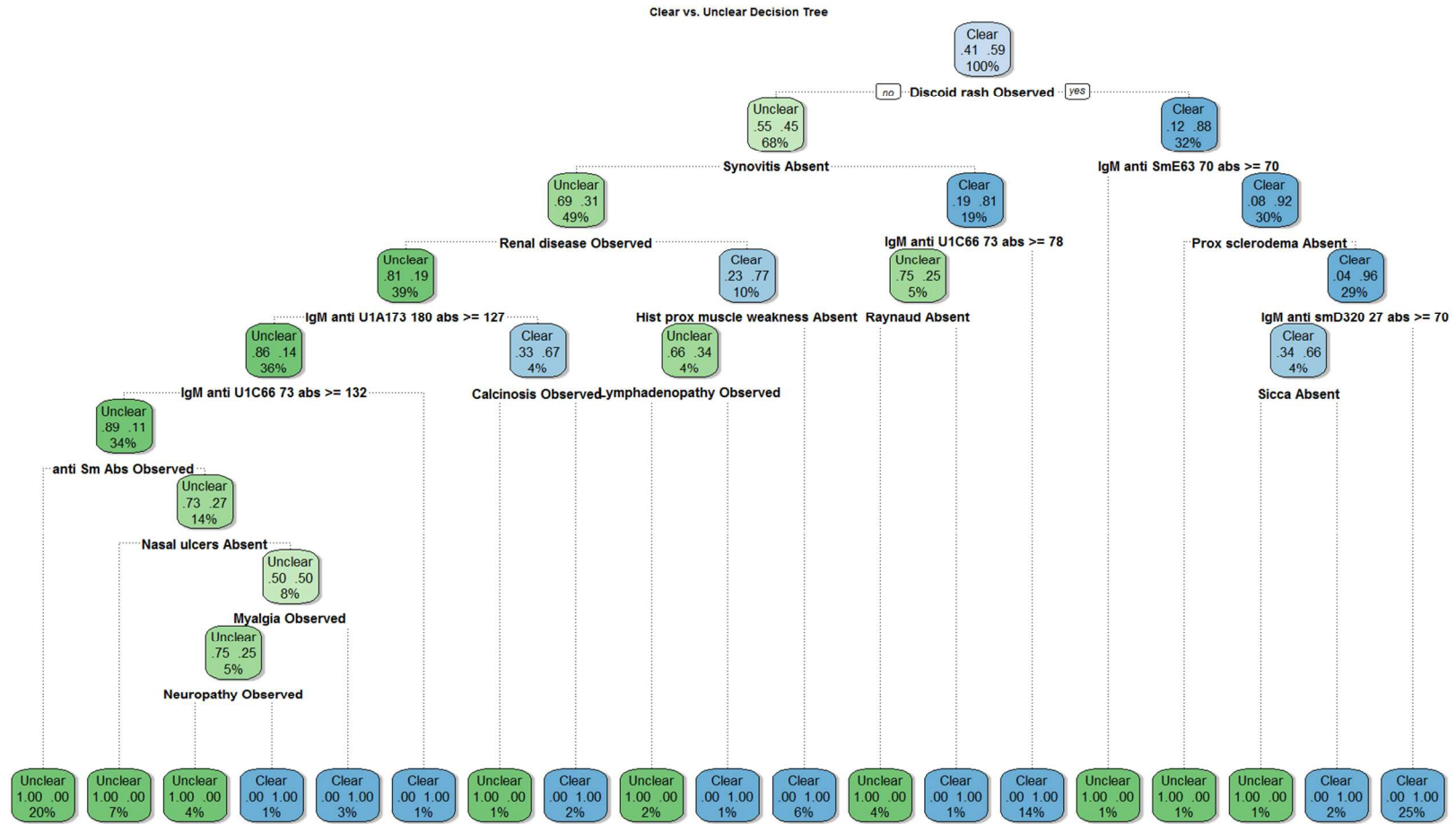
	Training	Test	Validation
Accuracy	0.9125	0.9231	0.9630
Sensitivity	0.5890	0.5833	0.6154
Specificity	0.5000	0.5000	0.5000

### Unclear SLE vs MCTD patients: Decision tree 2



	Training	Test	Validation
Accuracy	0.8875	0.9231	0.8889
Sensitivity	0.6197	0.5833	0.5833
Specificity	0.5000	0.5000	0.5000

### Unclear SLE vs MCTD patients: Decision tree 3



	Training	Test	Validation
<b>Accuracy</b>	0.9375	0.8846	0.9259
<b>Sensitivity</b>	0.6000	0.6087	0.6000
<b>Specificity</b>	0.5000	0.5000	0.5000