

We survived the exam! Happy Halloween!!
Remember nutrient p & have safe fun!



- I. Announcements:** No lab today! Break for exam week!
Next R Blood Chemistry. Thanks sincerely for helping us optimize safety by reading $\geq 2x$ Lab 5, LM pp 5-1 to 5-6.
- II. Blood Form & Function** LS ch 11, DC Module 5 pp 35-9
 - A. Formed vs Nonformed/cells vs plasma** fig+tab 11-1
Cell origin - bone marrow. What's in plasma? p 316
 - B. Red blood cells/erythrocytes:** O₂ carrying pp 317-8
Normal flexible vs fragile sickle cell fig 11-5 p 320
 - C. White blood cells/leukocytes:** defense/immunity
differential + general functions pp 326-30 fig 11-1
 - D. Platelets/thrombocytes:** clotting pp 321-2 fig 11-6
- III. Blood Chemistry Lab: Basics** LM + LS ch 11 & 17
 - A. What's blood typing? ABo System** ch 11 LS pp 341- 4
Rhesus factor? Erythroblastosis fetalis? LS p 343
 - B. Physiology in the News:** Eat right for your type?
 - C. What's blood glucose? Diabetes?** LS ch 17 pp 560- 73
 - D. Questions about blood chem lab?**
- IV. Exam Comments + Return**

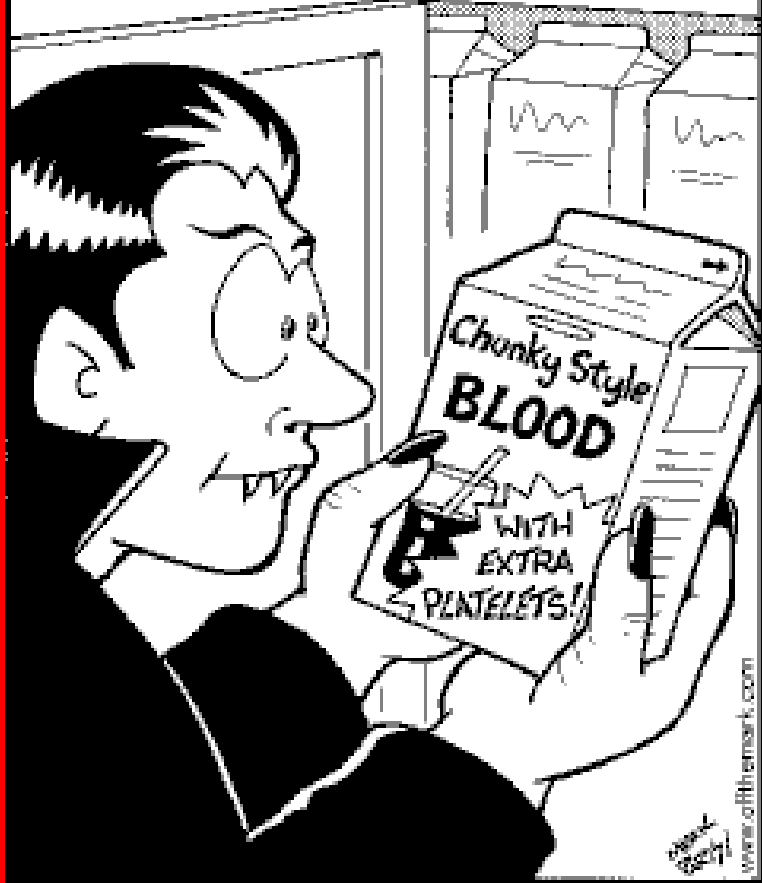
Ghost, marshmallow
or white blood cell?



off the mark by Mark Parisi

www.offthemark.com

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**Today & next week
we'll cover blood
chemistry to
ensure for
adequate lab prep
time & incubation.**

Can Halloween Treats Be Healthy?



Choose an item w/@ least some redeeming value – nuts? raisins? popcorn? fruits?...



**Where's the line?
Are nutrient-p choices possible?
Volume/calorie control?**

??



A degree of nutrient density?

Entirely empty calories?

http://www.clemson.edu/extension/hgic/food/nutrition/nutrition/life_stages/hgic4112.html



Raisinets, 1 standard package

Nutrient	Your Intake	Recommendation or Acceptable Range
<u>Food Energy/Total Calories (kcal)</u>	111	<u>2331</u>
<u>Protein (gm)</u>	1	56
<u>Carbohydrate (gm)</u>	19	130
<u>Total Fiber (gm)</u>	1	30
<u>Total Fat (gm)</u>	4.2	2.5 - 4.3
<u>Saturated Fat (gm)</u>	2.5	< 1.2
<u>Monounsaturated Fat (gm)</u>	1	**
<u>Polyunsaturated Fat (gm)</u>	0	**
<u>Linoleic (omega 6) (gm)</u>	0.1	14
<u>Alpha Linolenic (omega 3) (gm)</u>	0	1.6
<u>Cholesterol (mg)</u>	1	< 300
<u>Vitamin A (mcg RAE)</u>	6.8	900
<u>Vitamin C (mg)</u>	0.1	90
<u>Vitamin E (mg a-TE)</u>	0.3	15
<u>Thiamin (mg)</u>	0	1.2
<u>Riboflavin (mg)</u>	0	1.3



Raisinets, 1 standard package

<u>Niacin (mg)</u>	0.1	16
<u>Folate (mcg, DFE)</u>	2	400
<u>Vitamin B6 (mg)</u>	0	1.7
<u>Vitamin B12 (mcg)</u>	0.1	2.4
<u>Calcium (mg)</u>	24.4	1200
<u>Phosphorus (mg)</u>	40.5	700
<u>Magnesium (mg)</u>	12.8	420
<u>Iron (mg)</u>	0.5	8
<u>Zinc (mg)</u>	0.2	11
<u>Selenium (mcg)</u>	0.7	55
<u>Potassium (mg)</u>	146	4700
<u>Sodium (mg)</u>	10	1300 - 2300

Reese's Peanut Butter Cup, 1 standard cup



Nutrient	Your Intake	Recommendation or Acceptable Range
<u>Food Energy/Total Calories (kcal)</u>	88	2331
<u>Protein (gm)</u>	2	56
<u>Carbohydrate (gm)</u>	9	130
<u>Total Fiber (gm)</u>	1	30
<u>Total Fat (gm)</u>	5.2	1.9 - 3.4
<u>Saturated Fat (gm)</u>	1.8	< 1
<u>Monounsaturated Fat (gm)</u>	2	**
<u>Polyunsaturated Fat (gm)</u>	1	**
<u>Linoleic (omega 6) (gm)</u>	0.9	14
<u>Alpha Linolenic (omega 3) (gm)</u>	0	1.6
<u>Cholesterol (mg)</u>	1	< 300
<u>Vitamin A (mcg RAE)</u>	2.9	900
<u>Vitamin C (mg)</u>	0.1	90
<u>Vitamin E (mg a-TE)</u>	0	15
<u>Thiamin (mg)</u>	0	1.2
<u>Riboflavin (mg)</u>	0	1.3

Reese's Peanut Butter Cup, 1 standard cup

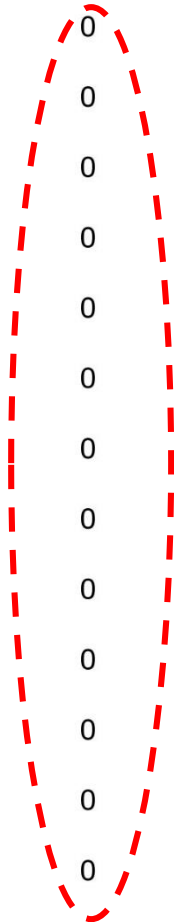


<u>Niacin (mg)</u>	0.8	16
<u>Folate (mcg, DFE)</u>	8.5	400
<u>Vitamin B6 (mg)</u>	0	1.7
<u>Vitamin B12 (mcg)</u>	0.1	2.4
<u>Calcium (mg)</u>	13.3	1200
<u>Phosphorus (mg)</u>	27.4	700
<u>Magnesium (mg)</u>	10.5	420
<u>Iron (mg)</u>	0.2	8
<u>Zinc (mg)</u>	0.2	11
<u>Selenium (mcg)</u>	0.2	55
<u>Potassium (mg)</u>	58	4700
<u>Sodium (mg)</u>	53	1300 - 2300



Candy Corn, 12 pieces

Nutrient	Your Intake	Recommendation or Acceptable Range
<u>Food Energy/Total Calories (kcal)</u>	494	<u>2331</u>
<u>Protein (gm)</u>	0	56
<u>Carbohydrate (gm)</u>	123	130
<u>Total Fiber (gm)</u>	0	30
<u>Total Fat (gm)</u>	0	11 - 19.2
<u>Saturated Fat (gm)</u>	0	< 5.5
<u>Monounsaturated Fat (gm)</u>	0	**
<u>Polyunsaturated Fat (gm)</u>	0	**
<u>Linoleic (omega 6) (gm)</u>	0	14
<u>Alpha Linolenic (omega 3) (gm)</u>	0	1.6
<u>Cholesterol (mg)</u>	0	< 300
<u>Vitamin A (mcg RAE)</u>	0	900
<u>Vitamin C (mg)</u>	0	90
<u>Vitamin E (mg a-TE)</u>	0	15
<u>Thiamin (mg)</u>	0	1.2
<u>Riboflavin (mg)</u>	0	1.3

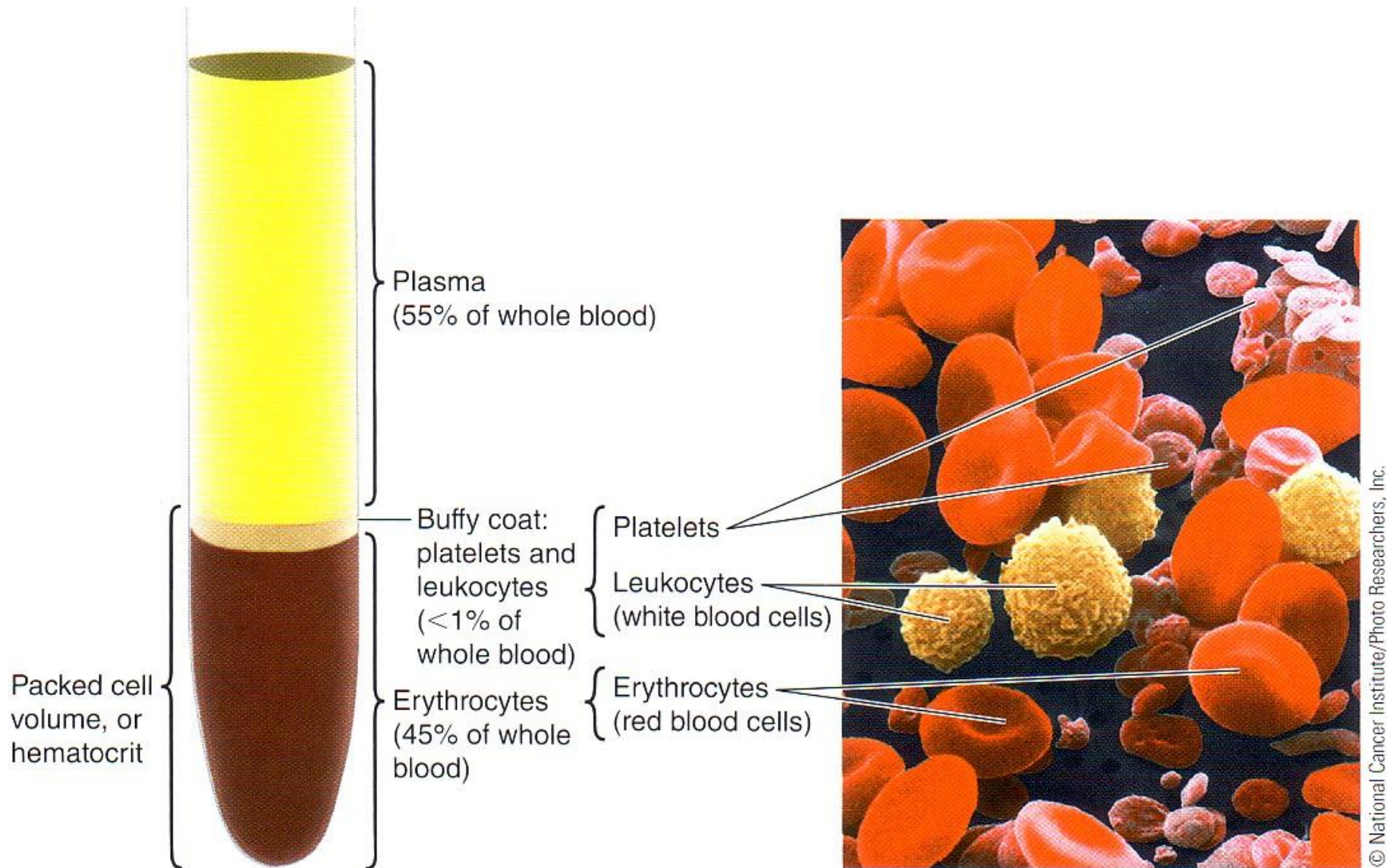


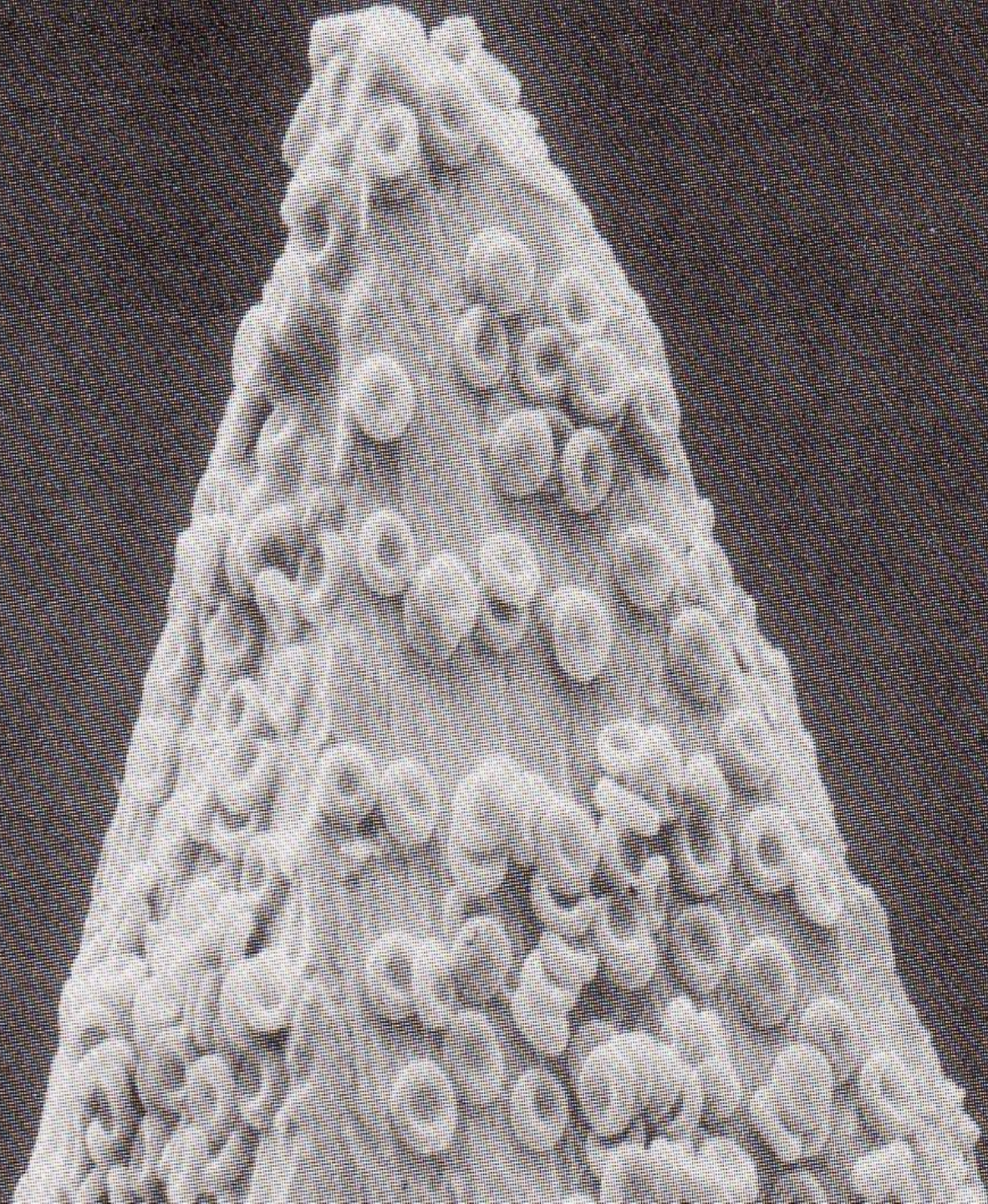


Candy Corn, 12 pieces

<u>Niacin (mg)</u>	0	16
<u>Folate (mcg, DFE)</u>	0	400
<u>Vitamin B6 (mg)</u>	0	1.7
<u>Vitamin B12 (mcg)</u>	0	2.4
<u>Calcium (mg)</u>	2.6	1200
<u>Phosphorus (mg)</u>	0	700
<u>Magnesium (mg)</u>	0	420
<u>Iron (mg)</u>	0	8
<u>Zinc (mg)</u>	0	11
<u>Selenium (mcg)</u>	0.8	55
<u>Potassium (mg)</u>	5	4700
<u>Sodium (mg)</u>	21	1300 - 2300

What's in Blood? Plasma & Blood Cells



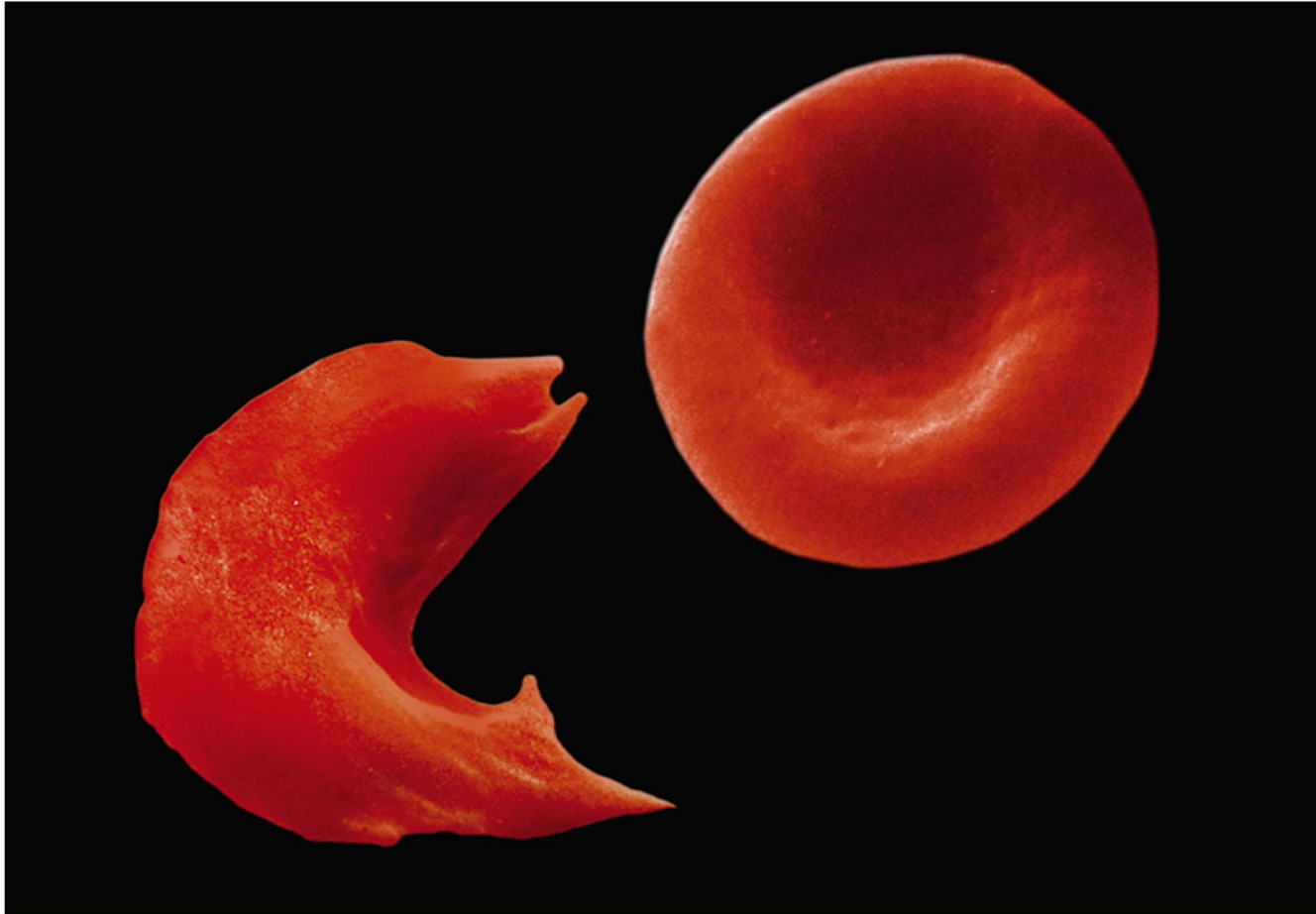




Sickle-shaped blood cells

Normal red blood cells

© Dr. Stanley Flegler/Visuals Unlimited



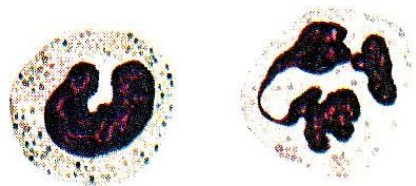
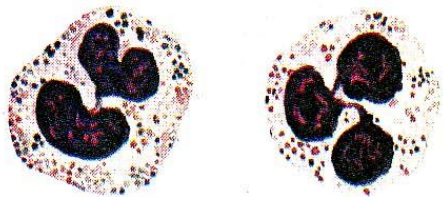
What a difference one amino acid can make!

Amino acid sequence of normal hemoglobin:

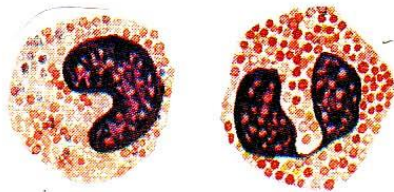
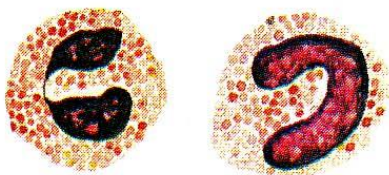
Val — His — Leu — Thr — Pro — Glu — Glu

Amino acid sequence of sickle-cell hemoglobin:

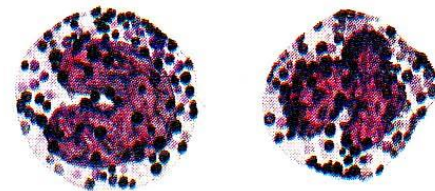
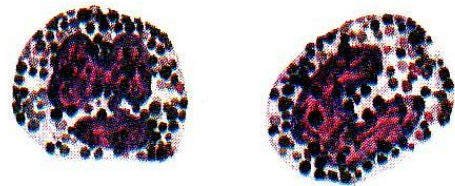
Val — His — Leu — Thr — Pro — Val — Glu



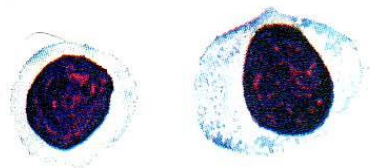
NEUTROPHILS



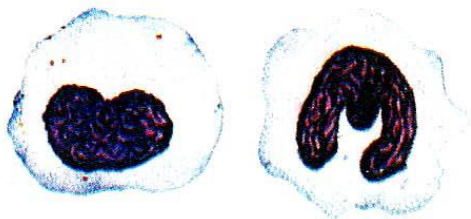
EOSINOPHILS



BASOPHILS



LYMPHOCYTES



MONOCYTES

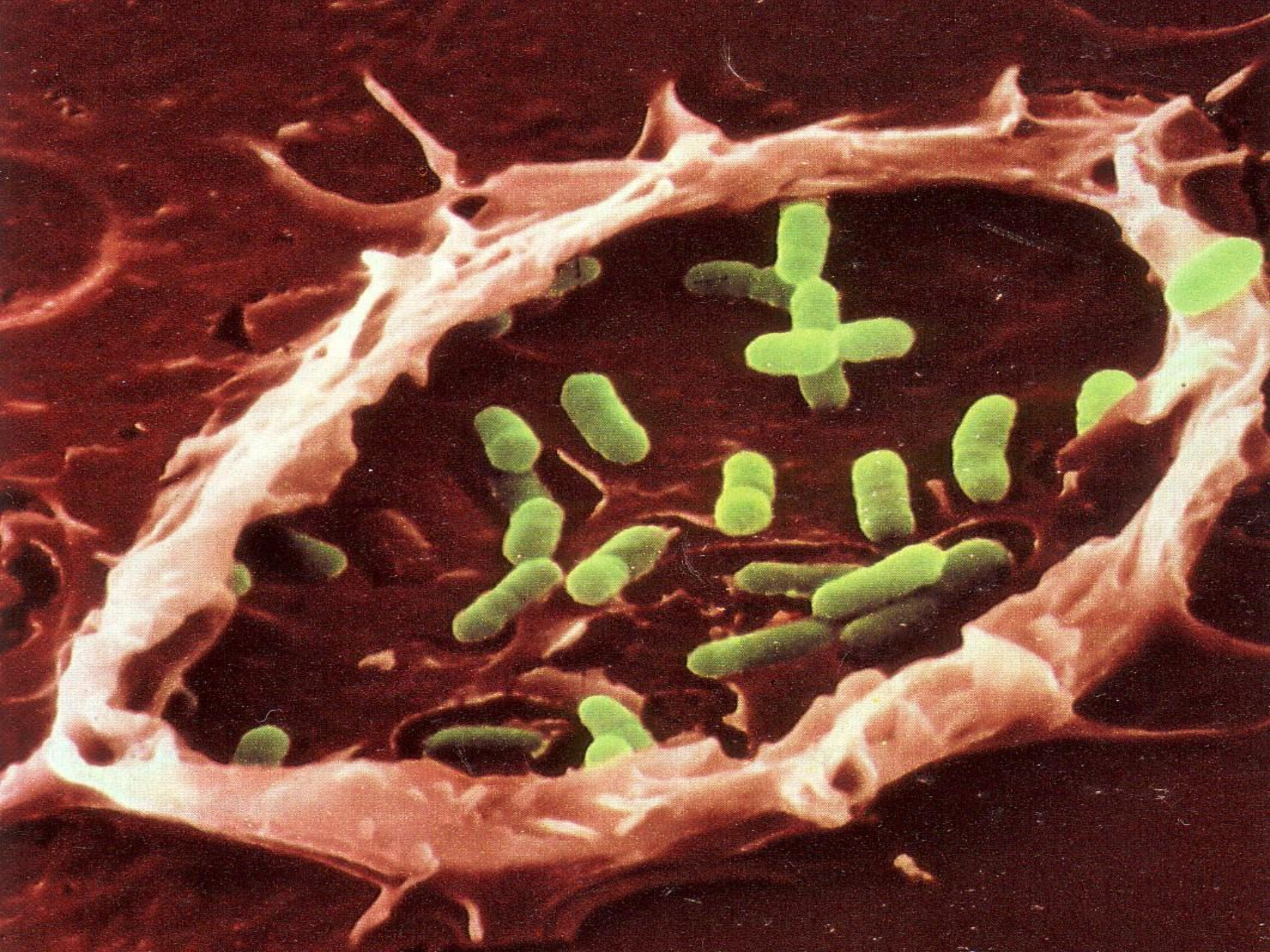


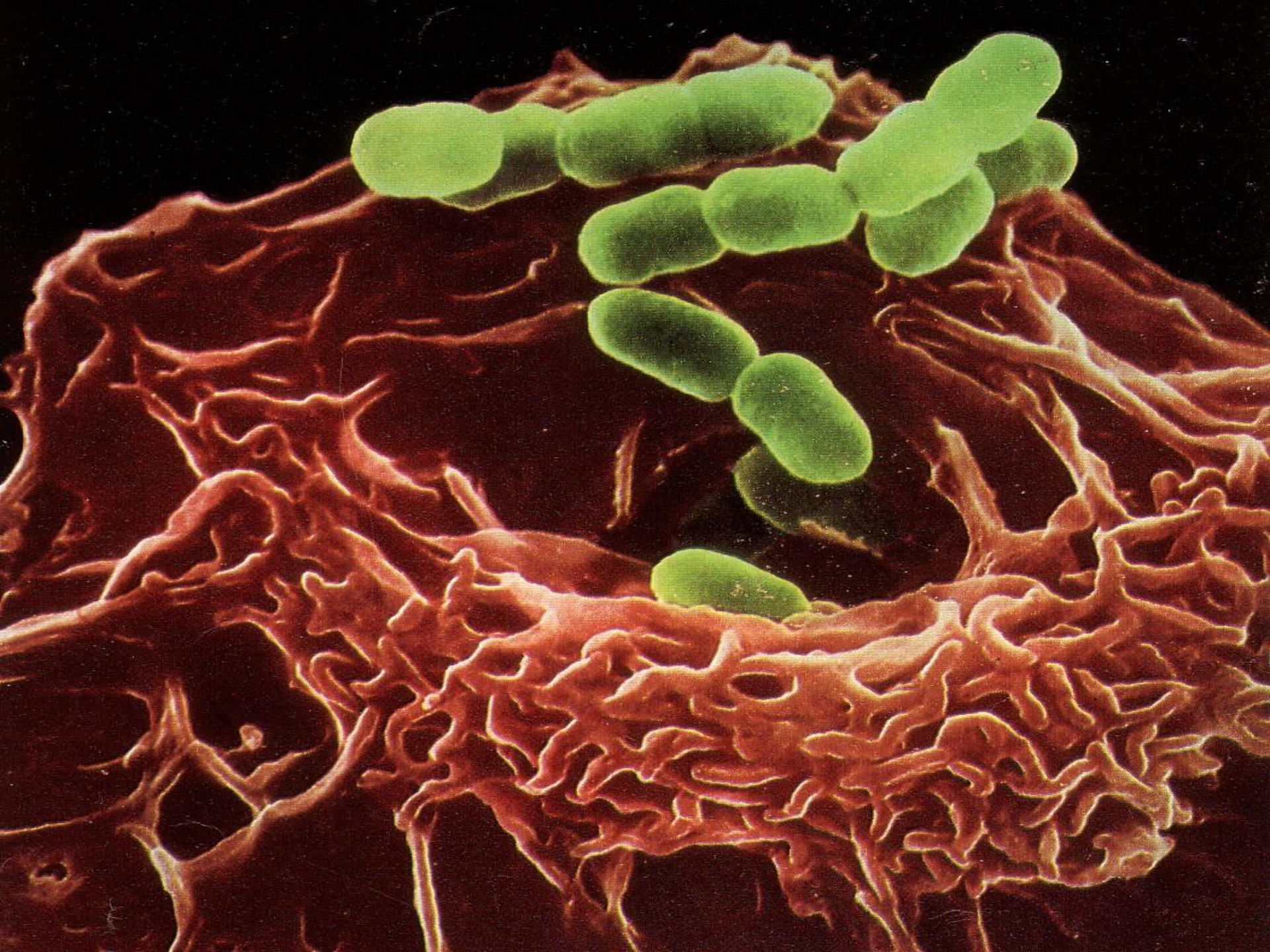
PLATELETS

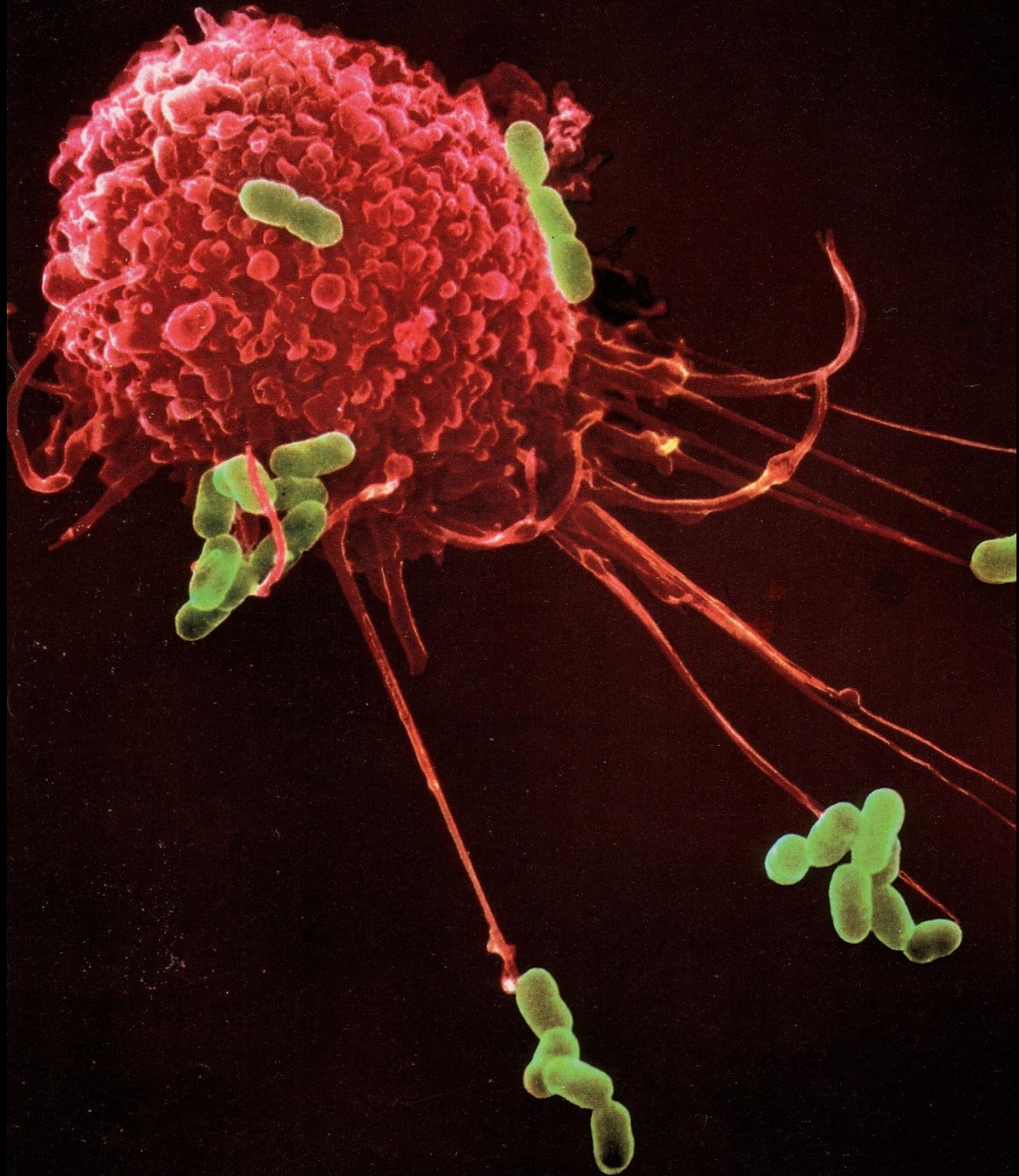


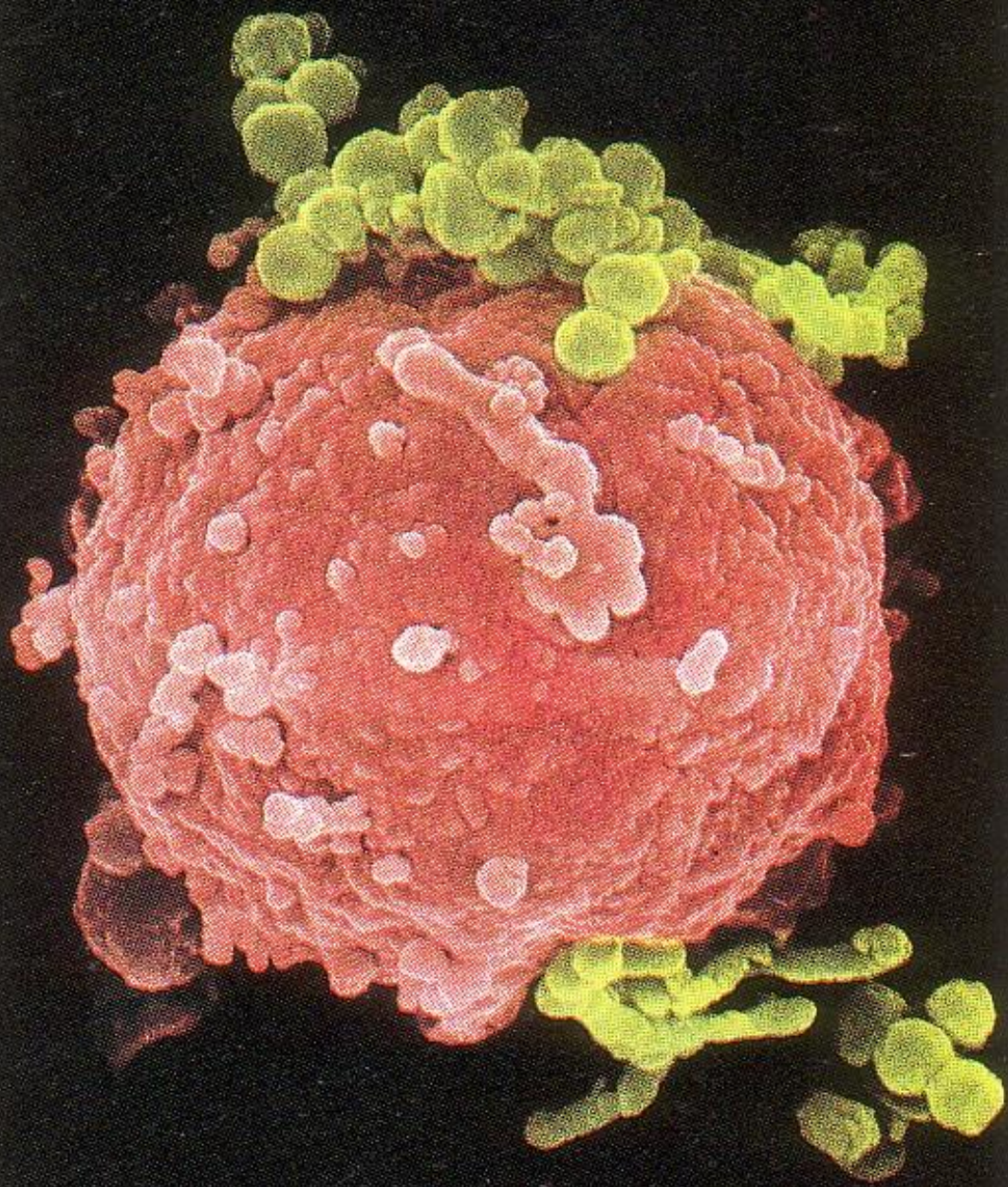
ERYTHROCYTES

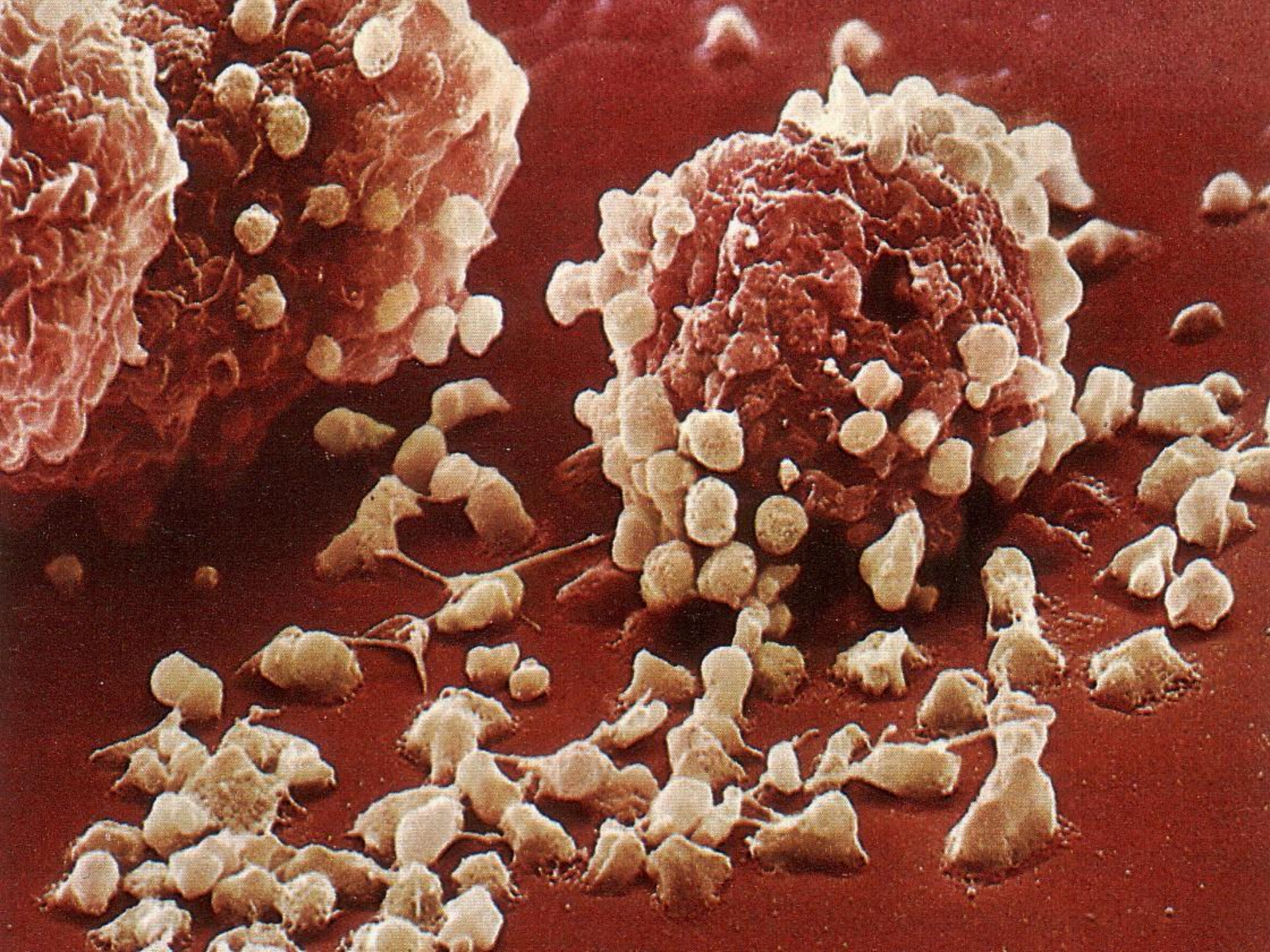


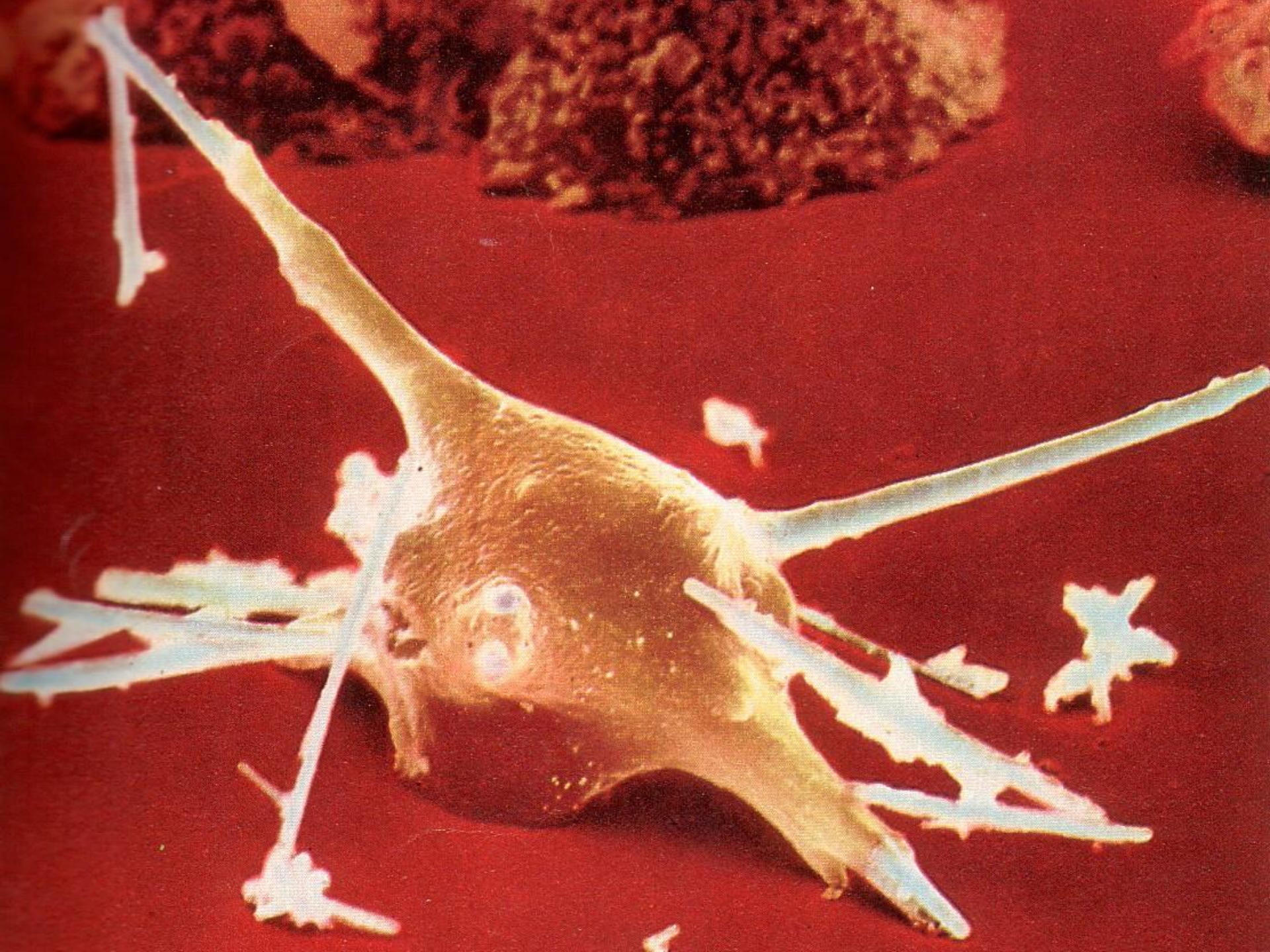


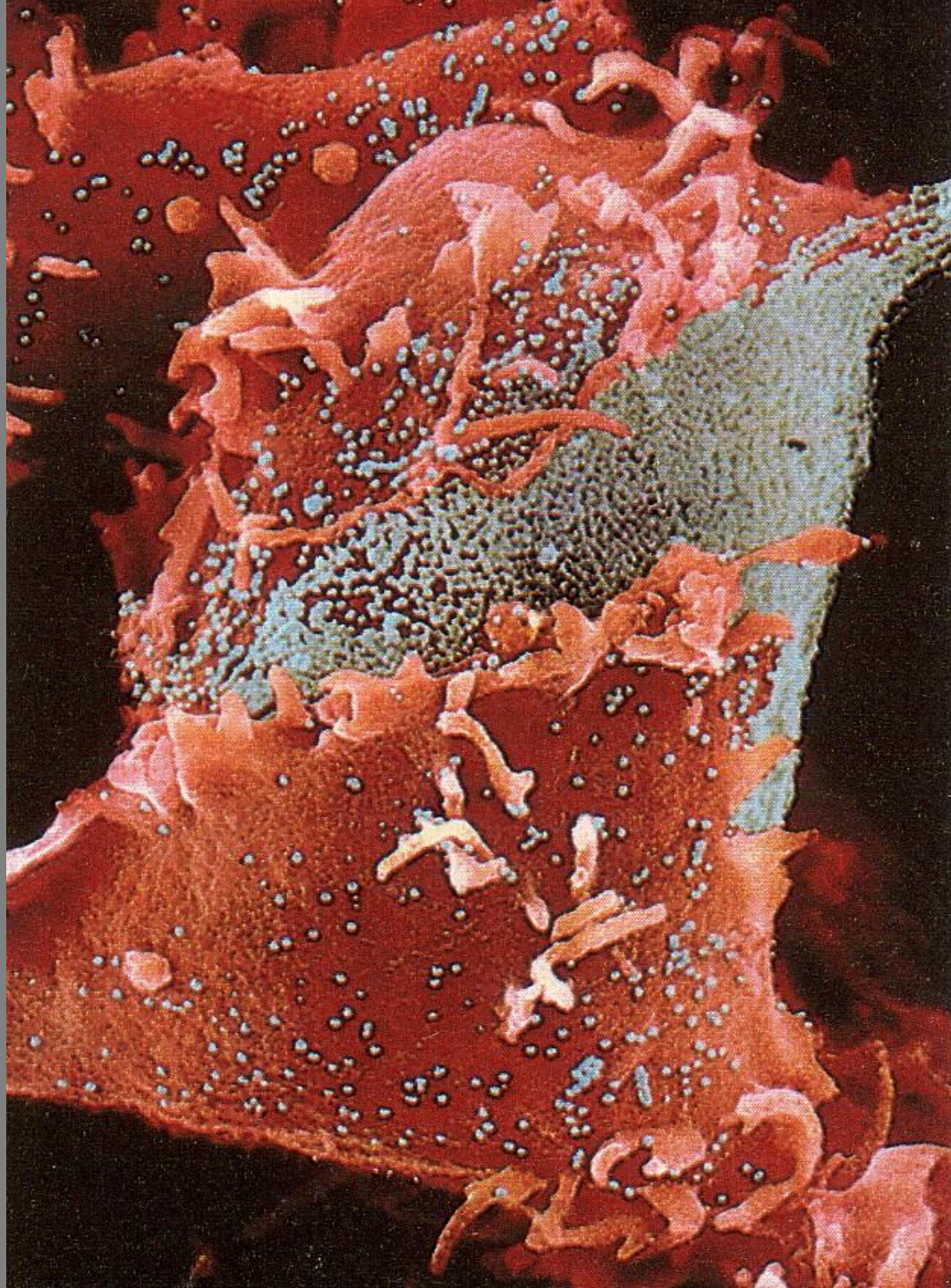




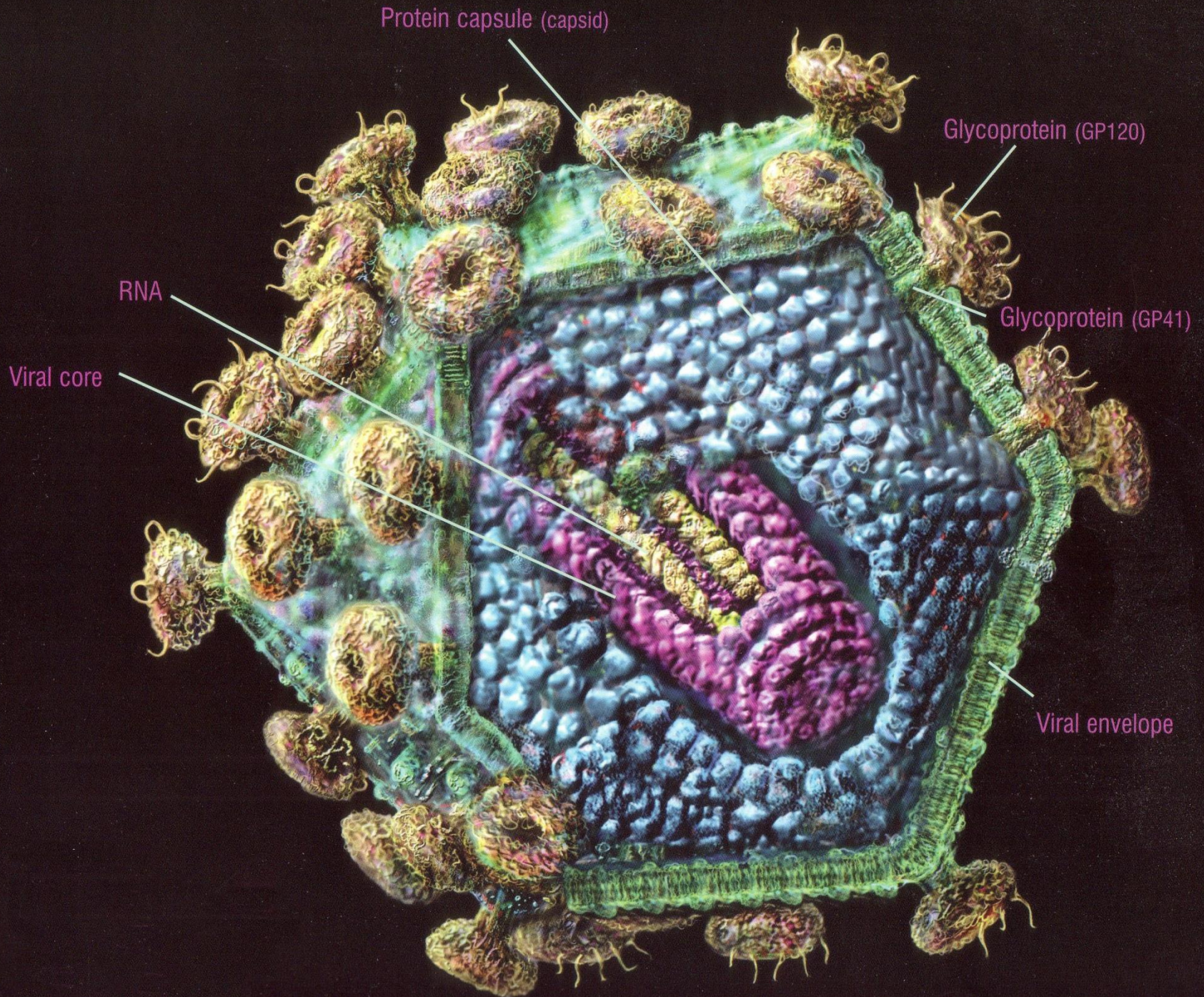


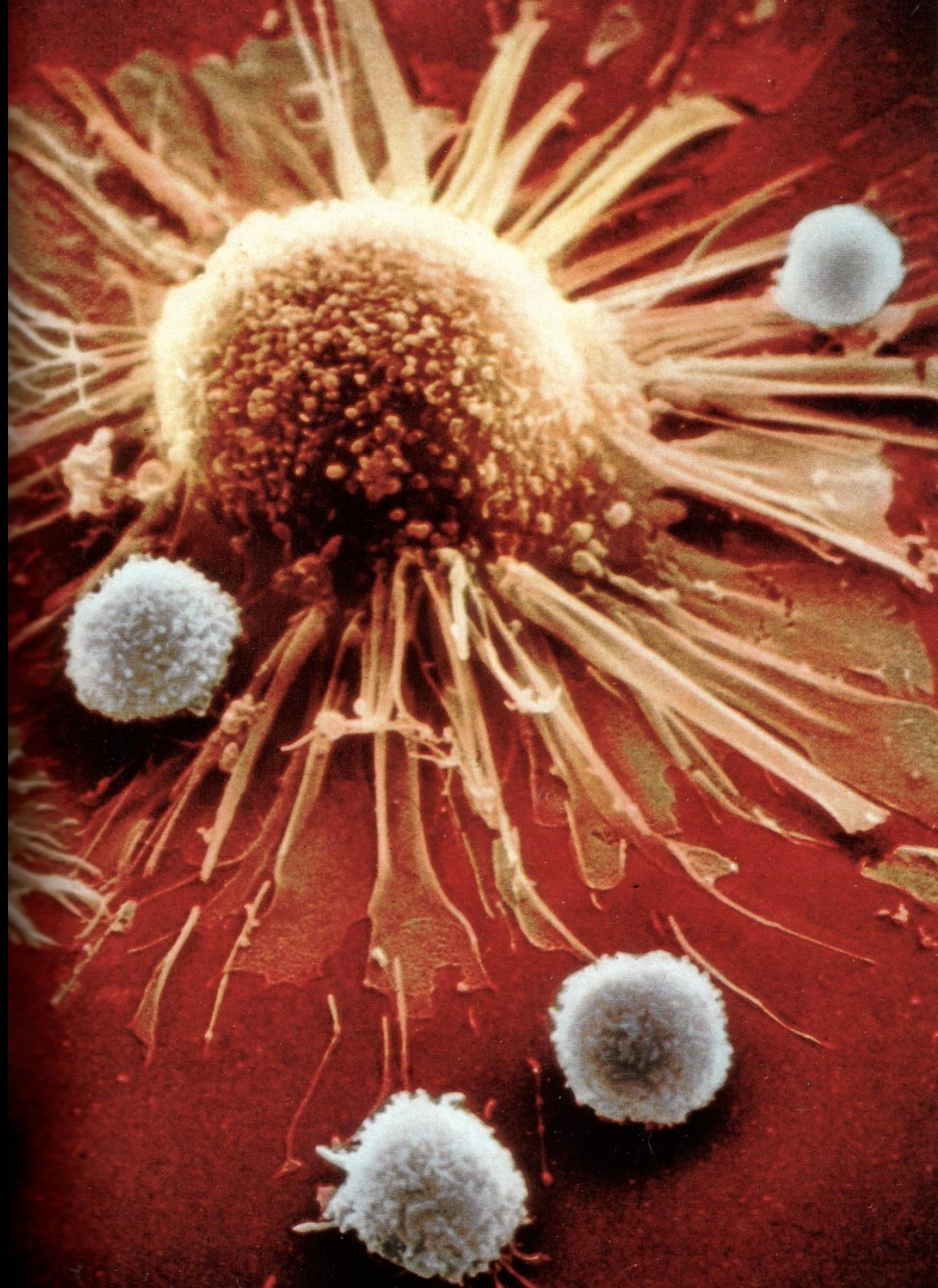




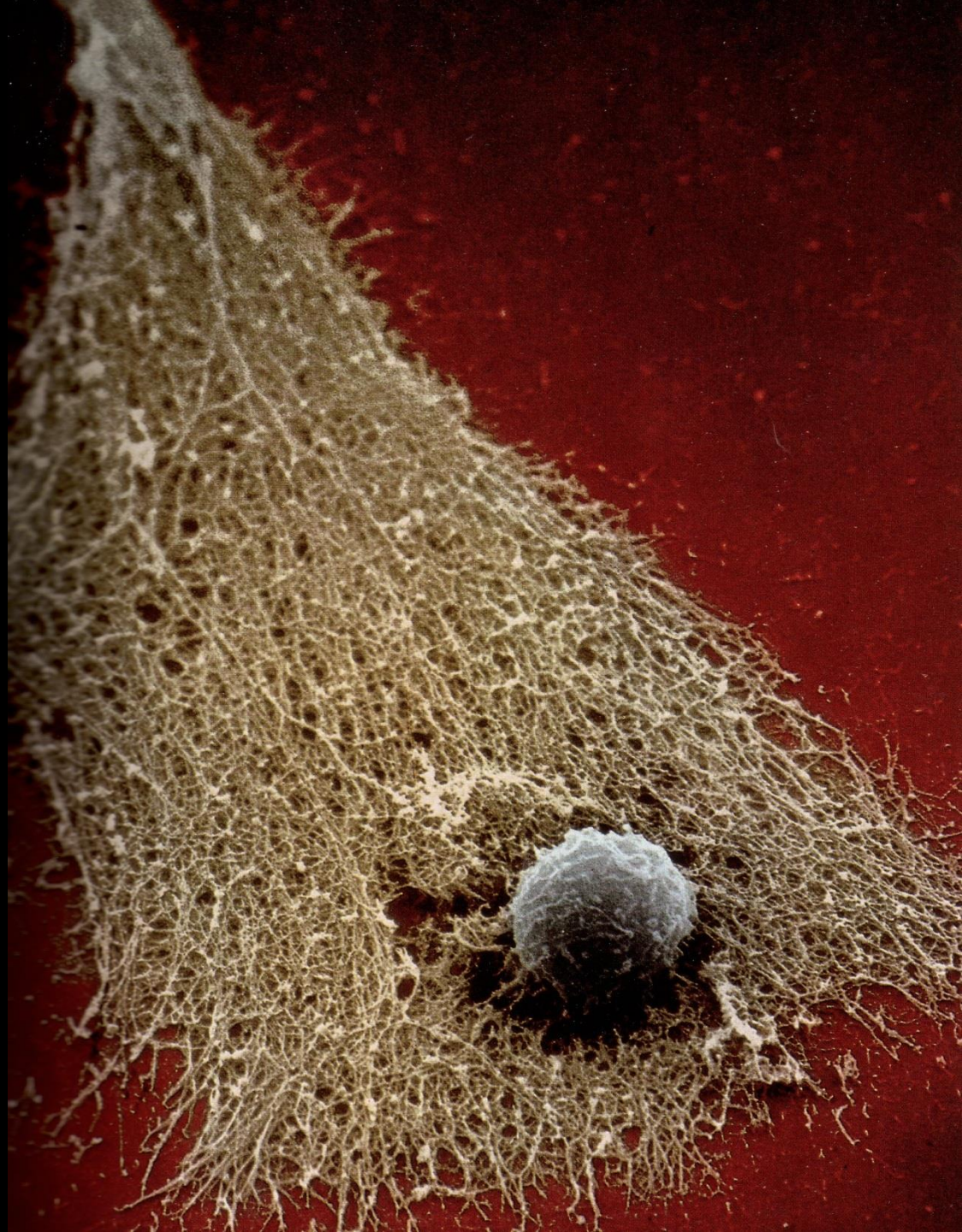


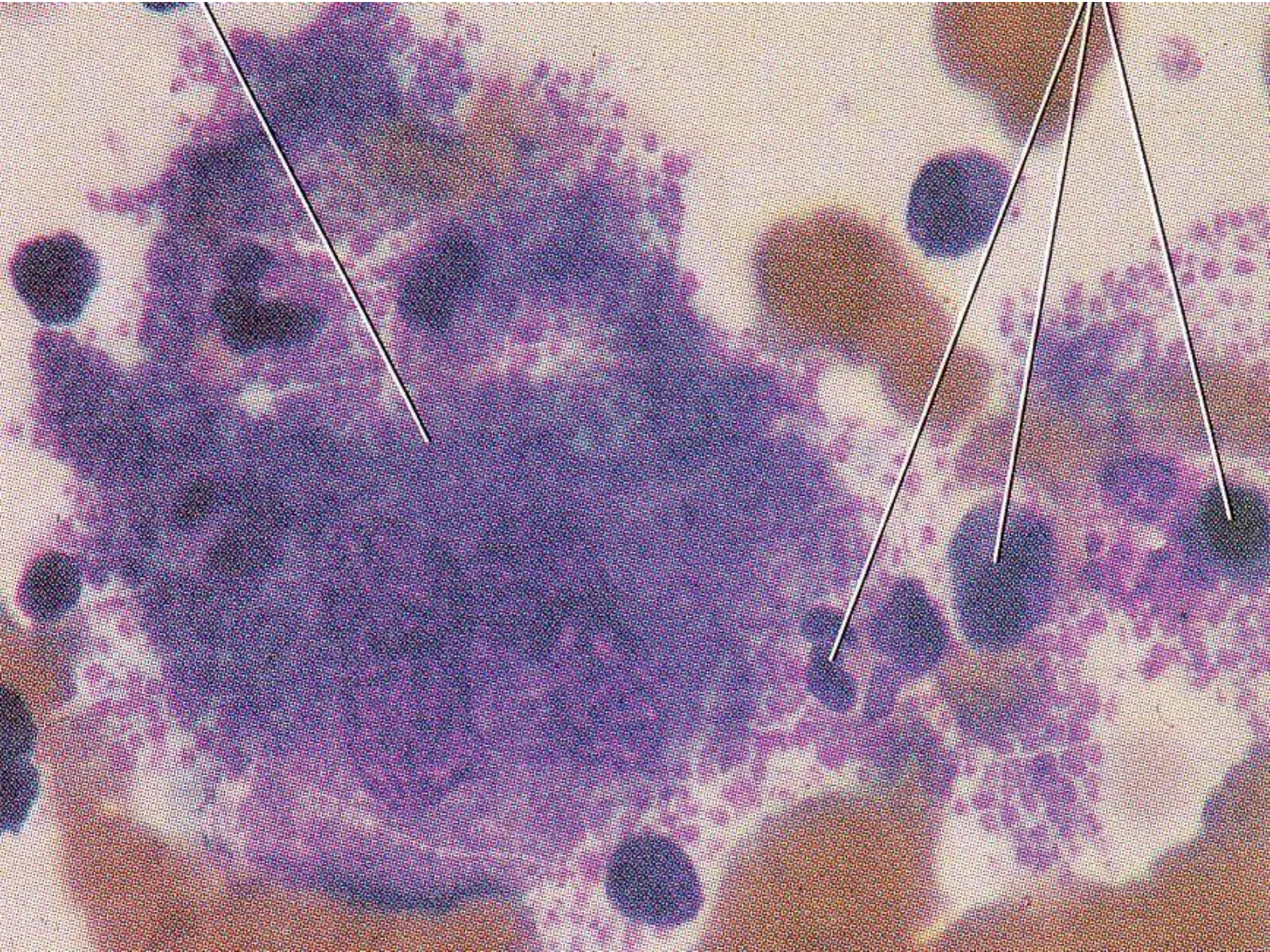










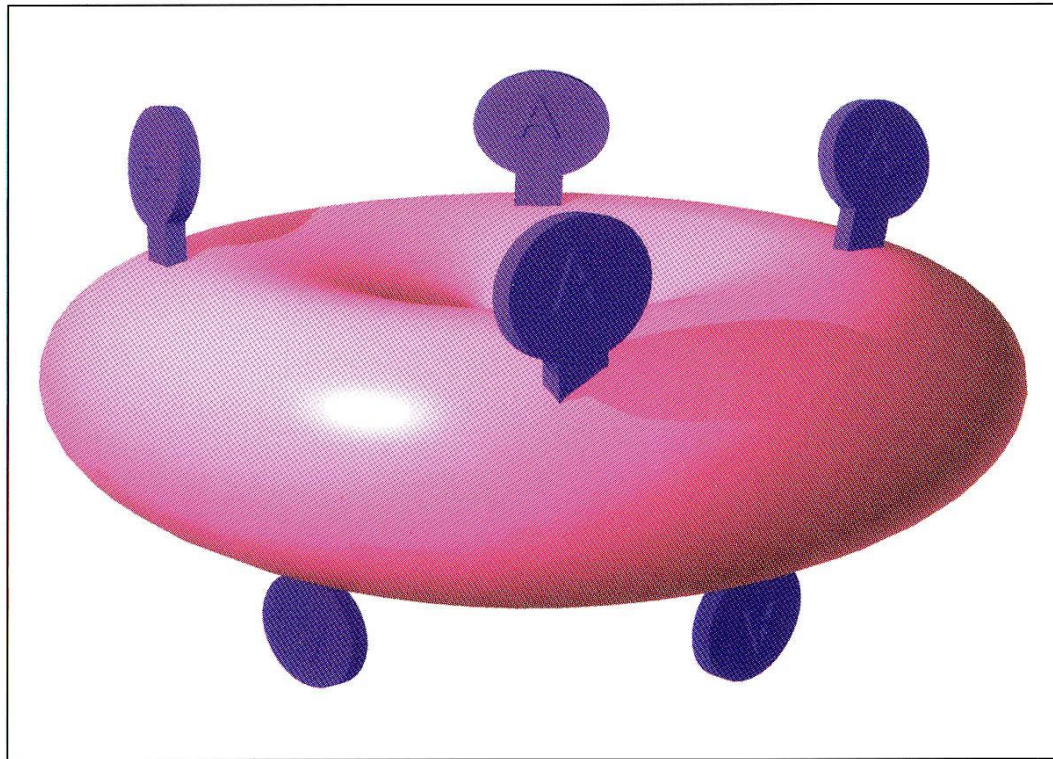


Q?

Discussion

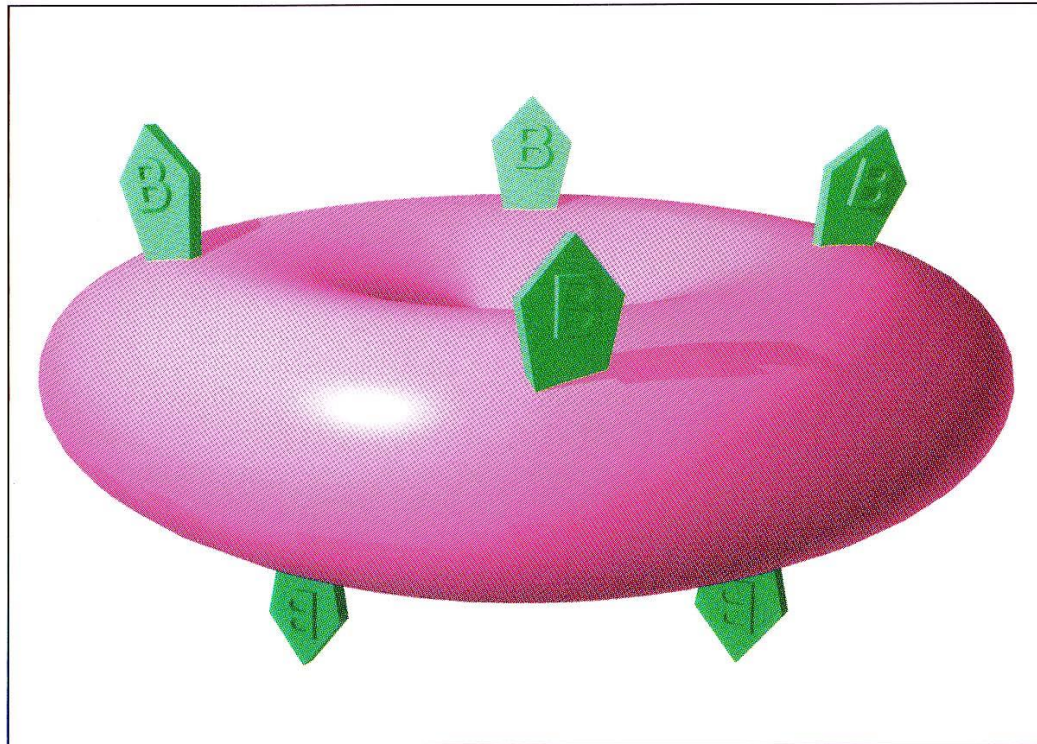
Break

A



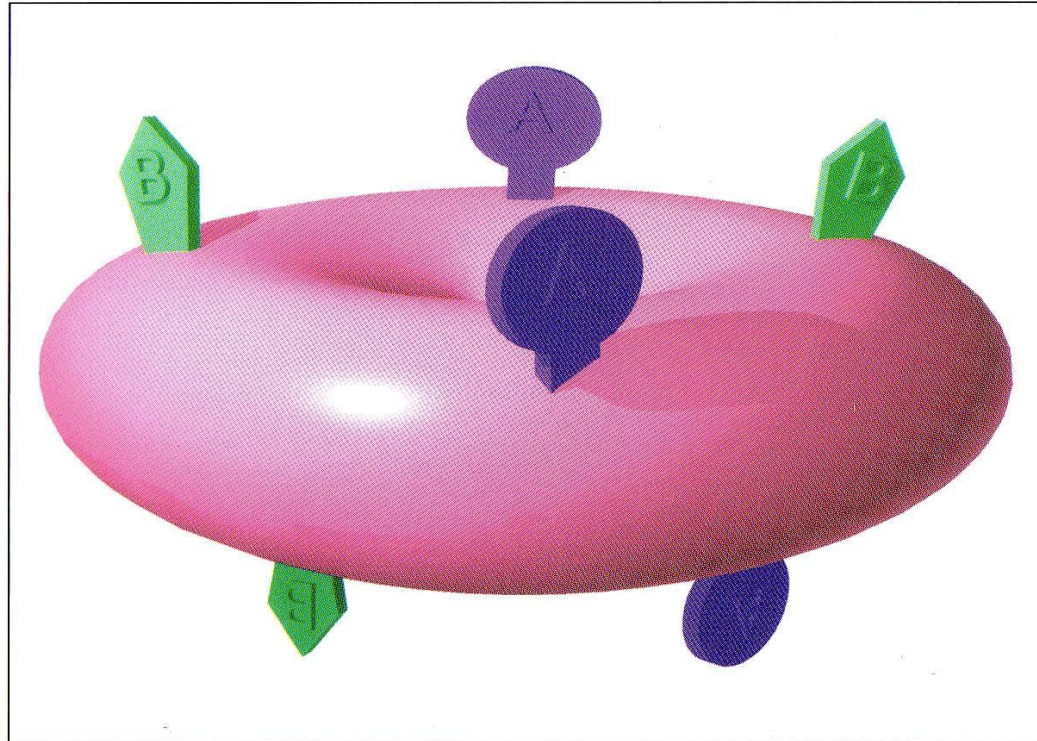
A Antigens
(Agglutinogens)

B

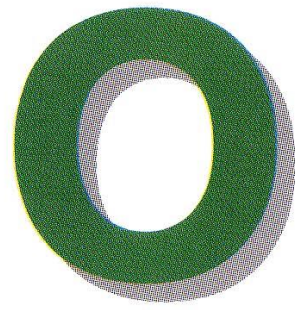


B Antigens
(Agglutinogens)

AB



A & B Antigens
(Agglutinogens)

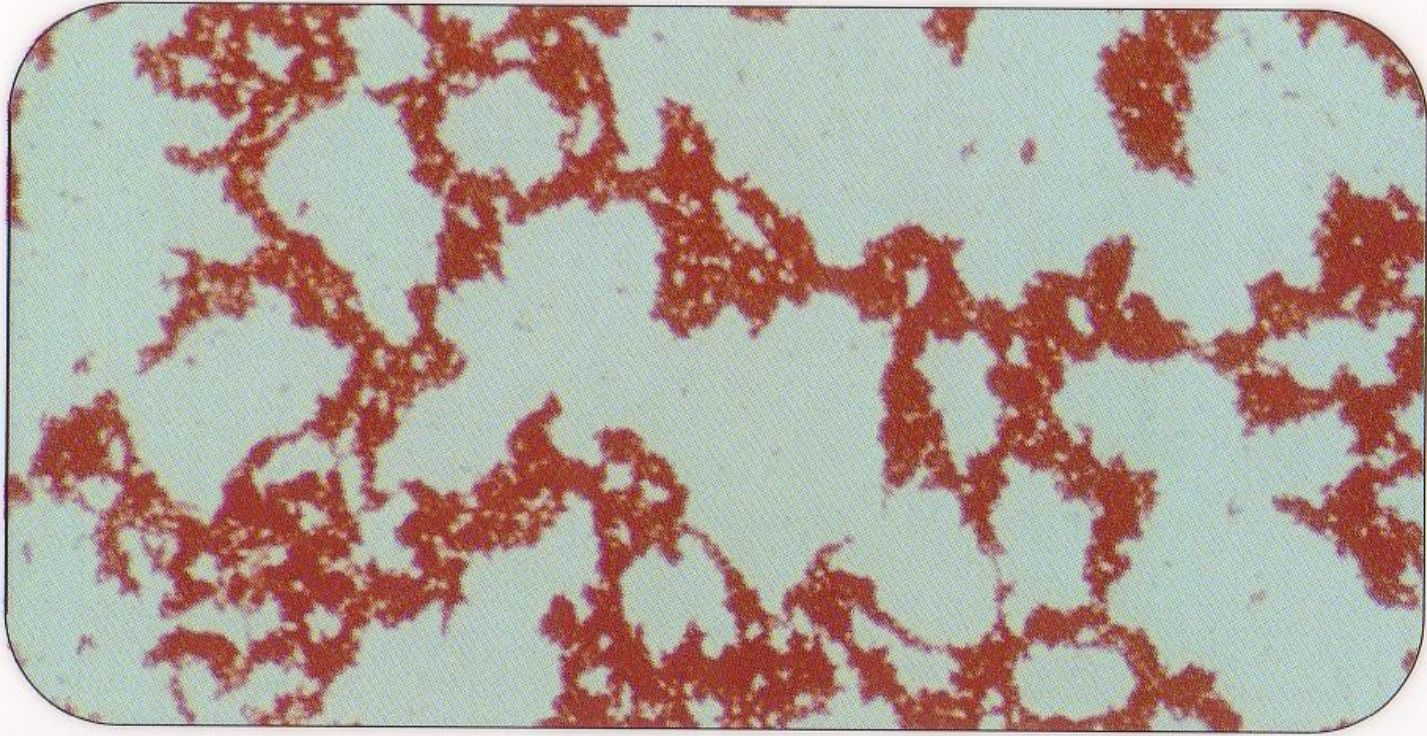


No Antigens
(Agglutinogens)

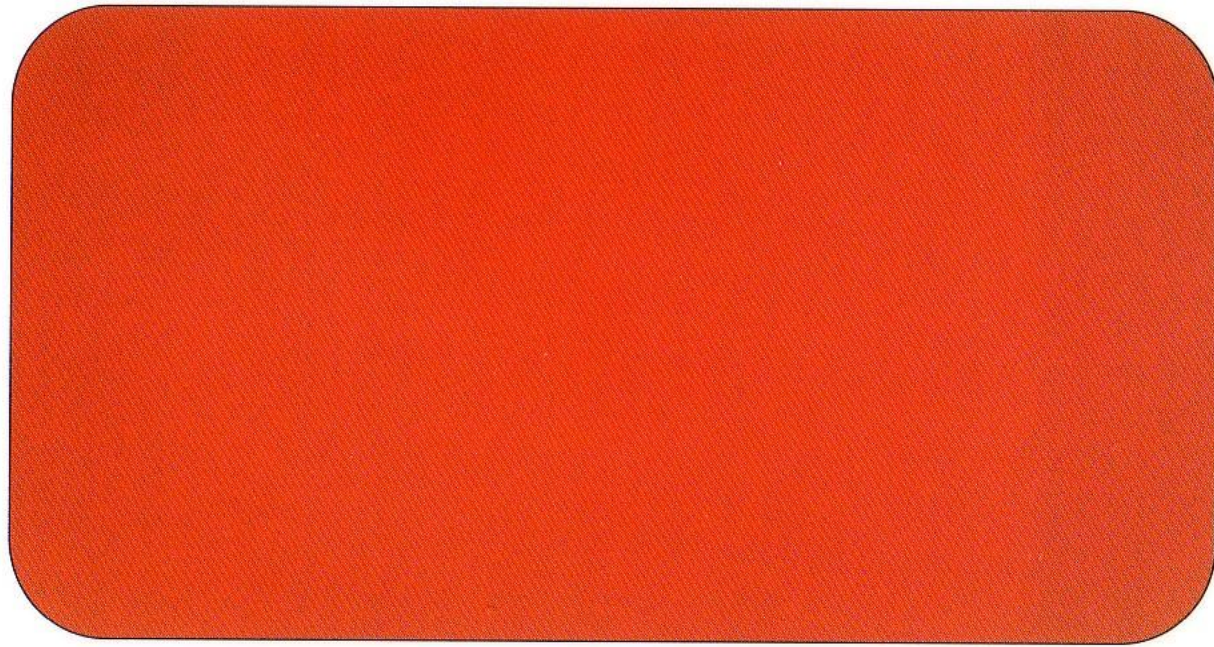


A Antibodies

(Agglutinins)

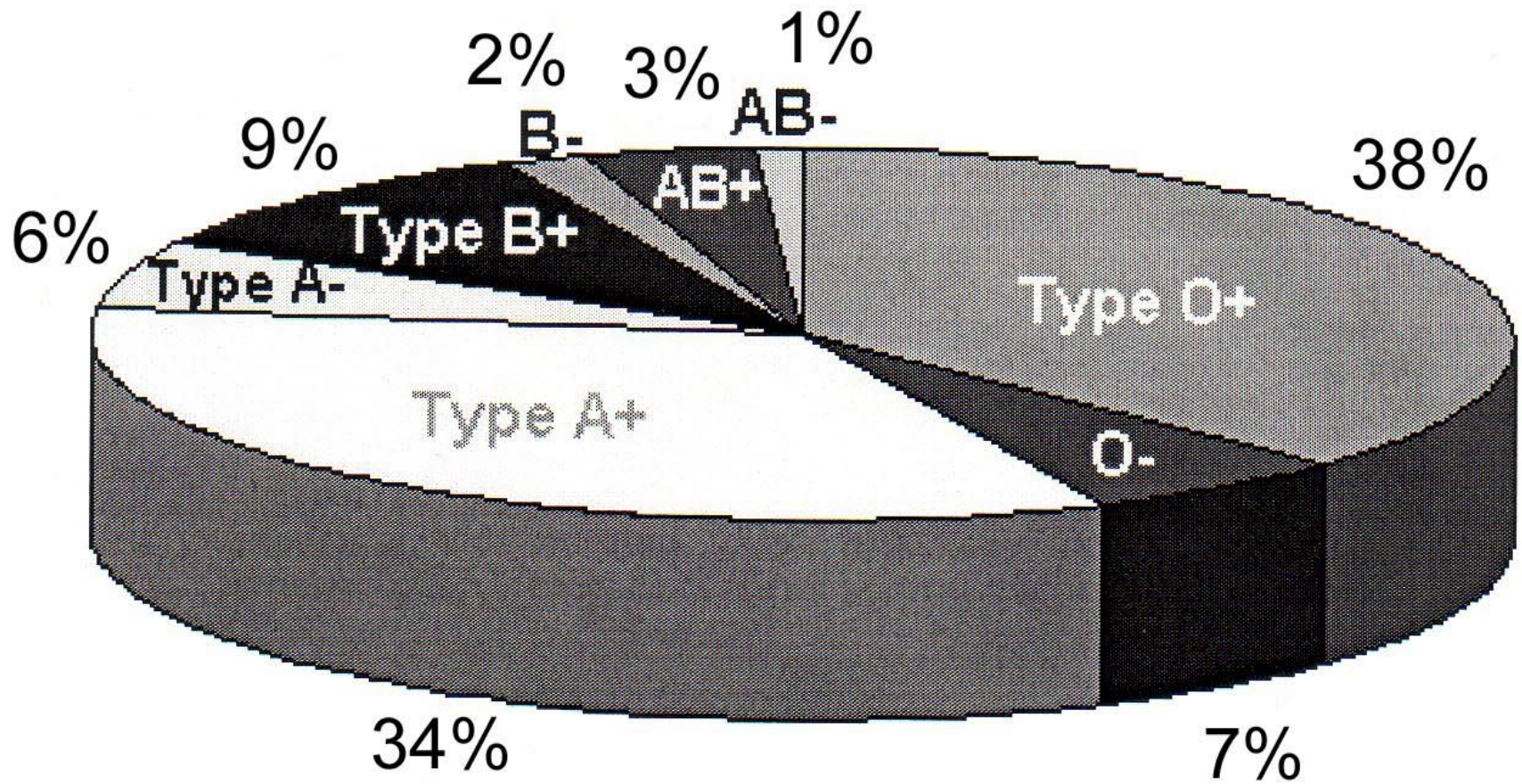


Clumping with
anti-A serum



No Clumping with
anti-A serum

Blood Type Distribution, General Population



NOVEMBER 1997

\$2.50

NUTRITION ACTION

H E A L T H L E T T E R

What's New in
Fast Food?—page 15

CENTER FOR SCIENCE IN THE PUBLIC INTEREST

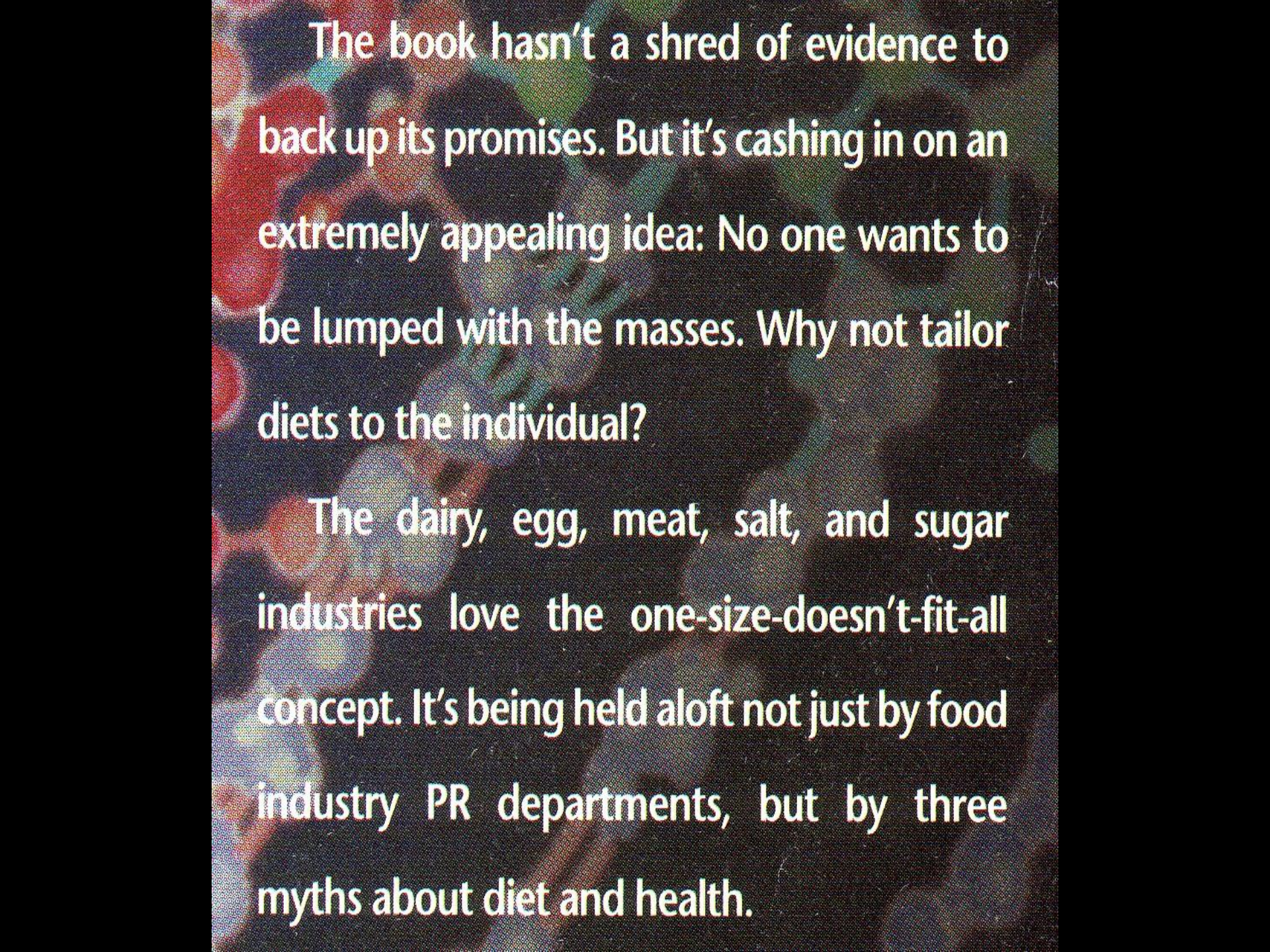
VOLUME 24 / NUMBER 9

Does one size fit all?

BY BONNIE LIEBMAN

"If you've ever suspected that not everyone should eat the same thing or do the same exercise, you're right," says the cover of Peter D'Adamo's *Eat Right 4 Your Type*.

D'Adamo claims that your blood type determines what foods you should eat to avoid obesity, cancer, heart disease, ear infections, learning disabilities, strep throat, infertility, and more. (Example: Type Os should go for ground beef and broccoli but avoid cantaloupe and whole wheat bread.)




The book hasn't a shred of evidence to back up its promises. But it's cashing in on an extremely appealing idea: No one wants to be lumped with the masses. Why not tailor diets to the individual?

The dairy, egg, meat, salt, and sugar industries love the one-size-doesn't-fit-all concept. It's being held aloft not just by food industry PR departments, but by three myths about diet and health.

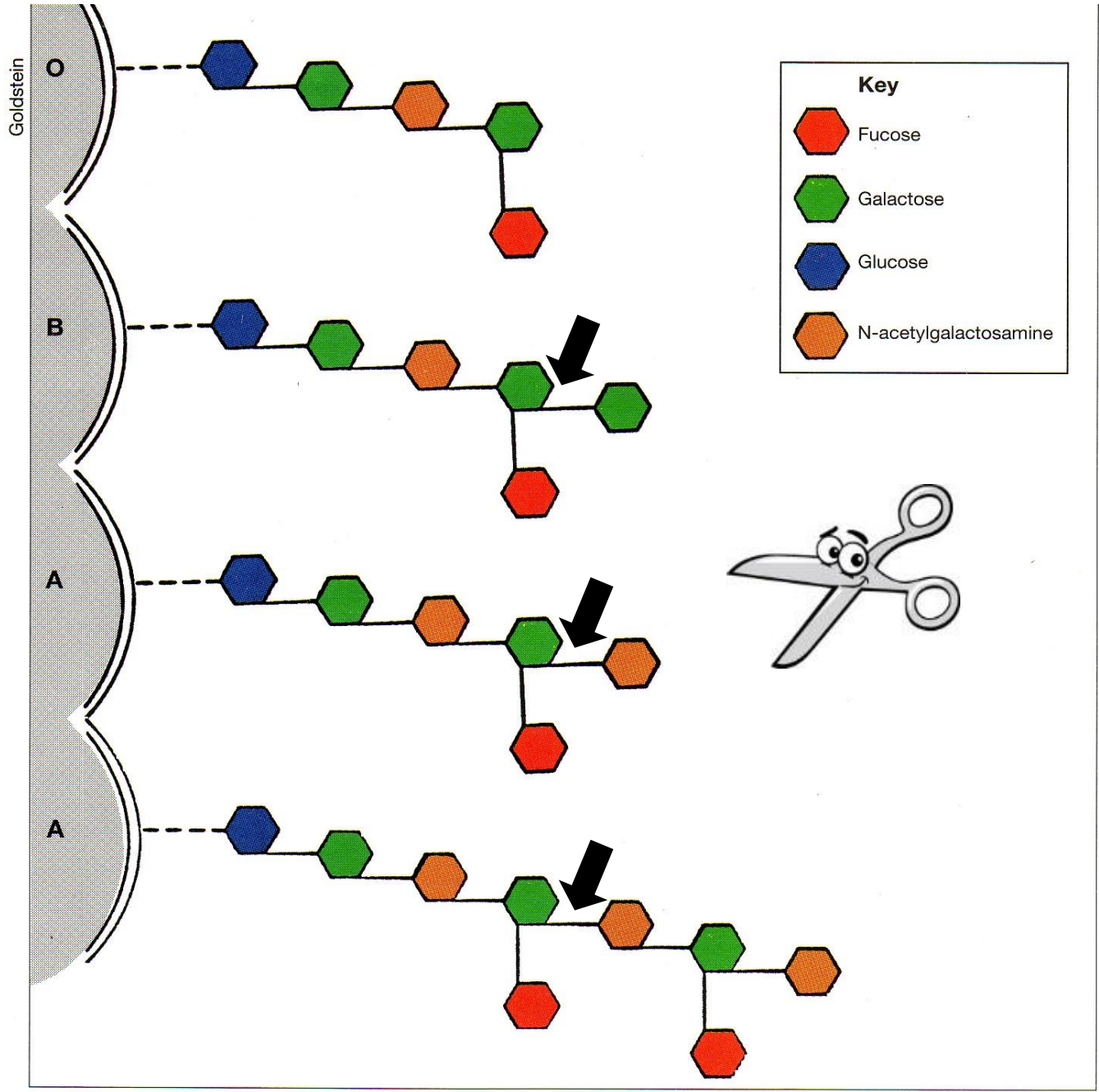
The Weekly Newsmagazine of Science

SCIENCE NEWS

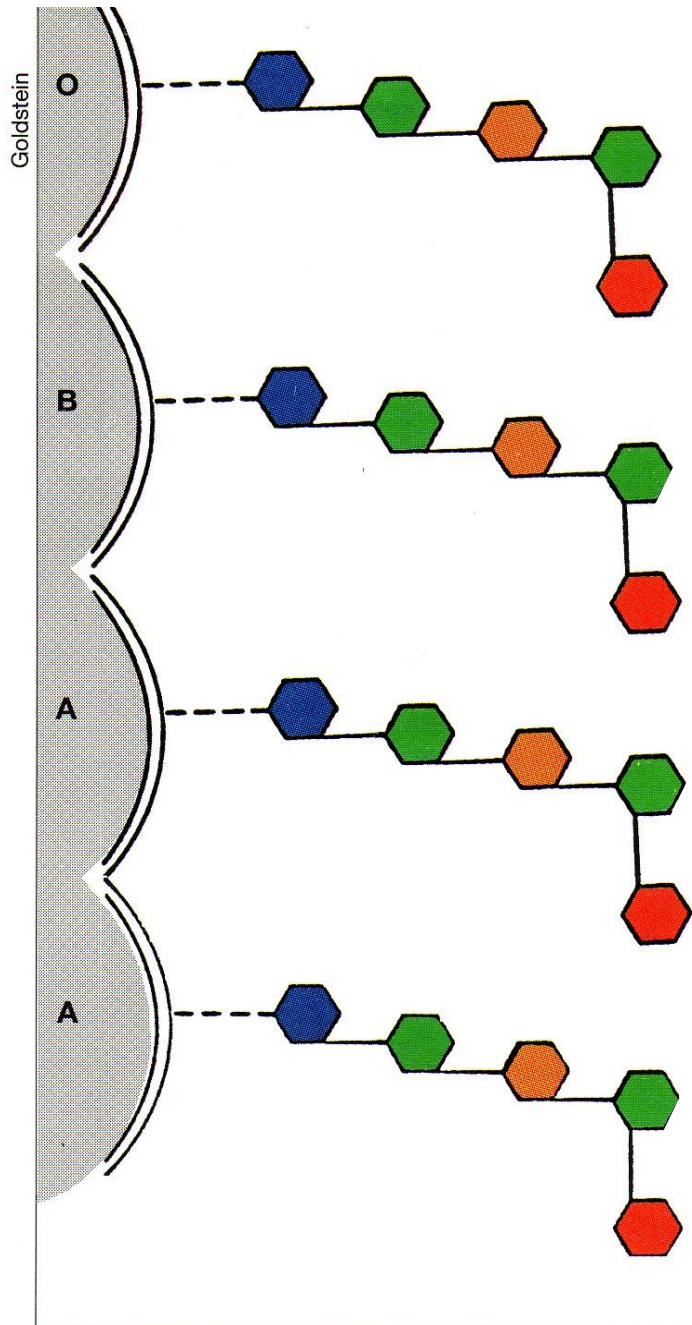
January 11, 1997
Vol. 151, No. 2
Pages 17-32







**Universal
Blood**



All like Type O!

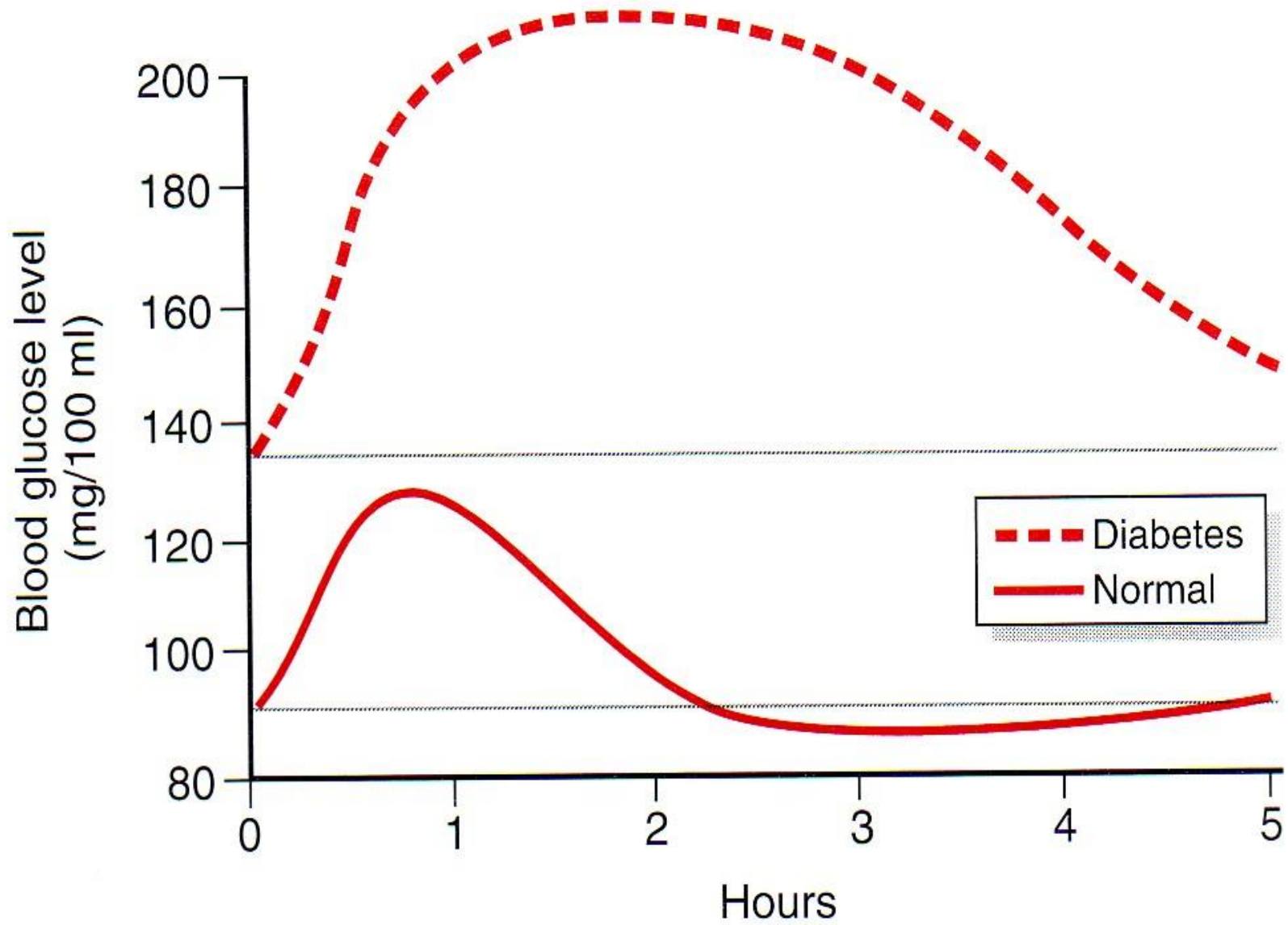


Key	
	Fucose
	Galactose
	Glucose
	N-acetylgalactosamine

Erythroblastosis Fetalis?

**eg, Rh- mom
Rh+ baby**

<http://www.nlm.nih.gov/MEDLINEPLUS/ency/article/001298.htm#Alternative%20Names>



***No food, drink or gum in lab!
Thanks sincerely!***



PREPARATION



WASH & DRY



ALCOHOL



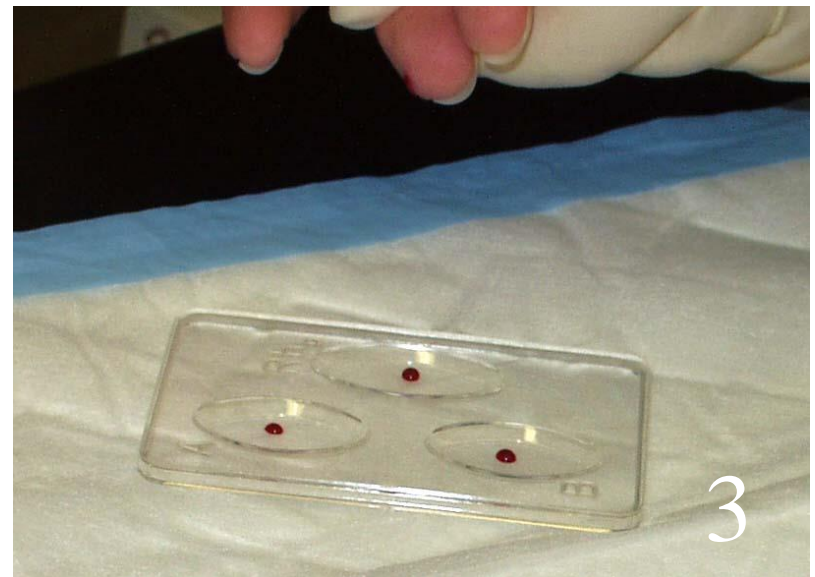
SAMPLE+TESTS



OBTAIN μ SAMPLE



BLOOD GLUCOSE



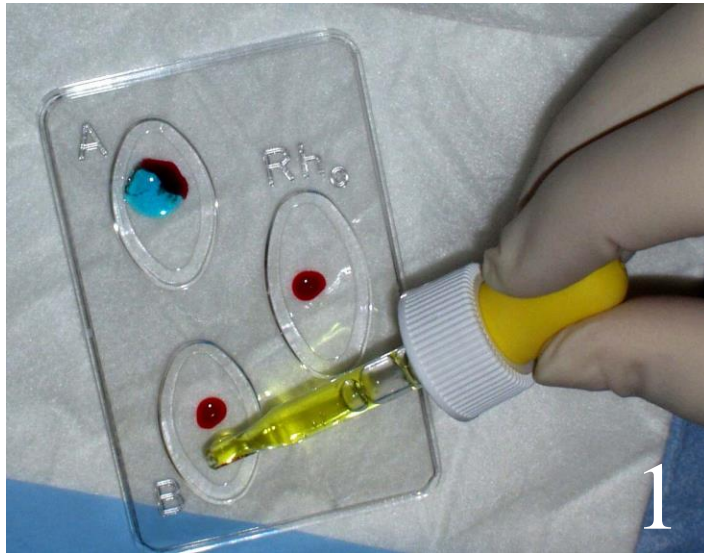
BLOOD TYPING

BLOOD GLUCOSE

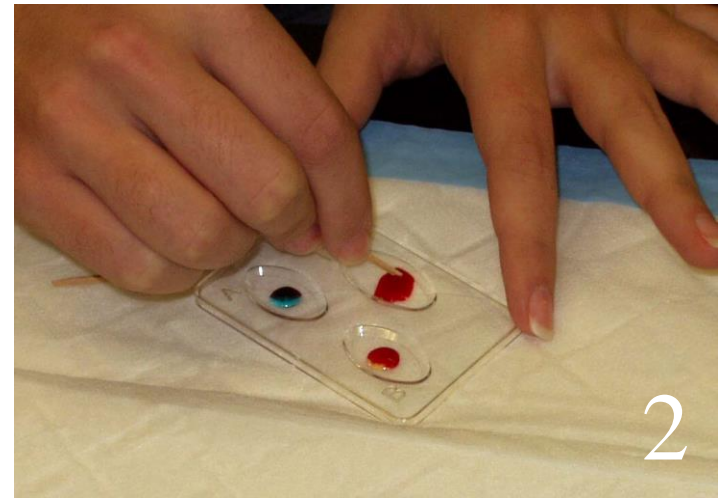


READ & RECORD!!

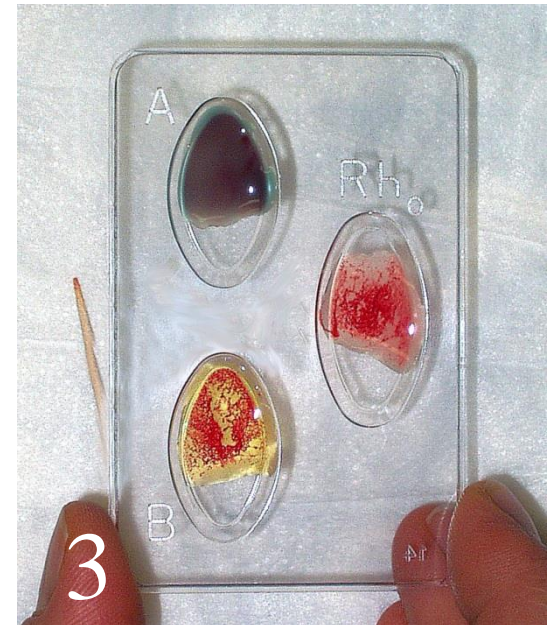
BLOOD TYPING



ADD ANTISERA



MIX W/TOOTHPICKS



READ & RECORD!!

CLEAN-UP!



1

FOLD DIAPER



2

BLOOD PRODUCTS



3

REWASH!!

**Q about
Blood Chem
Lab?**

WOW!



SUPER



~ TOP 5-10!

EXCELLENT!!



~ TOP 15!

GREAT EFFORT



~ TOP 20-25!

Class Frequency Distribution Report for BI 121 Midterm F16, Multiple Choice, Part II

Overall

Mean Score: 71.50%

Grade	Percent Score	Raw Score	Frequency	Percent
A	90.00 - 100.00	36.00 - 40.00	14	8.00
B	80.00 - 89.99	32.00 - 35.99	37	21.14
C	70.00 - 79.99	28.00 - 31.99	56	32.00
D	60.00 - 69.99	24.00 - 27.99	38	21.71
F	0.00 - 59.99	0.00 - 23.99	30	17.14

