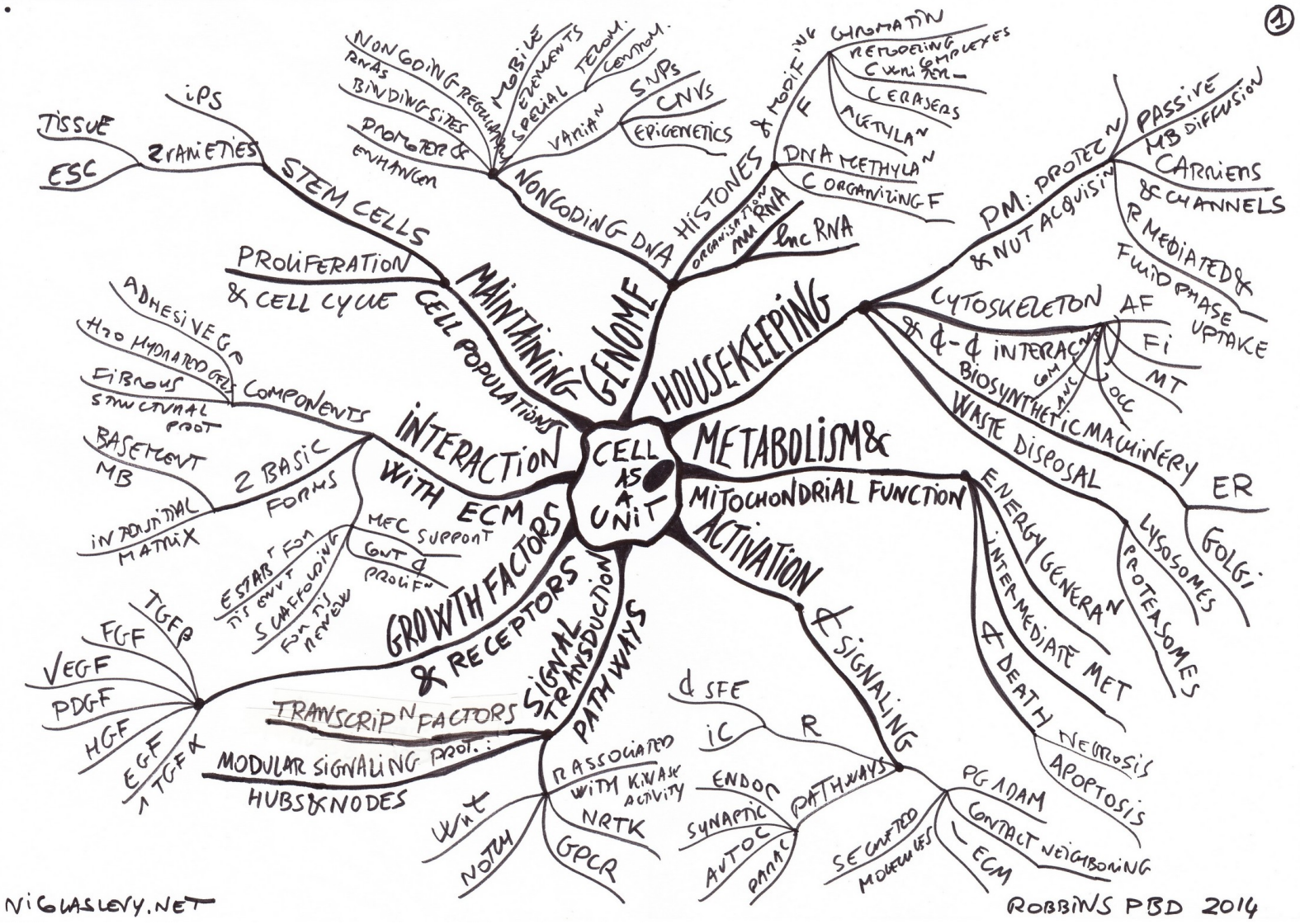
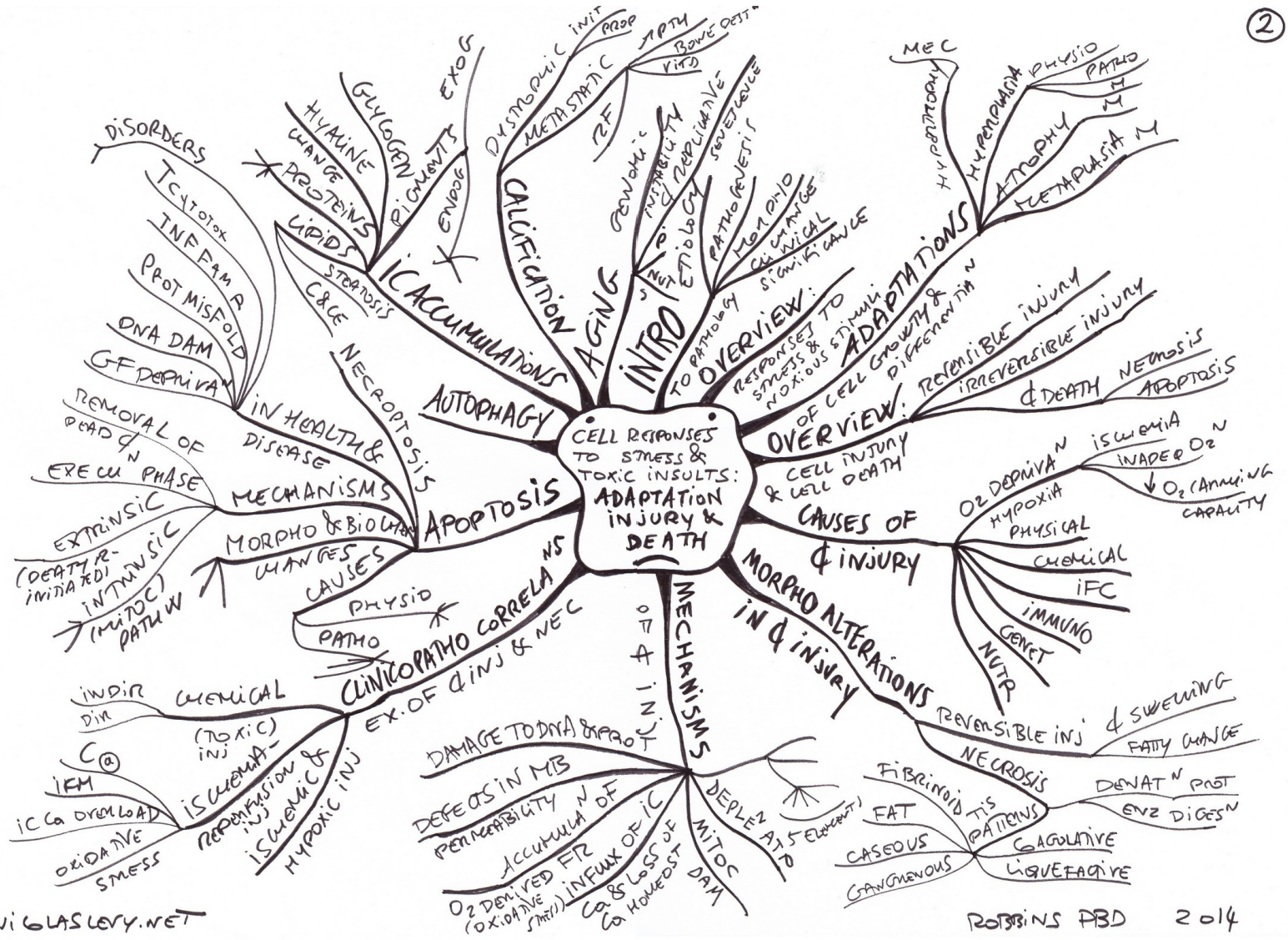
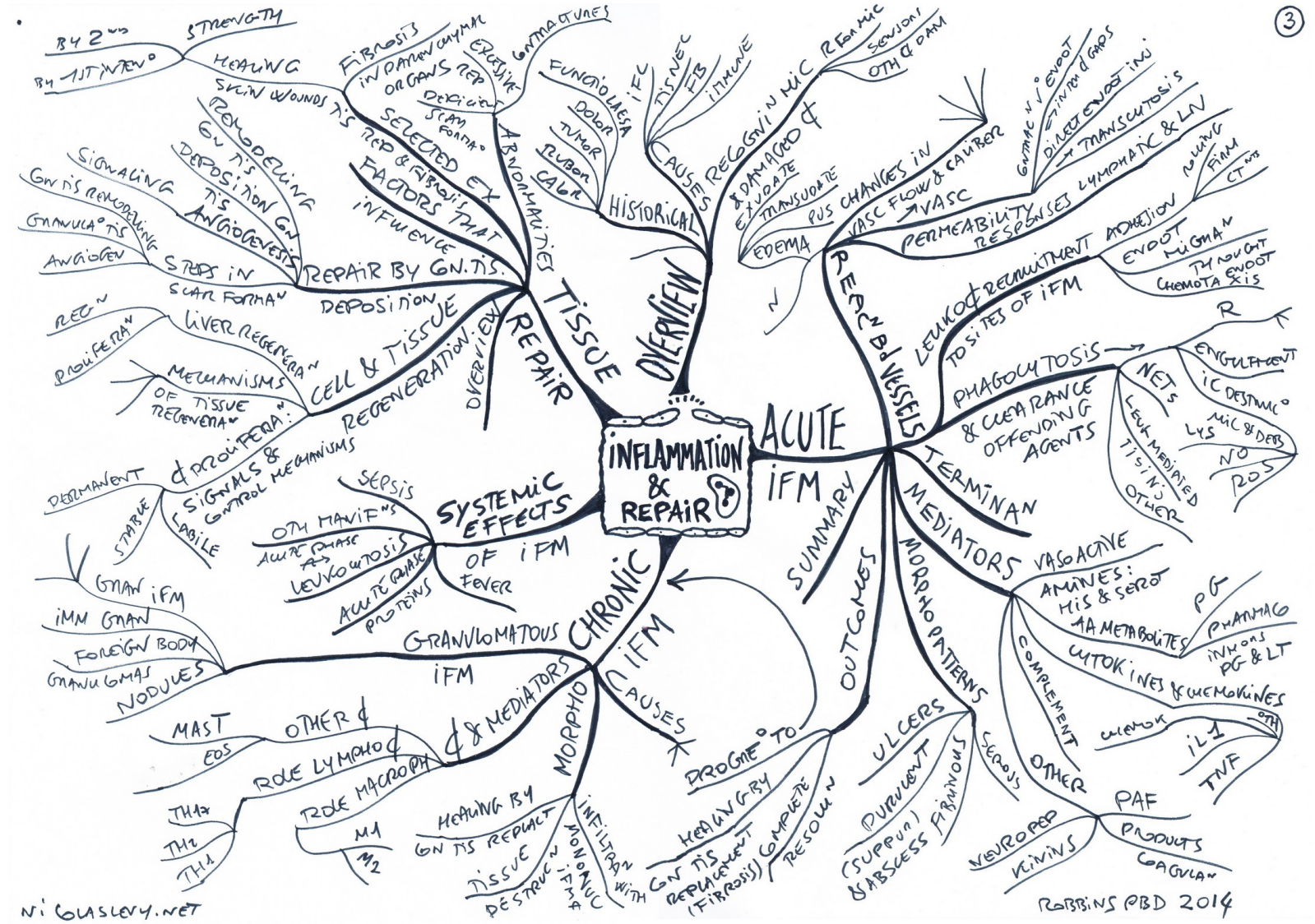
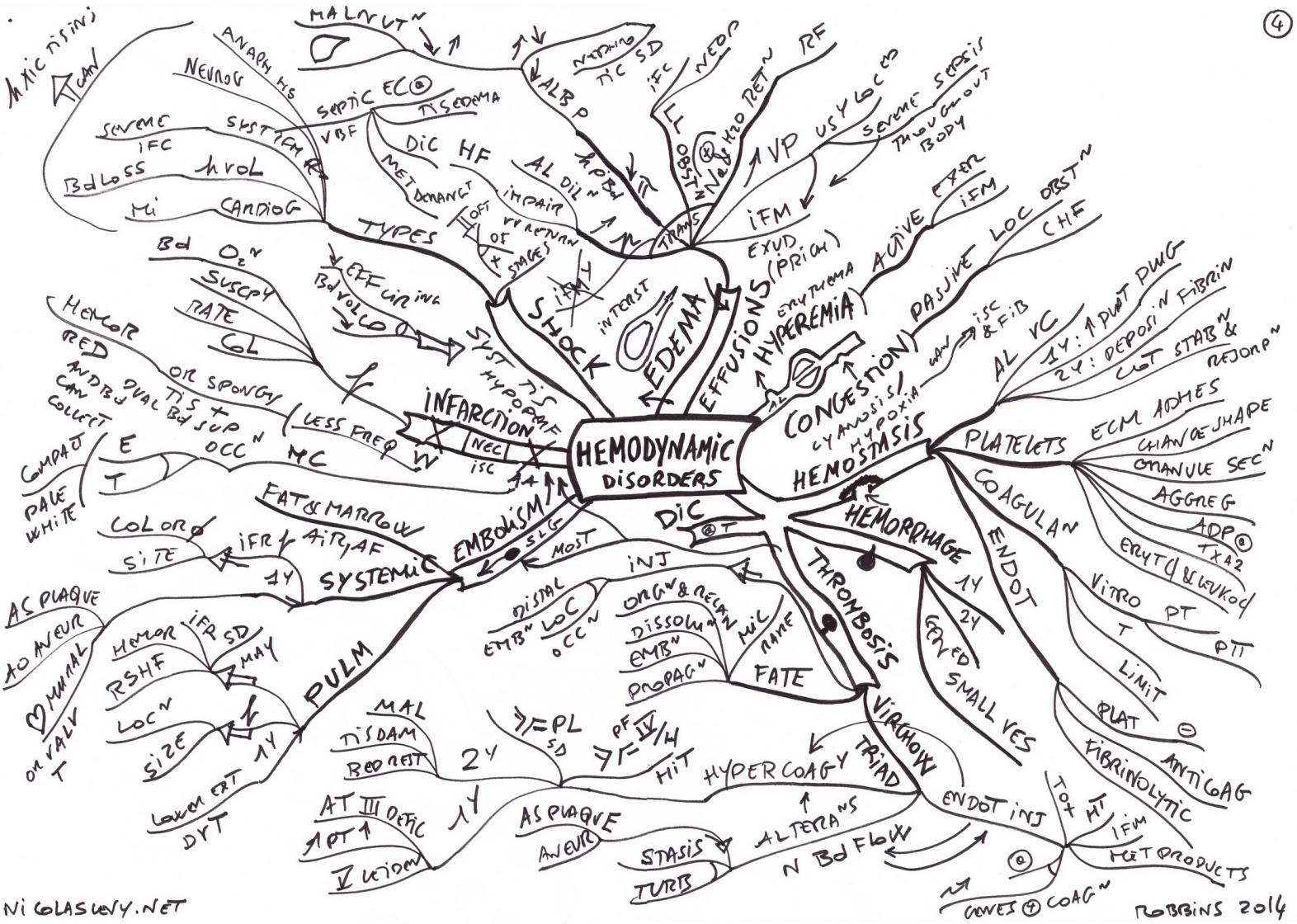

1
CELL AS A UNIT
MAINTAINING GENOME
STEM CELLS
TISSUE
ESC
iPS
2 FAMILIES
NONCODING REGULATORY
RNAs
BINDING SITES
PROMOTERS &
ENHANCERS
MOBILE ELEMENTS
SPECIAL
TELOM.
CENTROM.
VARIAN
SNPs
CNVs
EPIGENETICS
NONCODING DNA
HISTONES
& MODIFING CHROMATIN
REMODELING
CHROMATIN
COMPLEXES
ERASERS
ACETYLAT
DNA METHYLAT
ORGANIZING F
ORGANISATION
MM RNA
lnc RNA
CELL POPULATIONS
PROLIFERATION
& CELL CYCLE
INTERACTION WITH ECM
ADHESIVE GP
H2O HYDRATED GEL
FIBROUS
STRUCTURAL PROT
COMPONENTS
BASEMENT MB
2 BASIC FORMS
INTERSTITIAL MATRIX
MEC SUPPORT
CONT & PROLIF
ESTABL FOR TISSUE STRUCTURE FOR TISSUE REPAIR
GROWTH FACTORS & RECEPTORS
TGFβ
FGF
VEGF
PDGF
HGF
EGF
ATGFX
TRANSCRIP FACTORS
MODULAR SIGNALING PROT.:
HUBS & NODES
SIGNAL TRANSDUCTION PATHWAYS
Wnt
NOTCH
R ASSOCIATED WITH KINASE ACTIVITY
NRTK
GPCR
HOUSEKEEPING
PM: PROTECTN & NUT ACQUISIN
PASSIVE
MB DIFFUSION
CARRIERS
& CHANNELS
R MEDIATED &
FLUID PHASE UPTAKE
CYTOSKELETON
AF
FI
MT
& C-C INTERACTN
GM
ANC
OCC
BIOSYNTHETIC MACHINERY
ER
GOLGI
WASTE DISPOSAL
LYSOSOMES
PROTEASOMES
METABOLISM & MITOCHONDRIAL FUNCTION
ENERGY GENERAN
INTERMEDIATE MET
ACTIVATION & SIGNALING
& DEATH
NECROSIS
APOPTOSIS
& SFE
IC
R
ENDOC
SYNAPTIC
AUTOC
PARAC
PATHWAYS
SECRETED MOLECULES
PG ADAM
CONTACT NEIGHBORING
ECM
NIGLASLEY.NET
ROBBINS PBD 2014



NICLASLEVY.NET

ROBBINS PBD 2014


3
INFLAMMATION & REPAIR
TISSUE REPAIR
OVERVIEW
CAUSES
HISTORICAL
DAMAGED & EXUDATE
TRANSUDATE
EDEMA
PUS
CHANGES IN VASC FLOW & CALIBER
VASC
PERMEABILITY
RESPONSES
LYMPHATIC & LN
ADHESION
EXOCYT
MIGRAN
THROUGH
CHEMOTAXIS
LEUKOCYTE RECRUITMENT TO SITES OF IFM
PHAGOCYTOSIS
NETS
ENGULFMENT
IC DESTRUC°
LYS
MIC & DEBS
NO
ROS
LEUK MEDIATED TISSUE DAM
OTHER
& CLEARANCE OFFENDING AGENTS
TERMINAN
MEDIATORS
VASOACTIVE
AMINES: HIS & SEROT
AA METABOLITES
PG
PHARMAC
INVOLVS PG & LT
CYTOKINES & CHEMOKINES
CHEMOK
IL1
TNF
OTH
COMPLEMENT
OTHER
PAF
PRODUCTS
COAGULAN
NEUROPEP
KININS
MORPHOPATTERNS
ULCERS
PURULENT (SUPPUR) & ABSCESS
FIBRINOUS
SEROUS
OUTCOMES
PROGNO° TO
HEALING BY
GN TIS REPLACEMENT (FIBROSIS)
COMPLETE RESOLUN
SUMMARY
ACUTE IFM
CHRONIC IFM
CAUSES
MORPHO
INFILTRAN WITH
MONONUC
IFMA
TISSUE DESTRUCN
HEALING BY
GN TIS REPLACT
GRANULOMATOUS IFM
NODULES
GRANULOMAS
FOREIGN BODY
IMM GRAN
GRAN IFM
MAST
EOS
OTHER
ROLE LYMPHOC
ROLE MACROPH
M1
M2
TH1
TH2
TH17
SYSTEMIC EFFECTS OF IFM
SEPSIS
OTH MANIFNS
ACUTE PHASE PROTEINS
LEUKOCYTOSIS
FEVER
SIGNALS & CONTROL MECHANISMS
LABILE
STABLE
PERMANENT
CELL & TISSUE REGENERATION
PROLIFERAN
MECHANISMS OF TISSUE REGENERAN
LIVER REGENERAN
REC^N
PROLIFERAN
SCAR FORMAN
REPAIR BY GN. TIS.
DEPOSITION
STEPS IN
GRANULA° TIS
ANGIOGEN
ANGIOGENESIS
GN TIS REMODELING
SIGNALING
DEPOSITION GN TIS
REMODELING GN TIS
SKIN WOUNDS
HEALING
STRENGTH
BY 2ND
BY 1ST INTENT°
FIBROSIS
IN PARENCHYMAL ORGANS REP
DERIVED SCAR FORMA°
ERCEDIN
GRANULATIVES
SELECTED EX FACTORS THAT INFLUENCE REP & FIBROSIS
ABNORMALITIES
FUNCTIONLESS
DOLOR
TUMOR
RUBOR
CALOR
IFC
TIS NEC
FB
IMMUNE
CAUSES
RECOGNITION
ACUTE
SEQUELAE
OTH & DAM
GRANULOCYTE
DIRECT EXOCYT INJ
TRANSCYTOSIS
RELEASE FIRM CT^NS
R
N
R
BLOOD VESSELS
ROLE IN
ROBBINS PBD 2014
NIGLASLERY.NET


HEMODYNAMIC DISORDERS
EDEMA
EFFUSIONS
HYPEREMIA
CONGESTION
HEMOSTASIS
PLATELETS
COAGULAN
HEMORRHAGE
THROMBOSIS
VIRCHOW TRIAD
HYPERCOAGY
ENDOT
SHOCK
TYPES
INFARCTION
EMBOLISM
SYSTEMIC
PULM
DIC
FATE
SEPTIC
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MALNUT
ALB
NEPHRO
RF
VP
IFM
EXUD
TRANS
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NEC
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COMPACT
PALE WHITE
FAT & MARROW
AIR, AF
COLOR
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IFR
1Y
AS PLAQUE
AO ANEUR
MUSCAL
VALV
HEMOR
RSHF
LOC
SIZE
IFR SD
MAY
LOWER EXT
DVT
MAL
DISDAM
BED REST
2Y
AT III DEFIC
PT
V LEIDEN
1Y
AS PLAQUE
ANEUR
STASIS
TURB
ALTERANS
N BD FLOW
HIT
DISTAL
EMB
LOC
OCC
ORGN & RECAN
DISSOLUTN
EMB
PROPAGN
MIL
NANE
INJ
MOST
SLG
ACTIVE EXER
PASSIVE LOC OBST
CHF
1Y: PLAT PLUG
2Y: DEPOSIT FIBRIN
LOT STABN & REJORGN
ECM ADHES
CHANGE SHAPE
GRANULE SECN
AGGREG
ADP
TXA2
ERYT/LEUKOD
VITRO
PT
T
PTT
LIMIT
PLAT
FIBRINOLYTIC
ANTICOAG
ENDOT INJ
TOX
HIT
IFM
HET PRODUCTS
GIVES COAGN
SMALL VES
GRVED
2Y
1Y
ISC & FIB
CYANOSIS
HYPOXIA
ERYTHROMA
SEVERE SEPSIS THROUGHOUT BODY
NEUTRPNIC SD
IFC
NEOP
NEPHRO RETN
SEPTIC EC
DISEDEMA
VBF
NEUROG
ANAPH HS
MALNUT
SEVERE
IFC
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ORGANS
TIS SUP
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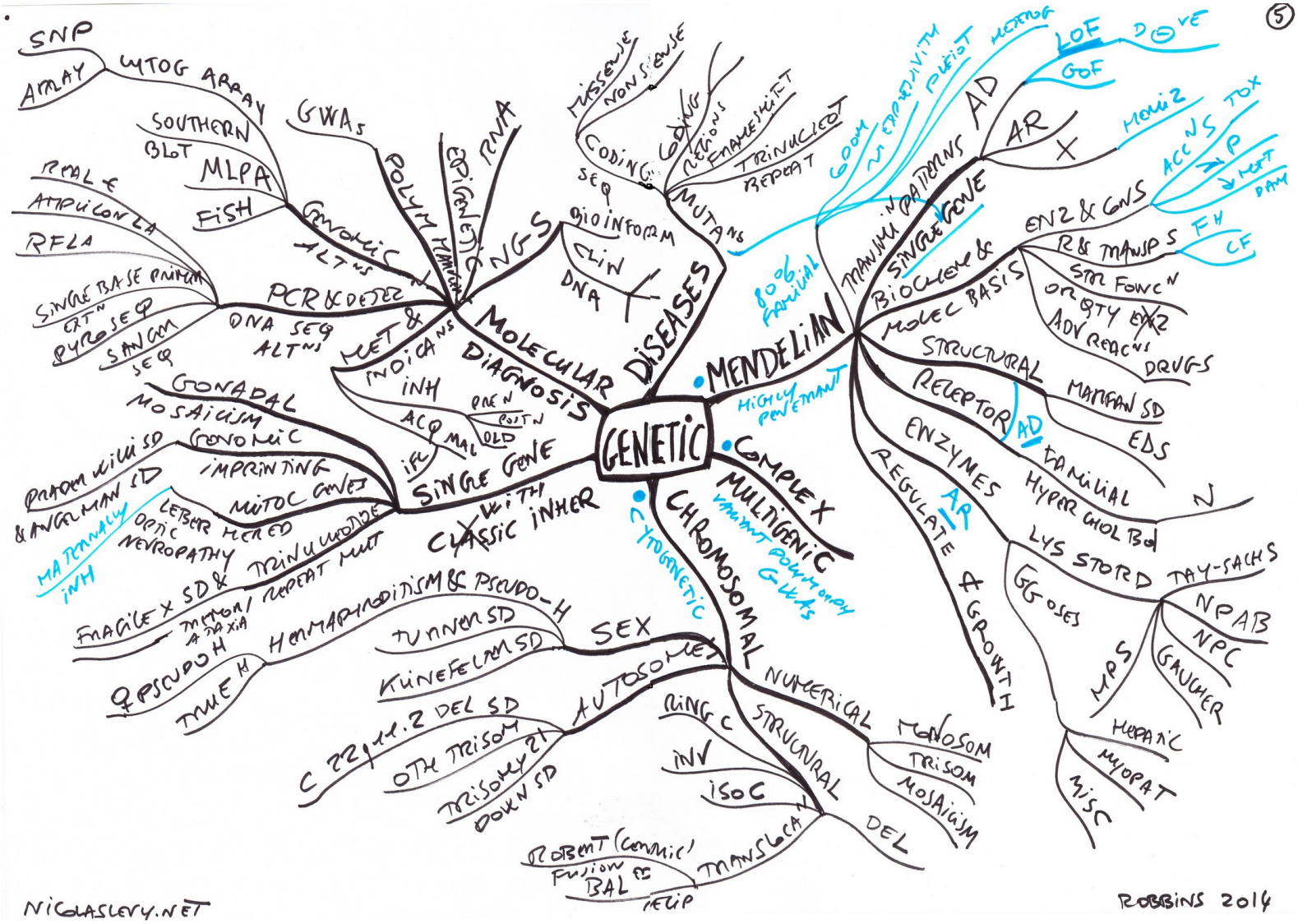
NICOLASLEVY.NET
ROBBINS 2014



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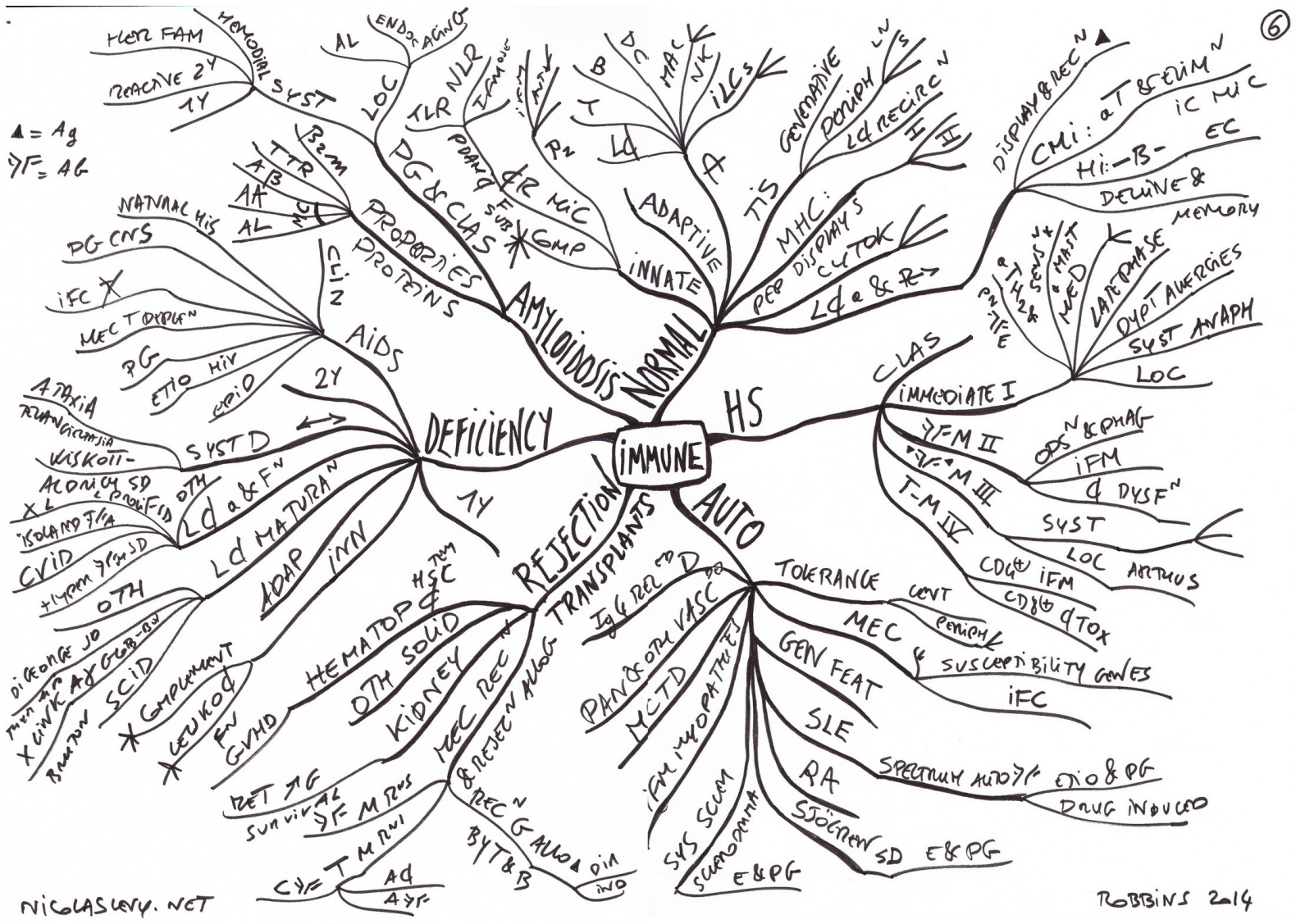
Y = AG



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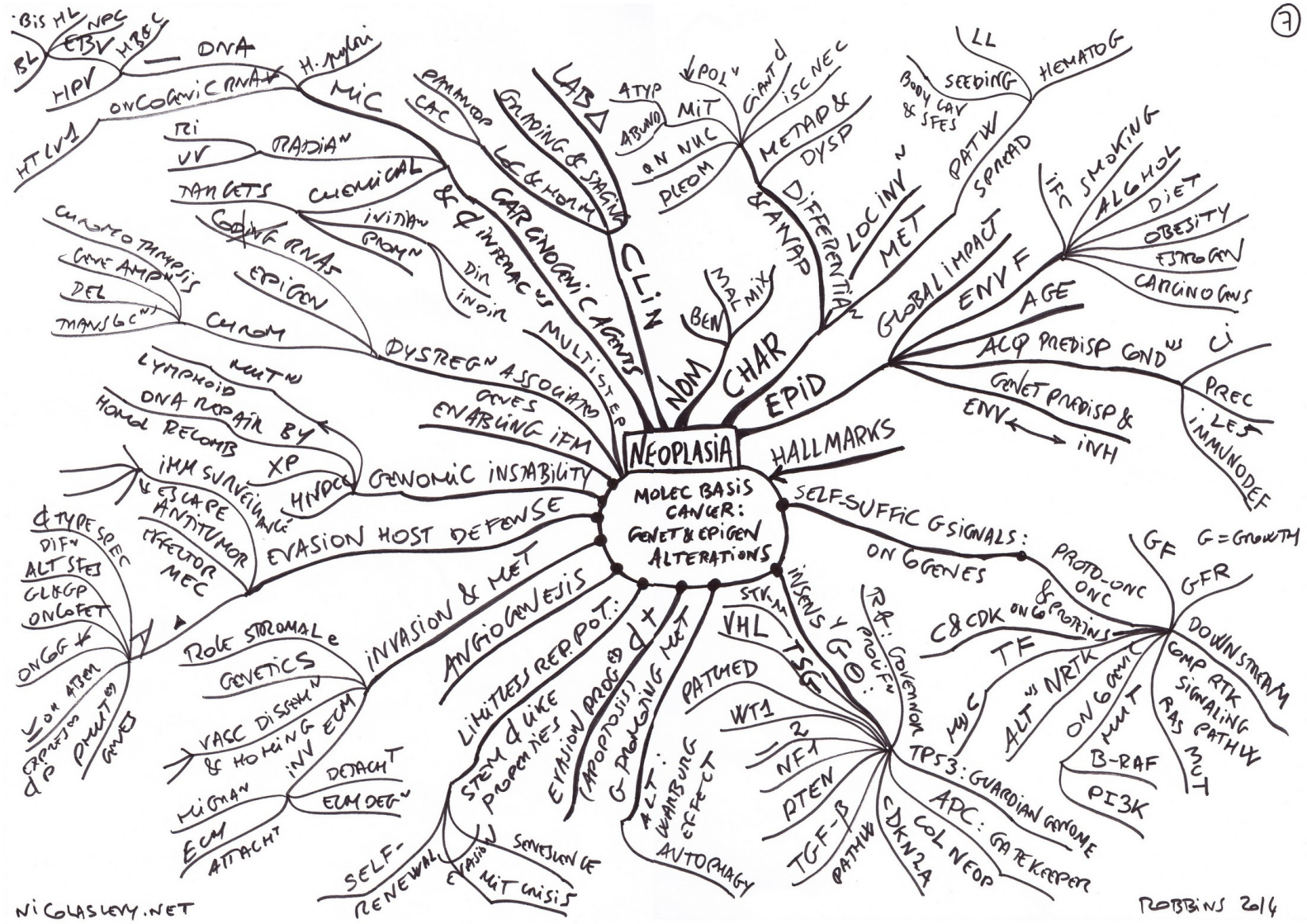
NEOPLASIA
MOLEC BASIS CANCER: GENET & EPIGEN ALTERATIONS
NOM
CLIN
CHAR
EPID
HALLMARKS
SELF-SUFFIC G SIGNALS:
ON G GENES
PROTO-ONC
ONC
GF
GFR
G = GROWTH
DOWNSTREAM
COMP RTK SIGNALING
RAS PATHW
MUT
B-RAF
PI3K
ALT VS N/RTK
ONGENIC
MUT
MYC
TF
C8 CDK ON G PROTEINS
TP53: GUARDIAN GENOME
APC: GATEKEEPER
COL NEOP
CDKN2A
TGF-β PATHW
PTEN
NF1
WT1
PATCHED
VHL
TSG
INSENS Y GO
RB: GOVERNOR PROLIF
STK-M
ALT: WARBURG EFFECT
AUTOPHAGY
G PROMOTING MET
LIMITLESS REPPOT.:
(APOPTOSIS)
EVASION PROG
STEM CELL LIKE PROPENSIES
SENESCENCE
MIT CRISIS
SELF-RENEWAL
ANGIOGENESIS
INVASION & MET
ROLE STROMAL e
GENETICS
VASC DISSEM & HOMING
INV ECM
DETACH
ECM DEG
ECM ATTACH
HIGHAN
EVASION HOST DEFENSE
ESCAPE ANTITUMOR EFFECTOR MEC
IMM SURVEILANCE
HNPCC
XP
GENOMIC INSTABILITY
DNA REPAIR BY HOMOL RECOMB
LYMPHOID
MUT N
DYSREG N ASSOCIATED GENES ENABLING IFM
MULTISTEP
DIFFERENTIATION & ANAP
LOC INV N
MET
GLOBAL IMPACT
ENV F
AGE
ACQ PREDISP COND VS
GENET PREDISP & ENV ↔ INH
PREC LES
IMMUNODEF
IFN SMOKING
ALCOHOL
DIET
OBESITY
ESTROGEN
CARCINOGENS
SPREAD
PATHW
LL
SEEDING
HEMATOG
BODY CAV & SFES
ATYP
ABUND
MIT
GIANT d
ISC NEC
METAP & DYSP
POL V
N NUC
PLEOM
LAB Δ
GROWING & SPACING
LOC & HORM
CARCINOGENIC AGENTS
& d INFRAC VS
CAC
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BEN
MALMIX
CHEMICAL
RADIAN
UV
IRI
TARGETS
CODING RNAS
INVITRO
PROM N
DIR
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EPIGEN
CHROM
CHROMOTHRIPSIS
GENE AMPN
DEL
TRANSLOCN
DYSREG N ASSOCIATED
ONCOGENIC RNA
H. pylori
MIC
DNA
BL
EBV
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HPV
HTLV-1
BIS HL
NPC
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STEM CELL LIKE PROPENSIES
(APOPTOSIS)
EVASION PROG
G PROMOTING MET
ALT: WARBURG EFFECT
AUTOPHAGY
SELF-RENEWAL
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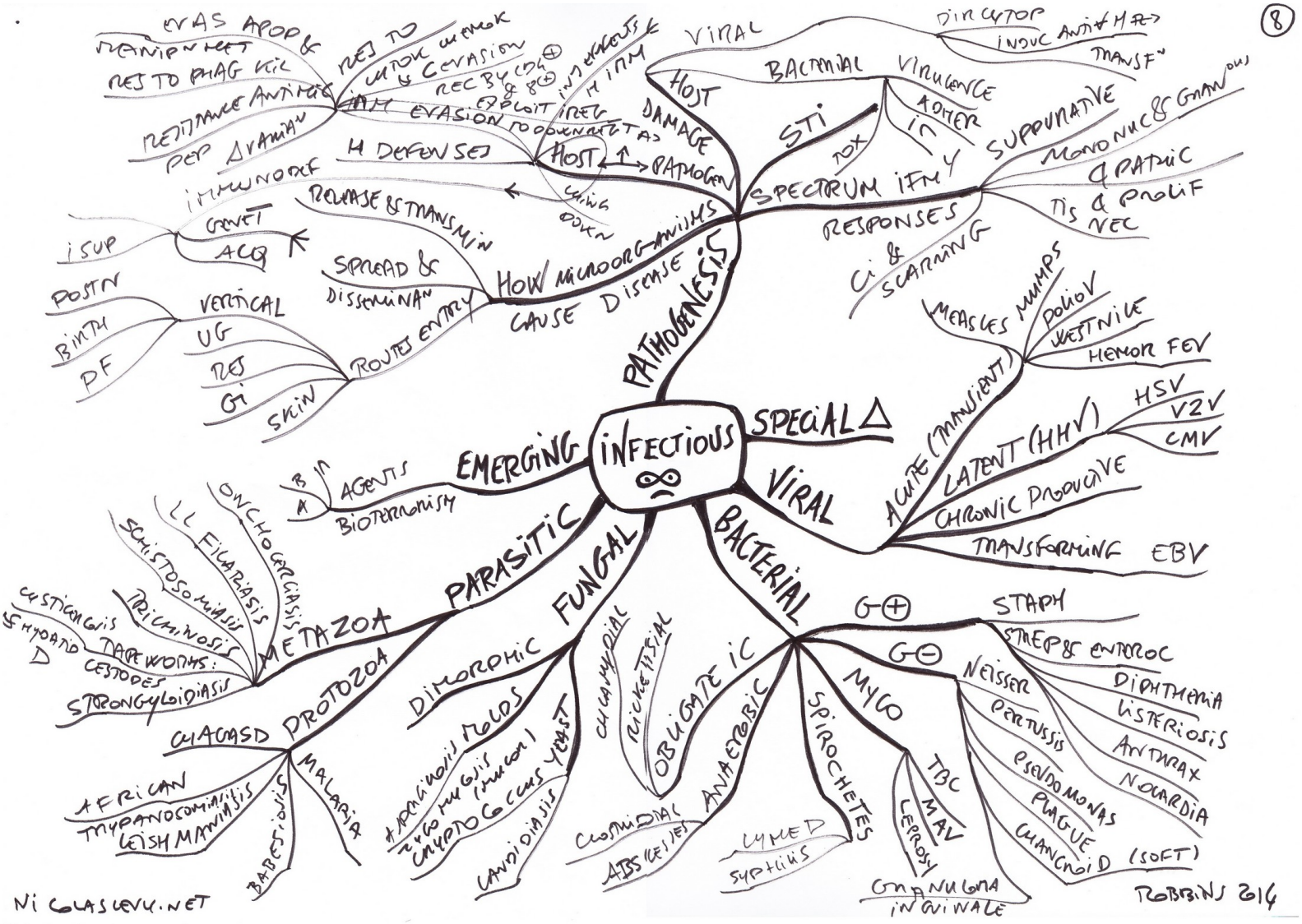
SENESCENCE
MIT CRISIS



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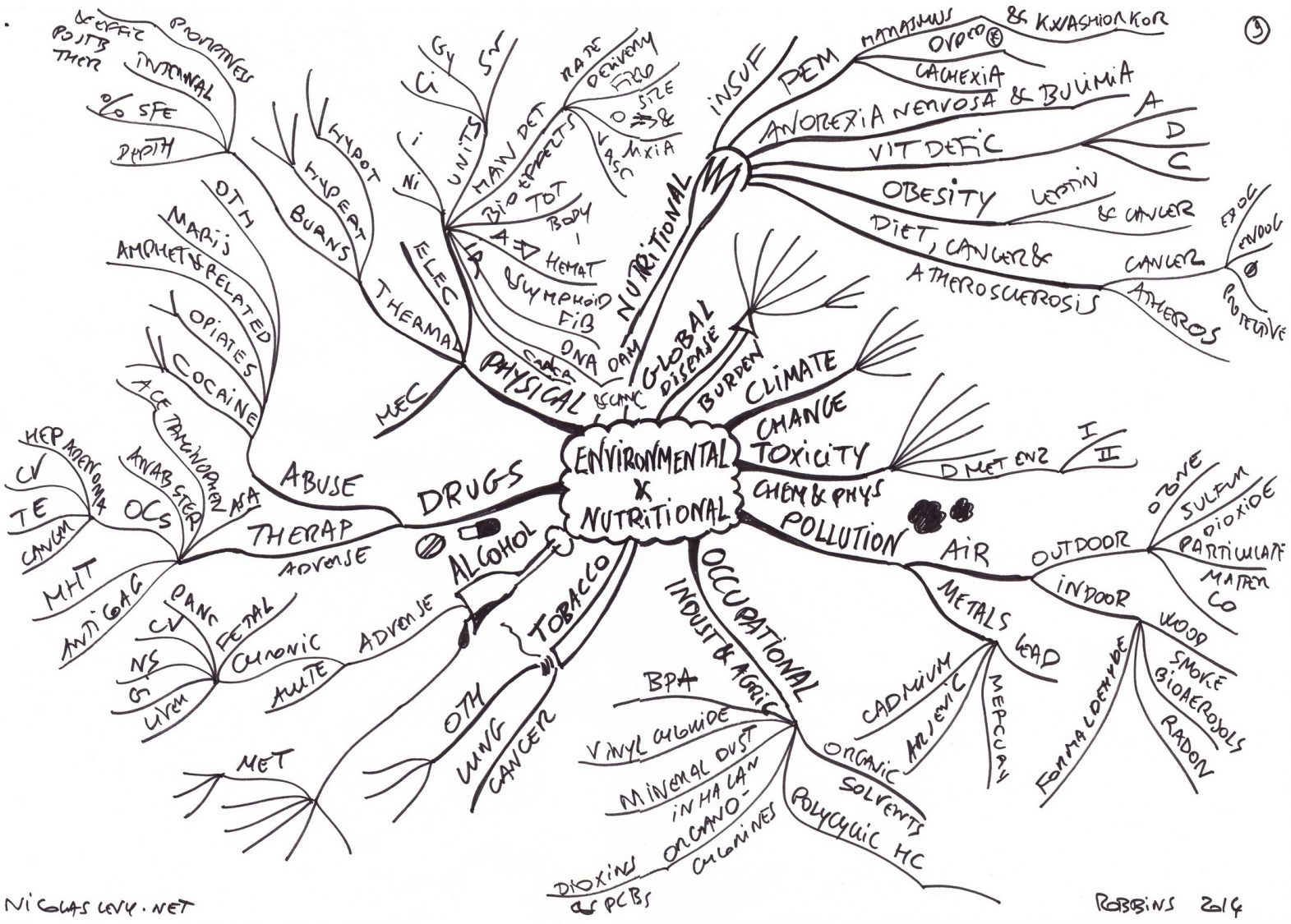

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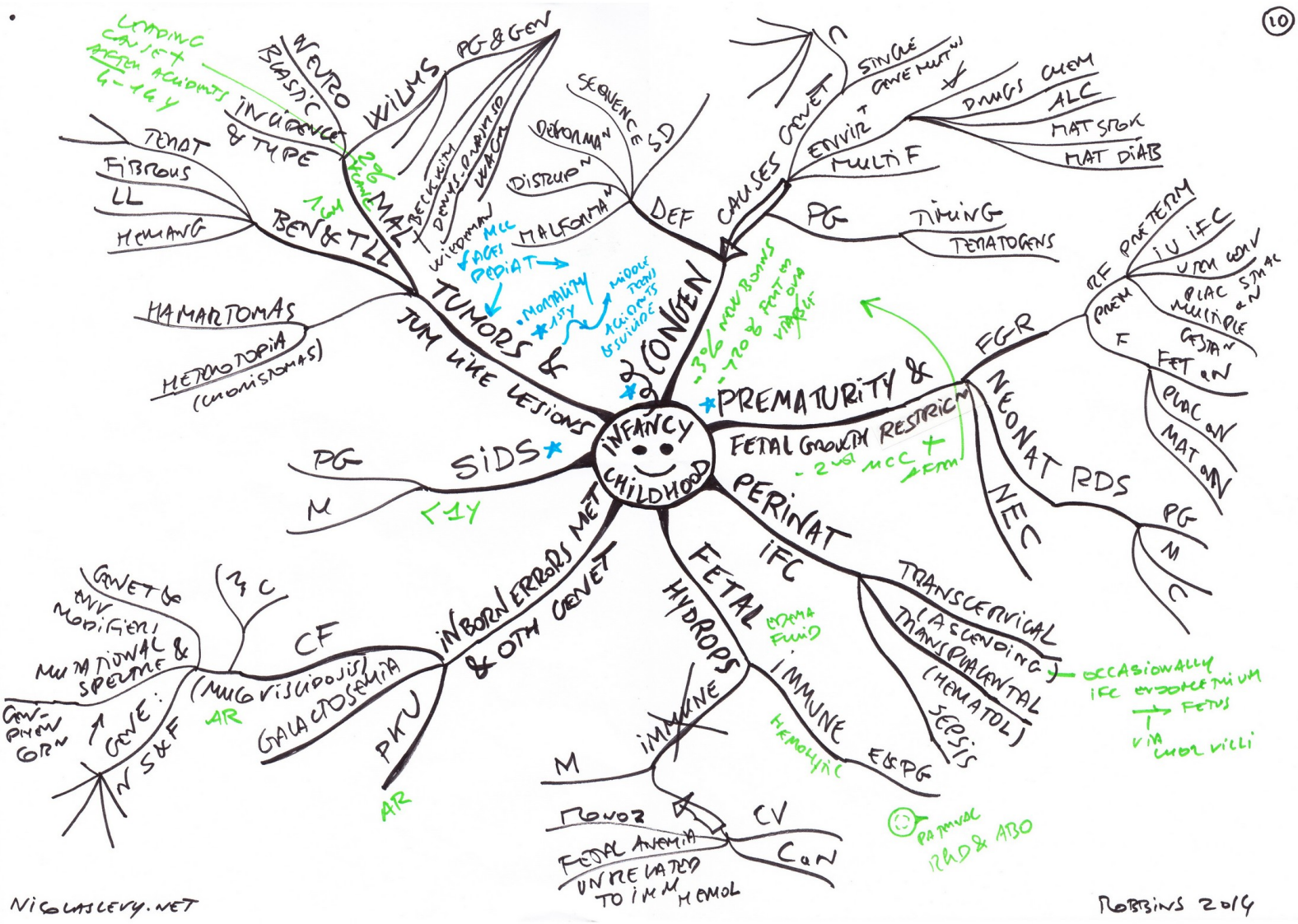

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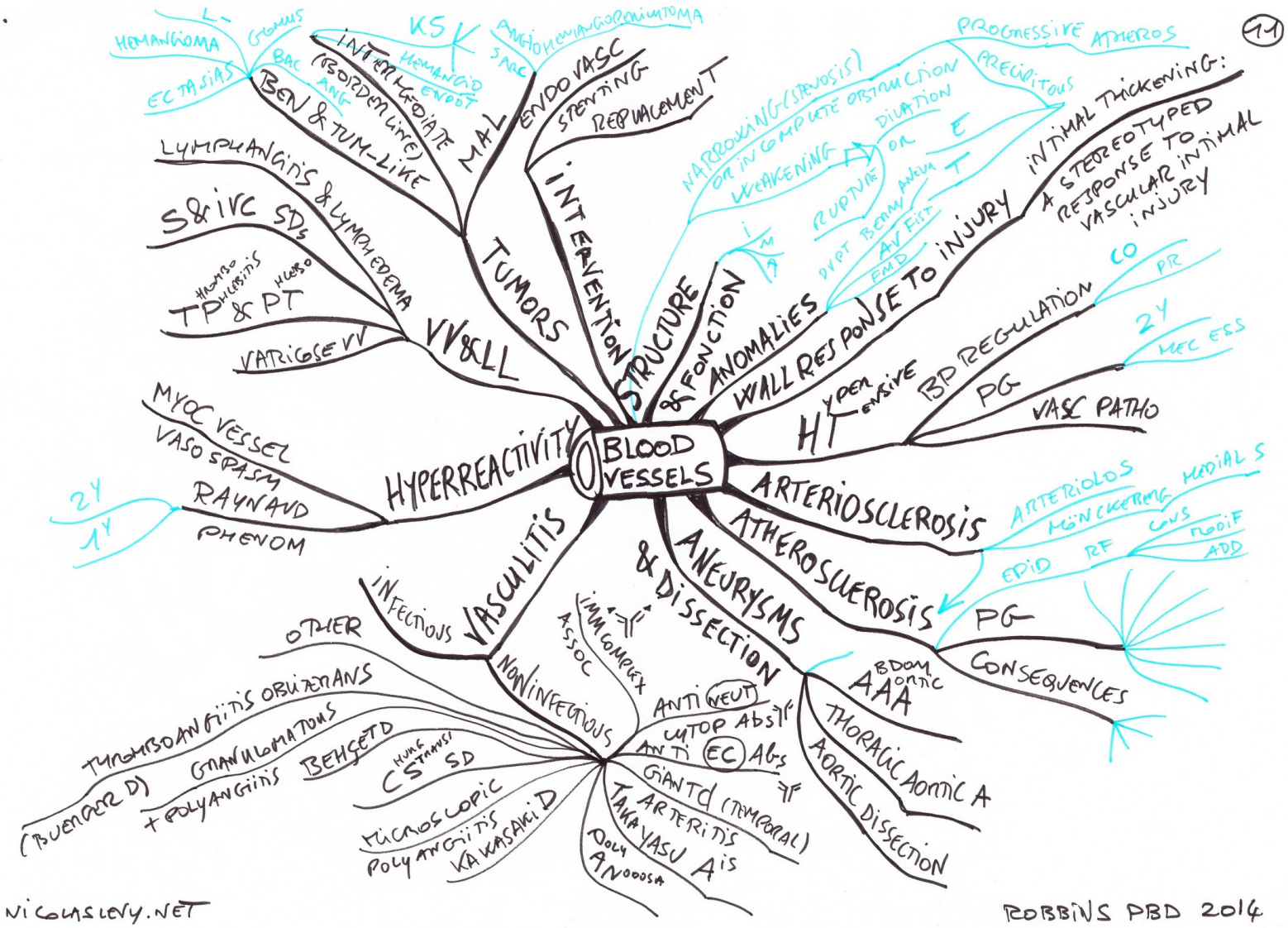

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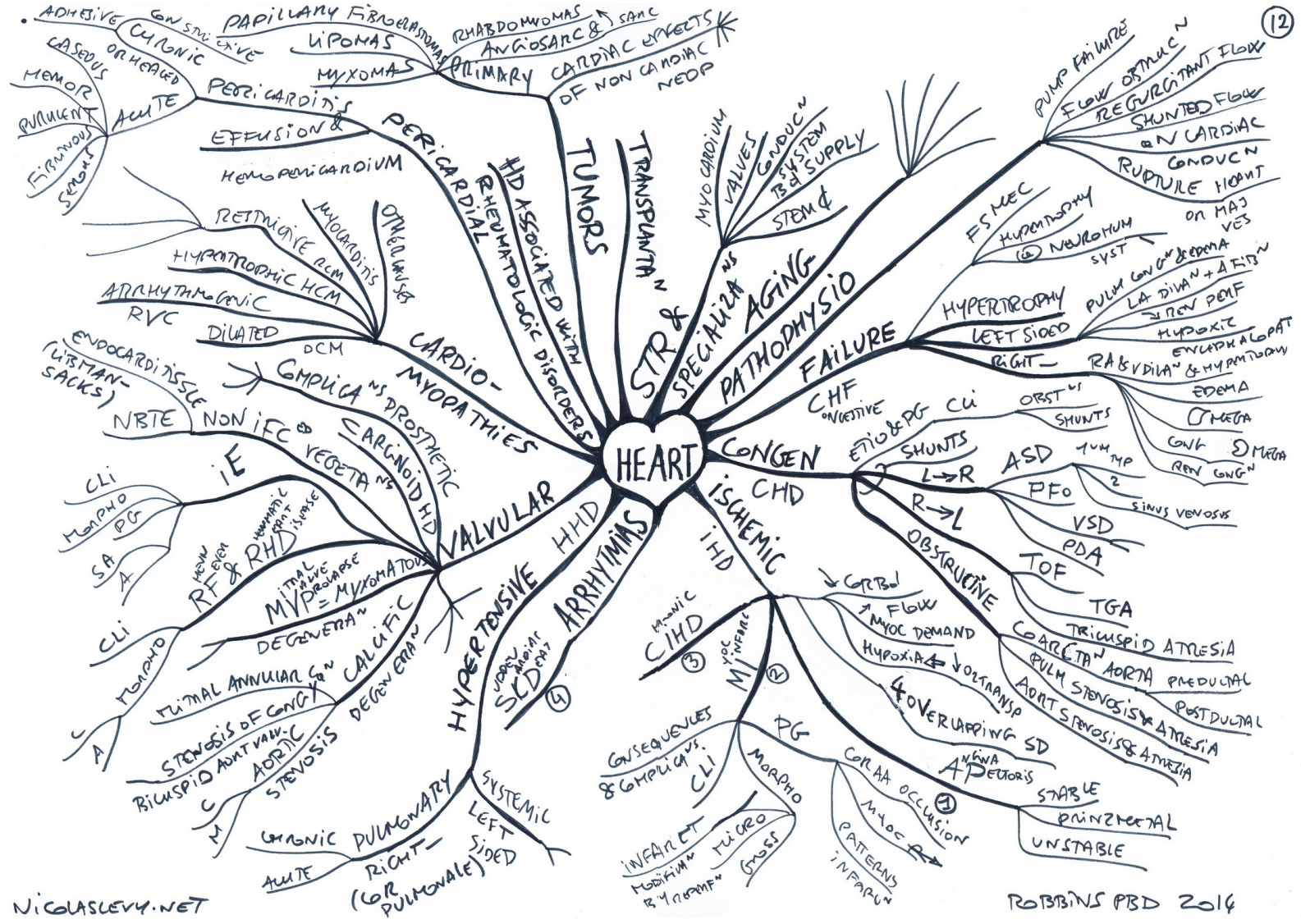
HEART
(12)
PERICARDIAL
PERICARDITIS
ACUTE
ADHESIVE
CONSTRICTIVE
CHRONIC
OR HEALED
CASEOUS
MEMOR
PURULENT
FIBRINOUS
SEROUS
EFFUSION &
HEMOPERICARDIUM
TUMORS
PAPILLARY FIBROELASTOMAS
LIPOMAS
MYXOMAS
RHABDOMYOMAS
ANGIOSARC & ↑ SARC
PRIMARY CARDIAC EXPECTS
OF NON CARDIAC
NEOP
TRANSPLANTAN
HD ASSOCIATED WITH
RHEUMATOLOGIC DISORDERS
CARDIO-MYOPATHIES
RETRICTIVE RCM
HYPERTROPHIC HCM
ARRHYTHMOGENIC RVC
DILATED DCM
MYOCARDITIS
OTHER INFS
ENDOCARDITIS
(LIBMAN-SACKS)
NBTE
NON IFC
COMPLICATNS
PROSTHETIC
VEGETATNS
CARCINOID HD
VALVULAR
IE
CLI
MORPHO
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SA
A
RF & RHD
MITRAL VALVE PROLAPSE = MYXOMATOUS
DEGENERATN
MITRAL ANNULAR CALCIFIC DEGENERATN
STENOSIS OF CONG XATN
BICUSPID AORT VALV
AORTIC STENOSIS
HYPERTENSIVE
HHD
ARRHYTHMIAS
SCD
SYSTEMIC
LEFT SIDED
CHRONIC PULMONARY
ACUTE
RIGHT-
(OR PULMONALE)
STR & SPECIALIZATNS
AGING
PATHOPHYSIO
MYOCARDIUM
VALVES
CONDUCTN
BS SYSTEM
SUPPLY
STEM ¢
FAILURE
CHF
ONVECTIVE
ETIO & PG
CLI
OBSTRUCTNS
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1 VM MP
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PREDUCTAL
POSTDUCTAL
PULM STENOSIS & ATRESIA
AORT STENOSIS & ATRESIA
OBSTRUCTIVE
ISCHEMIC
IHD
↓ CORBLD
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MYOC DEMAND
HYPOXIA
↓ ORTRANSP
OVERLAPPING SD
ANGINA PECTORIS
STABLE
PRINZMETAL
UNSTABLE
MI
MYOC INFARC
CORAA OCCLUSION
MYOC
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INFARCTN
PG
MORPHO
CLI
CONSEQUENCES & COMPLICATNS
INFARCT
MODIFICATN
MICRO
GROSS
REVASCULARIZATN
CHRONIC
CIHD
PUMP FAILURE
FLOW OBSTRUCTN
REGURGITANT FLOW
SHUNTED FLOW
ON CARDIAC
CONDUCTN
RUPTURE HEART
OR MAJ VES
FS MEC
HYPERTROPHY
NEUROHUM SYST
HYPERTROPHY
LEFT SIDED
RIGHT-
PULM CONGTN & EDEMA
LA DILATN + AFIBN
↓ REN PERF
HYPOXIC ENCEPHALOPAT
RA & VDILATN & HYPERTROPHY
EDEMA
HEPATA
GVG
SPLENOMEGA
REN CONGTN
NICOLASLEVY.NET
ROBBINS PBD 2016

WBC
LYMPH NODES
SPLEEN
THYMUS
WHITE CELLS
NEOP
SPLEEN
INFARCTS
CONGESTIVE
SPECIFIC
A - ITIS
CONGEN
NEOP
RUPTURE
-MEGALY
DYPT
HYPERPLASIA
THYMOMAS
THYMUS
DYPT & MAINTENANCE
HEMATOP TIS
NUMBER
LEUKOPENIA
NEUTROPENIA
AGRANULOCYTOSIS
TOX
DRUG
INDIRECT ON INEF
GRANULOP
DEFICIENCY
LEUKOCYTOSIS
REACTIVE &
LYMPH NODES
LYMPHADENITIS
A SPEC
C SPEC
HL'H
ENDOMARGINATIC
LYMPHO
ISTIOCYTOSIS
FH
PCH
RH
WC
SVS
C TRANSLOC
ACQ
MUT
MYH GEN
CI
IAT & SMOK
LANGERHANS &
MISTIOCYTOSIS
UNIFOC & MULTIFOC
UNISYS
(EOSINOPHILIC GRAN)
MULTIFOC MULTISYS
(LETTERER-SIWE)
PULM
PROLIFERATIONS
ETIO & DG F
CLASS N
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CHRONIC
MPD
MDS
AMLS
HL
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IMMATURE PROG ACCUM IN MARROW
INEFFECTIVE HEMATOP
CYTOPENIAS
LYMPHOID
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ACUTE LYMPHOBLASTIC
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PERIPH B
CLL/SLL
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DIFFUSE LARGE
BLY
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PCDIFFERENTIATED
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PLASMA CELL
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PLASMOMA
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LYMPHOPLASMA
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LYMPHOCYTIC LE
MYCOSIS FUNGOIDES
SÉZARY SD
ADULT T LE/LY
ANAP LARGE LY
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MZLY
MANTLE CELL LY
2%
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LC RICH
NOD SCLER
MIXTA
CLASSICAL
NIGLAS LEVY-NET
MC NHL USA
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COMMON FORMS LE & LY
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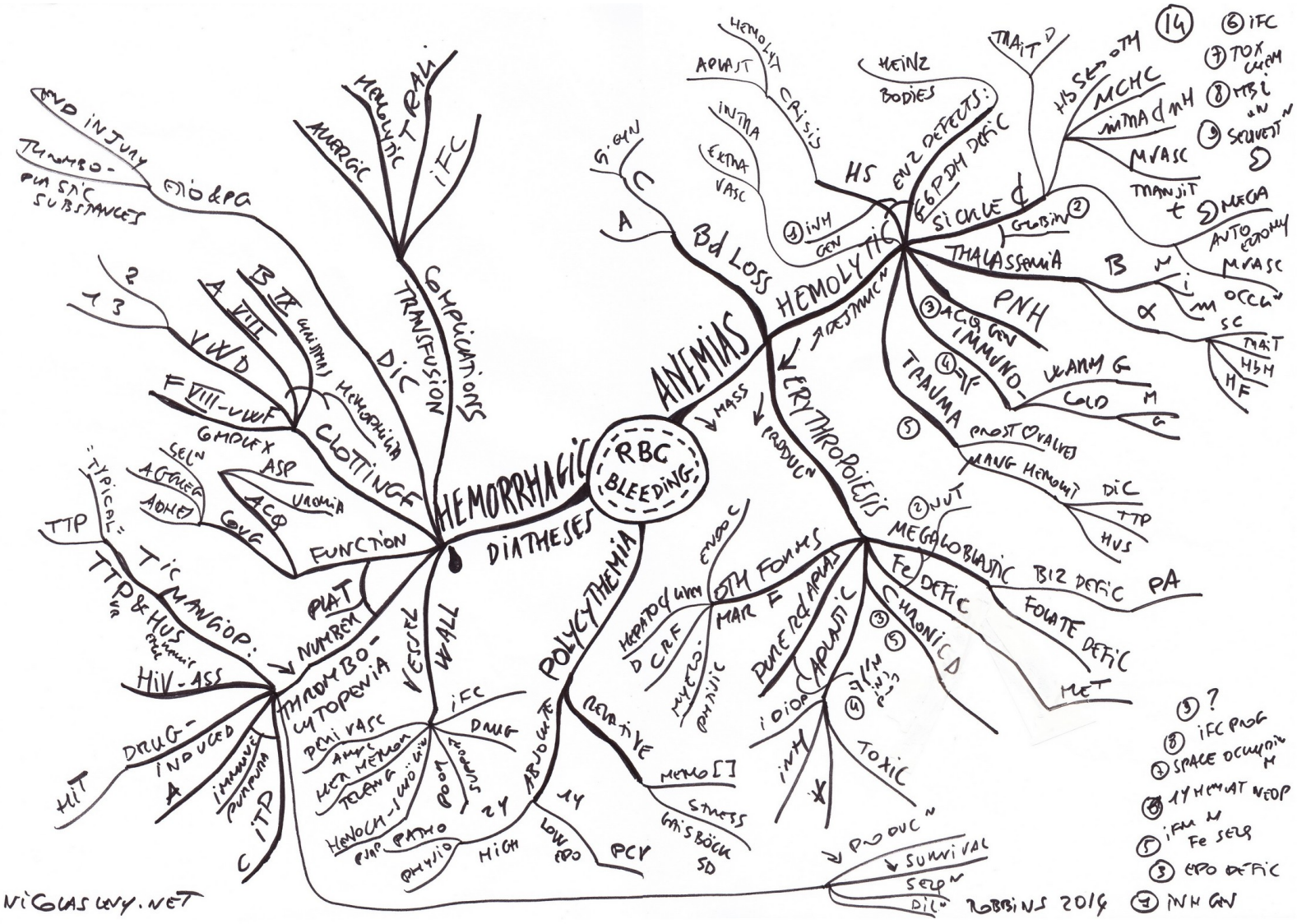
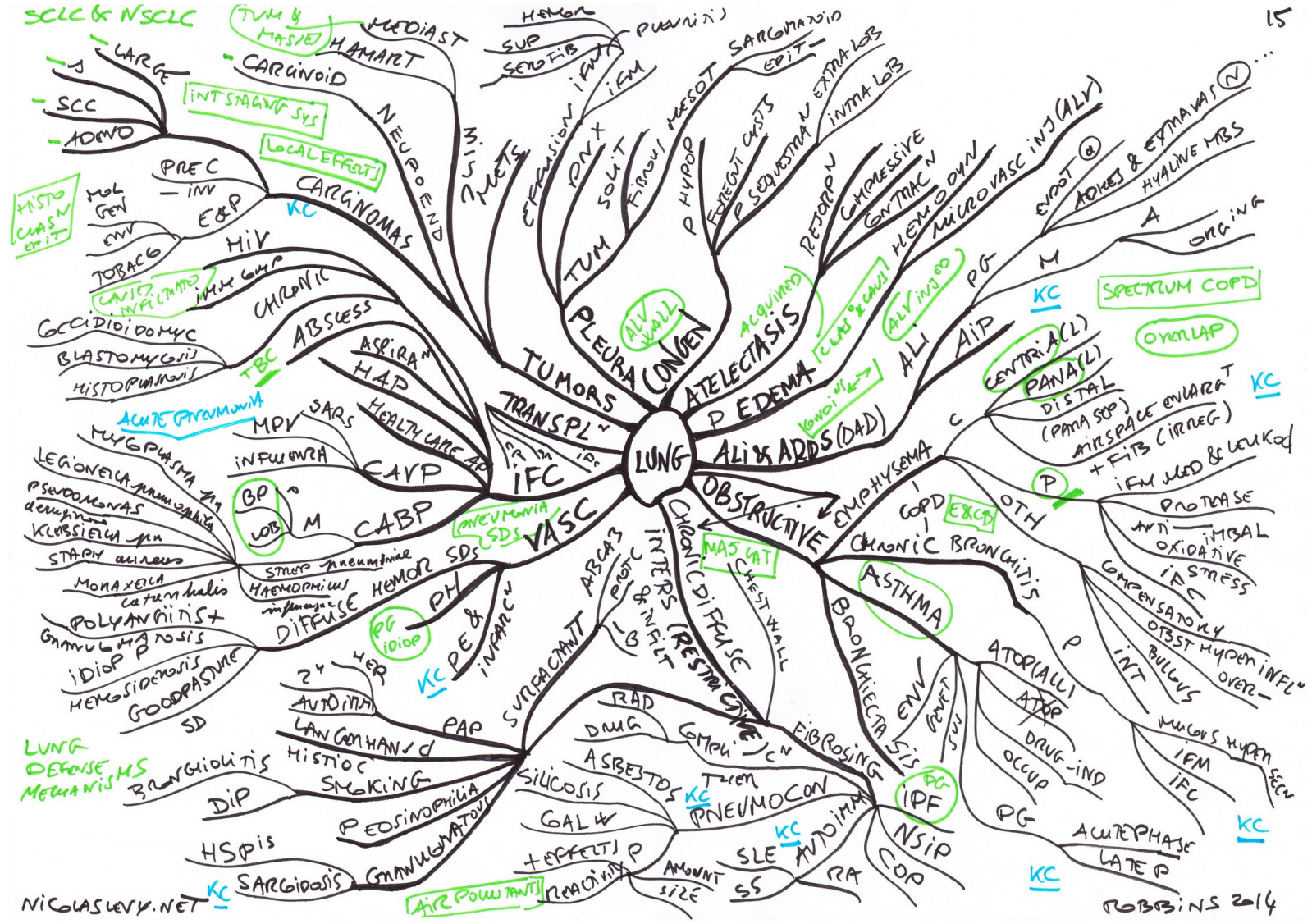
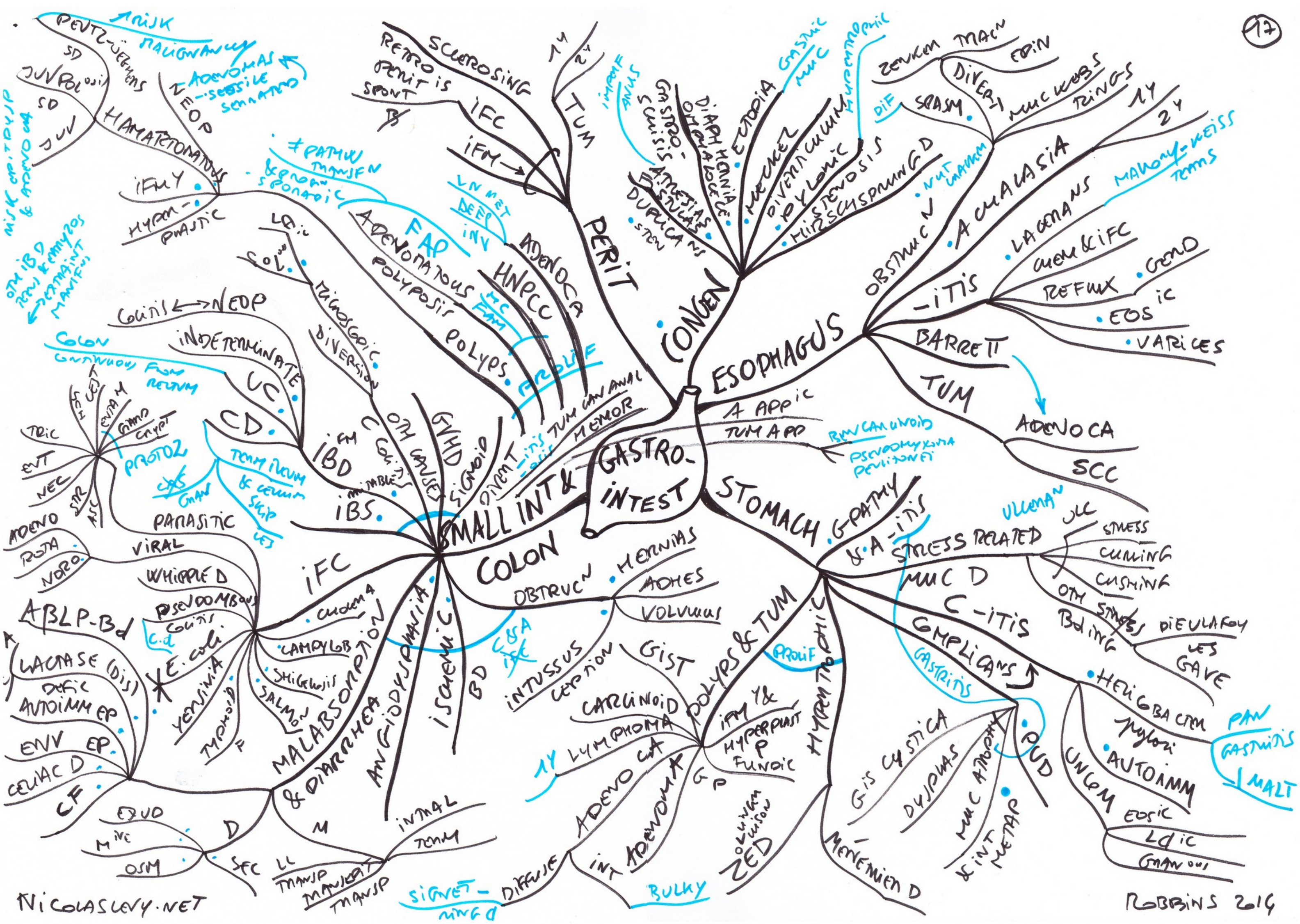
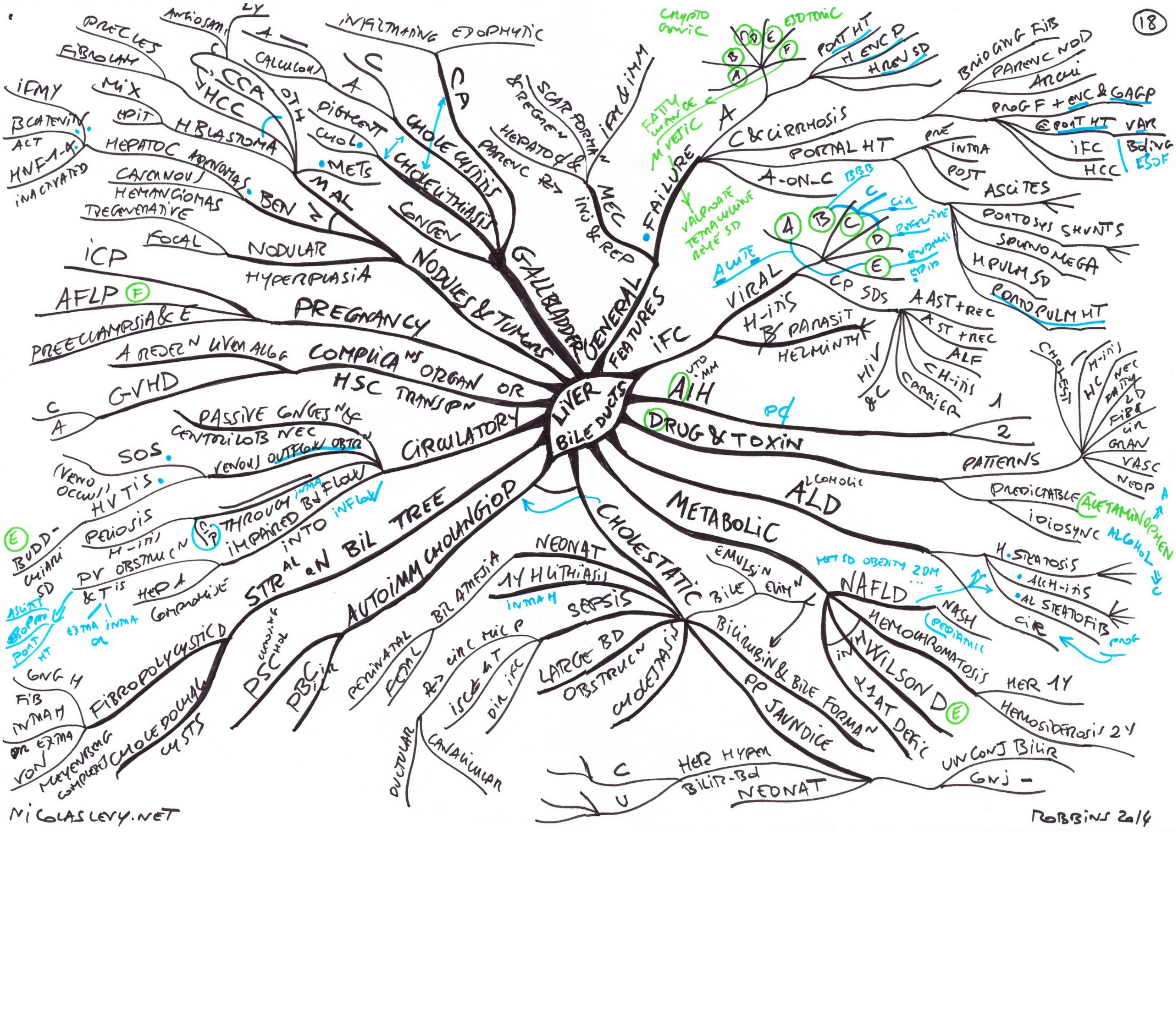
ROBBINS 2014

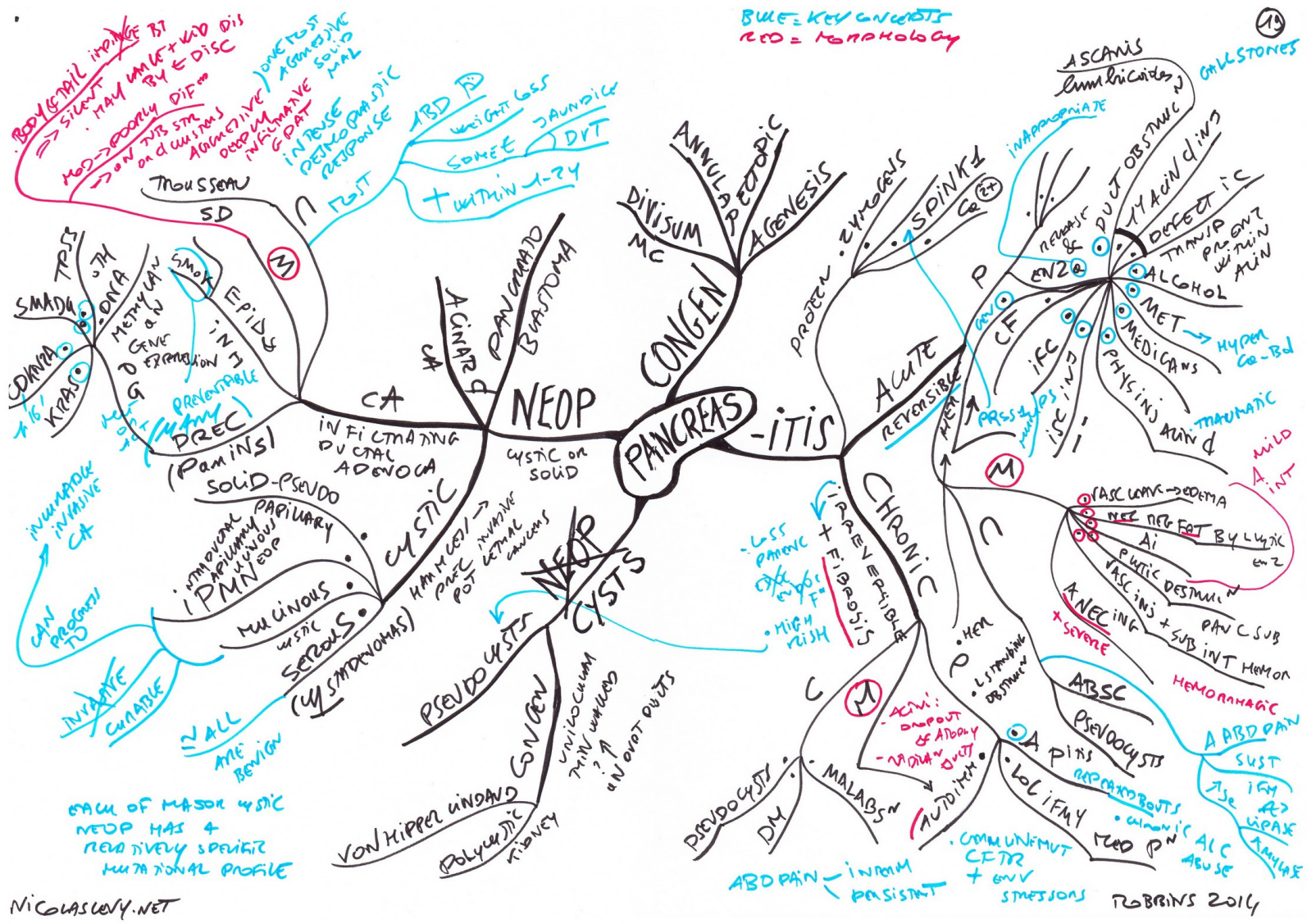

RBC BLEEDING
HEMORRHAGIC DIATHESES
ANEMIAS
HEMOLYTIC
Bd LOSS
ERYTHROPOIESIS
POLYCYTHEMIA
THROMBOCYTOPENIA
VESSEL WALL
CLOTTING
FUNCTION
PLAT NUMBER
TRANSFUSION
DIC
COMPLICATIONS
ALLERGIC
HEMOLYTIC
iFC
TRAUMA
ENDO INJURY
THROMBOPLASTIC SUBSTANCES
VWD
F VIII-VWF COMPLEX
HIV-ASS
DRUG-INDUCED
TTP
HUS
TIC
MANGIOP:
HIT
ITP
HEMOLYSIS
APLAST
CRISIS
INTRA
EXTRA VASC
HS
ENZ DEFECTS:
G6PDH DEFIC
SICKLE
THALASSEMIA
PNH
IMMUNO-
TRAUMA
MEGALOBLASTIC
B12 DEFIC
FOLATE DEFIC
Fe DEFIC
PA
CHRONICD
APLASTIC
PURE RED APLAS
MYELO-PHTHIC
MAR F
OTH FORMS
ENDOC
HEPATOCELLULAR
D CRF
RELATIVE
STRESS
GAISBÖCK SD
PCV
LOW EPO
HIGH
PHYSIO
PATHO
PLAT
DRUG
ABSOLUTE
PRODUC
SURVIVAL
SEQN
DIL
MASS
PRODUC
REDISTRIBUC
SEQUEST
MCHC
MVASC
MANJIT
MEGA
AUTO
OCCLUSC
THAIT
HSH
HF
TOX
TBI
SEQUEST
IFC PROG
SPACE OCCUPIN
1Y HEMAT NEOP
IFN N
Fe SEQR
EPO DEFIC
INH GN
ROBBINS 2016
NIGLASKY.NET

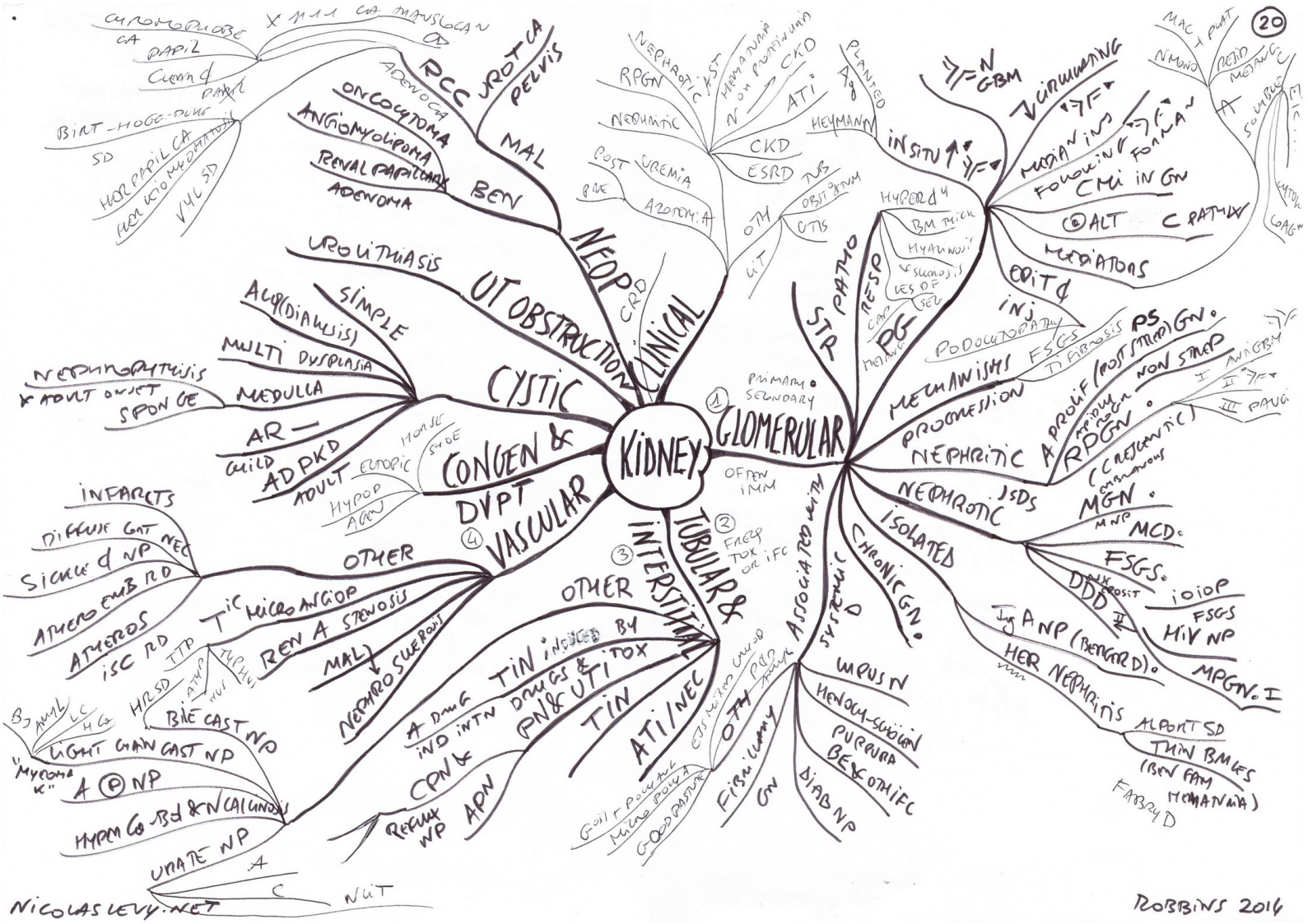

LUNG
SCLC & NSCLC
LARGE
SCC
ADENO
CARCINOID
TUM & MASSES
MEDIAST
HAMART
INT STAGING SYS
LOCAL EFFECTS
NEUROEND
CARCINOMAS
PREC
INV
E&P
HIV
CHRONIC
ABSCESS
TBC
ACUTE PNEUMONIA
MPV
SARS
INFLUENZA
CAVP
CABP
BP
LOB
M
HAP
HEALTH CARE AP
ASPIRATION
TUMORS
TRANSPL
IFC
VASC
PLEURA
CONGEN
TUM
PNX
SOLIT
FIBROUS
MESOT
SARCOMA
EPIT
PLEURITIS
SUP
SERO FIB
EFFUSION
INFECT
IFM
METS
ATELECTASIS
ACQUIRED
REABSORP
COMPRESSIVE
CONTRACT
HEMODYN
MICROVASC INJ (ALV)
P EDEMA
ALI & ARDS (DAD)
ALI
AIP
PG
M
A
ORGING
SPECTRUM COPD
OVERLAP
CENTRIA(L)
PANA(L)
DISTAL
AIRSPACE ENLARGT
+ FIB (IRREG)
IFM MED & LEUKOCT
PROTEASE
ANTI
IMBAL
OXIDATIVE
STRESS
IAC
COMPENSATORY
OBST HYPERINFL
OVER-
BULLOUS
INT
MUCOUS HYPERSECN
IFM
IFC
OBSTRUCTIVE
EMPHYSEMA
COPD
CHRONIC BRONCHITIS
ASTHMA
BRONCHIECTASIS
ENV
FIBROSING
IPF
NSIP
COP
RA
SS
SLE
AUTOIMM
PNEUMOCONI
ASBESTOS
SILICOSIS
GALW
+ EFFECTS
REACTIVITY
AMOUNT
SIZE
AIR POLLUTANTS
RAD
DRUG
COMPLI
THEN
CHRONIC DIFFUSE (RESTRICTIVE)
INTERS
ARCA3
PROTC
& INFILT
LB
CHEST WALL
MAS CAT
SURFACTANT
PAP
AUTOIMM
LANGERHANS
HISTIOC
SMOKING
BRONCHIOLITIS
DIP
EOSINOPHILIA
GRANULOMATOUS
SARCOIDOSIS
HSPIS
LUNG DEFENSE MECHANISMS
PE & INFARCT
PH
PG IDIOP
DIFFUSE HEMOR
SDS
PNEUMONIA SDS
STREP PNEUMONIAE
HAEMOPHILUS INFLUENZAE
MONAXELLA CATARRHALIS
POLYARTHRITS+
GRANULOMATOSIS
IDIOP
HEMOSIDEROSIS
GOODPASTURE
SD
STAPH AUREUS
KLEBSIELLA SPN
PSEUDOMONAS AERUGINOSA
LEGIONELLA PNEUMOPHILA SPN
MYCOPLASMA SPN
ATOP(ALL)
ATOP
DRUG-IND
OCCUP
PG
ACUTEPHASE
LATE P
ENV
GENET
SUS
P
OTH
EXCD
KC
NICOLASLEVY.NET
ROBBINS 2014

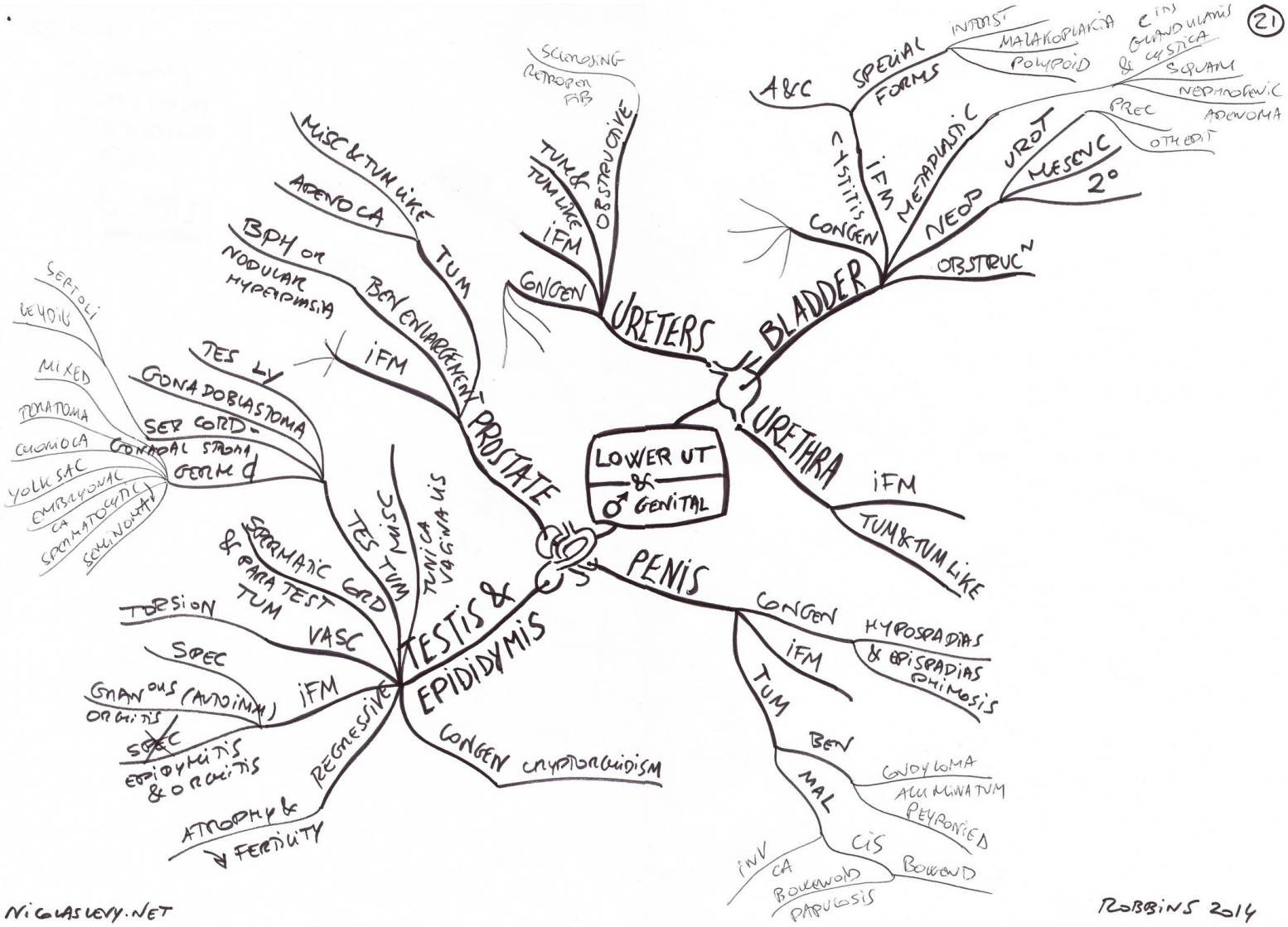
HEAD & NECK
ORAL CAVITY
TEETH & SUPPORTING TIS
CARIES (TOOTH DECAY)
GINGIVITIS
PERIODONTITIS
ULC (CANKER SORES)
APHTHOUS
PROLIFERATIVE
FIBROUS
PERIPH GIANT CELL GRAN
PERIFIBROMAS
PERIPH OSSIFYING
PYOGENIC GRAN
INFLAM FIBROMAS
IFM & REACTIVE
ACIC
GINGIVOSTOMATITIS
HSV
ORAL CANDIDIASIS (THRUSH)
DEEP FUNG
IFC
DENM
HEMAT
MISC
ACANTHOLYS
TZANCK TEST
MANIFESTATIONS
SYST D
HAIRY LEUKOPLAKIA
LEUKOPLAKIA
ERYTHRO
SCC
PRECANC LES
CIS
MAL
MAY
MOLEC BIO
M
ODONTOGENIC CYSTS & TUMORS
DENTIGEROUS CYST
OKC
PERIAPICAL C
ODONTOGENIC TUN
AMELOBLASTOMA
ODONTOMA
SALIVARY GLANDS
IFM
SIALADENITIS
MUCOCEL
SIALOLITH
PAROTITIS
XEROSTOMIA
SJÖGREN SD
ADENOMA
PLEOMORPH
NEOP
MUCOEPID
WARTHIN CA
ADENOID
CYSTIC ADEN
ACINIC
OTH
PAPILLOMATOSUM
CELLBALEV
PARAGANGLIOMA (CHEMODECTOMA TUM)
THYROGLOSSAL DUCT CYST
BRANCHIAL CYST
(CERV LYMPHOEPIT)
EARS
OTOSCLEROSIS
CHOLESTEATOMAS
IFM
AOISM
PARAGANGLIOMAS
CAS
LABIS
POLYPS
OTOSCL
ABSCESS
CHOL
NEUROMA
NP CA
OLF NB
ESTESIO NEUROBLAST
SINONASAL
NP
ANGIOFIBROMA
(JUVENILE)
NASOPHAR
IFM
SNUSES & NASOPHAR
TUM NOSE
H. influenzae
SINGLE PROLIFERATIVE NOD (VC & POLYPS) IFM
SQUAM PAPILLOMA
LARYNX
CA
SCC
AIRWAYS
UPPER
NOSE
IFM
RHINITIS
ALLERG
NASAL
POLYPS
SINUSITIS
CANAL
NECKING LES
SPREADING FUNG
LETHAL MIDLINE GRAN
WG
KAMIAGAWA
MUCOR
BE
SI
ROBBINS 2014
NICOLASLEVY.NET


GASTRO-INTEST
ESOPHAGUS
STOMACH
SMALL INT & COLON
CONGEN
PERIT
SCLEROSING
RETRO PERIT IS
SPONT
IFC
IFM
TUM
1Y
2Y
ECTOPIA
GASTRIC MUC
MECKEL DIVERTICULUM
PYLORIC STENOSIS
HIRSCHSPRUNG D
DIAPHR HERNIA
GASTROSCHISIS
ATRESIAS
FISTULAS
DUPLICATIONS
STEN
ZENKER
EPIN
DIVERT
SPASM
MUC WEBS
RINGS
OBSTRUCN
ACHALASIA
LACERATIONS
MALLORY-WEISS TEARS
-ITIS
CHEM & IFC
REFLUX
GERD
EOS IC
VARICES
BARRETT
TUM
ADENOCA
SCC
A APPIC
TUM APP
PSEUDOMYXOMA PERITONEI
G-PATHY
& A-ITIS
STRESS RELATED
ULC
STRESS
CURLING
CUSHING
DIEULAFOY
GAVE
MUC D
C-ITIS
COMPLICATIONS
GASTRITIS
PUD
HELICOBACTER PYLORI
AUTOIMM
PAN GASTRITIS
MALT
UNCOM
EOSIC
LGIC
GRANULOMATOUS
HYPERTROPHIC
MENETRIER D
ZED
POLYPS & TUM
GIST
CARCINOID
LYMPHOMA
ADENOCA
ADENOMA
FUNDIC
HYPERPLAST
INT
DIFFUSE
SIGNET-RING
BULKY
OBSTRUCN
HERNIAS
ADHES
VOLVULUS
INTUSSUSCEPTION
ISCHEMIC
ANGIODYSPLASIA
MALABSORPTION & DIARRHEA
CF
CELIAC D
ENV EP
AUTOIMM EP
LACTASE (DIS) DEFIC
ABLP-BD
E. COLI
PSEUDOMEMBRANOUS COLITIS
CHOLERA
CAMPYLOB
SHIGELLOSIS
SALMON
TYPHOID
YERSINIA
WHIPPLE D
VIRAL
PARASITIC
ADENO
ROTA
NORO
PROTOZ
IFC
IBS
IBD
CD
UC
INDETERMINATE
DIVERSION
OTH CAUSES
COLITIS
GVHD
SIGMOID
DIVERT
MEMOR
POLYPS
ADENOMATOUS POLYPOSIS
FAP
HNPCC
ADENOCA
HAMARTOMATOUS
PEUTZ-JEGHERS
JUV POL
HYPERPLASTIC
NEOP
ADENOMAS
PROLIF
NICOLASLEVY.NET
ROBBINS 2014


LIVER BILE DUCTS
GENERAL FEATURES
FAILURE
A
C & CIRRHOSIS
A-ON-C
PORTAL HT
PRE
INTRA
POST
ASCITES
PORTOSYS SHUNTS
SPLENOMEGA
H PULM SD
PORTOPULM HT
BRIDGING FIB
PARENC NOD
ARCHI
PROG F + ENC & GAGP
PORT HT
VAR
IFC
HCC
Bding ESOF
PORT HT
H ENC P
H REN SD
EXOTONIC
CRYPTO GENIC
FATTY CHANGE
M VESIC
VALPROATE
TETRACYCLINE
REYE SD
MEC
INJ & REP
IFM & IMM
SCAR FORMAN & REGEN
HEPATO & PARENC RT
IFC
VIRAL
ACUTE
A B C D E
CP SDs
A AST + REC
AST + REC
ALF
CH-ITIS
CARRIER
HIV & C
H-ITIS
PARASIT
HELMINTH
AIH
AUTO IMM
DRUG & TOXIN
1
2
PATTERNS
CHOLEST
H-ITIS
HC NEC
FATTY
LD
FIBR
CIR
GRAN
VASC
NEOP
PREDICTABLE
ACETAMINOPHEN
ALCOHOL
IDIOSYNC
ALD
ALCOHOLIC
H. STEATOSIS
ALCH-ITIS
AL STEATOFIB
CIR
PROG
METABOLIC
NAFLD
MET SD OBESITY 2DM
NASH
PEDIATRIC
HEMOCHROMATOSIS
HER 1Y
HEMOSIDEROSIS 2Y
WILSON D
A1AT DEFIC
IN
CHOLESTATIC
BILE
EMULSIN
ELIMN
BILIRUBIN & BILE FORMAN
PP JAUNDICE
UNCONJ BILIR
CONJ
NEONAT
HER HYPERBILIR-BD
C
U
CHOLESTASIS
LARGE BD OBSTRUCN
SEPSIS
INTRAH
1Y HLITHIASIS
NEONAT
BIL ATRESIA
PERINATAL
FOETAL
AUTOIMM CHOLANGIOP
PBC
PSC
STR AL AN BIL TREE
FIBROPOLYCYSTIC D
CHOLEDOCHAL CYSTS
VON MEYENBURG COMPLEXES
CONG H FIB
INTRAH OR EXTRA
DUCTULAR
CANALICULAR
CIRCULATORY
INTO
THROUGH
IMPAIRED BF FLOW
INFLOW
PV OBSTRUCN
& T
H-ITIS
PELIOSIS
EXTRA INTRA
HEP A
COMPROMISE
BUDD-CHIARI SD
HV T
SOS
VENO OCCLUS
VENOUS OUTFLOW OBSTR
PASSIVE CONGESTION
CENTRILOB NEC
COMPLICAS ORGAN OR HSC TRANSPN
GVHD
C
A
PREGNANCY
AFLP
ICP
PREECLAMPSIA & E
NODULES & TUMORS
NODULAR HYPERPLASIA
FOCAL
REGENERATIVE
BEN
MAL
CAVERNOUS HEMANGIOMAS
HEPATOC ADENOMAS
HNF-1-A
INACTIVATED
ACT
B CATENIN
IFMY
H BLASTOMA
EPIT
MIX
FIBROLAM
PRECURS
HCC
CCA
ANGIOSARC
METS
GALLBLADDER
CONGEN
CHOLELITHIASIS
CHOL
PIGMENT
CHOLECYSTITIS
A
C
CA
INFILTRATING
EXOPHYTIC

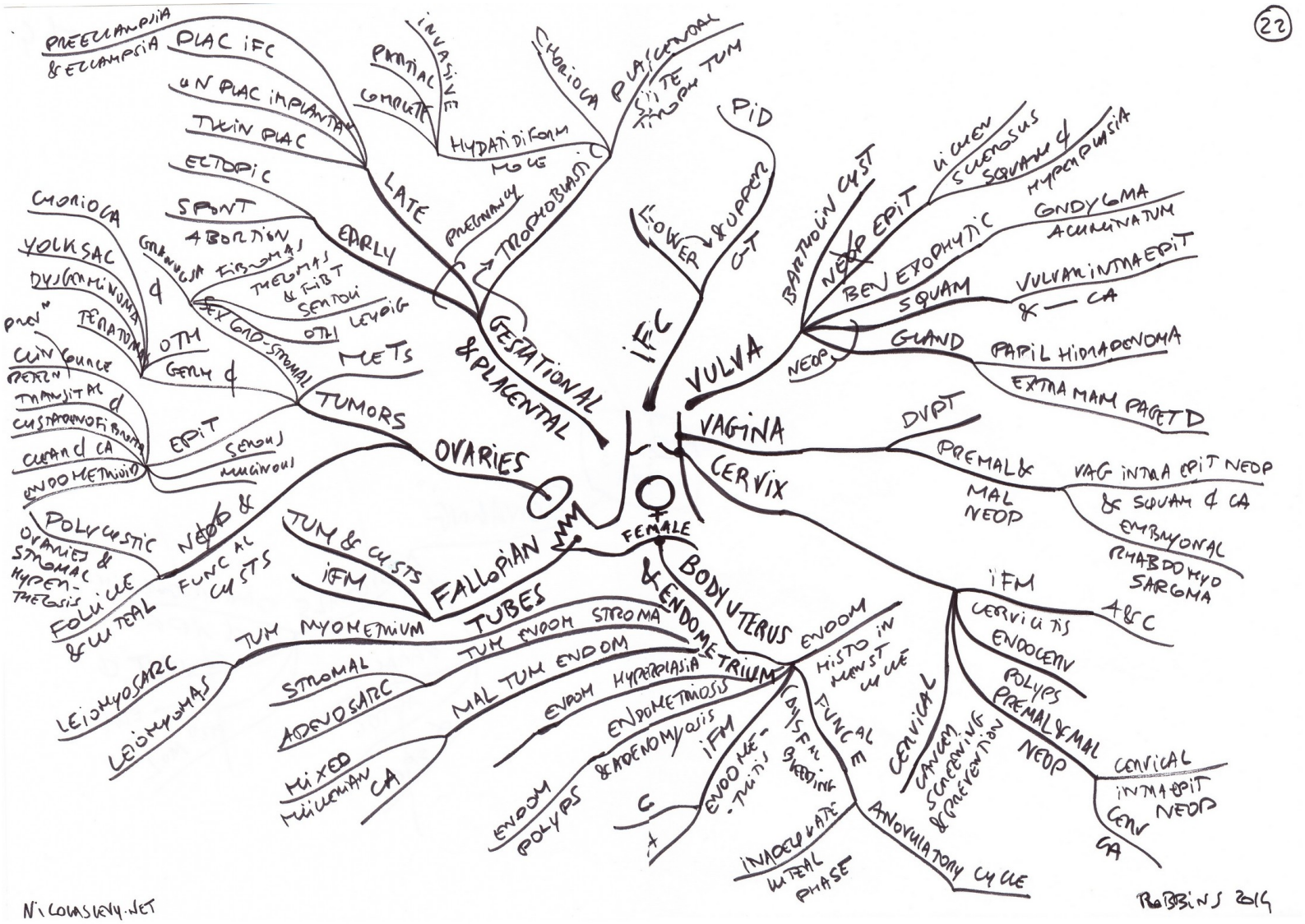

PANCREAS
NEOP
CONGEN
-ITIS
CYSTS
CA
ACINAR CA
PANCREATOBLASTOMA
DIVISUM
MC
ANNULAR ECTOPIC
AGENESIS
PROTEIN
ZYMOGENS
SPINK1
Ca2+
ASCARIS lumbricoides
GALLSTONES
ACUTE
REVERSIBLE
CHRONIC
PANCREATITIS
FIBROSIS
AUTOIMM
ALCOHOL
MET
MEDICAMS
PHYSINJ
ACIDD
TRAUMATIC
MILD
ABD PAIN
SUST
IGH
AST
LIPASE
AMYLASE
ABSC
PSEUDOCYSTS
ABCESS
LOCIFMY
MOD PN
COMMUNFMUT CFTR + ENV STRESSORS
ALC ABUSE
MALABSN
DM
PSEUDOCYST
ABD PAIN
INTERM PERSISTANT
ROBBINS 2016
NICOLASLEVY.NET
BLUE = KEY CONCEPTS
RED = MORPHOLOGY
19


KIDNEY
NEOP
RCC
ONCOCYTOMA
ANGIOMYOLIPOMA
RENAL PAPILLARY ADENOMA
MAL
BEN
UT OBSTRUCTION
UROLITHIASIS
CYSTIC
SIMPLE
ACQ (DIALYSIS)
MULTI DYSPLASIA
MEDULLA
NEPHRONOPHTHISIS
JUVENILE
ADULT
SPONGE
AR
CHILD
AD PKD
ADULT
CONGEN &
DVPT
VASCULAR
OTHER
INFARCTS
DIFFUSE GAT NEC
SICKLE CELL NP
ATHEROEMB RD
ATHEROS
ISC RD
TIC
MICROANGIOP
REN A STENOSIS
MAL
NEPHROSCLEROSIS
TTP
HRSD
BILE CAST NP
LIGHT CHAIN CAST NP
"MYELOMA K"
A (P) NP
HYPER CA-BD & N CALCINOSIS
URATE NP
NICOLASLEVY.NET
CLINICAL
GLOMERULAR
PRIMARY
SECONDARY
OFTEN IMM
STR PATHO
NESP
RPG
MECHANISMS
PROGRESSION
NEPHRITIC
NEPHROTIC
ISOLATED
CHRONIC GN
ASSOCIATED WITH
SYSTEMIC
IMPUS N
HENOCH-SCHÖLEIN PURPURA
BENIGN
DIAB NP
FIBRILLARY GN
OTH
ANP (BERGER D)
HER NEPHRITIS
ALPORT SD
THIN BM LES
(BEN FAM HEMATURIA)
FABRY D
MPGN I
MIV NP
FSGS
IOIOP
DDD
MCD
MGN
FSGS
JSDs
RPGN
PS
NON STEP
APROLIF (POST STREP) GN
CRESCENTIC
ANTI GBM
PAUCI
CIRCULATING
CMI IN GN
ALT
C RATIO
MEDIATORS
EDIT
INJ
PODOCYTOPATHY
FSGS
TUBULAR &
INTERSTITIAL
OTHER
TIN
ATI/NEC
A DRUG
IND INTN
DRUGS &
PN & UTI
TOX
CPN
APN
REFLUX NP
NEPHROPATHY
ATI
CKD
ESRD
OTH
UTIS
OBST
TUB
AZOTEMIA
POST RENAL
UREMIA
RPGN
NEPHROTIC
HEYMANN
PLANTED
GBM
INSITU
HYPERd
BM THICK
HYALINOSIS
LES OF SEL
COMP
NEPHRO
MAC + PLAT
NEPHRO
RETIP
MESANGIAL
COLLAGEN
GOOD PASTURE
FIBRILLARY
GN
DIAB NP
HENOCH-SCHÖLEIN PURPURA
BENIGN
OTHER
ETC
ROBBINS 2016



NICHOLASLEVY.NET

ROBBINS 2014



NICOMASTERY.NET

ROBBINS 2014

BREAST

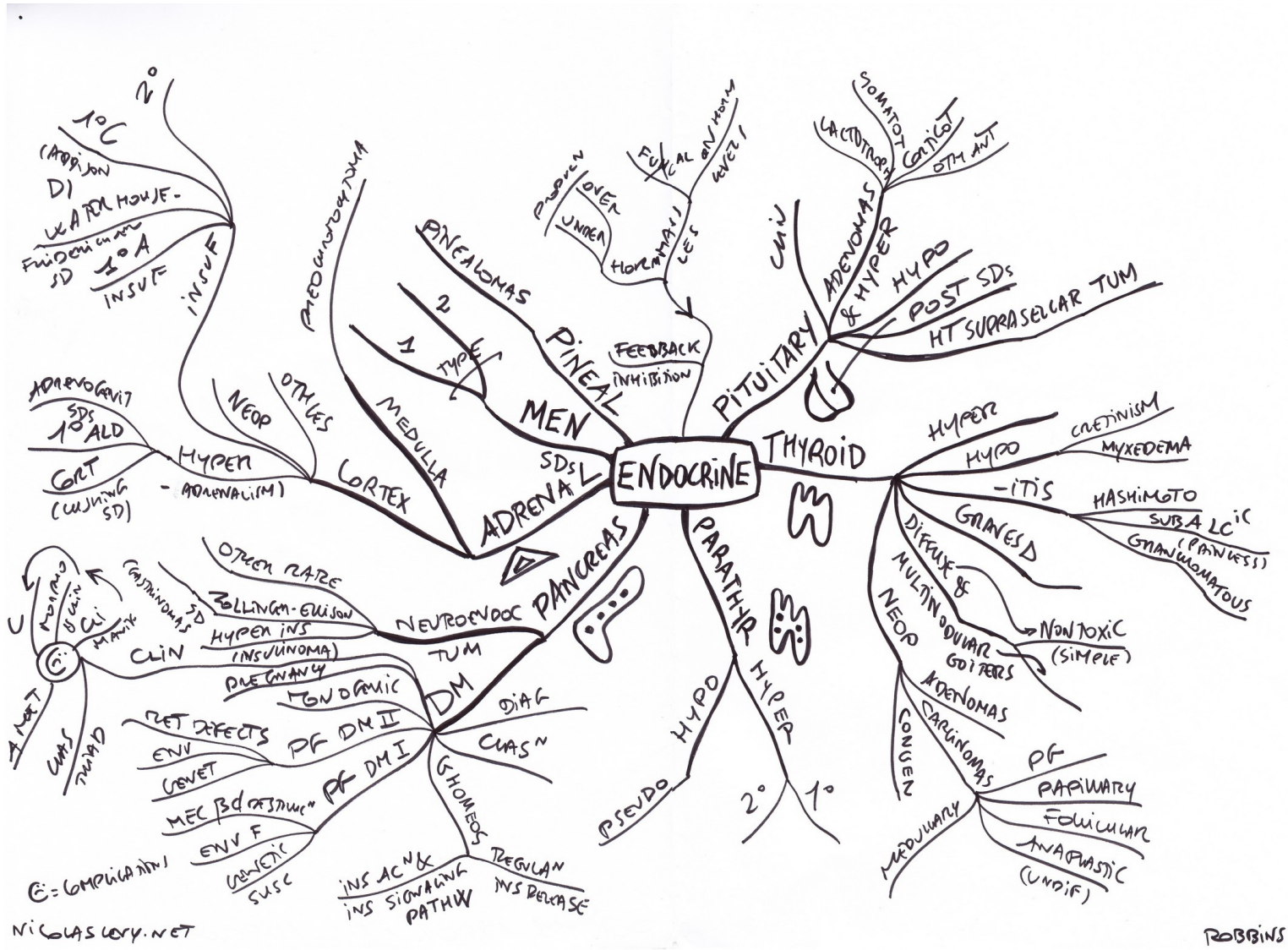
- TDLU
- LS
- MDL
- S
- IV

CLINICAL PRESENTATIONS

- DVPT
  - PAIN (MASTALGIA or MASTODYNIA)
  - PALPABLE MASSES
  - NIPPLE DISCHARGE
  - MAMMOGRAPHIC SIGNS
  - SENSITIVITY & SPECIFICITY → AGE
  - DENSITIES
  - Ca NS
  - DCIS
- ACQUIRED
- INVERSION
- GYNECOMASTIA
- AXILLARY BREAST TIS
- ACCESSORY or LEDOMA
- MILK LINE
- PERMANENT
- INTRALOB INFLAMMATORY
- STROMA
- EPIT
- MYO-
- OTHER MALIGNANT
- STROMAL
  - ONLY
  - BIPHASIC
  - PHYLLODES
  - FIBROADENOMA
  - LES INTERLOBULAR STROMA
  - MAL
  - BEN
  - MC
  - TTT
  - LOC
  - SYST
  - IMPROVEMENTS
  - NEW RANDOMIZED TRIAL
  - ANGIOSARC
  - SPOR
  - RADIAN
  - MC STROMAL MAL
- PROGNOSTIC & PREDICTIVE FACTORS
  - BIO
  - MOLEC
  - SUBTYP
  - SPEC HISTO
  - TMP
  - HISTO
  - GRADE
  - PROLIF RATE
  - ER
  - HER2/NEU
  - PR
  - TERO DISTINCTIVE PATHWAYS + CHATS LINK BIO & CLI
  - LOC & ADVANCED
  - IFM
  - CA LVI
  - SIZE
  - LN METS
  - METS
  - INV VS CIS
  - ♂
- SPECIAL TYPES
- INVASIVE (INFILTRATING) CIS
  - NOTTINGHAM HISTO SCORE
    - GRADED USING
    - CLAS: HOMOVER & HER2 & PROLIFERATION
    - HIGH
    - LOW
    - PROLIFERATION
    - ER⊕ HER2⊕
    - ER⊕ HER2⊖
    - HER2⊕
    - ER⊖ HER2⊖
  - PAGET'S
  - NON COMEDO
  - COMEDO CA
  - DCIS
    - ↔ CLIN BIO THER
    - * BILAT RISK
    - * TTT LOCY AS SUBSEQ OCCURRENCE SENSITIVE
  - LCIS
  - CIS
  - GENY
  - LARGER < 1 cm
  - PETUNIUM FIXED CUL DENSIFYING => DIMPLING
  - MC SITE
  - MAL
  - 2NCC
- TYPES
- CARCINOMA
- TUMORS
  - MASSIVITY
  - CANCER DIPT
  - BEN EPIT
  - RISK MANY CHOOSE SURVEILLANCE OR CHEMO PREV
  - SURG
  - CLINICAL SIGNIFICANCE
  - ATYPIA
  - PROLIF
  - CIS
  - GYNECOMASTIA
  - SOME FEAT
  - PAPILLOMAS
  - COMPLEX SCLEROSING LES
  - SCLEROSING ADENOSIS
  - EPIT HYPERPL
  - ADENOMAS
  - LACTATIONAL
  - ADENOSIS
  - FIBROSIS
  - CYSTS
  - OFTEN + APOC METAPL
  - PROLIF (FIBROCYSTIC)
  - ATYPIA
  - ALH
    - TYPICAL*
    - OBULAR*
    - HYPERPLASIA
  - ADH
  - ER⊕ HER2⊕
  - ER⊕ HER2⊖
  - ER⊖ HER2⊖
  - HER-2⊕
  - ER⊕ HER-2⊕
  - MOLEC MEC CARCINOGEN & NUM PROG
  - SPORADIC
  - FAMILIAL
  - ETIOLOGY & PATHOGEN
  - INCIDENCE & EPIDEMIO
  - ER
  - HER-2
    - ⊕ 50-65%
    - ⊕ 10-20%
    - ⊕⊕ 10-20%
  - SUPPORTING STROMAL HORMONAL MILIEU
  - RF
  - BREAST FEEDING
  - EXER
  - OBESITY
  - DIET
  - GENDER
  - GENUINE MUTATIONS
  - ASSIGNED REL
  - RACE OR ETHNICITY
  - AGE
  - ACCUM DNA ALT + EPIGENET
  - BREAST DENSITY, RADIAN
  - EXP & CA
  - CONTRALAT BREAST OR ENDOM
  - NICGASCRY.NET
  - ETIOLOGY
  - EXPOSURE
  - BEHAV
  - ALT + LIFE STATUS
  - ALT + LIFE STATUS
  - HORMONE
- IFM
  - RARE OUTSIDE LA CATIONAL
  - POSSIBILITY IFM Y CA* MIMICKING SHOULD BE ALWAYS GUIDDRED
  - ACUTE MASTITIS
    - STAPH
    - STREP
  - SQUAM METAPL
    - KERATINIZING
    - = REC SUBAREOLAR ABSCESS
    - = ZUSKAD
  - LACTIFEROUS DUCTS
  - DUCT ECTASIA
    - SPEC CAUSE MUST BE DET AS TTT
    - ANTIBIOT
    - SPIROLOJY
    - SURG
  - FAT NEC
  - LYMPHOCYTIC MASTOP (SCLEROSING LOBULITIS)
  - GRANULOMATOUS MASTITIS
  - LOBULAR
- USUALLY CAUSE ST BUT FREQ DETECTED
- WITHOUT
- 1 GRU LNR
- 2 MUCINOUS (COLLOID)
- 3 TUBULAR
- 4 PAPILLARY
- 5 APOC CA
- 6 MICROPAPIC
- 7 MEDULLARY
- 8 SECRETORY
- 9 IFM Y
- I
- II
- III

MORPHOLOGY KEY CONCEPTS

ROBBINS 2014


ENDOCRINE
ADRENAL
CORTEX
1°C
2°
(ADDISON)
DI
WATERHOUSE-FRIDERICHSEN SD
1° A INSUF
INSUF
HYPER (ADRENALISM)
ADREVOGENIT SDs
1° ALD
GRT (CUSHING SD)
NEOP
OTHES
MEDULLA
PHEOCHROMOCYTOMA
MEN
1
2
TYPE
PINEAL
PINEALOMAS
PROPER
OVER
UNDER
HORMONAL LES
FUNCTIONAL ON HORM LEVEL
FEEDBACK INHIBITION
PITUITARY
CNS
ADENOMAS & HYPER
LACTOTROPS
SOMATOT
CORTICOT
OTH ANT
HYPO
POST SDs
HT SUPRASELLAR TUM
THYROID
HYPER
HYPO
CRETINISM
MYXEDEMA
-ITIS
HASHIMOTO
SUBACUTE (PAINFUL)
GRANULOMATOUS
GRAVES D
DIFFUSE & MULTINODULAR GOITERS
NONTOXIC (SIMPLE)
NEOP
ADENOMAS
CARCINOMAS
CONGEN
PF
PAPILLARY
FOLLICULAR
ANAPLASTIC (UNDIF)
MEDULLARY
PARATHYR
HYPER
1°
2°
HYPO
PSEUDO
PANCREAS
NEUROENDOC TUM
ZOLLINGER-ELLISON
HYPER INS (INSULINOMA)
OTHER RARE
(CA)TECHOLAMINES SD
DM
CLIN
POLYURIA
POLYDIPSIA
MANIF
PREGNANCY
GONADOMIC
DIAG
CLASS
PF DM II
PF DM I
GENET DEFECTS
ENV
GENET
MEC β CELL RESISTANCE
ENV F
GENETIC SUSC
HOMEOS
REGULAN
INS RELEASE
INS ACTN & INS SIGNALING PATHW
CLIN
PATHOPHYS
CLAS
TRIAD
ANAT
☺ = COMPLICATIONS
NICOLASLORY.NET
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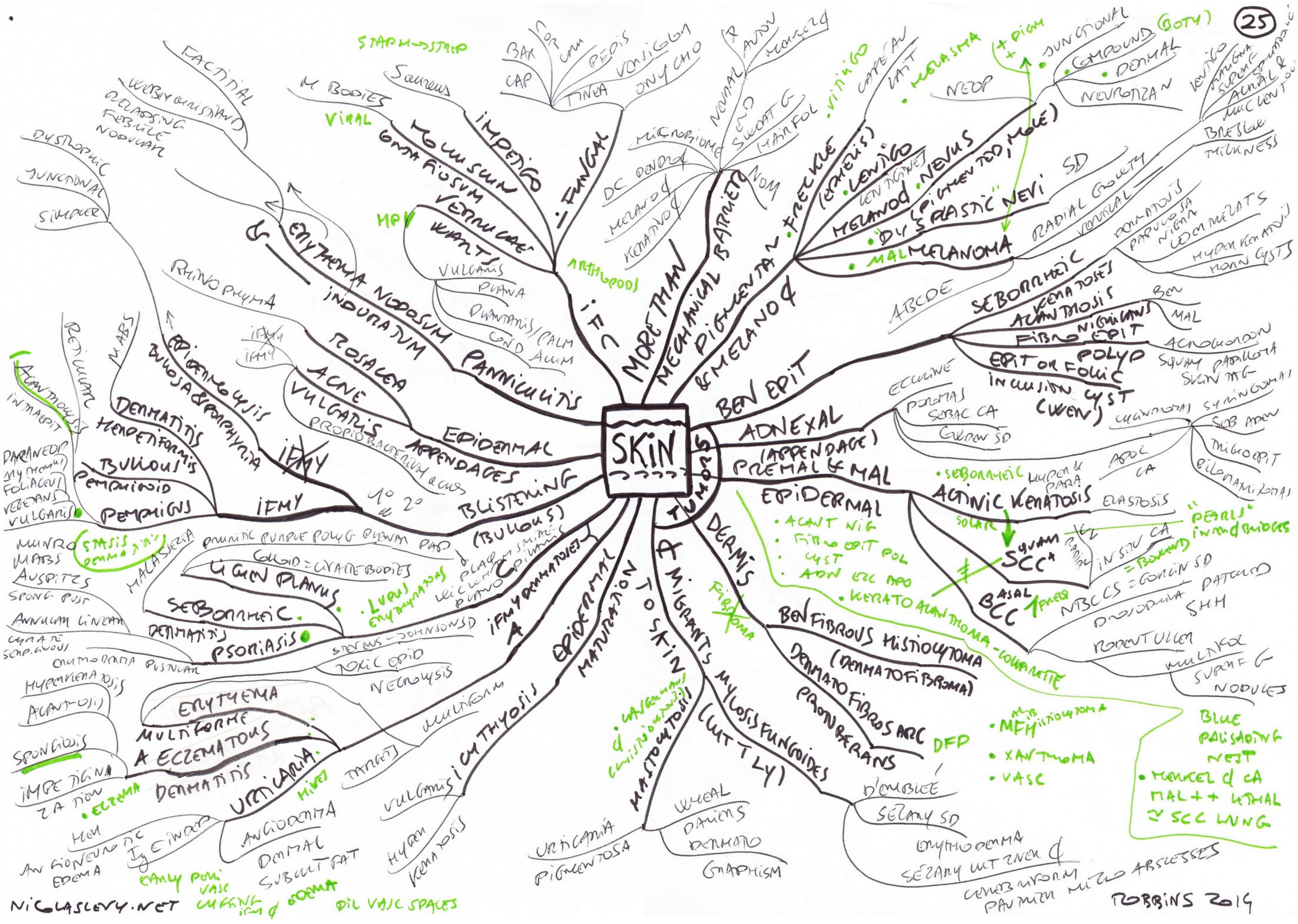
25
SKIN
IFC
MOLLUSCUM CONTAGIOSUM
VERRUCAE
WARTS
IMPETIGO
FUNGAL
TINEA
VIRAL
HPV
ARTHROPODS
MORE THAN MECHANICAL BARRIER
PIGMENTATION & MELANOCYTES
FRECKLE
LENTIGO
MELANOCYTIC NEVUS
DYSPLASTIC NEVI
MELANOMA
VITILIGO
MELASMA
JUNCTIONAL
COMPOUND
DERMAL
RADIAL GROWTH
VERTICAL
BEN EPIT
SEBORRHEIC KERATOSES
ACANTHOSIS NIGRICANS
FIBROEPIT POLYP
EPIT OR FOLLIC INCLUSION CYST (WEN)
ADNEXAL (APPENDAGE)
PREMAL & MAL EPIDERMAL
ACTINIC KERATOSIS
SCC
BCC
DERMIS
BEN FIBROUS HISTIOCYTOMA (DERMATOFIBROMA)
DERMATOFIBROSARC PROTUBERANS
DFP
XANTHOMA
VASC
MIGRANTS TO SKIN
MYCOSIS FUNGOIDES
SÉZARY SD
MASTOCYTOSIS
URTICARIA PIGMENTOSA
EPIDERMAL MATURATION
ICHTHYOSIS
VULGARIS
IFMY DERMATOSES
URTICARIA
ANGIOEDEMA
A ECZEMATOUS DERMATITIS
ERYTHEMA MULTIFORME
STEVENS-JOHNSON SD
TOXIC EPID NECROLYSIS
PSORIASIS
SEBORRHEIC DERMATITIS
LICHEN PLANUS
LUPUS ERYTHEMATOSUS
BLISTERING (BULLOUS)
PEMPHIGUS
BULLOUS PEMPHIGOID
DERMATITIS HERPETIFORMIS
EPIDERMOLYSIS BULLOSA & PORPHYRIA
EPIDERMAL APPENDAGES
ACNE VULGARIS
PROPIONIBACTERIUM ACNES
ROSACEA
RHINOPHYMA
PANNICULITIS
ERYTHEMA NODOSUM
ERYTHEMA INDURATUM
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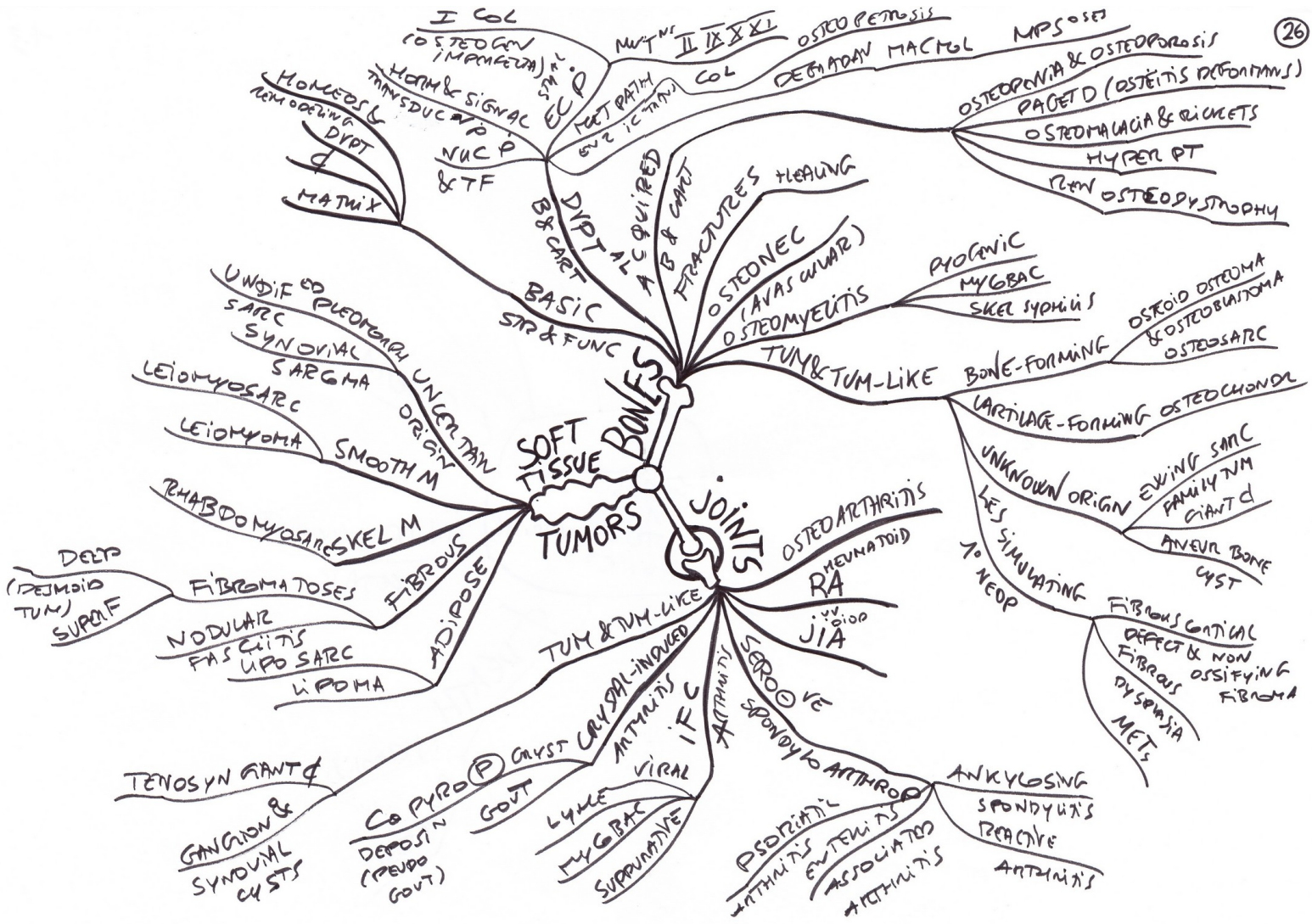
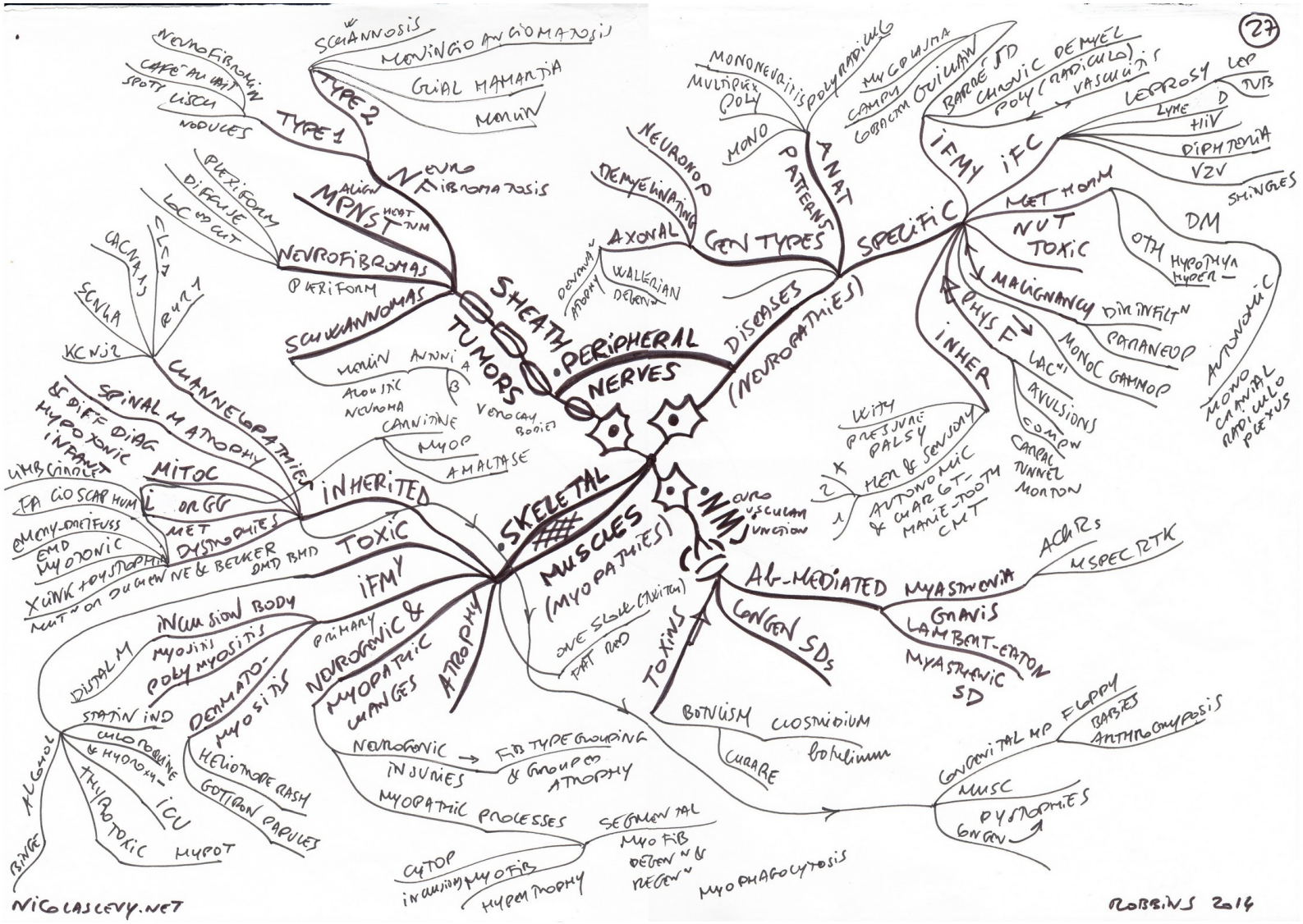

BONES
I COL
(OSTEOGEN IMPERFECTA)
MUT^NS II IX X XI
OSTEOPETROSIS
MPS OSD
MACROL
DEGRADAN
COL
ECP
MATRIX & SIGNAL TRANSDUCTION
NUC P & TF
HOMEOS & REMODELING
DVPT
MATRIX
OSTEOPENIA & OSTEOPOROSIS
PAGET D (OSTEITIS DEFORMANS)
OSTEOMALACIA & RICKETS
HYPER PT
RENAL OSTEODYSTROPHY
DVPT
ACQUIRED
B & CART
FRACTURES
HEALING
OSTEONEC
(AVASCULAR)
OSTEOMYELITIS
PYOGENIC
MYCBAC
SKEL SYPHILIS
BASIC
STR & FUNC
TUM & TUM-LIKE
BONE-FORMING
OSTEOID OSTEOMA & OSTEOBLASTOMA
OSTEOSARC
CARTILAGE-FORMING
OSTEOCHONDR
UNKNOWN ORIGIN
EWING SARC
FAMILY TUM
GIANT C
ANEUR BONE CYST
LES SIMULATING NEOP
FIBROUS CORTICAL DEFECT & NON OSSIFYING FIBROMA
FIBROUS DYSPLASIA
METS
SOFT TISSUE TUMORS
UNDIFED PLEOMORPH SARC
SYNOVIAL SARCOMA
UNCERTAIN ORIGIN
LEIOMYOSARC
LEIOMYOMA
SMOOTH M
RHABDOMYOSARC
SKEL M
FIBROUS
DEEP (DESMOID TUM) SUPERF
FIBROMATOSES
NODULAR FASCIITIS
LIPOSARC
LIPOMA
ADIPOSE
JOINTS
OSTEOARTHRITIS
RA
RHEUMATOID
JIA
JUV IDIOP
TUM & TUM-LIKE
CRYSTAL-INDUCED ARTHRITIS
CO PYRO P CRYST
GOUT
DEPOSIT (PSEUDO GOUT)
TENOSYN GIANT C
GANGLION & SYNOVIAL CYSTS
IFC
LYME
MYCBAC
SUPPURATIVE
VIRAL
ARTHRITIS
PSORIATIC ARTHRITIS
ENTERITIS ASSOCIATED ARTHRITIS
SERO ⊖ VE SPONDYLOARTHROP
ANKYLOSING SPONDYLITIS
REACTIVE ARTHRITIS



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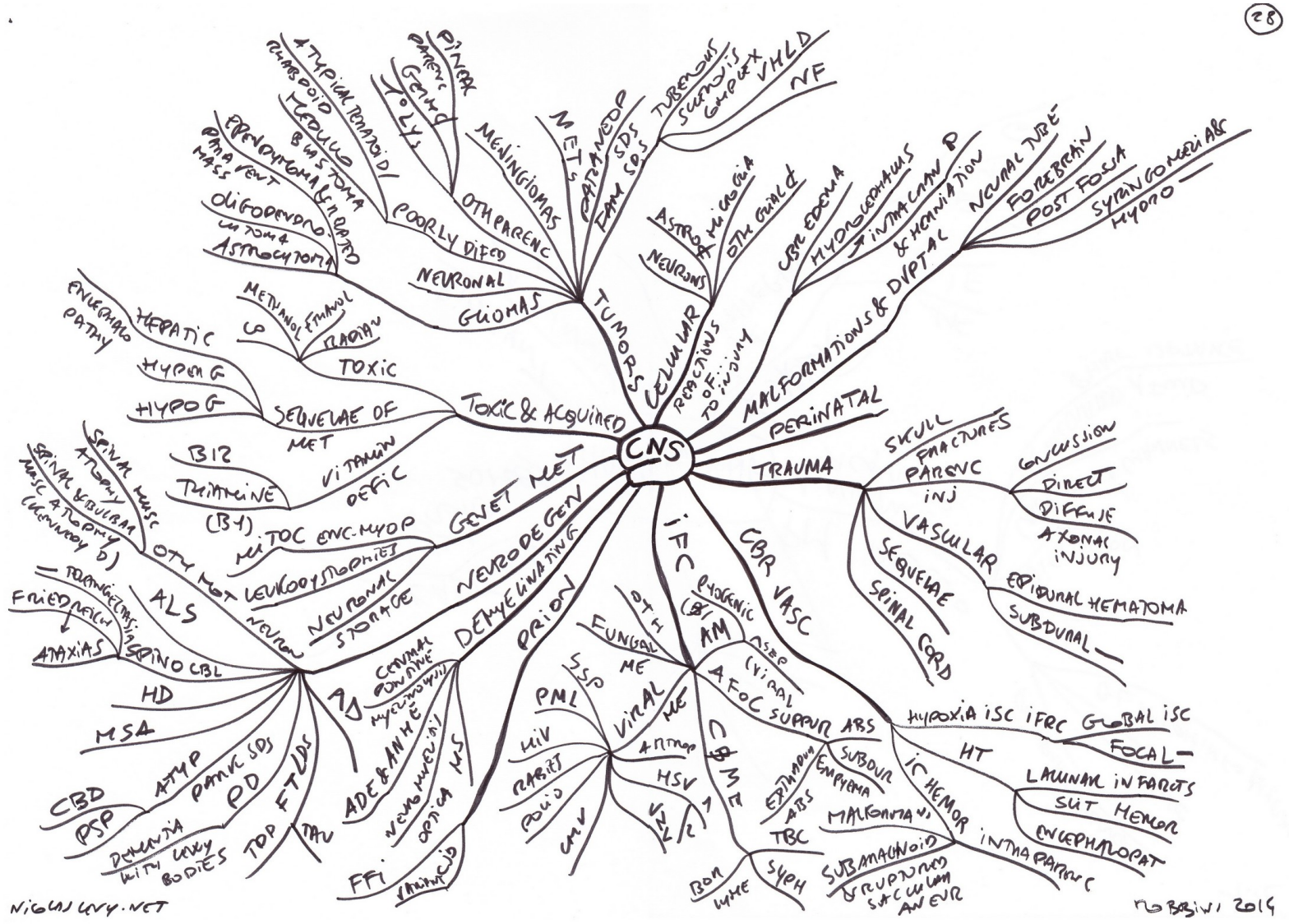

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EYE

- ORBIT
  - OTH IFMY
    - CELLULITIS
    - MUCORMYC
    - GRANULOMATOSIS
    - WITH ANGIITIS IFMY
    - PSEUDOTUM
  - THYROID OPHTHALMOPAT (GRAVES D)
  - END-STAGE: RHTHISIS BULBI
  - FUNCTIONAL ANATOMY & PROPTOSIS
  - NEOP
  - FA
    - CONJ
    - ELEPHANTIASIS
    - CHALAZION
  - NEOP
    - BCC
    - SEBACEOUS CA
    - KS
    - PALPEBRAL
    - FORNIX
    - VIRAL
    - BULBAR
    - CONJUNCTIVITIS
    - DRY EYES
    - -ITIS
    - CHLAMYDIA
    - TRACHOMATIS
    - CICATRICIAL PEMPHIGOID
  - FA
    - SCARRING
    - DELLE
  - PINGUECULA & PTERYGIUM
  - NEOP
    - INTRAEPIT
    - SCC
    - MUCOEPIDERMOID CA
    - NEVI
    - IFMED
    - JUVENILE
    - MELANOMAS
    - 1° ACQ
    - MELANOSIS + ATYPIA ≈ MIS
- OPTIC NERVE
  - OPT NEURITIS
    - OTH
      - GANGLIOMATOUS DANGER
      - PAPILLEDEMA
      - ANTISC OPTIC NP
      - LYMPHOMA
      - NEOP
        - RETIND BLASTOMA
          - FLEX NEUR-WIN TOR STEINER ROSETTES
  - PILOCYTIC ASTROCYTOMAS
- RETINA & VITREOUS
  - RETINITIS
  - OTHER
    - RETINITIS PIGMENTOSA
    - DEAN
    - AMD
      - GENERATED AGAINST DEGENERATION
      - NEOVASC (WET)
      - ATROPHIC (DRY)
      - BRUCH'S MB
  - RAO OCCLUSIONS
  - SICKLED RP
    - RVASCULITIS
    - RADIAN RD
  - RPAT PREMATURITY
    - (RETRO LENT FIBROPLASIA)
    - RVASCD
      - NEOVASCN
      - RETINAL HEMT
        - RHEGMATOGENOUS
  - FA
  - DM
    - PROLIF
  - HT
    - NON PROLIF
    - ELSCHNIG SPOTS
    - MICRO ANEUR
- UVEA
  - NEOP
    - UVEAL NEVI & MELANOMAS
    - 1°
  - UVEITIS
    - NON
    - JUV RA
    - SARCOIDOSIS
    - SYMPATHETIC OPHTHALMIA
  - ENDOPHTHALMITIS & PAN
    - EXOG
    - ENDOG
- ANT SEGMENT
  - FA
    - CATARACT
      - ANT SEGM
      - LENS
      - POST POLE
      - POST SUBCAPS
      - PHACOLYSIS
    - GLAUCOMA
      - NON LOW TENSION
      - OPEN-ANGLE
        - 1° ANGLE CLOSURE
        - PSEUDOEXFOLIATION
        - 2°
        - FUNCAL
        - 1°
- CORNEA
  - FA
    - NOT MYOPIA HYPEROPIA
    - BOWMAN LAYER
    - CORNEAL ENDOT
    - DESCEMET MB
    - ACANTHAMOEBA
  - KERATITIS & ULCERS
  - DEGENERATIONS & DYSTROPHIES
    - BAND KERATOPAT
      - CALCIFIC
      - AGINIC
    - KERATOCONUS
    - FUCHS ENDOT DYST
    - STROMAL DYST
      - STROMAL EDEMA
      - BULLOUS KP
- SCLERA
  - -ITIS
  - OSTEOGENESIS IMPERFECTA CONGEN
  - MELANOSIS OCULI

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