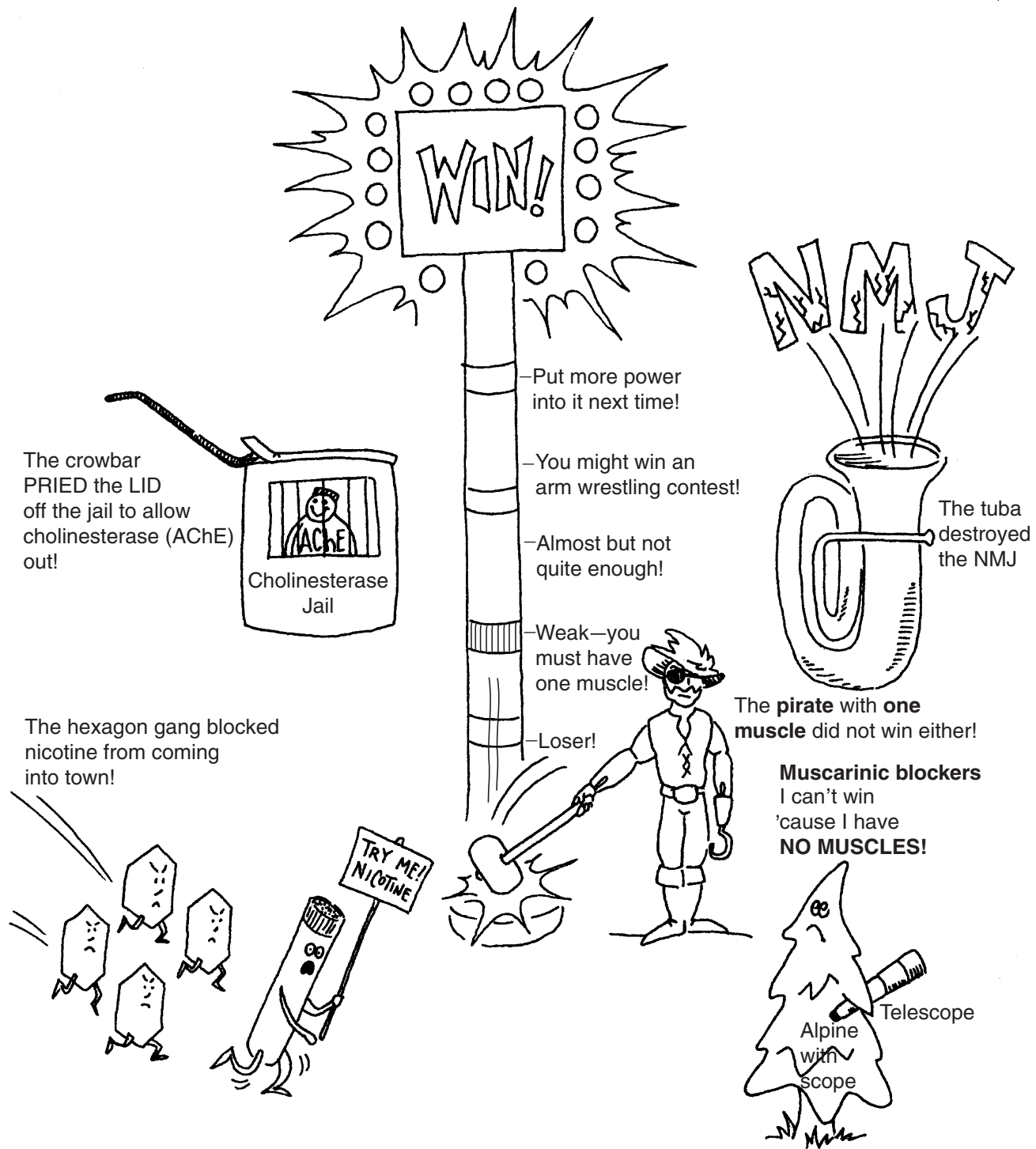
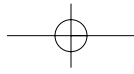


Cholinoceptor Blockers and Cholinesterase Regenerators

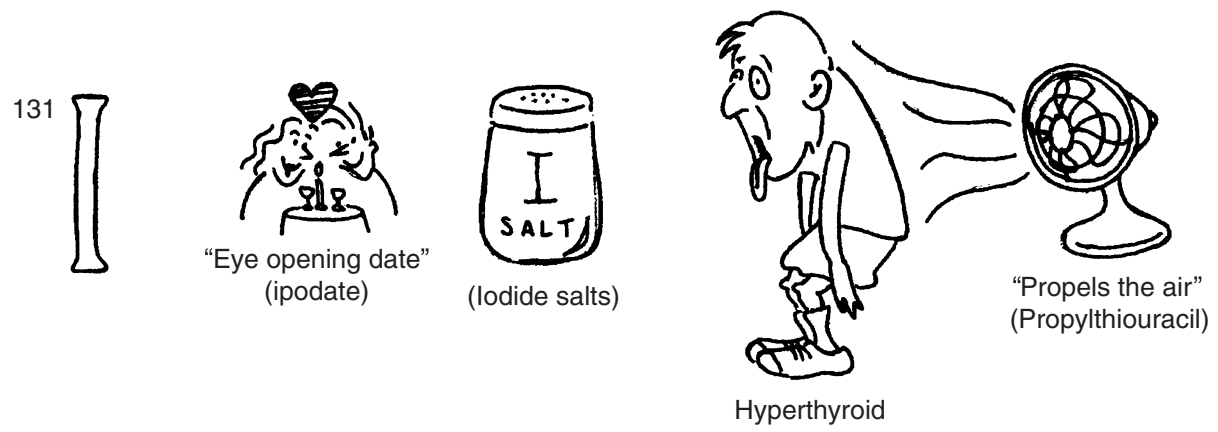
5

USE YOUR MUSCLES,
HIT THE BLOCK AND WIN!

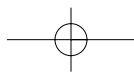
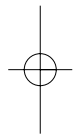
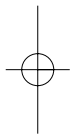
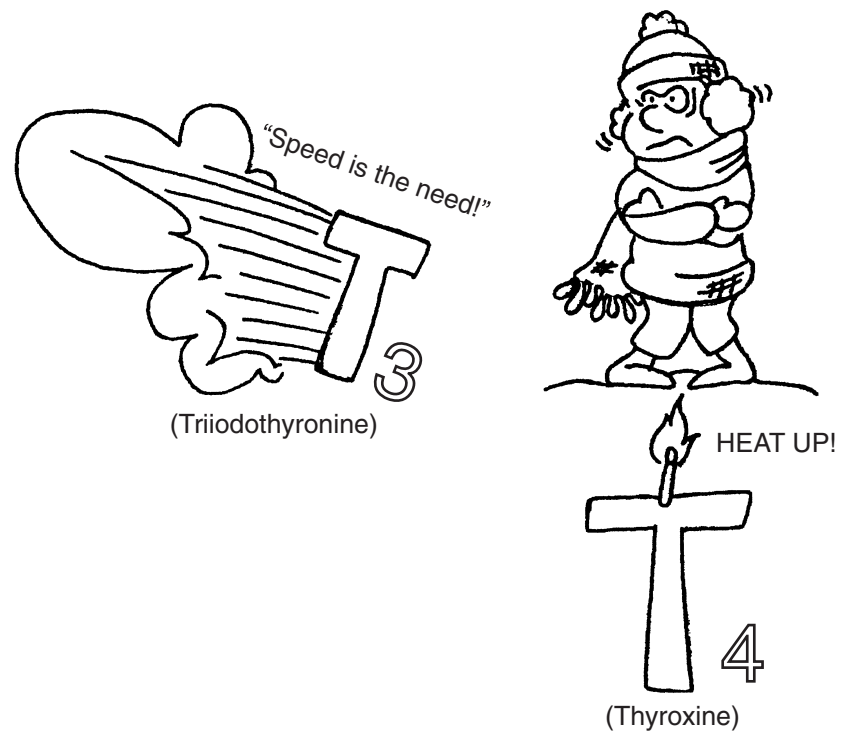




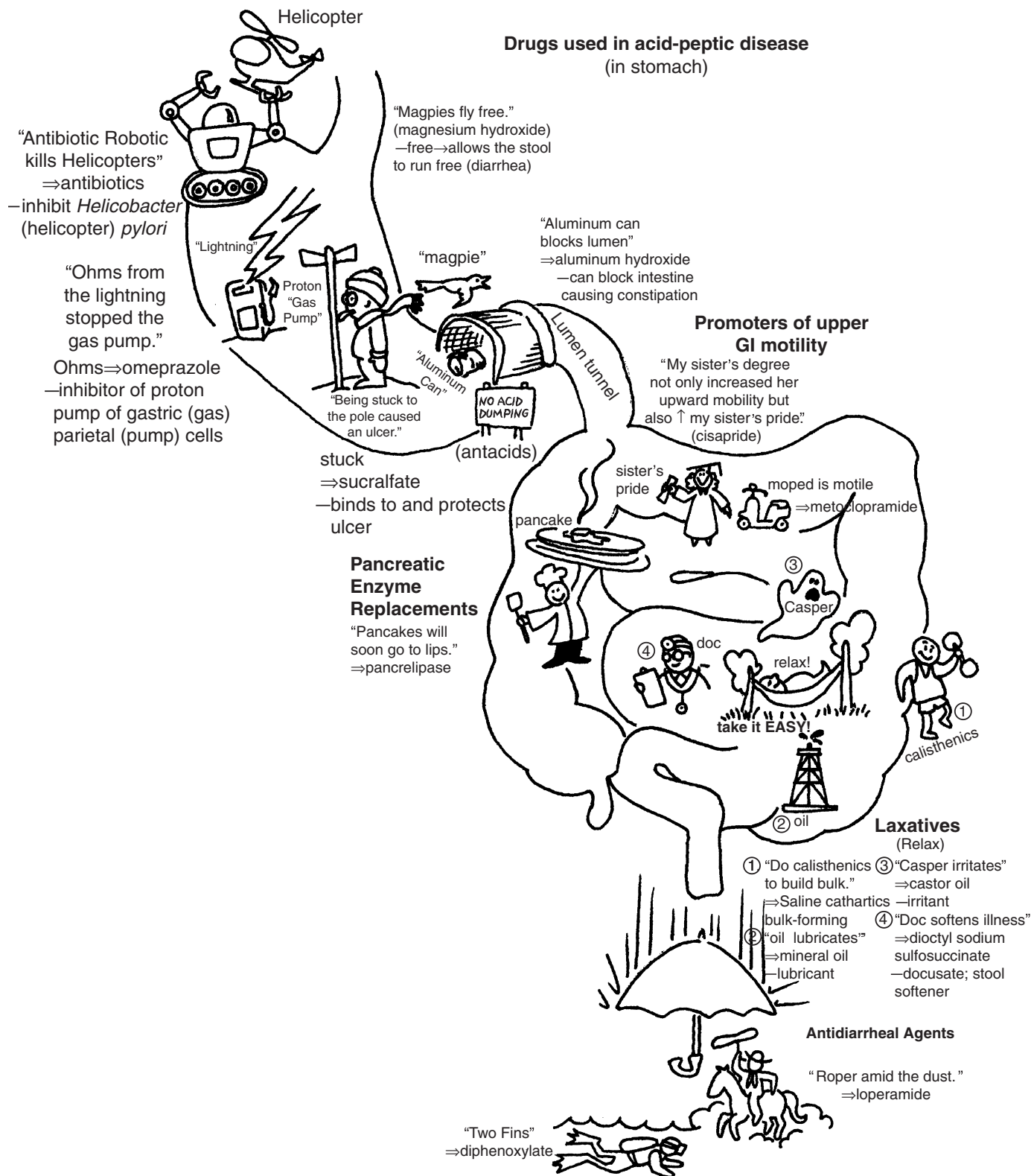
Thyroid Drugs 11



Hypothyroid



PHARMACOLOGY OF GI TRACT



Antihypertensives

NOTES

ANTIHYPERTENSIVES

DIURETICS

loop { furious⇒furosemide
Ethan crys⇒ethacrynic acid
bum⇒bumetanide
K⁺ sparing { spear⇒spironolactone
thiazide- { Indian purple⇒indapamide
like { chlorinated⇒chlorthalidone
thiazide { chlorinated H₂O⇒
hydrochlorothiazide

α₂-agonists

clony⇒clonidine
bends⇒guanabenz
face⇒guanfacine
dopey⇒methyldopa

Serpent⇒reserpine

- prevents storage of NE

Gigi⇒guanethidine

- stops NE release

andrenaline⇒guanadrel

β-blockers

both around word meant to remind you that these are β₁ specific { NAD⇒nadolol
Ate⇒atenolol (β₁)
meat⇒metoprolol (β₁)
pin⇒pindolol
propane⇒propranolol
bistro⇒bisoprolol (β₁)

α-blockers

tarzan⇒terazosin
dots⇒doxazosin
Prozac⇒prazosin

Ca²⁺ channel blockers

coach⇒Ca²⁺ blockers
delerious⇒diltiazem
vera⇒verapamil
nikes⇒nifedipine

Vasodilators

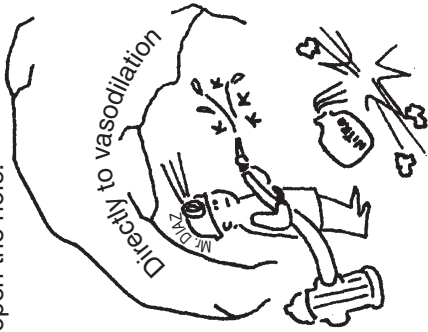
Diaz⇒diazoxide
miner⇒minoxidil
H₂O/hydrant⇒hydralazine
nitro⇒nitroprusside
open the hole⇒vasodilator
K's from the hose⇒channel activators

Angiotensin Inhibitors

Angie⇒angiotensin inhibitors
cap⇒captopril
lo stump⇒losartan
Linus⇒lisinopril
in-a-lap⇒enalapril

Antihypertensives

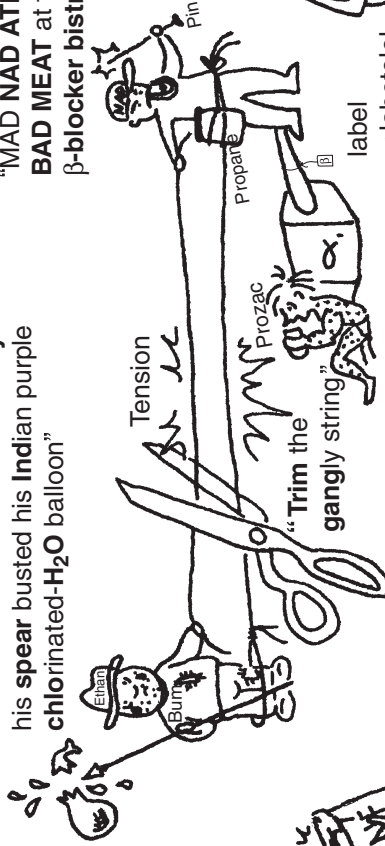
"Mr. Diaz, the miner, uses H₂O from the hydrant and nitro to open the hole."



"MAD NAD ATE BAD MEAT at the β-blocker bistro"



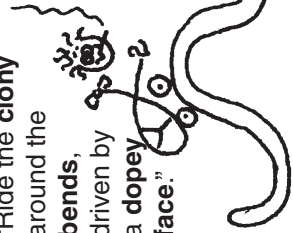
"A furious bum named Ethan cries because his spear busted his Indian purple chlorinated-H₂O balloon"



"Trim the gangly string"

trim ⇒ trimethaphan
gang ⇒ ganglionic blocker
Prozac for his dots"

"Ride the clony around the bends, driven by a dopey face."



"Serpent stops storage"

"Gigi dines on adrenaline"



"A boy, named Linus, with Angie the giving tree watches ants run in-a-lap."

ANTICOAGULANTS

ADP Receptor Inhibitors:
Tickle⇒ticlopidine
Cyclops⇒clopidogrel

Phosphodiesterase Inhibitor:
2 pyramids⇒dipyridamole

cyclooxygenase Inhibitor
ASP⇒aspirin

GP IIb/IIIa inhibitors:
Ep, Tif bat⇒
Eptifibatide
tarantula fibs⇒
tirofiban

Jonathan said "Look ep (up),
Tif; bat the tarantula that fibs."

"Heip and our hero, Hercules,
went to war against

Kay the pro-surfer!"

VS.

Thrombolytic
(fibrinolytic)
Plasminogen⇒plasmin

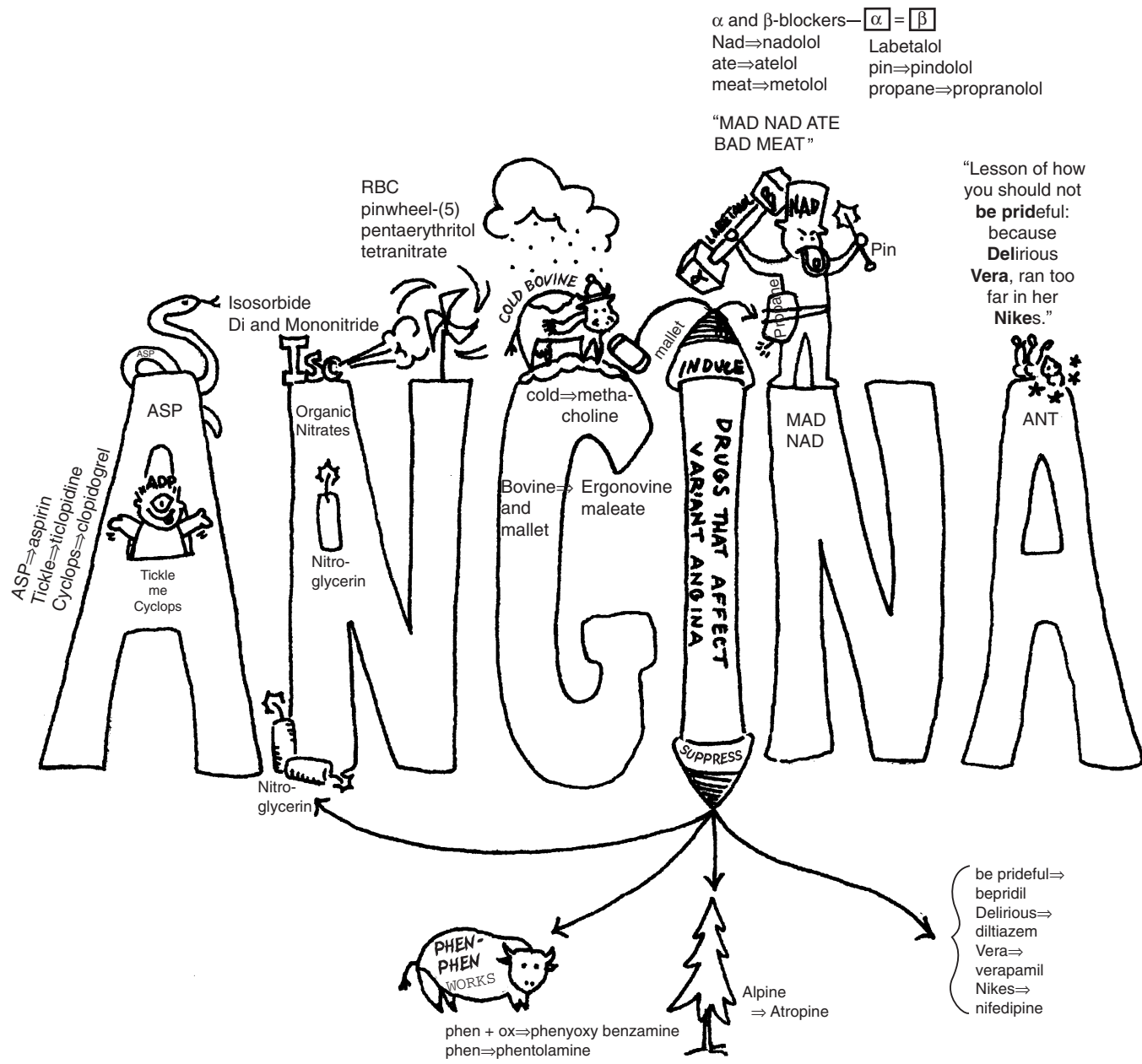
Anticoagulants
Heip⇒heparin
hero, Hercules⇒hirudin
war⇒warfarin
pro-surfer⇒protamine sulfate (antidote for heparin)
Kay⇒vitamin K (antidote for warfarin)

"Anise the striptease stripped
in front of the Uruguanian PTA ...
then was arrested and put on a
train to the Caprock Acid Jail"

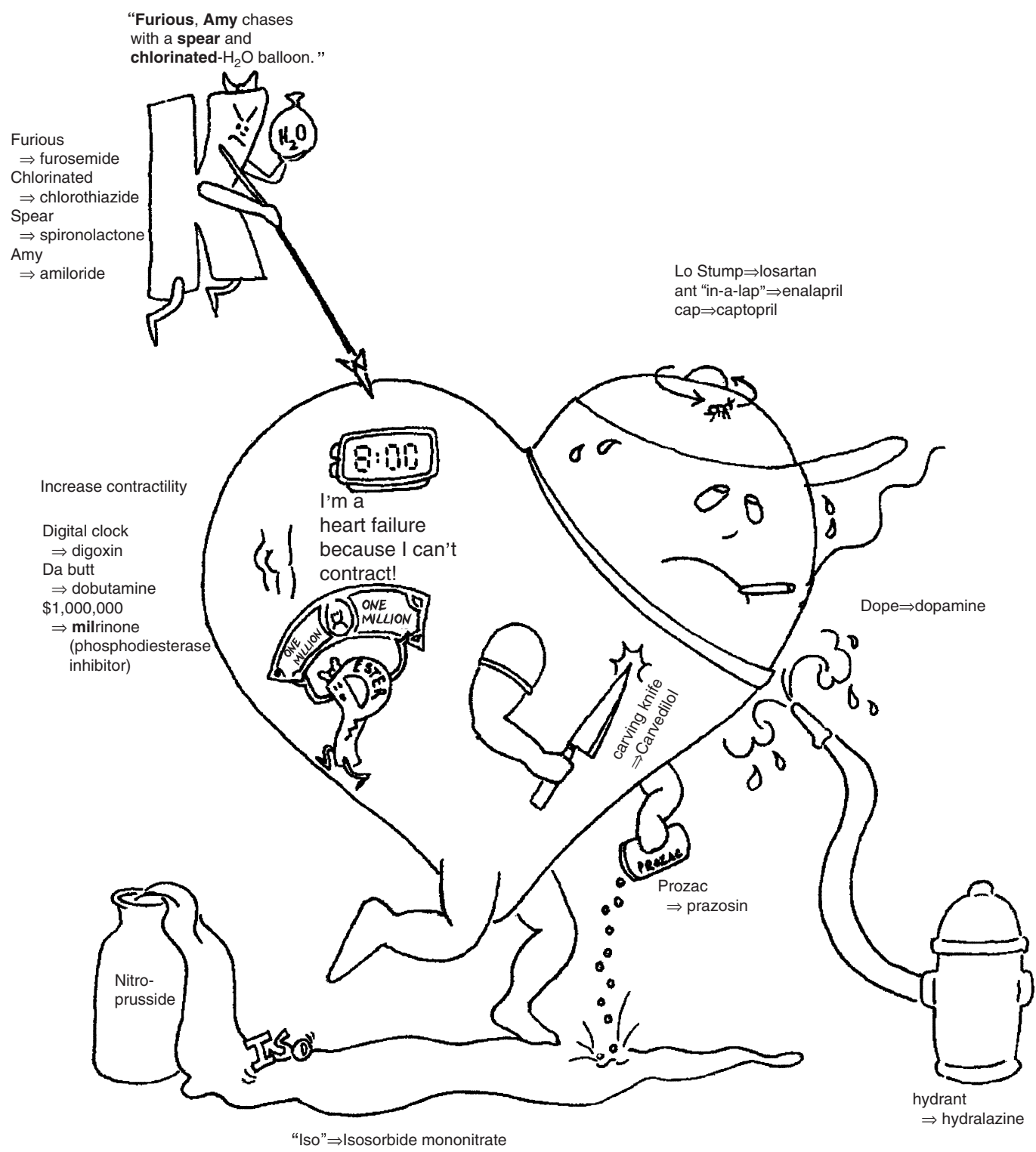
"She turned placid gentlemen
into applauding men!"

Anise the striptease
⇒anistreplase
stripped⇒streptokinase
Uruguanian⇒urokinase
PTA⇒t-PA
antidotes to thrombolytic
caprock acid⇒ε-aminocaproic acid
train⇒tranexamic acid

ANTIANGINAL AGENTS

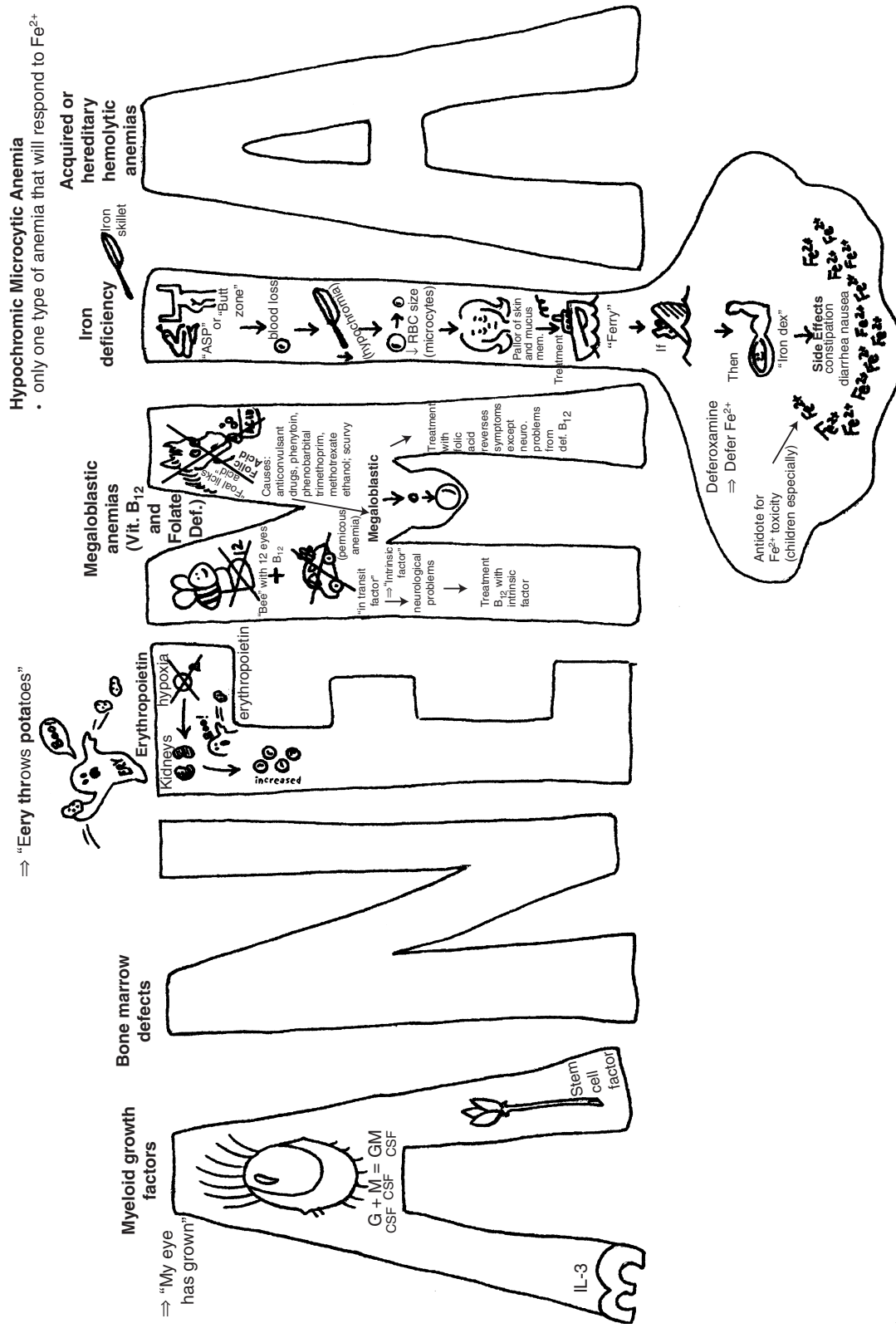


HEART FAILURE



Drug Therapy for Anemias


Drug Therapy for Anemias



50

Antimicrobial Agents Inhibiting Peptidoglycan Synthesis

NOTES

Cephalosporins (cellophane )

- from mold
 - 1) bactericidal
 - 2) parenterally/orally administered
 - 3) side effect→hypersensitivity
- 6-ring structure

Bacitracin→Tracy's Back


- 1) produced by *Bacillus subtilis*
- 2) inhibits peptidoglycan synthesis by preventing (Tracy kicking sugar cube) the attachment of amino sugars to cell membrane lipids (??)
- 3) bactericidal against multiplying bacteria
 - nephrotoxic⇒kidneys in back

Cycloserine

- ⇒ cyclone and serene
- my→kills *Mycobacterium tuberculosis*
- central nervous system toxicity
- inhibits D-alanine use in synthesis of bacterial cell wall

Beta-Lactam Antimicrobial Agents

M = monobactams

 = penems

CD = carbapenems

- cause seizures

Inhibitors—Administered in Combination with Beta-Lactam Antimicrobial Agents

"Tim the inhibitor, augments u in the zoo."

Tim = Timentin

augment = Augmentin

u = Unasyn

zoo = Zosyn

Penicillin

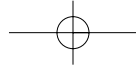
- ⇒ Penny
- 1) interferes with synthesis of peptidoglycan
 - ⇒ cap on Pepsi bottle
- 2) binds outer cell membrane proteins
 - A) carboxypeptidases⇒carbonation
 - B) transpeptidases⇒traverses
- 3) activate autolytic enzymes
 - ⇒ crack in bottle
- 4) bactericidal against actively multiplying cells
 - G—narrow spectrum (highly potent)
 - V—narrow spectrum (low potent)
 - penicilloyl—hapten responsible for hypersensitivity
 - cause GI disturbances
 - 5-ring structure
 - tolerance:
 - ⇒ low MIC (minimum inhibitory concentration)
 - ⇒ high MBC (minimum bactericidal concentration)
 - use low dose to stop and high dose to kill

Vancomycin

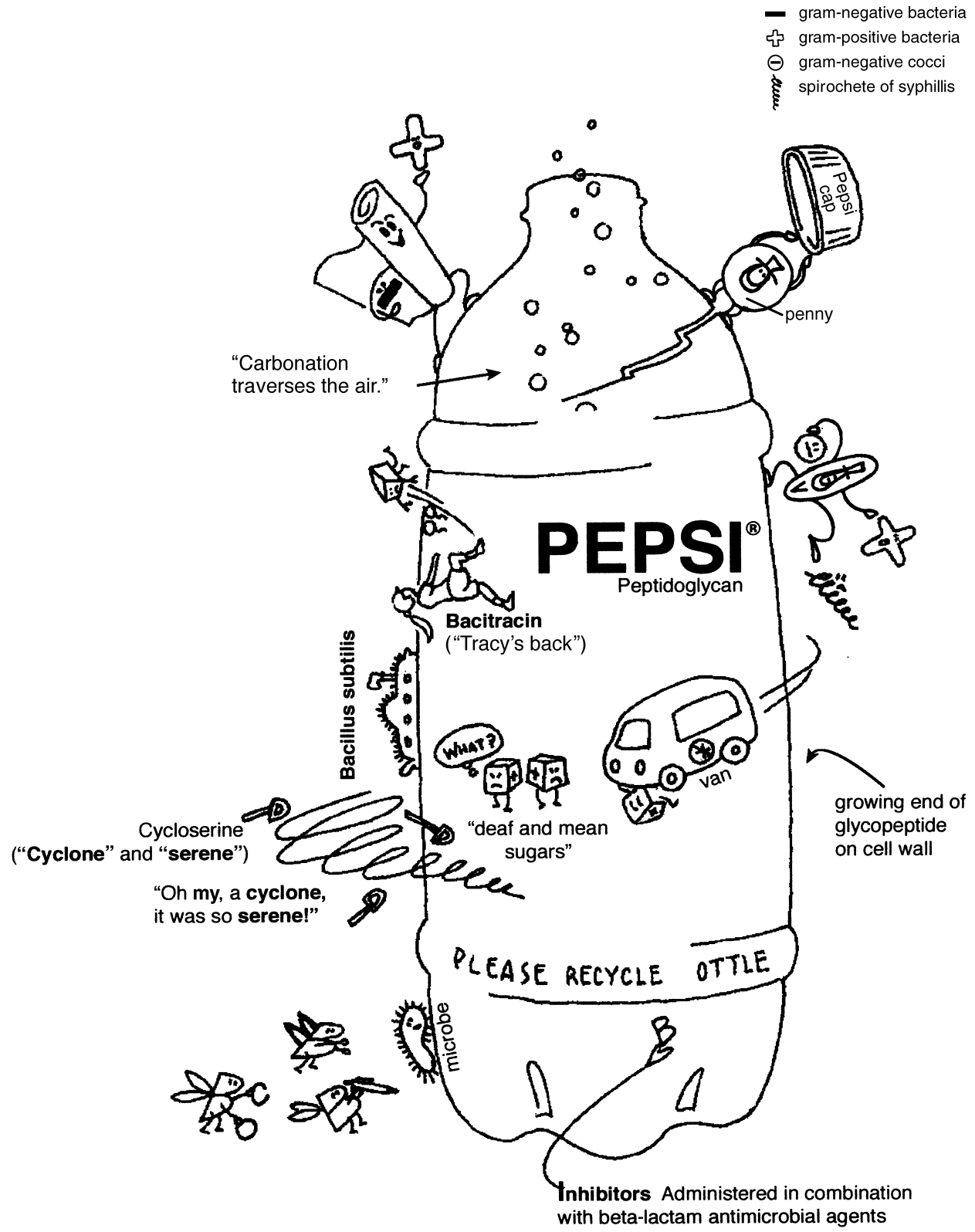
- ⇒ Van
- amino sugars⇒mean sugar cubes
- 1) inhibits transfer of amino sugars to the growing end of glycopeptide on cell wall
- 2) bactericidal against multiplying bacteria

- 3) neurotoxicity—auditory nerve damage with hearing loss
 - ⇒ WHAT?
 - narrow spectrum

β →Beta Lactamase—resides in periplasmic space of gram-negative bacteria; degrades penicillins



Antimicrobial Agents Inhibiting Peptidoglycan Synthesis



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Antimicrobial Agents Inhibiting Nucleic Acid Function

NOTES

Rifamycin

- ⇒ (RIF)
- inhibits bacterial DNA-dependent RNA polymerase
- broad spectrum
 - ⇒ broad tombstone
- primarily used against *Mycobacterium tuberculosis*
 - ⇒ TB on tombstone

Quinolone (derivative of nalidixic acid)

- ⇒ (**Quintalope alone**)⇒5 horns
- inhibits bacterial DNA gyrase
- broad spectrum (many horns)
- **enoxacin**, **norfloxacin**, **ciprofloxacin**
 - ⇒ enox ⇒ north flock ⇒ skip
- “Enox skipped to north to join ox flock”


Metronidazole

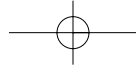
- ⇒ (**Metro** runs night and day!)
- MOA→4 steps
 - 1) passive diffusion of metronidazole into target cell
 - 2) metronidazole activated by reduction
 - 3) toxic intermediates
 - ⇒ single and double strands break in DNA
 - 4) release of inactive end products
- narrow spectrum
 - ⇒ anaerobic bacteria and anaerobic protozoa
 - (*Trichomonas vaginalis*)
 - ⇒ “Tricky Mona”

Side effects:

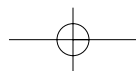
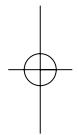
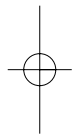
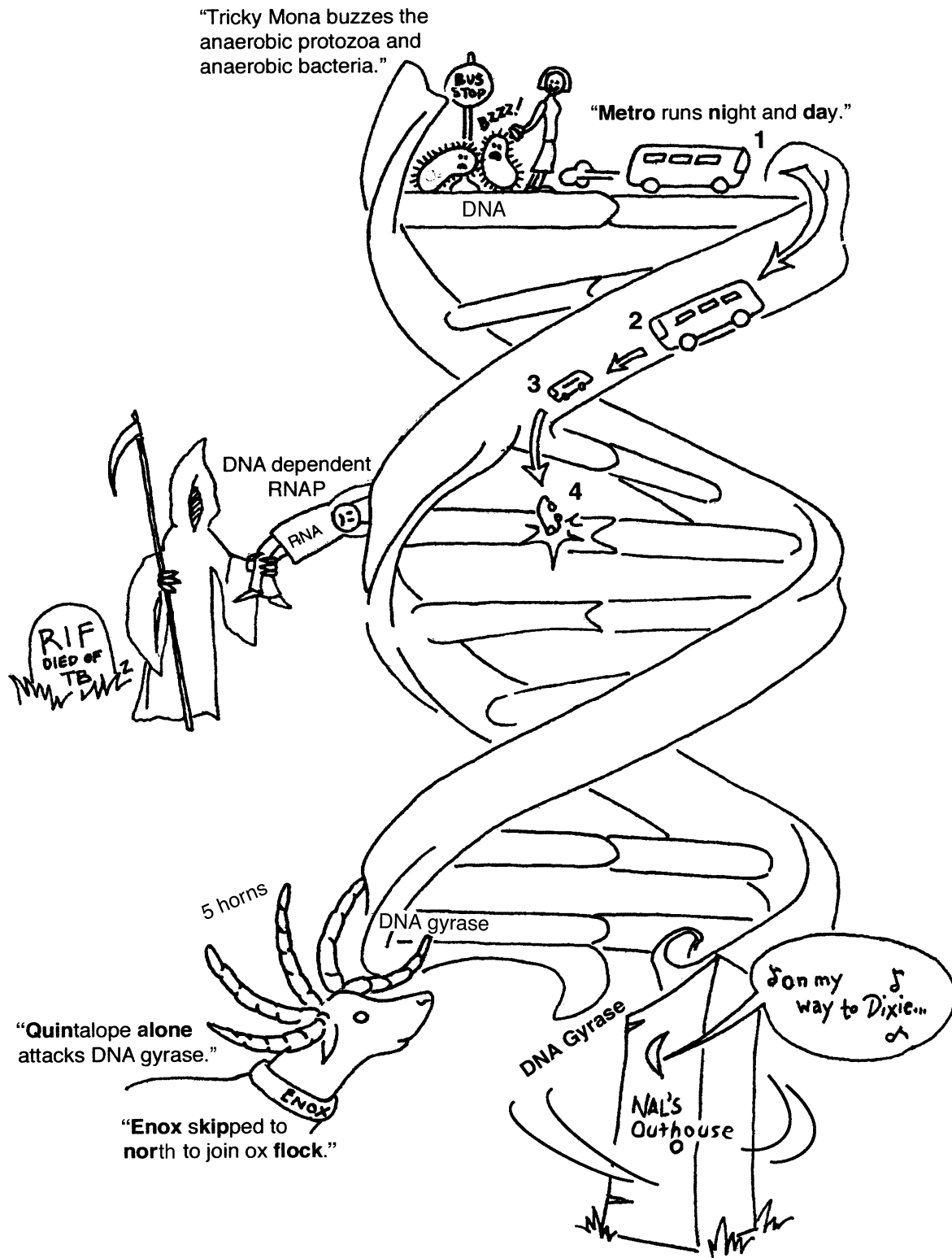
- mutagenic and carcinogenic in animals
- peripheral neuropathy
- disulfiram-like reaction with alcohol

Nalidixic Acid

- ⇒ (**Nal's—Dixie**)
- inhibits DNA gyrase
- narrow spectrum
 - ⇒ gram-negative bacilli⇒slit  in door
- used primarily in UTIs
 - ⇒ outhouse means UTIs



Antimicrobial Agents Inhibiting Nucleic Acid Function



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Antimicrobial Agents Inhibiting Folic Acid Synthesis

NOTES

- All bacterostatic ⇒ Folic acid

Sulfonamides

- ⇒ (SULFUR ON, AM II)
- broad spectrum
 - ⇒ arms open wide
- used in UTIs, GI, and as topical
- structural analogs of *p*-aminobenzoic acid (PABA)
 - ⇒ (magician says "PABA CADABRA")
- inhibits tetrahydropteridic acid synthetase
 - ⇒ 4 bubbles
- causes: anemia, thrombocytopenia, leukopenia, skin rashes

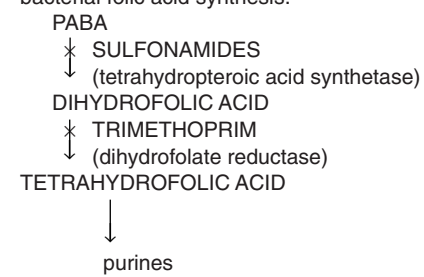
Trimethoprim

- ⇒ (TRY MET. IT'S PRIME.)
- co-trimoxazole (dog sitting on **cot's rim**)
 - ⇒ mixture of trimethoprim + sulfamethoxazole ⇒ inhibits both steps of synthesis
 - ⇒ treatment of UTI, traveller's diarrhea
- competitive inhibitor of reductase dihydrofolate ⇒ "two water foals"

Sulfones

- ⇒ (cell phone)
- major agent is diaminodiphenylsulfone (DDS) ⇒ (two diamonds)
- narrow spectrum
- used in leprosy ⇒ (leopard)

mechanism of action of sulfonamides and trimethoprim on metabolic pathway of bacterial folic acid synthesis:



Antimicrobial Agents Inhibiting Folic Acid Synthesis



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Agents Inhibiting Protein Synthesis

NOTES

Aminoglycosides⇒“A Mean Geico Insurance Agent”

“Gentleman, Toby, and Stripper Ami sped to Kansas in a Neon.”—insured by Geico
gentleman—gentamicin produced by *Micromonospora*; all others by *Streptomyces*;
treat gram positive

- irreversibly bound to 30S (G) subunit



- used to treat gram negative (M)

Toby = tobramycin
stripper = streptomycin
ami = amikacin
sped = spectinomycin
Kansas = kanamycin
Neon = neomycin

Side effects:

- nephrotoxicity and ototoxicity
- ⇒ . . . WHAT?

Chloramphenicol

- ⇒ (colored fin)
- broad spectrum
- ⇒ broad range of colors
- reversibly binds 50S
- causes reversible bone marrow depression⇒bone
- causes (rarely) aplastic anemia and gray baby syndrome (premature infants lacking liver UDP-glucuronyl transferase)

Tetracyclines

C = chlortetracycline⇒Clorox bottle

D = doxycycline⇒DO₂xO = oxytetracycline⇒O₂M = minocycline⇒O₂→treatment for acne

- broad spectrum
- causes tooth discoloration⇒black tooth
- requires energy to enter cell (ATP)
- ⇒ requires energy to ride cycle
- if resistant to one tetracycline, resistant to all
- do not take with antacids because divalent cations will inhibit gut absorption of it.

Quinupristin/dalfopristin

- ⇒ (quints prison)
- ⇒ (dallas prison)
- active against gram-positive (G)
- used in vancomycin-resistant *Enterococcus faecium* (VREF)
- ⇒ van and nosocomial diarrhea
- ⇒ nose with stuff running out
- hepatotoxicity side effect

Lincosamides

- lincomycin⇒links
- clindamycin
- ⇒ (clinks)
- same action as erythromycin primarily against anaerobic bacteria

Macrolides

- ⇒ (Big Mac slides)
- erythromycin⇒ERY!
- moderately broad spectrum
- binds 50S unit

“Solid Z-line”

- ⇒ (linezolid)
- inhibits on ribosomal level
- used in VREF and methicillin-resistant *Staphylococcus aureus*
- when combined with pseudoephedrine or phenylpropanolamine can cause increase in blood pressure

M gram-negative

G gram-positive

G 30S (Laurie is sad she is 30)

⇒ tRNA binds

M 50S (half of \$1)

⇒ linking of growing peptide chain

G (handcuffs) irreversibly bound

M reversibly bound

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Antimicrobial Agents Which Damage the Cell Membrane (Wall)

NOTES

POLYMYXIN

Poly A—toxic

Poly B

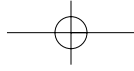
Poly C—toxic

Poly D—toxic

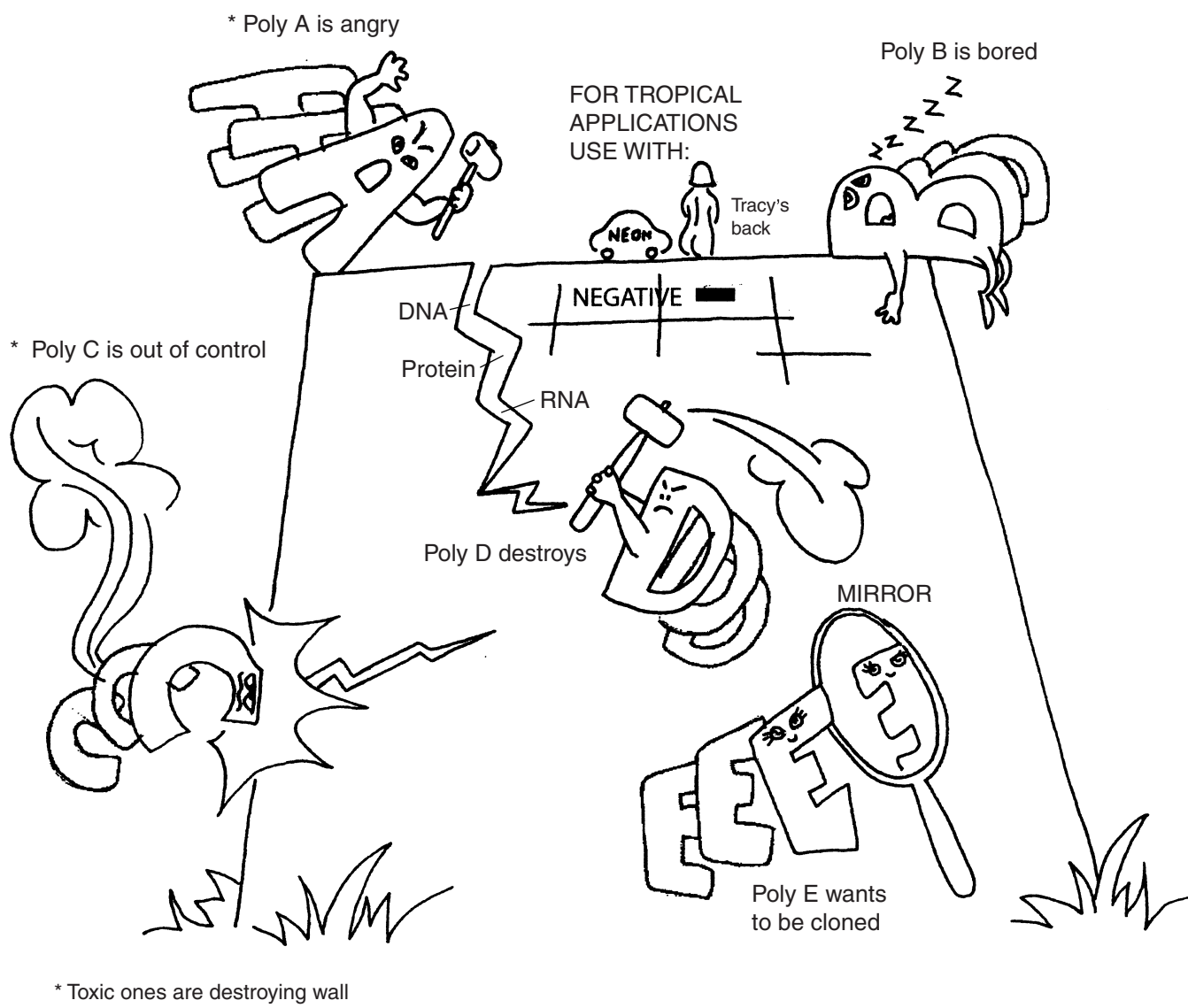
Poly E—same as colistin

⇒ (cloned)

- functions as a cationic detergent which disrupts osmotic integrity of cell membrane
- narrow spectrum of gram-negative bacilli
⇒ negative
- topical ointments
⇒ usually in combination with neomycin (neon) or bacitracin (Tracy's back)
- neurotoxic, nephrotoxic



Antimicrobial Agents Which Damage the Cell Membrane (Wall)



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Antimicrobial Agents with Unknown Mechanism of Inhibition

NOTES

ISONIAZID

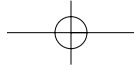
- ⇒ (I saw a night alien)
- analog of B-6
 - ⇒ (6 bees)
- a.k.a. pyridoxine
 - ⇒ (Pirate with dots)
- treatment for *Mycobacterium* TB
 - ⇒ (coughing bees)
 - ⇒ (TB on pants)

NITROFURANS

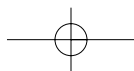
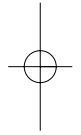
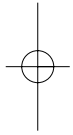
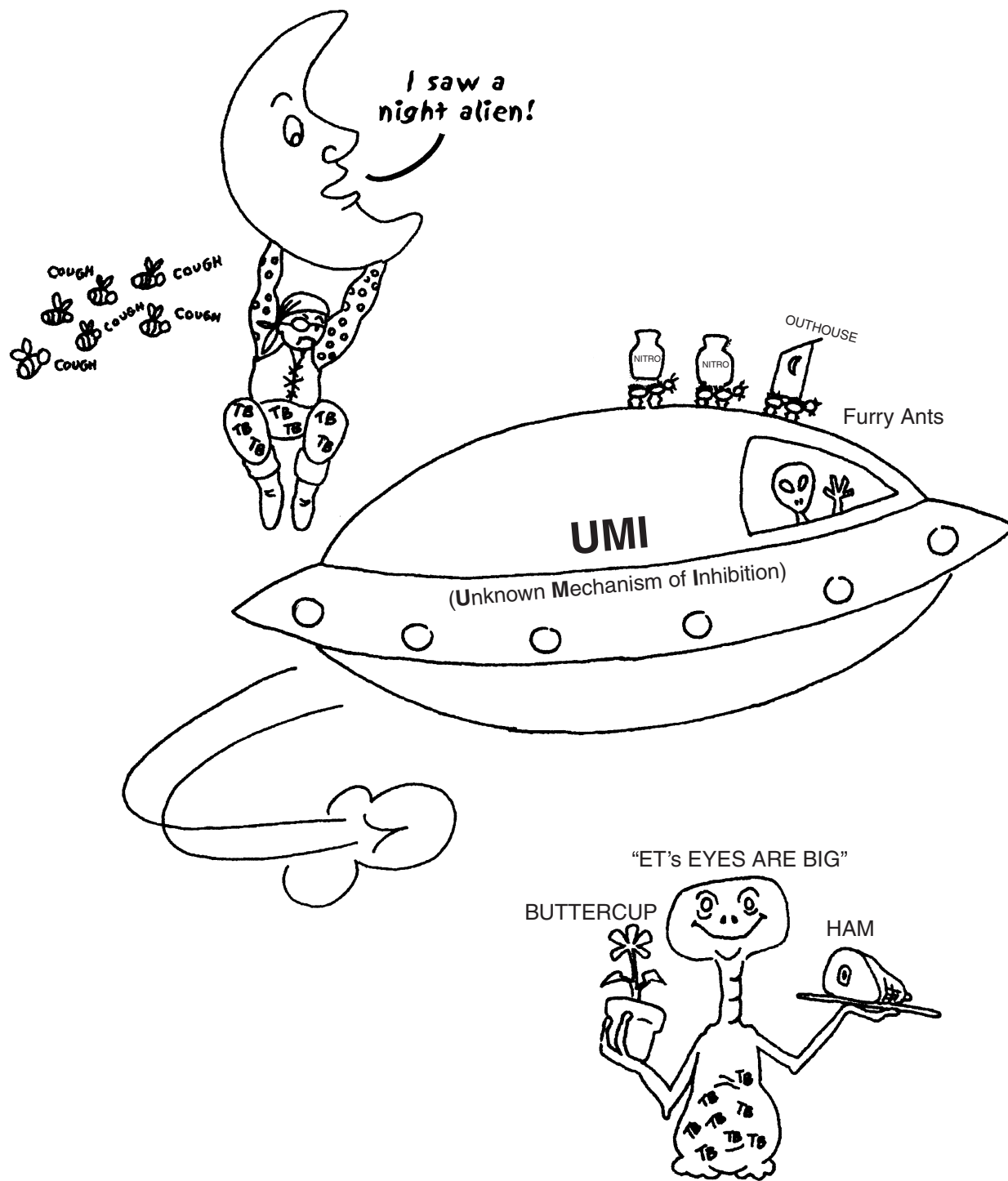
- ⇒ nitro carrying furry ants
- used for UTIs
 - ⇒ (outhouse)
- broad spectrum

ETHAMBUTOL

- ⇒ ET, ham, buttercup
- treatment for *Mycobacterium* TB
- rare side effects related to eyes
 - ⇒ (ET's **eyes** are big)



Antimicrobial Agents with Unknown Mechanism of Inhibition



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Antibiotics I: Cephalosporins (Cellophane)

NOTES

ANTIBIOTICS I: CEPHALOSPORINS (CELLOPHANE)

Narrow Spectrum (1st generation)

- Cefadroxil⇒Fad
- Cefazolin⇒Fazolin's
- Cephalexin⇒Alex
- Cephalothin⇒Thin
- 1st generation do not enter CSF

Intermediate Spectrum (2nd generation)

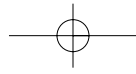
- Cefaclor⇒aclor
- Cefamandole⇒a man Dole
- Cefoxitin⇒fox
- Cefuroxime⇒furious ox
- enter CSF

Broad Spectrum (3rd generation)

- Cefixime
- ⇒ fix me
- Cefoperazone
- ⇒ opera zone
- Cefotaxime
- ⇒ taxi me
- enter CSF

4th Generation

- Cefepime
- ⇒ "Look ep, I'm 4."
- enter CSF



Antibiotics I: Cephalosporins (Cellophane)

1st Generation

administer through IV

Fazolin's spaghetti

⇒ spectrum includes E. coli and Klebsiella

"Alex wanted to be part of the **thin fad** until he ate at **FAZOLIN'S**."

Kidney ⇒ nephrotoxic

β-Lactamase (penicillinase) ⇒ less susceptible to penicillinases

2nd Generation

⇒ depletes vit. K production

Treatment: Otitis media and sinusitis

"Cef, the French **actor** (actor), signed peace to **a man Dole**, a **fox**, and a **furious ox**."

⇒ treats anaerobes

I can't breathe! ⇒ anaerobic infections — peritonitis or diverticulitis

use for meningitis/encephalitis

3rd Generation

"A fat lady hit the 3rd **opera zone** and broke a glass."

Treats gram-negative

"Don't **taxi me** to the trash, **fix me!**"

nosocomial infections

4th Jonathan says, "Look **ep**, I'm 4."

4th Generation

Antiviral Agents

NOTES

immunotherapy

- immunoglobulins:
 - ⇒ (passive vaccine): hepatitis B and A, chickenpox, rabies, measles;
 - interferon- α -2b: HPV, HCV

Protease Inhibitors

- pharmacophores compete with viral polypeptides for the protease and bind irreversibly to it
- indinavir, ritonavir, saquinavir**
- MOA: prevent post-translational cleavage of GAG and GAG-Pol polypeptides that is essential for maturation of the virion: without cleavage immature non-infectious particles bud from membrane
- spectrum: HIV

Viral Reverse Transcriptase ($\frac{1}{2}$) Nucleoside Inhibitors

- ⇒ "no nuclear war"
- nevirapine**—"nevi→mole"
- ⇒ MOA: binds away from **active** site of RT (**nevi is away from activist's active mouth**)

but prevents catalyst needed to incorporate base into growing chain; alters cleavage specificity of RNase H activity of RT;

- spectrum: **HIV**

Ion Channel Blockers

- amantadine—"Amen to dine"
- MOA: inhibits **M-Z** capsid protein from functioning→ \uparrow pH (basically) of viral endosome→blocks conformational change in hemagglutinin (HA) required for fusion of membranes; prevents HA from assuming correct conformation for incorporation into budding virion
- spectrum: influenza A (fly with A wings), Parkinson's disease (causes dopamine release from intact nerve terminals)
- toxicity: slurred speech, ataxia, dizziness

Viral Reverse Transcriptase (RT) or RNA-Dependent DNA Polymerase Nucleoside Analogues

- ⇒ nuclear explosion
- zidovudine**⇒(AZT) (zipper): enters as prodrug→host cell phosphorylates AZT to AZT-TP→incorporated into growing DNA chain in place of thymidine-TP→terminating it
- AZT-TP also \downarrow cellular thymidine kinase so adenosine-TP levels \downarrow ; **AZT only inhibits replication not infection**
- spectrum: HIV⇒"HIVE"

Viral DNA-Dependent DNAP Nucleoside Analogues

modified bases trick the viral DNAP into binding the analogue, which results in premature chain termination

- acyclovir (ACV) enters cell as prodrug→herpes virus thymidine kinase phosphorylates ACV→ACV-monophosphate (ACV-MP)→cellular guanosine-MP kinase→ACV-MP to ACV-TP (active)→ACV-TP into chain→termination chain

elongation "viral handshake"→**HSV-1, HSV-2**, ⇒VZV, EBV ganciclovir→CMV

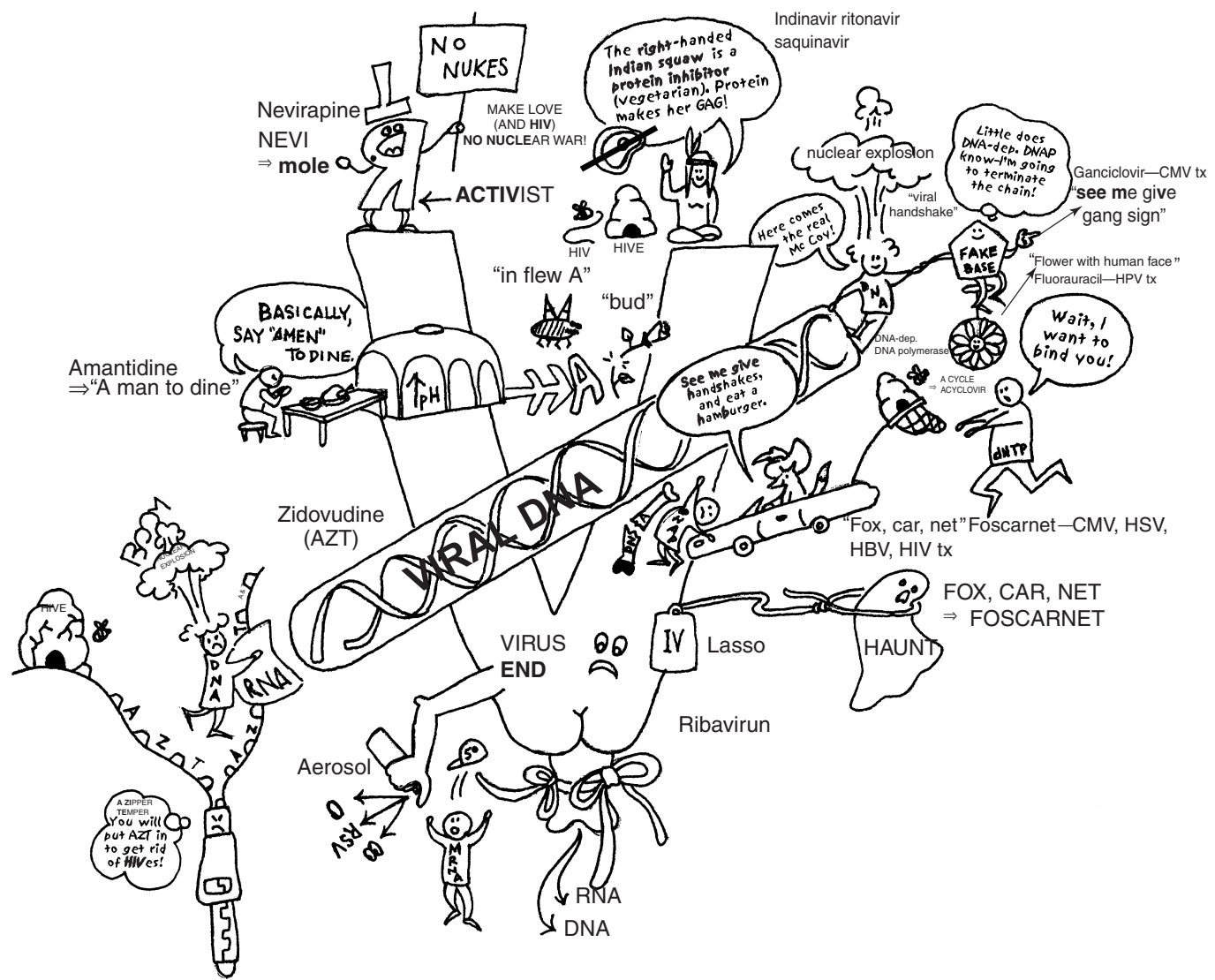
- (retinitis in HIV patients)
- fluorouracil→HPV (genital warts)
- ⇒ "flower with human face"

Viral DNAP, RT Inhibitors Pyrophosphate Analogues

- ⇒ "pirate hat on fox"
- bind to pyrophosphate-binding site of DNAP or RT and block dNTP binding
- foscarnet→spectrum: HIV (**hive**); HBV (**hamburger**); CMV (**see me give**); HSV 1 and 2 (**handshake**)
- toxicity: can inhibit cellular DNA replication in kidney and bone marrow

Inhibition of Viral RNA or DNA Replication by Blocking Important Vital Enzymes→"Virus End"

- ribavirin→"ribbon"
- ⇒ must be phosphorylated (1, 2, or 3)
- ⇒ ribavirin-MP→inhibits cellular **inosine** 5' (I know sign)-5'-MP-OH→depleting GTP
- ⇒ ribavirin-TP→interferes with 5' capping of mRNAs by inhibiting cellular guanylyl transferase
- ⇒ ribavirin-MP, DP, or TP→directly inhibit viral RNA-dependent RNAP
- spectrum for IV—Lassa fever virus, Hantaan virus; aerosol—RSV



NSAIDs

NOTES

NSAIDS

■ SULINDAC

- ⇒ "SUE LINDA"
- Pro-drug, converted to a sulfide
- long half-life, for osteo and rheumatoid
- inhibits COX-1 more than COX-2
- side effects: GI symptoms, Steven, Johnson

■ PENICILLAMINE

- teratogenic
- heavy metal chelator
- slows bone destruction
- serious toxicity
- long latency
- causes fever, rash, proteinuria, severe bone marrow depression
- deaths due to aplastic anemia

■ CELECOXIB

- ⇒ "celebrity"
- half-life = 11 hr.
- **selective COX-2 inhibitor**
- antiinflammatory, antipyretic, analgesic
- fewer GI ulcers, no ↑ in bleeding time
- protein bound, **metabolism by cyto P4502C9**
- **Inhibits cyto P450 CYP2D6**, so ↑ concentration of some β -blockers, antidepressants, antipsychotics
- Adverse: GI toxicity and pain, renal toxicity

■ PHENYLBUTAZONE

- ⇒ "fin on butt"
- oldest and most toxic
- potent antiinflammatory
- **LETHAL** agranulocytosis and aplastic anemia
- adverse effects: nephrotoxic, deafness
- used for gouty arthritis, poor for rheumatoid

■ METHOTREXATE

- ⇒ "Tex"—cowboy hat
- **for rheumatoid arthritis**
- **folate antagonist**
- prevents irreversible bone damage
- low dose—well tolerated
- Adverse: hepatic, bone marrow suppression, GI ulcers

■ INDOMETHACIN

- ⇒ Indian feather
- COX-1 and COX-2 inhibitor
- effective in rheumatoid, gouty arthritis, close patent ductus arteriosus
- adverse effects: **HEADACHE**, aplastic anemia
- avoid HTN, pregnancy

■ NAPROXEN

- ⇒ closed eyes mean naptime
- long half-life
- especially for **MIGRAINES**, also for rheumatoid arthritis
- well tolerated

■ GOLD

- ⇒ gold chain necklace
- for active rheumatoid
- stops and prevents bone and articular erosion
- protein bound, long latency
- cannot be given with penicillamine
- stop with thrombocytosis, leukopenia
- recently treatment **QUESTIONED**

■ IBUPROFEN

- ⇒ Advil
- OTC
- COX-1 and -2
- Do not use for nasal polyps, angioedema, or if there is a tendency of bronchospasticity
- **renal** toxicity
- COX-1—expressed in **all tissues**
 - platelet aggregation
- COX-2—only in **brain**
 - induced by cytokines

■ KETOROLAC

- ⇒ "Key Toro the bull"
- **parenteral**—strong analgesic
- potential toxicity ↑ with salicylates
- NOT for pregnancy

■ KETOPROFEN

GI and CNS effects

- ⇒ "Key on a Top"
- OTC
- inhibits both COX and **lipoygenase**
- effective for rheumatoid
- does NOT alter warfarin

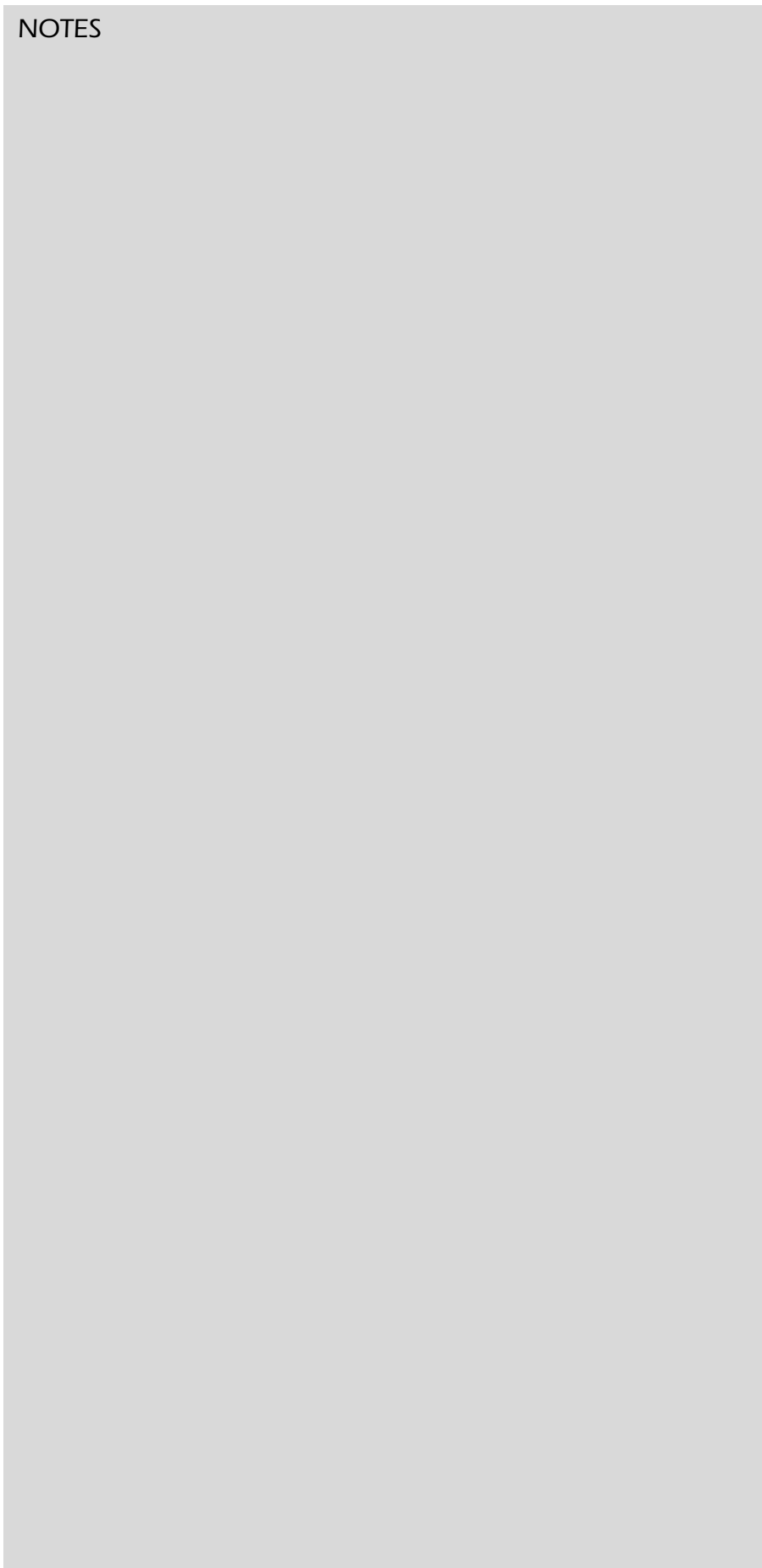
■ PIROXICAM

- ⇒ "pie on rocks"
- longest half-life (45 hr)
- effective on rheumatoid arthritis
- adverse: GI upset
- inhibits COX-1 more than COX-2

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Gout

NOTES



GOUT

- ↑ production of uric acid
- ↓ excretion of uric acid
- **acute Treatment** ⇒ NSAIDs, colchicine, steroids, analgesics
- **long term Treatment** ⇒ uricosurics, allopurinol, colchicine, NSAIDs
- ↑ fluid intake to prevent stones
- ↓ weight, alcohol...
- Acute gouty arthritis: 3–10 days duration
- Chronic (tophaceous) gout
- destruction of joints, tophi form on myocardium and valves, blockage of kidney

Colchicine

- ⇒ “coal in chic jeans”
- binds to tubulin, inhibits phagocytes
- *Antiinflammatory, only for gouty arthritis, **not** analgesic
- *Reserved for patients who CANNOT tolerate NSAIDs*

NSAIDs/Indomethacin/Naproxen
⇒Indian ⇒Nap

- for acute gouty arthritis
- prevent rebound attacks after corticosteroid treatment
- used with allopurinol and uricosuric agents
- *Aspirin should **NOT** be used—interferes with URIC acid EXCRETION by kidney

Allopurinol

- ⇒ “Aloe”
- competitive inhibitor of xanthine oxidase
- inhibits conversion of hypo- and xanthine → uric acid so **uric acid excreted**
- *Gouty attacks will occur at first, since mobilizes urate from tissue stores, so USE with colchicine or NSAIDs
- TOXICITY—well tolerated
- **CAUTION** with kidney patients
- ↑probenecid effects

Probenecid

- inhibit reabsorption of URATE, so ↑↑excretion
- inhibits secretion of penicillin and methotrexate
- slow build-up of dose to prevent attack
- use with colchicine, NSAIDs
- avoid aspirin
 - inhibits secretion of urate

Sulfinpyrazone

- ⇒ “surfin’ a pyramid”
- *same as probenecid
- avoid aspirin
 - inhibits secretion of urate

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Hypnotic/Antianxiety

NOTES

HYPNOTIC/ANTIANXIETY**Pentobarbitol**

⇒ "Penta Barbie doll"

Short to intermediate acting

Barbiturates: depress REM sleep

- prolong open time for Cl⁻ channels by GABA
- hypnotics are weak acids
- most are lipid-soluble → CNS
- metabolized by **hepatic microsomal** enzymes
- respiratory depression—cause of death
- **laryngospasm**—chief complaint
- * since metabolized by hepatocytes
 - ⇒ not for liver patients
 - ⇒ many drug interactions
- used for antianxiety

Zolpidem

⇒ ZOL' ↑↑

- non-benzodiazepine hypnotic
- acts on GABA-A receptor (α_1)
- ↑ duration of sleep, little effect on sleep stages
- widely prescribed as hypnotic

Buspirone

⇒ "Bus on Spiral"

- Antianxiety
- little potential for abuse
- lack hypnotic and anticonvulsant properties
- No cross-tolerance or cross-dependence with benzodiazepine

Baclofen

⇒ "Back Fin"

para-chlorophenyl GABA agonist at GABA-B receptor

- **SKELETAL MUSCLE RELAXANT**
- reduces spasm with spinal injury or MS

Benzodiazepines

- have replaced barbiturates for use in hypnosis
- depress stages 3 and 4 of non-REM sleep
- do not induce microsomal enzymes
 - lack interactions with other drugs
- NOT for pregnancy; lower abuse than barbiturates
- incidence and severity of CNS toxicity ↑ with age

Alprazolam

⇒ "Alacazam!"

- chosen for elderly
- also for antidepressant and panic disorders
- tend to develop physical dependence
 - withdraw gradually

Diazepam

⇒ Mr. Diaz in pan

- longer duration of action
- chosen for children
- is a **DOC for status epileptic**

Triazolam

⇒ Triad O' Lamps

- shortest half-life
- high rebound anxiety and insomnia
- tolerance develops quickly
 - ⇒ "we tolerate ewe!"

Flumazenil

⇒ "Plume with Fumes"

- competitively **ANTAGONIZES** binding of benzodiazepine
- reverses sedative effects used in anesthesia
- comatose patients from large dose of benzodiazepine—regain consciousness with flumazenil
- half-life shorter than most benzodiazepines
- adverse effect: **CONVULSIONS** with patients on benzodiazepine

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Neonatal/Gerontological Pharmacology

NOTES

NEONATAL/GERONTOLOGICAL PHARMACOLOGY**■ NEONATAL****Digoxin**

- ⇒ digital clock
- slower elimination, half-life ↑
- heart in young is insensitive to drug

Chloramphenicol

- ⇒ "colored fin"
- **gray baby syndrome**
- immature liver cannot conjugate drug, so ↑ serum concentration

Theophylline

- ⇒ THEO to cola (caffeine)
- less protein binding
- metabolized to CAFFEINE

Warfarin

- ⇒ WAR
- small
- crosses placenta
- teratogen

Heparin

- ⇒ HIEP
- large, polar
- does not cross placenta
- safer

■ GERONTOLOGICAL**Levodopa**

- ⇒ "L on a dope"
- increased bioavailability due to ↓ stomach dopa decarboxylase activity

Warfarin

- ⇒ WAR
- ↓ albumin levels cause ↑ free drug
- not affected by metabolism

Procainamide

- ⇒ cane
- hydrophilic
- ↓ water content, ↓ BF, ↓ muscle leads to increased plasma concentration
- narrow therapeutic index so ↓ renal clearance leads to increased blood levels

Propranolol

- ⇒ propane
- decreased metabolism, so ↑ half-life

Diazepam

- ⇒ "Mr. Diaz"
- lipophilic drug
- increased storage
- decreased metabolism, so ↑ half-life

Opiates

- ⇒ "opal"
- increased responsiveness

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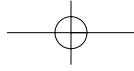
Antipsychotics

NOTES

ANTIPSYCHOTICS

Phenothiazines

aliphatic: chlorpromazine
piperidines: thioridazine
piperazines: trifluoperazine, fluphenazine
butyrophenones: haloperidol
heterocyclics: clozapine, olanzapine,
risperidone, sertindole, quetiapine



Parkinson's Disease and Other Movement Disorders

PARKINSON'S DISEASE AND OTHER MOVEMENT DISORDERS

