
“In a time of universal deceit,
telling the truth is a revolutionary act.”

George Orwell



BRMI

CONFERENCE 2018

Understanding the Bioregulatory Matrix and its Detoxification

May 11th, 2018

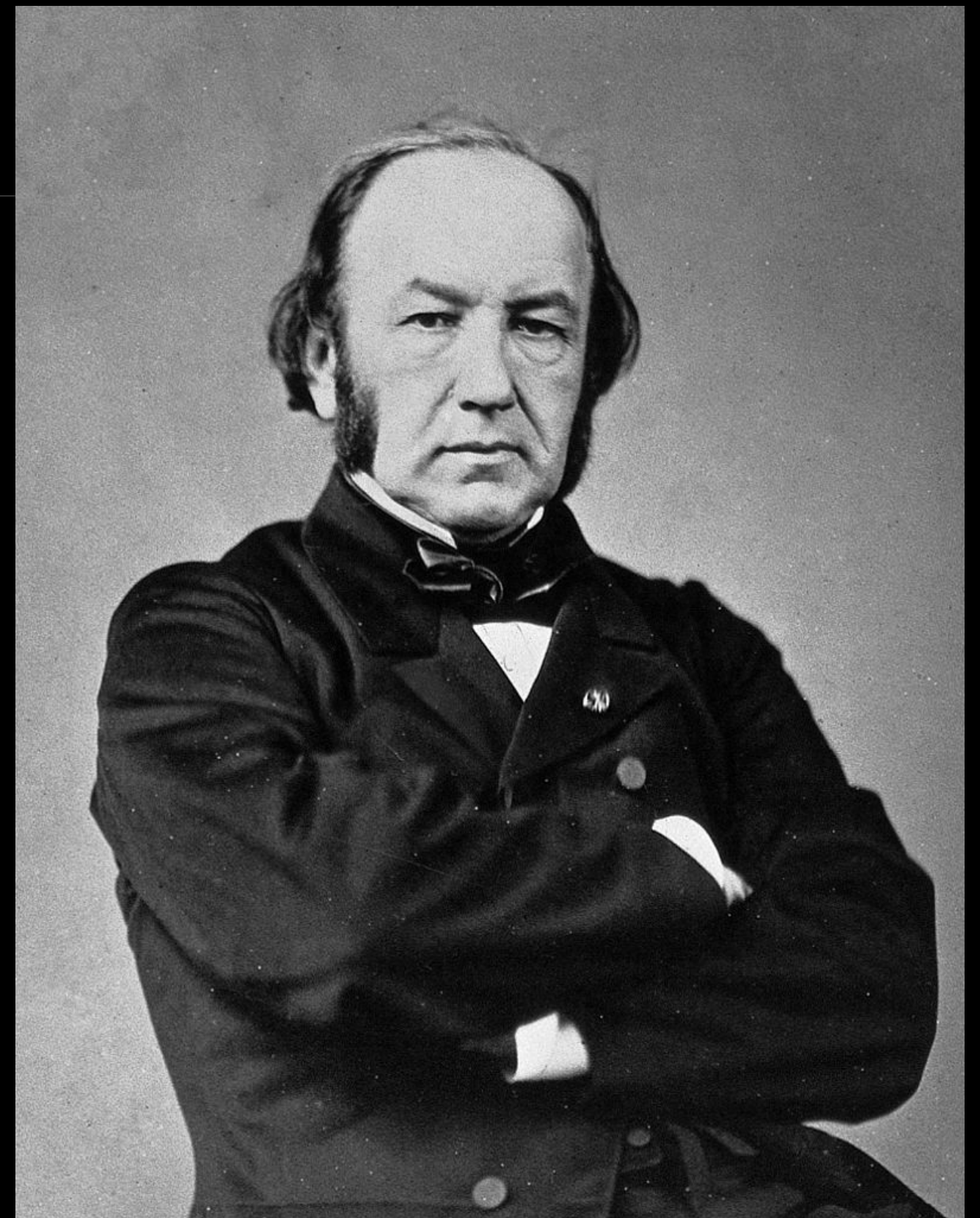
James Odell, OMD, ND, L.Ac

The Bioregulatory Terrain

- ▶ Terrain theory was initiated by Claude Bernard (1813-1878), and later built upon by Antoine Bechamp (1816-1908).
- ▶ They believed that the terrain or **internal environment** “**milieu interieur**” determines our state of health.
- ▶ Healthy bioregulatory terrain is when the body is functioning in homeostasis, and immunity and detoxification is operating efficiently - pathogenic microorganisms are less likely to cause infection.

The bioregulatory terrain
determines an individual's
susceptibility to disease.

Claude Bernard

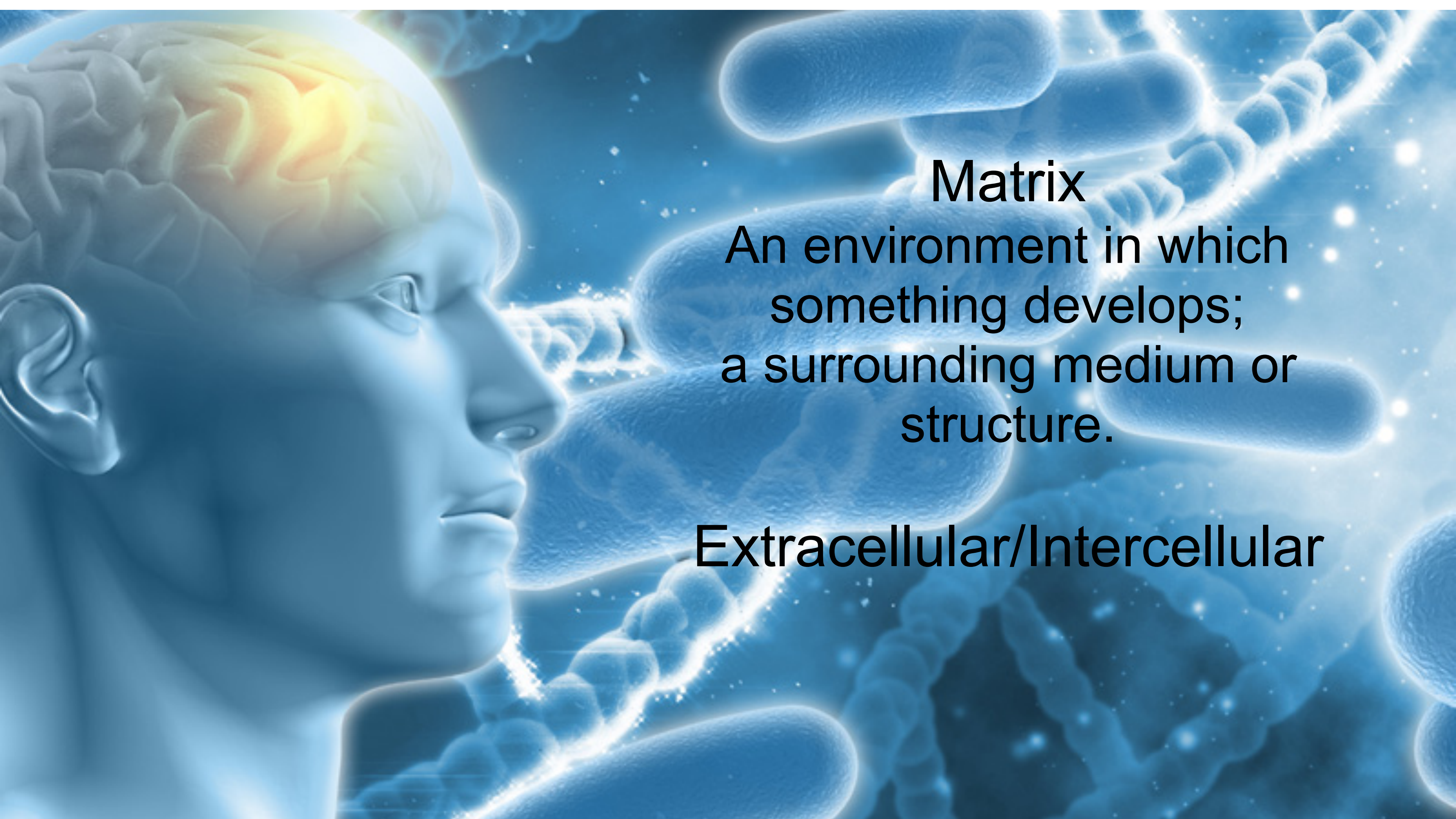


The Bioregulatory Terrain is both Physical and Nonphysical

Homeostasis

“When the quality of the milieu interieur is just right the blood and lymph flow freely, rich in nutrients and oxygen and free of unwanted substances or toxins; the red cells float freely and so too do the white cells of the immune system, vigorous and efficient. When this ideal condition is achieved, all the organs of the body harmonize and everything works the way it should.” - Claude Bernard

Internal milieu generally refers to the extra-cellular environment and its physiological capacity to ensure protective stability for the tissues and organs of the body



Matrix

An environment in which something develops; a surrounding medium or structure.

Extracellular/Intercellular

The extracellular matrix (ECM) is a major component of the bioregulatory environment with which cells interact, and it plays important roles in both normal development and disease progression.

Extracellular Matrix

The extracellular matrix is the non-cellular component present within all tissues and organs, and provides not only essential physical scaffolding for the cellular constituents, but also initiates crucial biochemical, biomechanical, and energetic processes that are required for tissue regeneration, cellular communication, detoxification and homeostasis.

The prerequisite for the cell's long life is regular renewal of this extracellular fluid.

2/3 of the human body's water content is in the cell,
1/3 is outside the cell.

This water is in constant movement,
the extracellular body water is renewed
every nine days.

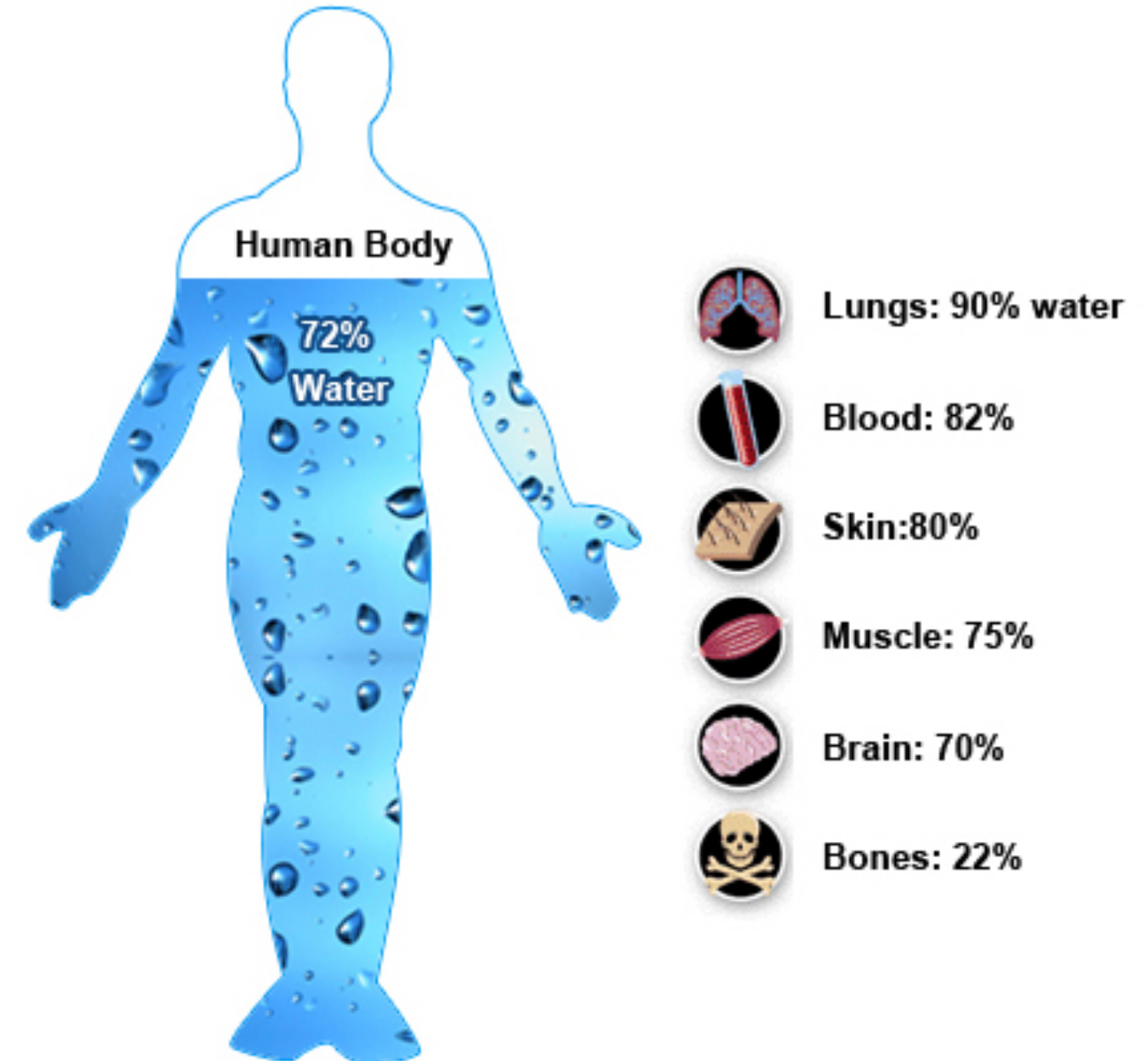
Water - the life force of the Matrix

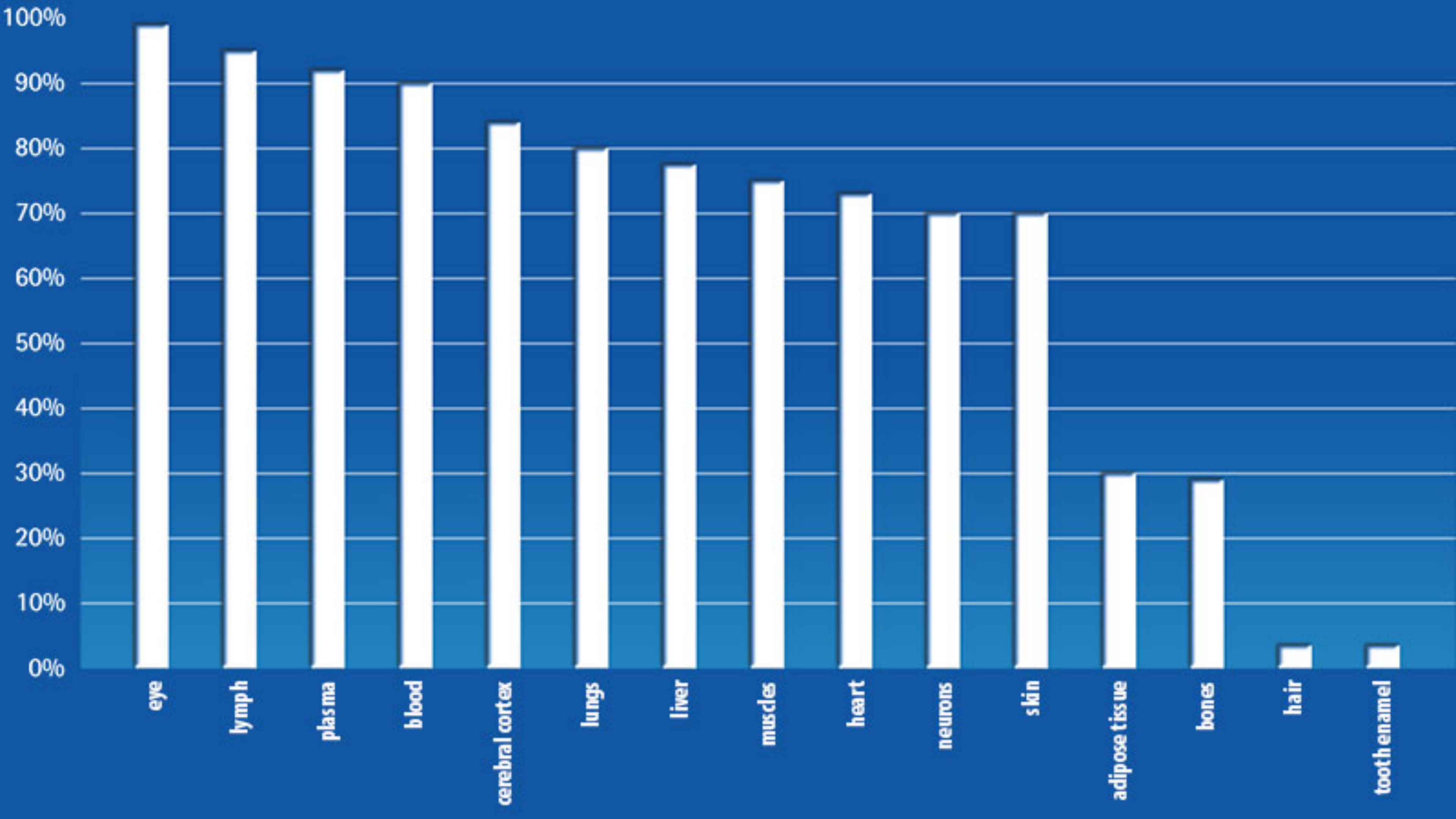
Different tissues contain different amounts of water.

Fat 10% water

Muscle 75% water

Plasma 93% water





Water has numerous roles in the human body

- It acts as a building material
- As a solvent
- As a reaction medium and reactant
- As a carrier for nutrients and waste products
- In thermoregulation
- and as a lubricant and shock absorber.

Calculating Hydration Need

- Calculate
 - $\text{Weight} \div 2 = \text{ounces daily to consume} = \text{maximum}$
 - For most adults average 8 - eight ounce glasses
 - Activity level – more or less depending
- Important times to drink water
 - After sleeping; before and during exercise
 - Between meals
 - Between 2 and 4 PM
 - Not as much after 6 PM

'Structured Water'

- Professor Gerald Pollack's - University of Washington. has extensively studied the properties of water
- In his latest book "The Fourth Phase of Water" (published 2013), Dr. Pollack describes what is called the fourth phase of water its 'exclusion zone (EZ)' or simply termed 'structured water.'

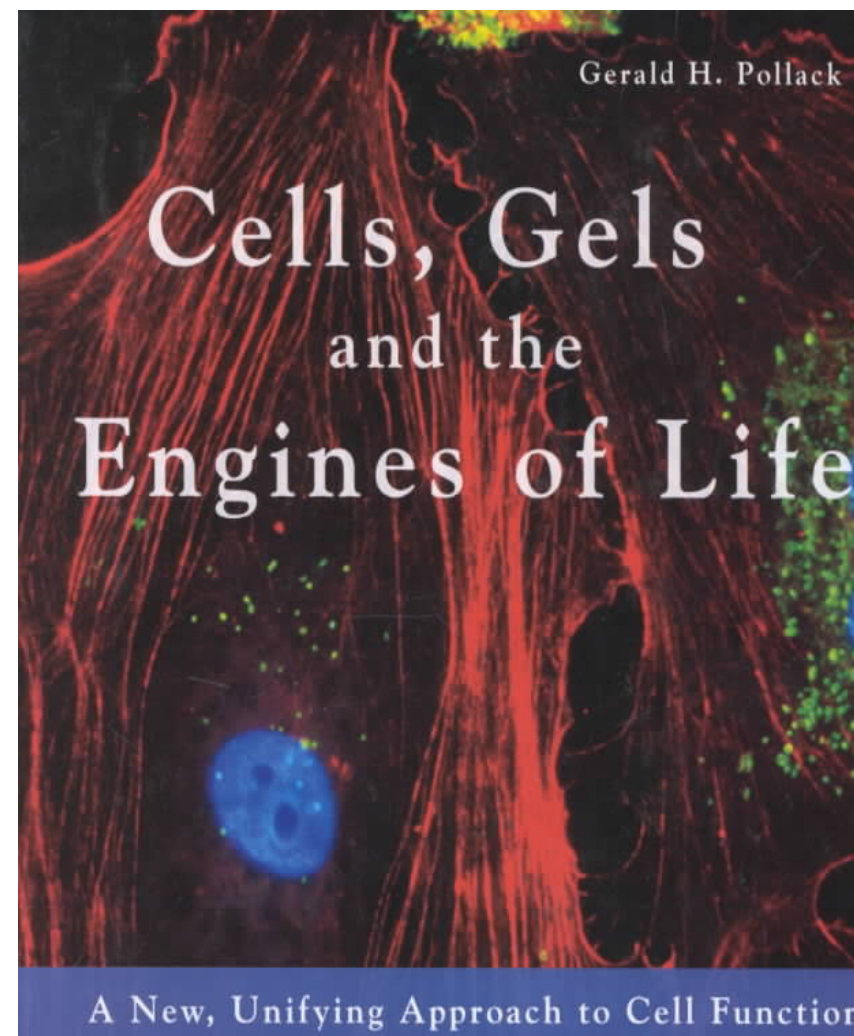
GERALD H. POLLACK

④ THE
FOURTH PHASE
OF WATER

① BEYOND
SOLID ②
LIQUID
VAPOR
③

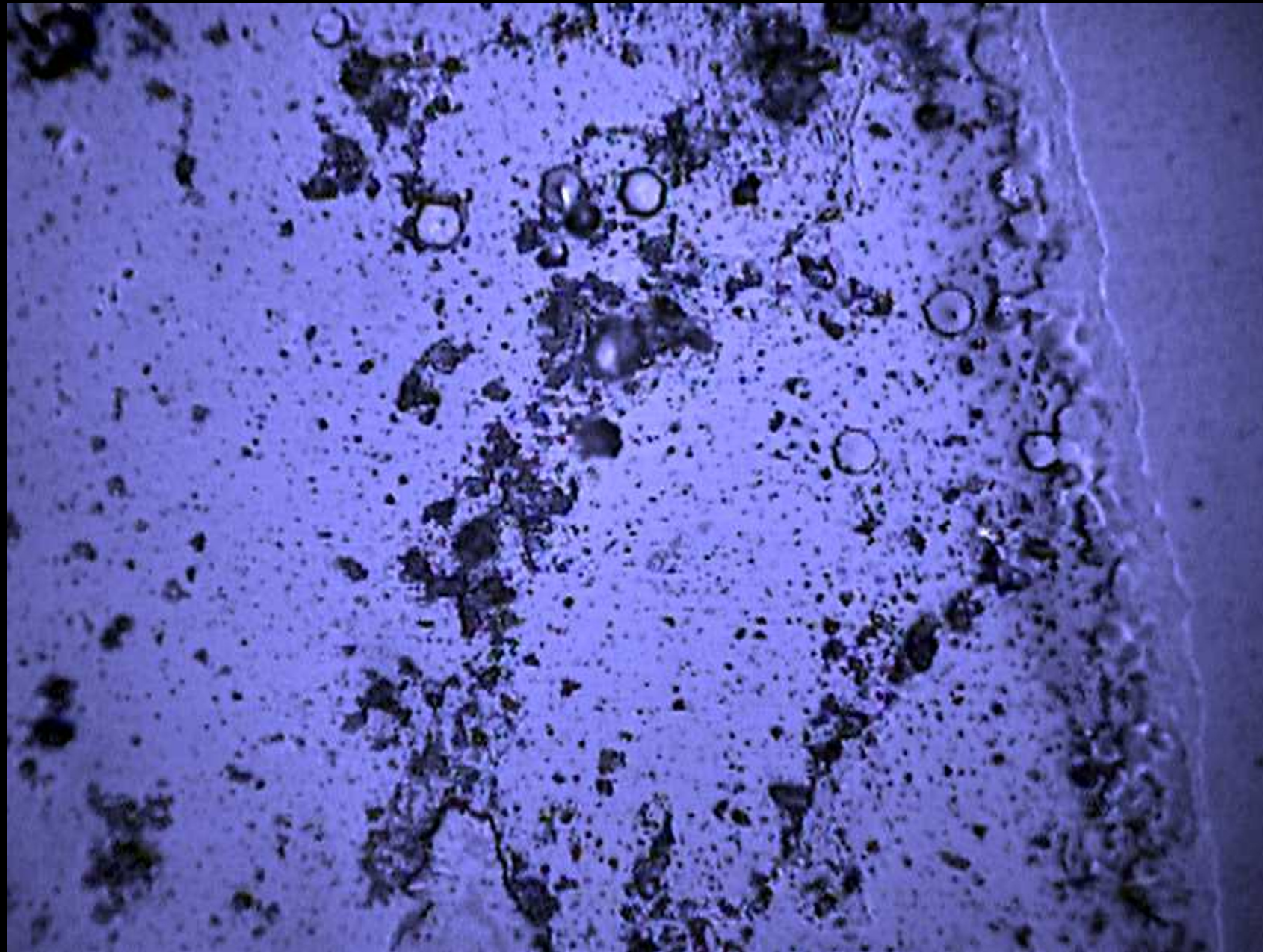
"The most significant
scientific discovery
of this
century."

According to Dr. Pollack, structured water charges by absorbing radiant energy. Both light waves and infrared waves charge structured water with energy.

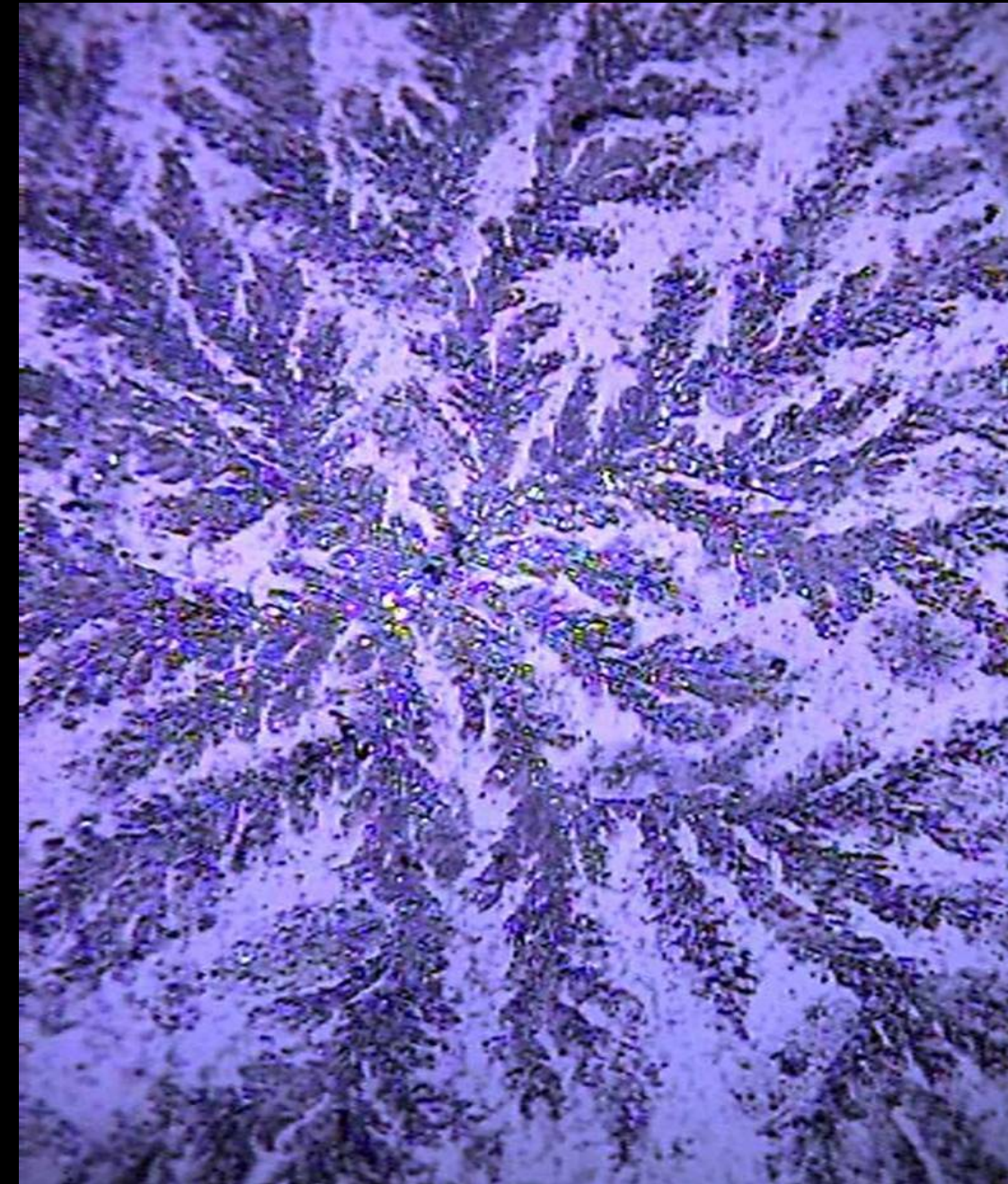


Hagalis Method Water Crystallization

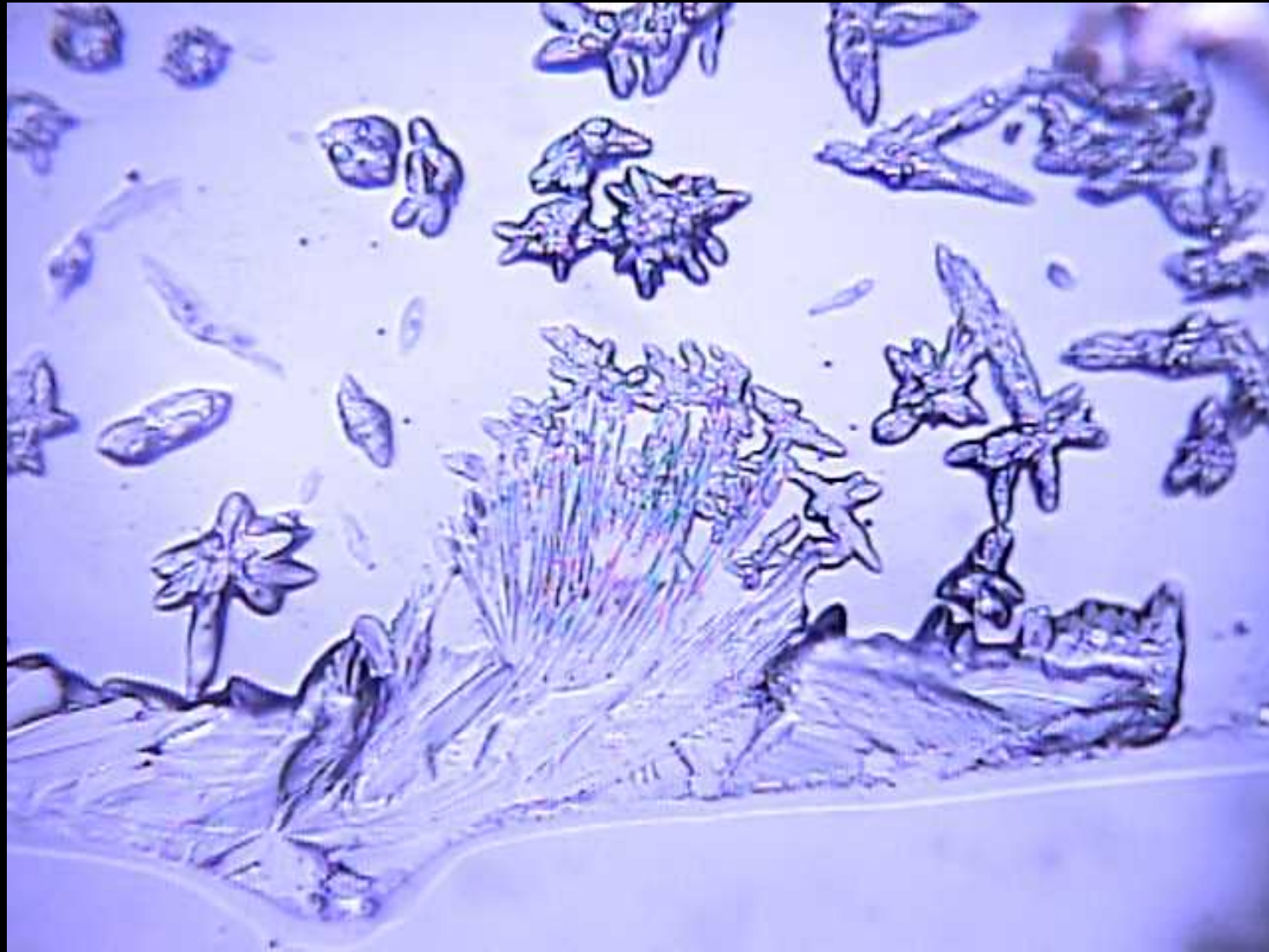
Tap Water



Spring Water



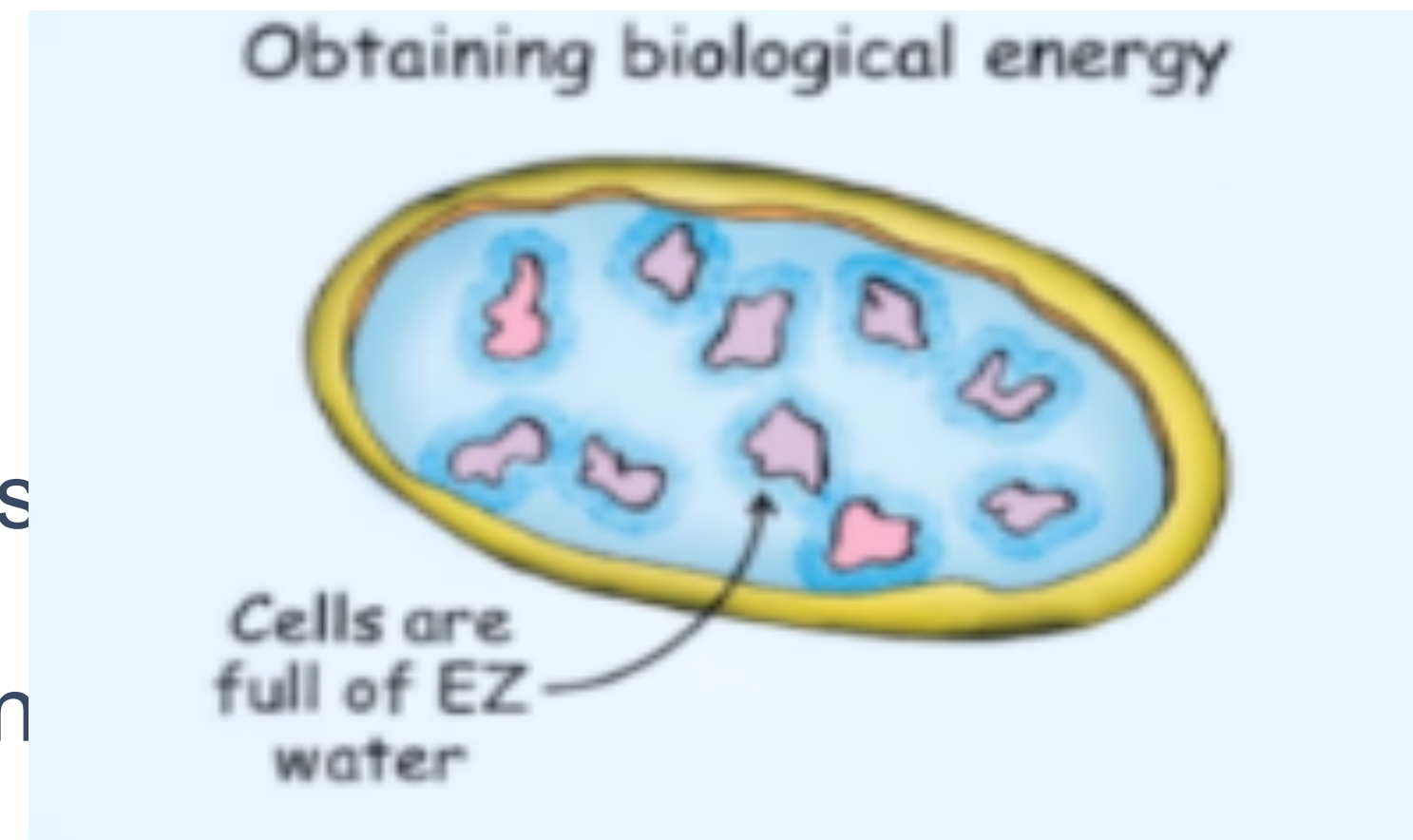
Spring



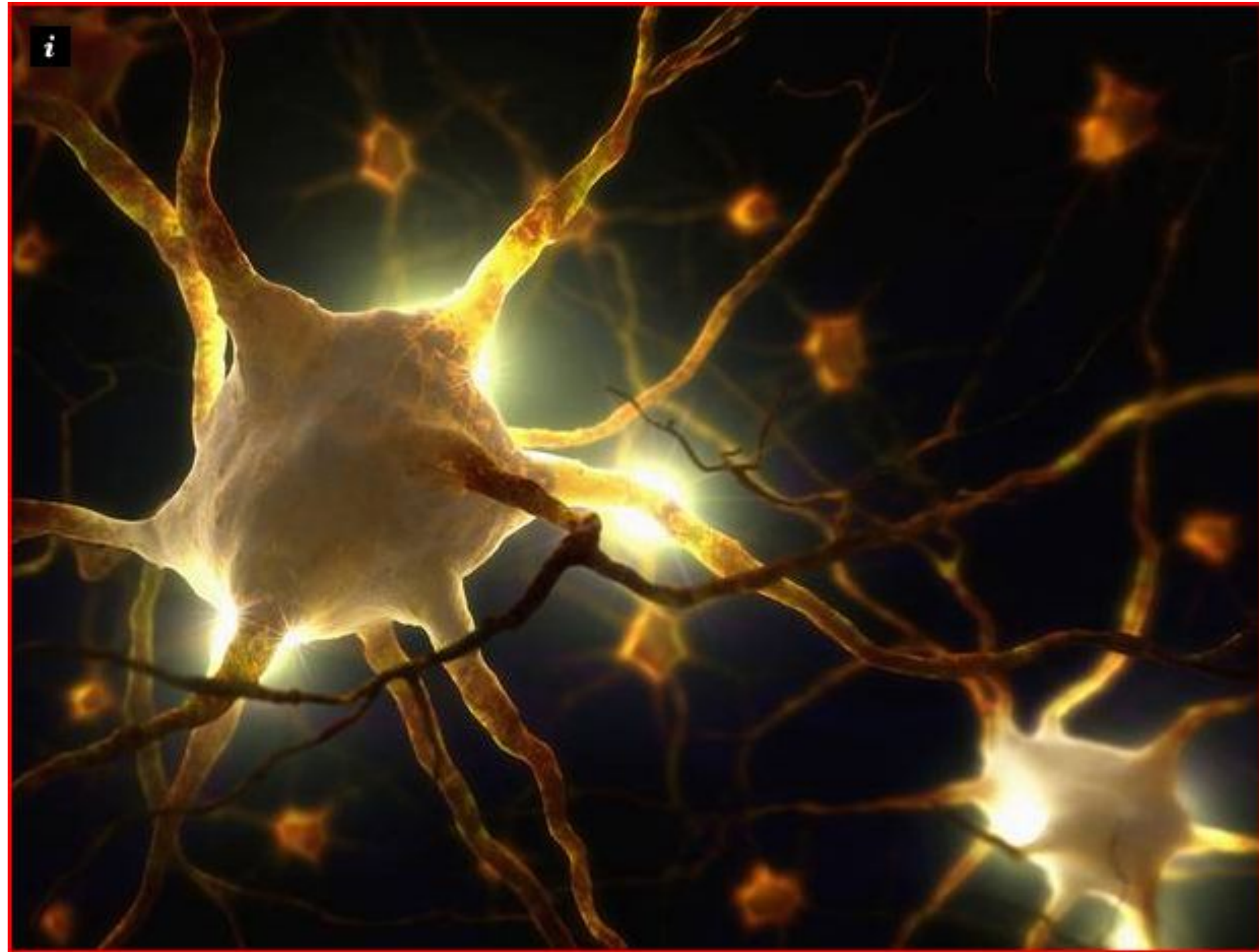
Tap



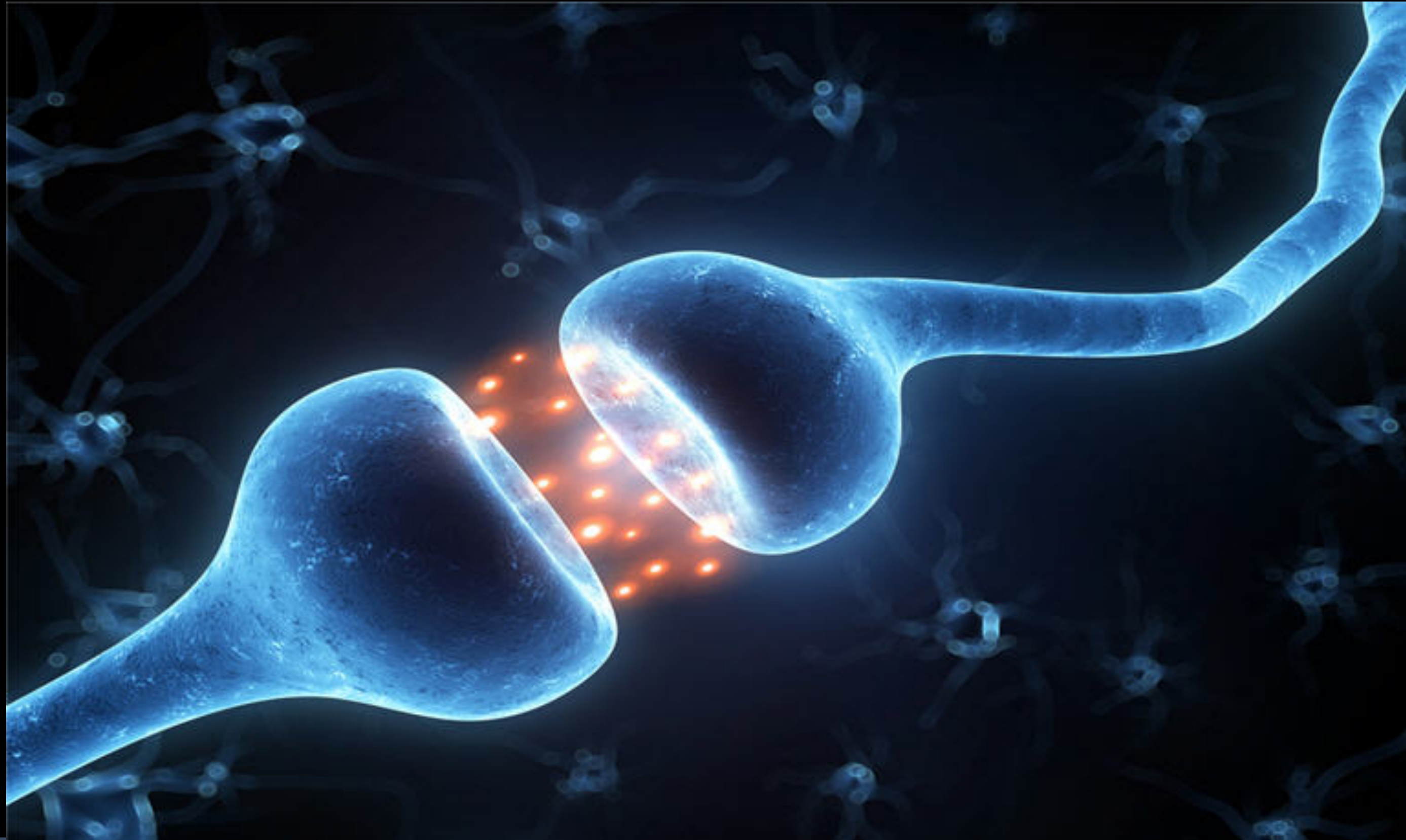
Much of the extracellular and intracellular matrix is made up of structured (EZ) water. Hence, a cell's cytoplasm is gel-like rather than an ordinary aqueous solution.



Essentially, our bodies are made up of a liquid crystal gel, charged with photons - an ideal transmitter of information, resonance, and coherence.



Information transfer is fundamental to life



Cellular Communication via the ECM

Most of the current literature on intercellular communication focuses on research of receptor-based cellular interactions and chemical signaling including structure and function of cell surface receptors and interacting molecules, recognition events in cell trafficking and immune-based cellular interactions, and the influence of the composition and molecular organization of the ECM on cell recognition events.

Cellular Communication via the ECM

There is strong evidence that cells communicate via electromagnetic signals.

Hence, there is also non-chemical and non-contact communication via light-mediated interactions of cells through the ECM.

All living biological organisms continuously emit radiations of light that form a field of coherence and communication.

BIOPHOTONS



Biophotons are usually produced at the rate of dozens per second per square centimeter of cell culture.



Humans are bioluminescent
from metabolic reactions,
but our glow is 1,000 times
weaker than the naked eye
can register. #HumanFail




Invisible emissions of quantum waves are spreading out from each of us.

At the same time, each of us has the waves of every other organism entangled within our own make-up.

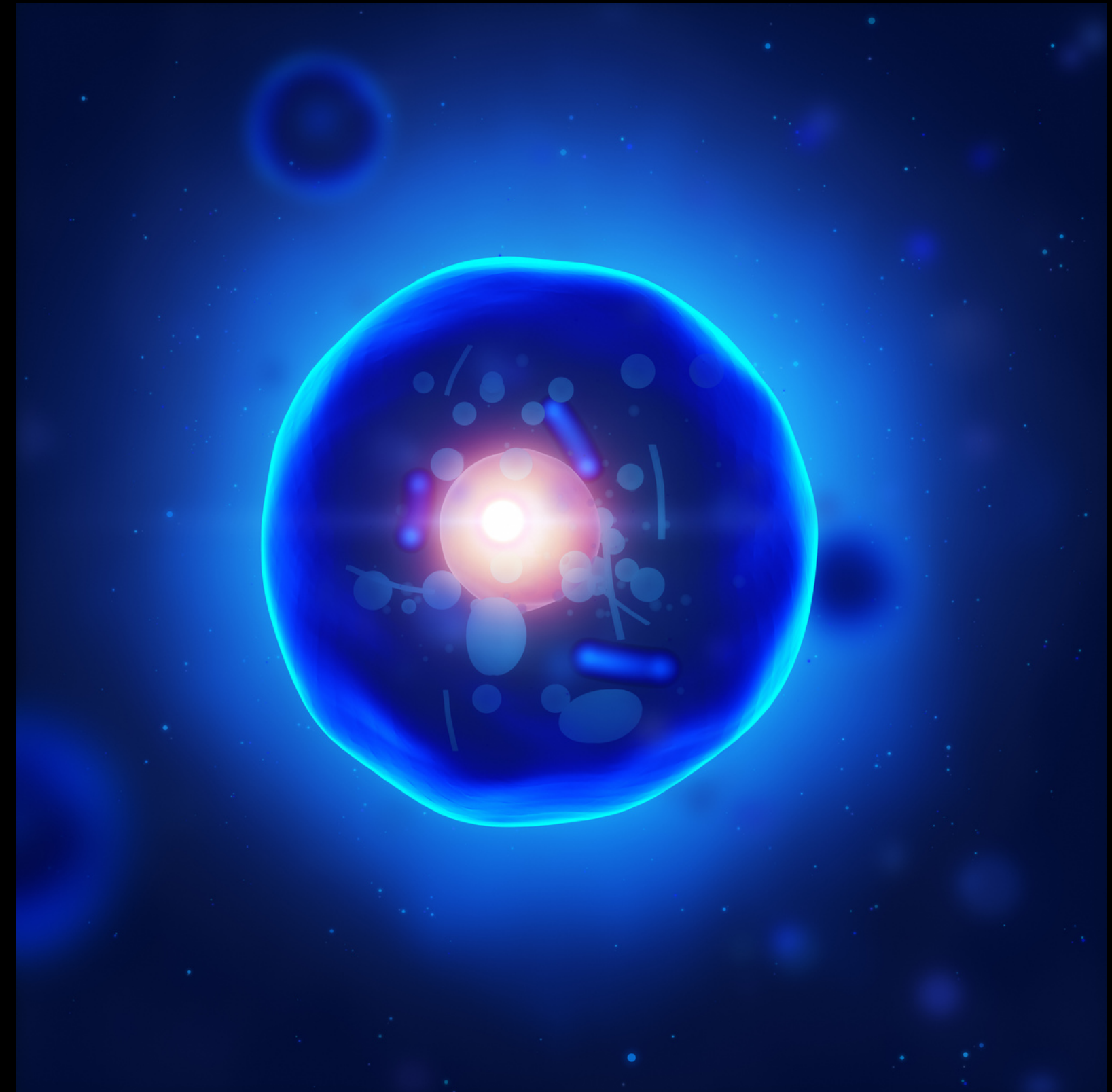
Biophoton streams consist of short quasiperiodic bursts, which are similar to those used to send binary data over a noisy channel.

This explains how cells can detect such low levels of radiation in a noisy environment.

Biofields can be viewed as affecting physiological regulatory systems in a manner that complements the more familiar molecular-based mechanisms.

- 
- The ECM is crisscrossed with chemical communication and regulatory systems, including neural pathways, lymphatics drainage, hormones and immune surveillance.
 - The human biofield also suffuse the ECM and all our cells and comprise an additional rich source of biological information and regulation.

- Every cell in the body is nourished via the ECM, and all waste products of cellular metabolism passes through this ground substance.

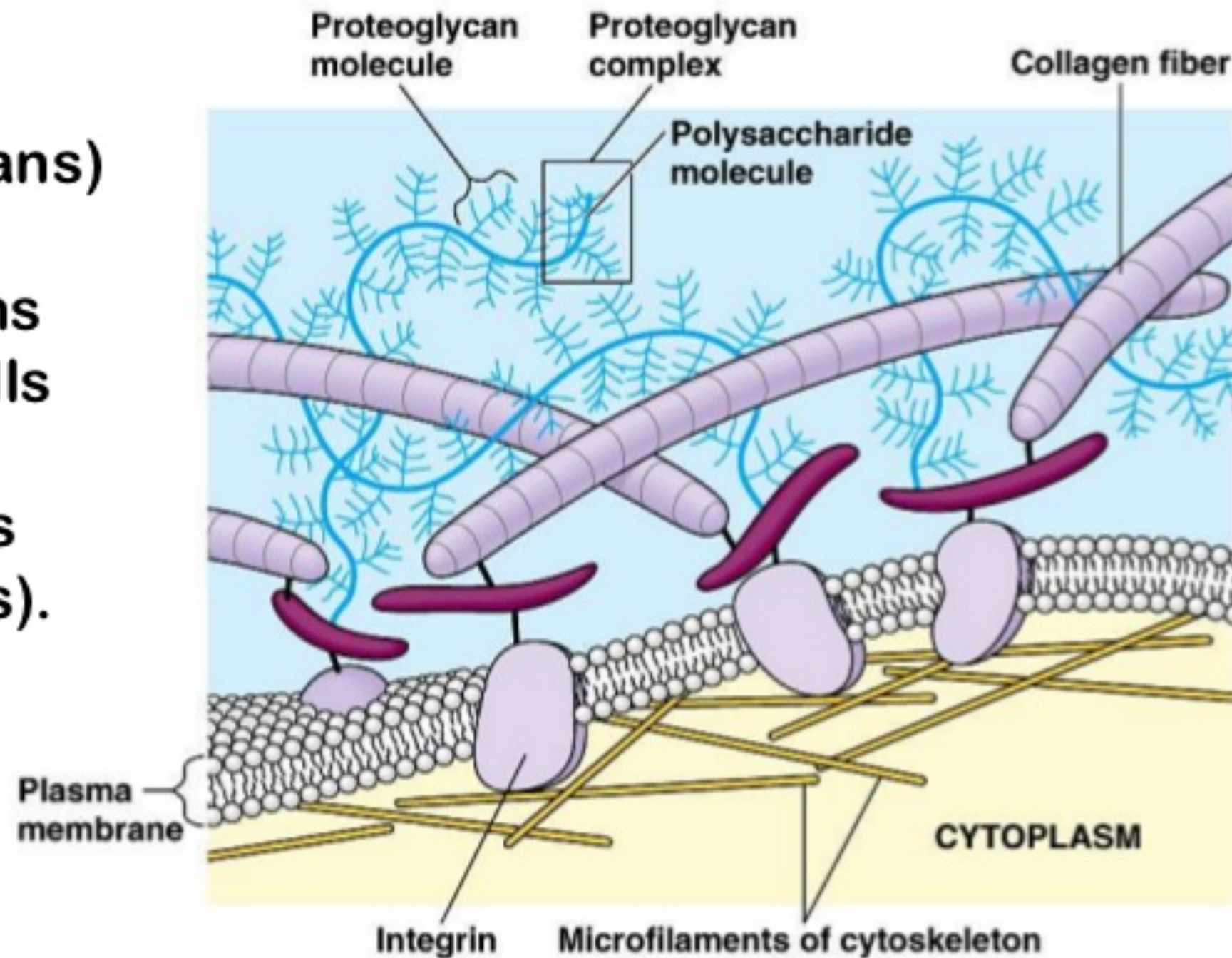


Extracellular Matrix Comprised of

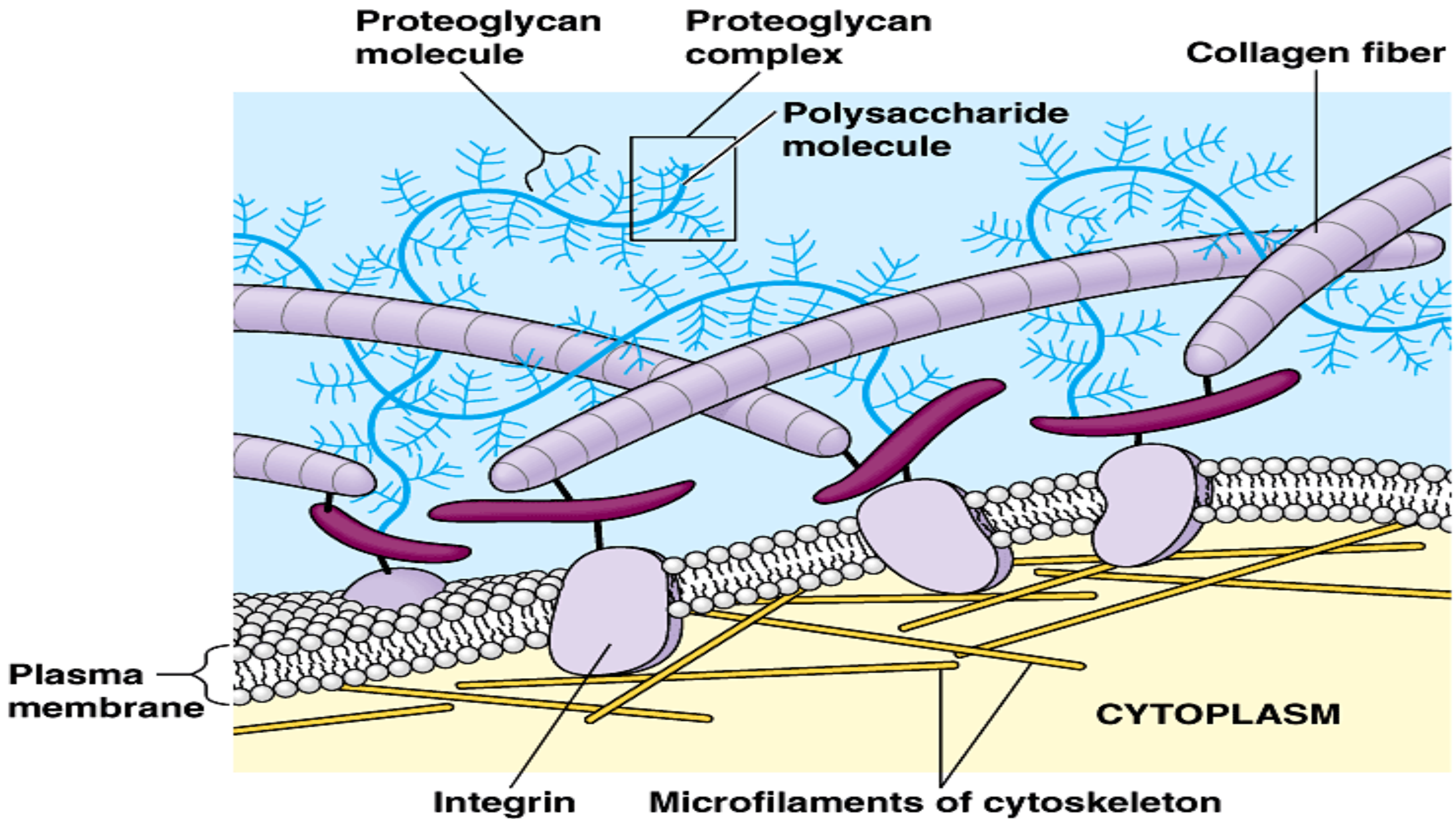
- Sugars in the form of polysaccharides, collagen, glycosaminoglycans and electrolyte solution, as well as lymphatic vessels.
- Collagens are the main proteins of the extracellular matrix. They account for 30% of total protein content of the body.

The ECM contains 3 classes of molecules:

- structural proteins (collagens and elastins)
- protein-polysaccharide complexes to embed the structural proteins (proteoglycans)
- adhesive glycoproteins to attach cells to matrix (fibronectins and laminins).



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Extracellular Matrix

- ECM provides the essential physical scaffolding for our seventy trillion internal cells.
- It is a dynamic environment with ongoing cellular communications and dialog.
- The ECM is one continuous interconnected substance, tying together every function and every process in the living body in one way or another.

ECM Qualities

- Strong negative charge – attracts Na and water
- Mobilize molecules secreted from cells and to cells
- Provide a reservoir for proteins and nutrients for later use
- Acts as a depository for waste and toxins that are not eliminated by the lymphatics
- Protects proteins from proteolytic degradation and free radical activity

ECM Composition is Tissue Unique

Each tissue has an ECM with a unique composition that is generated during tissue development through a dynamic and reciprocal, biochemical and biophysical dialogue between the various cellular components and the evolving cellular and protein microenvironment.

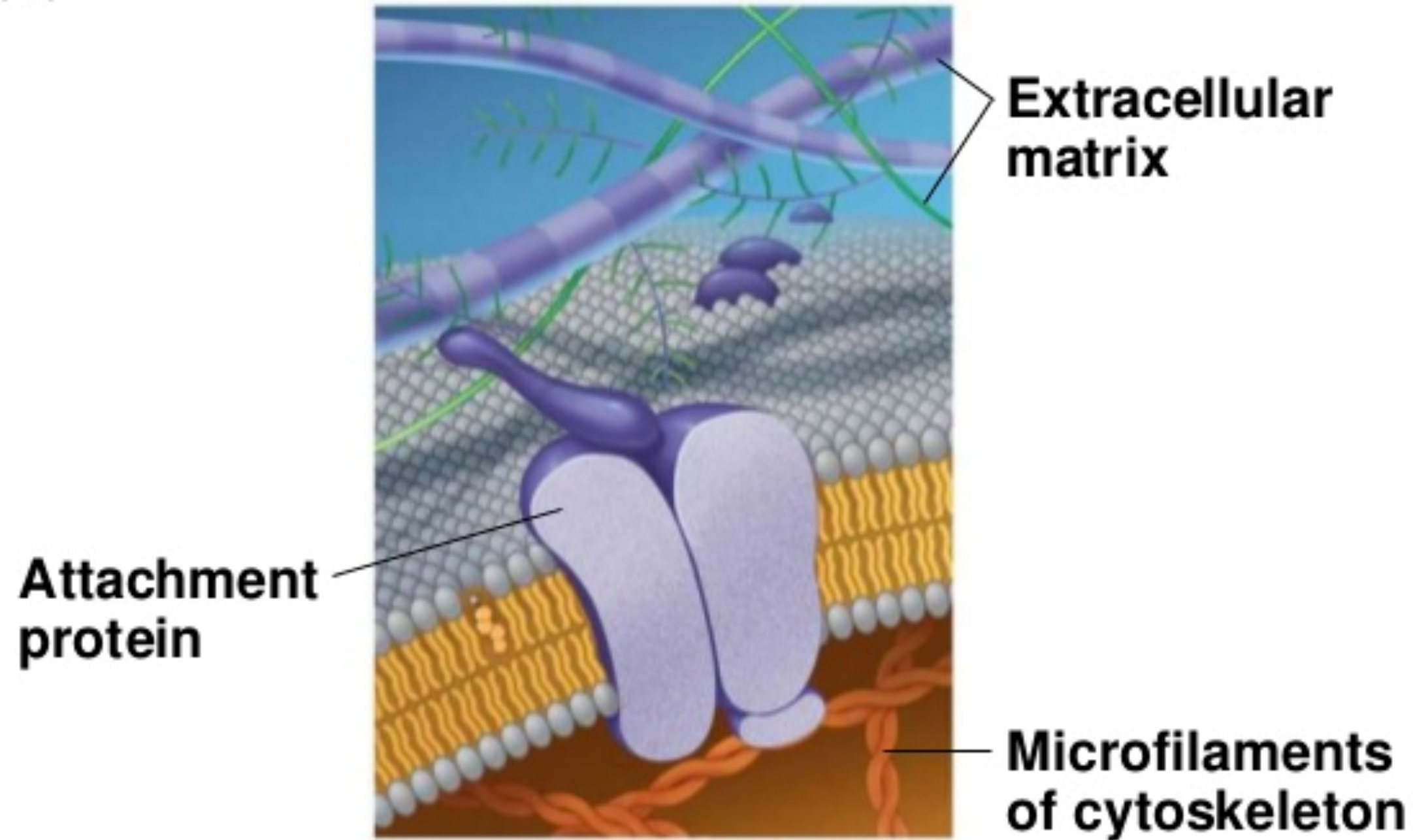
Extracellular Matrix

- ➔ ECM molecules are very good at absorbing water, rather like a sponge, such that 90% of the extracellular matrix is made up of water.
- ➔ ECM proteins and phosphates are negatively charged (anions) and attract cations (NA, K) → Water

Collagen and the ECM

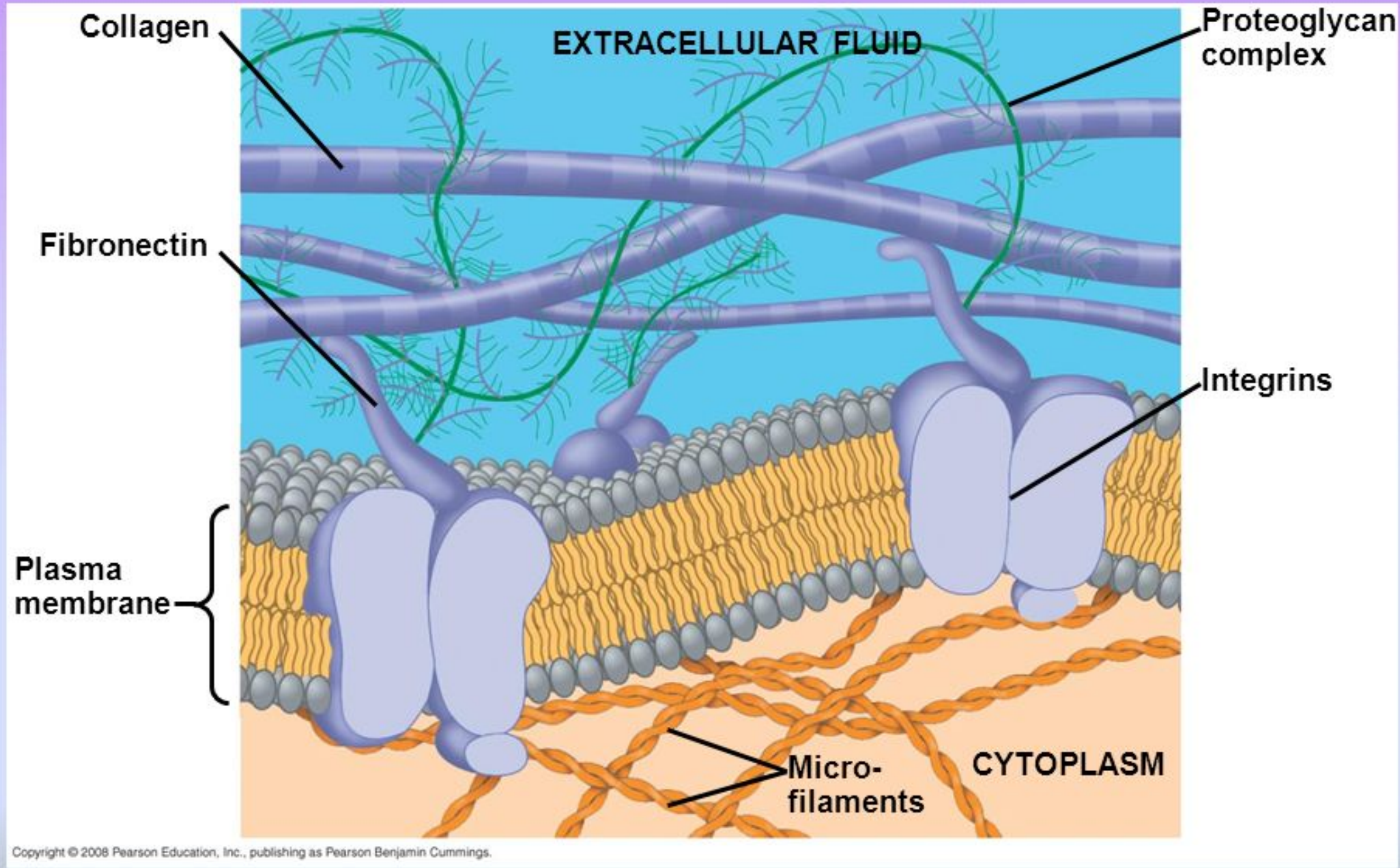
- Collagen is the most abundant protein in the human body, comprising more than 30% of total body protein.
- Collagen is concentrated in the extracellular matrix, and is synthesized primarily by fibroblasts.
- Collagen is comprised of various amino acids. Among the amino acids which comprise collagen, **glycine** is by far the most abundant.

Figure 5.1-5



Attachment Proteins

- Attach to the extracellular matrix and cytoskeleton
- Help support the membrane
- Can coordinate external and internal changes



Underlying Causes of Terrain Disturbances

Chronic Psychoemotional Stress

Past Events: shock, trauma

Physical Injury

Structural Impairments

Biochemical Imbalances

Organ/Gland Dysfunctions

Imbalanced Microbiome

Terrain Imbalances

Genomic Polymorphisms

Nutritional Deficiencies

Toxicity - Environmental

Accumulation of metabolic waste

Ionizing and Nonionizing Radiation

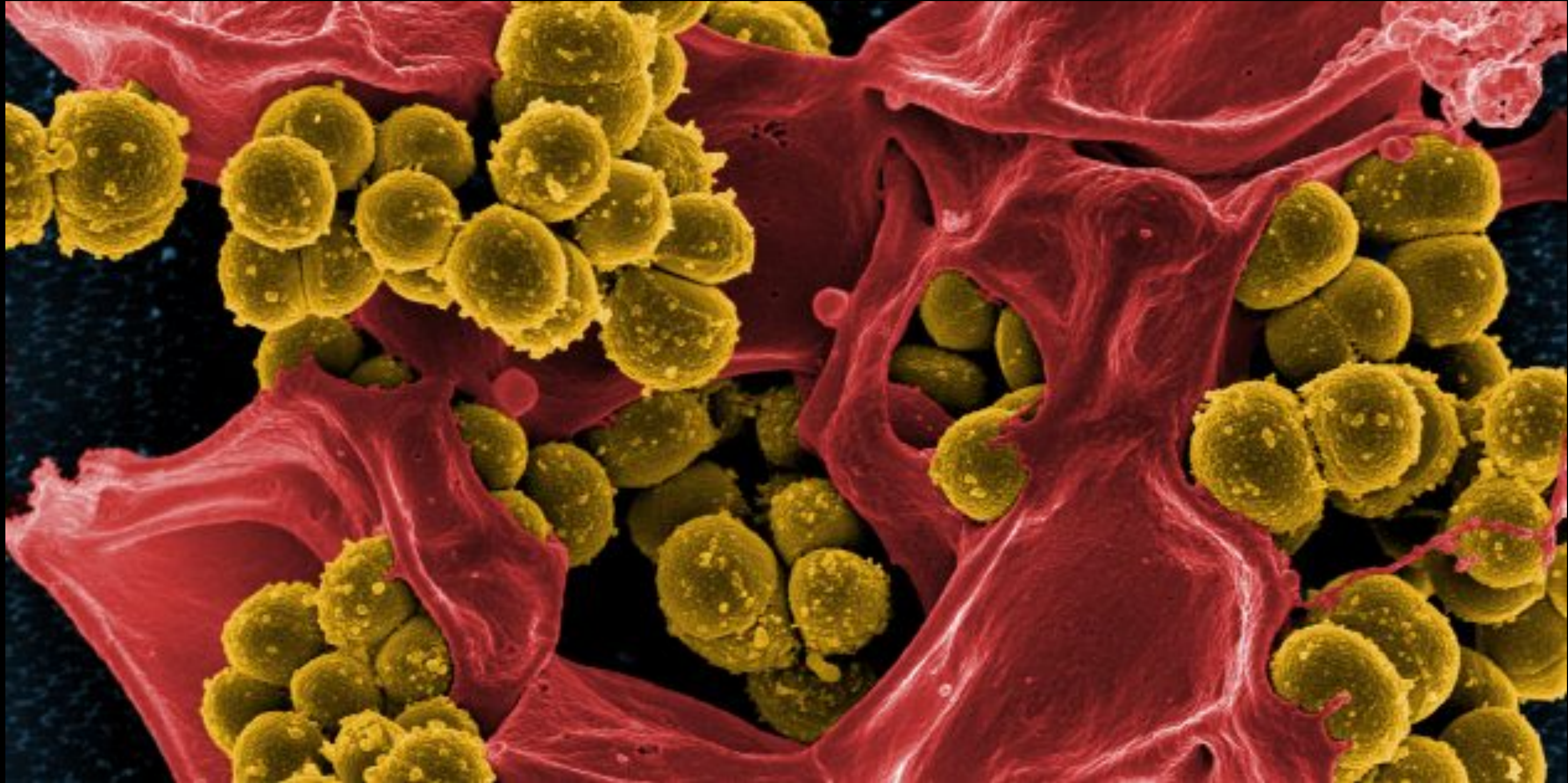
Foci / Interference fields

Geopathy

Extracellular Matrix Toxicity

- Toxicity leads to dysregulation
- Dysregulated extracellular matrices are characteristic of many diseases.
- Rehabilitation of the ECM can vastly improve outcome of chronic diseases.
- **It is within the ECM that healing begins**

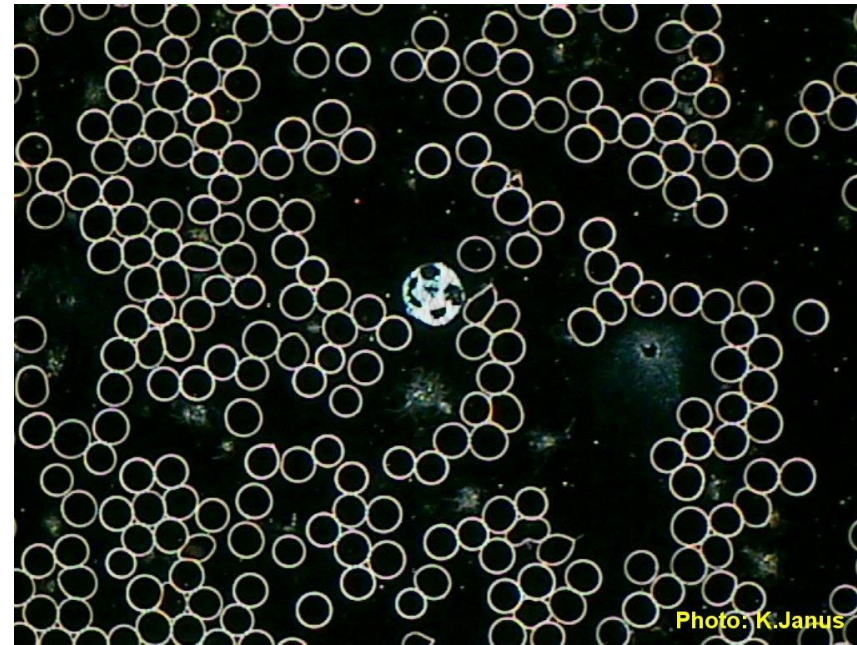
ECM Toxins



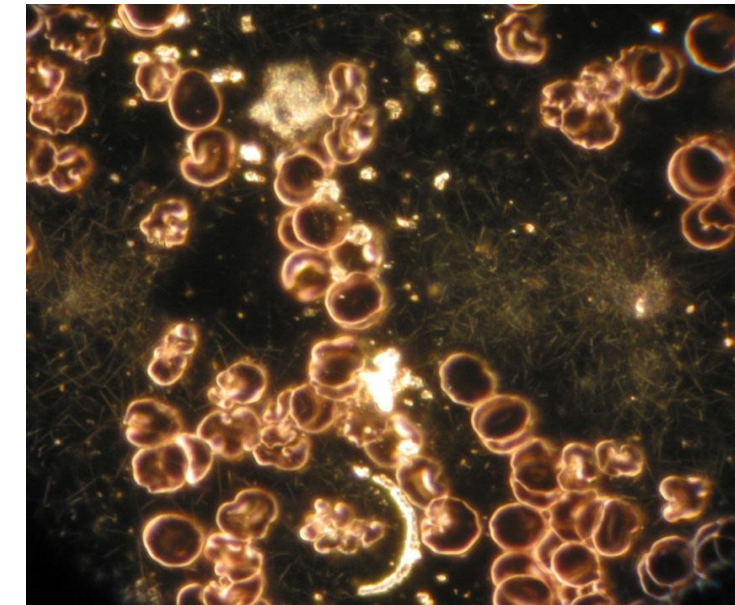
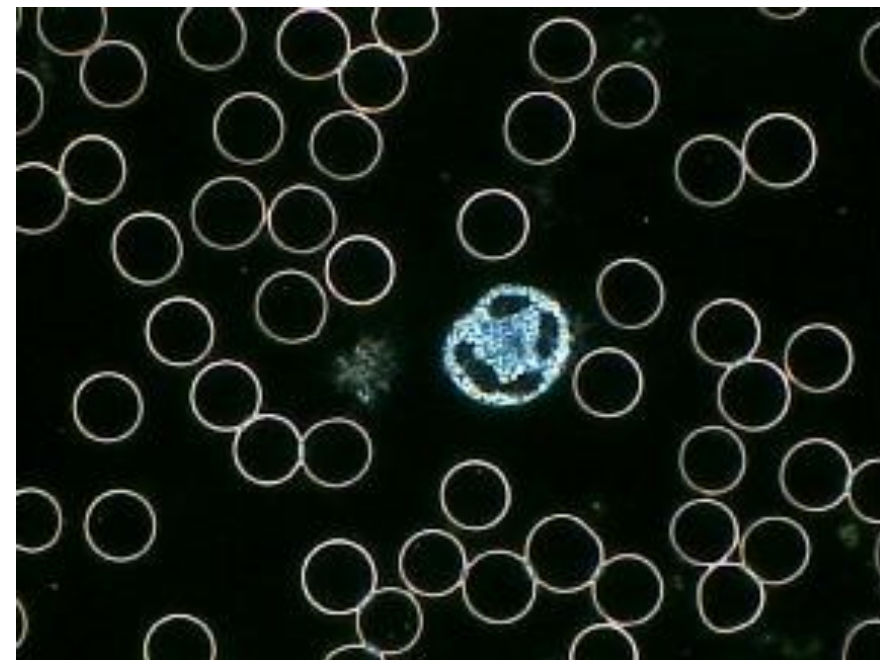
Deposition Into the ECM

Toxic elements, chemical toxins, antibiotics such as fluoroquinolones, as well as mycotoxins, molds and various other pathogens cause damage to the ECM through the activation of various metalloproteinases or activation of inflammatory cytokines.

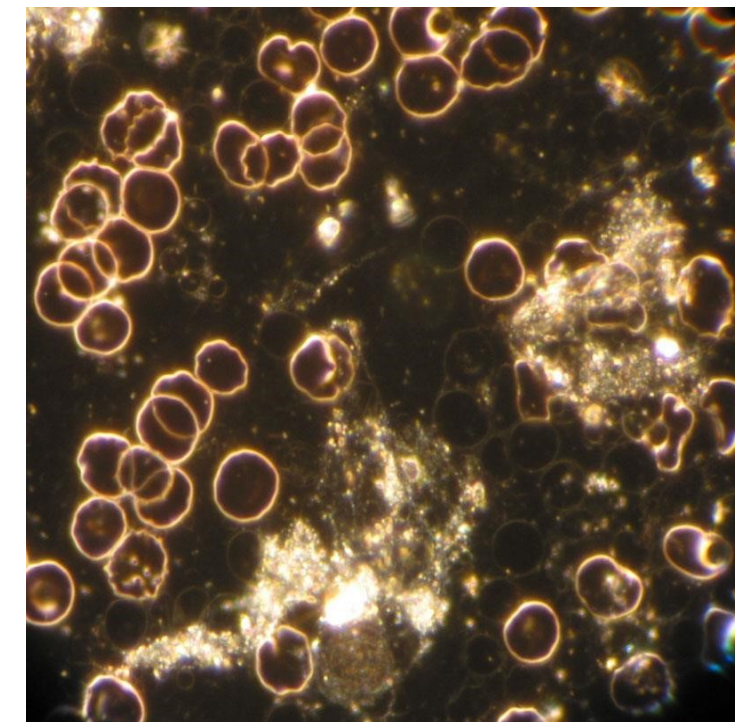
Darkfield Microscopy



Normal



Degenerative



Homotoxicology

- Dr. Hans-Heinrich Reckeweg (1905-1985) referred to bodily toxins as homotoxins.
- System of Homotoxicology - views symptoms of disease are the body's defense mechanisms at work against toxic substances.
- In 1955 Reckeweg published his six-phase table of Homotoxicosis that represents of the body's ability to regulate toxins.

Six-Phase Table - now called: **Disease Evolution Table**

DISEASE EVOLUTION TABLE (DET)

		Status of Regulation / Deregulation					
		Humoral Phases		Matrix Phases		Cellular Phases	
		Excretion Phase	Inflammation Phase	Deposition Phase	Impregnation Phase	Degeneration Phase	Dedifferentiation Phase
ECTODERMAL	1. EPIDERMAL	Increased Sweating, Crumens, Sebura, Smegma	Dermatitis, Impetigo, Abscess, Furuncle, Otitis externa	Hyperkeratosis, Seborrheic eczema, Nevus, Skin Tags (soft wart)	Atopic eczema, Urticaria, Warts, Fissura ani, Acne rosacea, Herpesion	Psoriasis, Decubitus ulceration, Radiation injury, Pemphigus vulgaris	Squamous cell carcinoma, Basal cell carcinoma, Melanoma
	2. ORODERMAL	Hyperplasia, Hyperexcitation	Otitis media, Pharyngitis, Stomatitis, Gingivitis, Aphthous ulceration, Glossitis, Rheitis (acute), Scurvitis (acute), Laryngitis, Dental abscess	Nasal polyps, Eustachian tube catarrh (serous otitis media), Dental granuloma	Atopic Rhinitis, Hay fever, Sinusitis (chronic), Rhinitis (allergic), Anosmia, Meniere's syndrome, Hypoaacusis	Otosclerosis, Deafness (transmission), Ozema, Atrophic rhinitis, Dental caries, Parodontosis	Leucoplakia (oro-dermal), Cancer of the tongue, Laryngeal cancer, Nasopharyngeal cancer, Throat cancer
	3. NEURODERMAL PNS and CNS	Increased secretion of neurotransmitters	Neuralgia, Neuritis, Polyneuritis, Meningitis, Encephalitis, Trigeminal neuralgia (acute)	Neuroma, Amyloid deposition, Heavy metal deposition	Epilepsy (petit mal), Parosia, Tic, Neuritis (optic), Attention Deficit/Hyperactivity Syndrome (ADHD), Guillain Barre syndrome, Polymyositis (acute), Trigeminal neuralgia (chronic)	Parkinson disease, Epilepsy (grand mal), Alzheimer's disease, Multiple Sclerosis, Amyotrophic Lateral Sclerosis, Peripheral Neuropathy, Diabetic neuropathy, Neurofibromatosis	Glioma, Meningioma, Astrocytoma
	4. EYE		Conjunctivitis (acute)	Pterygium, Mosche wolante (floaters), Iris spot (iritis)	Uveitis, Allergic conjunctivitis, Iris spots (chronic) Iritis, Astigmatism, Myopia, Presbyopia, Keratocoma, Pteris, Aech (lentil)	Glaucoma, Cataract, Hemianopsia, Macular degeneration, Paralytic mydriasis	Retinal cancer, Retinoblastoma
	5. SYMPATHICODERMAL	Increased adrenalin and noradrenalin secretion	Flushes, Hypervagotomy, Hypersympathicotonus	Ganglion neuroma	Dysautonomia (including Orthostatic hypotension)	Addison's disease, Reflex sympathetic dystrophy (RSD) or (Sudek's syndrome), Horner's syndrome	Pheochromocytoma, Neuroblastoma
ENDODERMAL	1. Respiratory	Sputum	Bronchitis (acute), Tracheitis	Nasal polyp	Bronchitis (asthmatic), Chronic tracheitis (viral), Cystic fibrosis	COPD (chronic obstructive pulmonary disease), Atrophy of bronchial mucosa	Tracheal cancer, Bronchial cancer
	2. Digestive	Increased digestive juices	Oesophagitis (acute), Gastritis (acute), Gastroenteritis (acute), Colitis	Gastric polyps, Intestinal polyps, Obstruction, Melanosis of the colon	Gastric ulcer, Duodenal ulcer, Gluten enteropathy (mild), Leaky Gut Syndrome, Dysbiosis	Crohn's disease, Colitis ulcerosa, Atrophy of the small intestinal villi, Gluten enteropathy (severe)	Barret's esophagus, Esophageal cancer, Gastric cancer, Duodenal cancer, Rectal cancer
	3. Urogenital	Increased mucous production	Bartholinitis, Cystitis, Urethritis, Infections of the urogenital mucosa	Bladder polyps, Uterine polyps	Interstitial cystitis	Atrophy of the urogenital mucosa	Bladder cancer, Cervical carcinoma
	1. Exocrine Sexual	Lactorrhoea	Mastitis	Mammary cysts, Breast calcifications	Mammary fibroadenoma, Fibrocystic mastopathy	Mammary atrophy, Gynecomastia	Mammary carcinoma
	2. Exocrine Digestive	Increased bile salt secretion, Increase gastric acid secretion	Pancreatitis, Salitis	Cholelithiasis, Steatosis hepatica, Pancreatic calcifications, Pancreatic cysts, Liver cysts, Wilson's disease, Salivary gland calcifications	Chronic hepatitis, Chronic pancreatitis, Viral pancreatitis (e.g. Mumps), Alcoholic hepatitis, Cystic fibrosis	Hepatic cirrhosis, Hepatic atrogenic disease	Liver cancer, Pancreatic cancer
	3. Respiratory		Acute pulmonary abscess, Pneumonia	Bronchiectasis, Pneumoconiosis	Bronchial asthma, Cystic fibrosis	Emphysema, Chronic pulmonary abscess, Interstitial fibrosis of the lung, Fungal balls	Pulmonary cancer
	4. Endocrine	Increased thyroid hormones, Parathyroid hormones, Thyric hormones, Insulin, Glucagon, Enteric hormones, Cortica suprarenal hormones, Adeno hypophysial hormones	Thyroiditis, e.g. de Quervain's thyroiditis	Thyroid cysts, Adrenal cysts, Adrenal adenoma, Hypophysial adenoma, Thyroma, Insulinoma, Parathyroid gland adenoma, Thyroid goiter, Adrenal adenomas	Grave's disease, Hashimoto's disease (1st stage), Puerperal thyroiditis, Cushing's syndrome, Precocious puberty, Adrenal exhaustion	Hashimoto's disease (2nd stage), Bredet's thyroiditis, Parathyroid atrophy	Thyroid cancer, Parathyroid cancer, Adrenal cancer, Carcinoid syndrome
8. CONNECT. TISSUE	Increased secretion of metalloproteinases, Increase in glycoprotein formation	Abscess, Reactive inflammatory response of the matrix, Tendinitis	Lipoma, Storage of toxins in the matrix, Amyloidosis, Mucopolysaccharidosis, Periartthritis humeroscapularis calcinosa	Mixed connective tissue disease (MCTD), Marfan's syndrome, Ehlers-Danlos Syndrome, Sphingolipidosis	Scleroderma, Carbohydrate deficient glycoprotein syndrome, Peyronie's disease, Progeria, Dupuytren's contracture	Sarcoma	
9. OSTEODERMAL		Osteomyelitis, Chondroitis	Osteophyte formation, Bone cysts	Osteomalacia, Early osteoporosis	Osteoporosis, Paget's disease	Osteosarcoma	
MESENCHYMAL	1. Blood	Leukocytosis neutrophilia, Anaemia related to acute infection	Thrombocytosis, Polycytemia (reactive), Hypercoagulation	Eosinophilia, Leukopenia, Anaemia (including anaemia of chronic disorders), Hypercoagulation	Aplastic anaemia, Thrombocytopenia, (including idiopathic thrombocytopenic purpura), Fungemia, Sicker's disease	Leukemia	
	2. Heart	Increased cardiac output, Tachycardia	Myocarditis, Extrasystoles, Acute rheumatic fever	Angina pectoris, Atrial enlargement, Arrhythmia cordis, Rheumatic fever affecting the heart, Prolapse of the mitral valve (Barlow's syndrome), Cardiomyopathy	Myocardial Infarct, Ventricular arrhythmia, Stenosis and insufficiency of the cardiac valves	Sarcoma	
	3. Vascular	Increased production of endothelial mediators	Phlebitis, Arteritis, Endothelial inflammation, Haemorrhoids	Venous stasis, Arterial plaques (atheroma), Haemorrhoids	Vasculitis, Arteriosclerosis, Varicose veins, Pararteritis nodosa, Angioma, Varicocele	Peripheral vascular disease, Aneurysm, Arteritis obliterans, Peripheral vascular disease	Angiosarcoma
11. LYMPHODERMAL	Increased lymph production	Tonsillitis, Adenitis, Adenoiditis, Lymphangitis	Lymph edema, Lymph adenopathy, Tonsillar hypertrophy, Adenoid hypertrophy	Indurated edema, Venereal lymphogranuloma, Cat scratch disease.	Lymphatic tuberculosis, Elephantiasis	Lymphoma (Hodgkin's, Non Hodgkin's), Lymphosarcoma	
12. CAVODERMAL	Increased synovial liquid, Cerebrospinal fluid	Arthritis, Polyarthritis, Synovitis, Acute rheumatic disease	Hydrops (articular), Gouty tophi, Haemarthrosis	Chronic arthritis, Reiter's syndrome, Hydrocephaly, Spinal disc herniation	Arthrosis, Ankylosing spondylitis	Sarcoma, Chondrosarcoma	
13. NEPHRODERMAL	Frequent urination	Nephritis, Glomerulonephritis, Pyelitis	Nephrolithiasis, Renal cysts, Renal sand, Orthostatic albuminuria, Haematuria	Pre-clinical nephrosis, Nephrotic syndrome, Chronic hematuria, Goodpasture's syndrome, Auto-immune glomerulonephritis	Nephrosis, Chronic glomerulonephritis, Tuberculosis of the urogenital tract	Hypernephroma, Wilms' tumor.	
14. SERODERMAL	Increased production of serous fluid	Pleuritis, Peritonitis, Pericarditis	Pleural effusion	Chronic exudative pleuritis and serositis, Ascites, Chronic pericarditis	Pleural, Pericardial and peritoneal tuberculosis, Pleural adhesions	Mesothelioma, Primary peritoneal carcinoma, Primary pleural cancer	
15. GERMINDODERMAL	M Increased seminal fluid	Prostatitis, Epididymitis, Orchitis	Spermatozooids, Early benign prostatic hyperplasia (BPH)	Benign prostatic hyperplasia (BPH), Oligoasthenospermia	Sterility	Prostate cancer, Testicular cancer, Seminoma, Teratoma	
F Heavy menstruation	Ovaritis, Adnexitis, Metritis, Dysmenorhea	Ovarian cysts, Uterine polyps, Uterine Fibroids	Chronic adnexitis, Amenorhea	Infertility, Ovarian atrophy	Ovarial cancer, Ovarial teratoma		
16. MUSCULODERMAL	Myalgia	Myositis	Myogelosis, Myositis ossificans	Muscular asthma, Mitochondrial myopathy, Autoimmune dermatomyositis	Muscular atrophy, Muscular dystrophy	Myosarcoma	

Self regulation. Self-healing effects. Favourable Prognosis.

Compensation. Tendency to aggravation. Doubtful Prognosis.

Stages of Regulation / Deregulation

- Excretion
- Inflammation
- Deposition into the ECM
- Impregnation
- Degeneration
- Differentiation

Deposition of Toxins leads to
Impregnation of the Cell
Damage to Cellular Membranes
and Internal Cellular Structures

The Vicariation Effect

Vicariation reflects changing symptoms due to displacement of illness-triggering toxins.

- Progressive – progression to the right (worsening)
- Regressive – progression to the left (detoxification/recovery)



Electrosmog, toxic metals, biotoxins, pesticides, herbicides, certain medications, all are potentially harmful to the ECM and cells.

Binding agents may be useful in the prevention of reabsorption of these toxins from the gut enterohepatic circulation.



ACID RAIN
Toxic metals (lead, cadmium, aluminum) leach into streams and lakes.

BACTERIA, VIRUSES & PARASITES
From animal and human wastes
• Giardia lamblia
• Cryptosporidium
• E. coli

WATER TREATMENT PROCESSING
• Chlorine
• Chloramines
• Aluminum
• Chlorine byproducts—THMs

INDUSTRIAL WASTE
Over 70 pollutants are regulated by the EPA, including arsenic and benzene.

LEAD & CADMIUM
From pipes and solder

NITRATES
From fertilizers

PESTICIDES, INSECTICIDES & HERBICIDES
• Endocrine-disrupting chemicals
• Lindane
• Alachlor
• Cyanazine

TOXIC WASTE DUMPS
• MTBE from gasoline storage
• Legal and illegal—they all leak
• Remember Love Canal?

YOUR DRINKING WATER SHOULD BE PURE!
The EPA agrees! The Maximum Contaminant Level Goal (MCLG) for most pollutants is zero!



ELECTROSMOG



 sensory perspective

Electrosmog

- ▶ The most common sources of wireless electrosmog
 - ▶ Cordless phones
 - ▶ Cordless baby alarms
 - ▶ Mobile/cellular phone masts/towers/transmitters
 - ▶ Mobile/cellular phones
 - ▶ Wireless networks

HEAVY METALS



Arsenic



Lead



Tungsten



Barium



Nickel



Tin



Beryllium



Copper



Antimony



Uranium



Platinum



Thorium



Cadmium



Mercury



Cesium



Thallium



Aluminum



Toxic Metals; Urine

TOXIC METALS					
		RESULT µg/g creat	REFERENCE INTERVAL	WITHIN REFERENCE	OUTSIDE REFERENCE
Aluminum	(Al)	120	< 35		
Antimony	(Sb)	0.1	< 0.4		
Arsenic	(As)	49	< 117		
Barium	(Ba)	8.3	< 7		
Beryllium	(Be)	< dl	< 1		
Bismuth	(Bi)	0.6	< 15		
Cadmium	(Cd)	0.8	< 1		
Cesium	(Cs)	5.3	< 10		
Gadolinium	(Gd)	0.2	< 0.4		
Lead	(Pb)	7.3	< 2		
Mercury	(Hg)	21	< 4		
Nickel	(Ni)	12	< 12		
Palladium	(Pd)	< dl	< 0.3		
Platinum	(Pt)	< dl	< 1		
Tellurium	(Te)	< dl	< 0.8		
Thallium	(Tl)	0.4	< 0.5		
Thorium	(Th)	< dl	< 0.03		
Tin	(Sn)	0.4	< 10		
Tungsten	(W)	< dl	< 0.4		
Uranium	(U)	0.1	< 0.04		

URINE CREATININE							
	RESULT mg/dL	REFERENCE INTERVAL	-2SD	-1SD	MEAN	+1SD	+2SD
Creatinine	84.3	35 - 225					

Provide Lymphatic Drainage Support

Homeopathic Lymph Remedies

- Lymphomyosot – HEEL
- Lymphonest – Nestmann
- Iteres – Pekana
- Lymphatik - Soluna
- Lymphaden – Hevert (Ampules)
- Lymphdiaral – Pascoe
- Unda - #48 intercellular drainage, #2 Kidney drainage

Algae – Brown and Green

Algae possess a wide range of cellular mechanism involved in the detoxification of heavy metals

Particularly sequestration of metals in the ECM that reduce their bioavailability

Laminaria japonica (Sweet Kelp)



Laminaria japonica

- High content of soluble polysaccharides like Fucoidan, Laminarin and alginate
- Alginate binds to all heavy metals including lead, mercury, cadmium, cobalt, copper and radium.
- Fucoidan has been demonstrated to induce cancer cell apoptosis in leukemia, stomach and colon cancer cell lines.
- Fucoidan also enhances phagocytosis.
- Laminarin exhibits a hypotensive effect.
- It also exhibits a strong anticoagulant activity.

Fucus vesiculosus (bladderwrack)



Fucus vesiculosus (Bladderwrack)

Bladderwrack is rich in iodine, calcium, magnesium, potassium, sodium, sulfur, silicon and iron and high in some B-complex vitamins. It contains moderate amounts of phosphorus, selenium, manganese and zinc and small amounts of vitamins A, C, E and G. It also contains vitamin K and is rich in algin, mannitol, carotene and zeaxantin.

Fucus vesiculosus (Bladderwrack)

- An excellent source of iodine – proven useful in the treatment of hypothyroidism and goiter.
- Helpful in the relief of rheumatism and rheumatoid arthritis, both used internally and as an external application upon inflamed joints.
- Rates of estrogen-dependent cancers are among the highest in Western countries and lower in the East. These variations may be attributable to differences in dietary exposures such as higher seaweed consumption among Asian populations. Dietary algae may be beneficial to women with or at high risk for estrogen-dependent diseases.
- Lowers plasma cholesterol levels.



Chlorella vulgaris and Chlorella pyrenoidosa are the most studied.

- ▶ Nakano, Shiro, Hideo Takekoshi, and Masuo Nakano. "Chlorella (Chlorella pyrenoidosa) supplementation decreases dioxin and increases immunoglobulin a concentrations in breast milk." *Journal of medicinal food* 10.1 (2007): 134-142.
- ▶ Shieh, Y. J., and J. Barber. "Uptake of mercury by Chlorella and its effect on potassium regulation." *Planta* 109.1 (1973): 49-60.
- ▶ Gipps, J. F., and B. A. W. Collier. "Effect of physical and culture conditions on uptake of cadmium by Chlorella pyrenoidosa." *Marine and Freshwater Research* 31.6 (1980): 747-755.
- ▶ Merchant, Randall E., and Cynthia A. Andre. "A review of recent clinical trials of the nutritional supplement Chlorella pyrenoidosa in the treatment of fibromyalgia, hypertension, and ulcerative colitis." *Alternative therapies in health and medicine* 7.3 (2001): 79.
- ▶ Wilde, Edward W., and John R. Benemann. "Bioremoval of heavy metals by the use of microalgae." *Biotechnology Advances* 11.4 (1993): 781-812

Clinical studies demonstrate chlorella assists:

- toxic element and pesticide detoxification
- healing from radiation exposure
- ability to reduce high blood pressure
- wound healing
- enhancement of immune function

Cilantro (Coriandrum sativum)

- Fresh - 5 grams a day is the minimum dose
- Tincture orally 6-15 drops 1/2 hr. before or 1 hr. after meals 2x/day - for 5 days; 2 day rest and continue.

Cilantro-algae Chelation Pesto- Two Tsp Daily

- 4 cloves garlic
- 1/3 cup Brazil nuts
- 1/3 cup sunflower seeds
- 1/3 cup pumpkin seeds
- 2 cups packed fresh cilantro
- 2/3 cup flaxseed oil
- 4 tablespoons lemon juice
- 2 tbsp. (6 capsules) modifilan powder
- Bragg's Liquid Aminos™

Cilantro + Algae (Brown or Green)

**The best detoxification is a
GRADUAL one**



**Organophosphate
Pesticides (OP)**

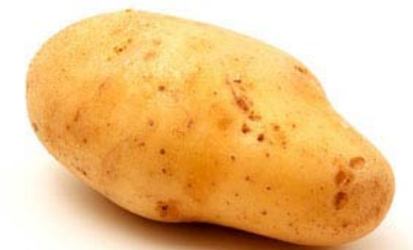
**Carbamate
Pesticides (CP)**

**Types of
Chemical
Pesticides**

**Organochlorine
Insecticides (OI)**

**Pyrethroid
Pesticides (PP)**

Dirty Dozen (Environmental Working Group)

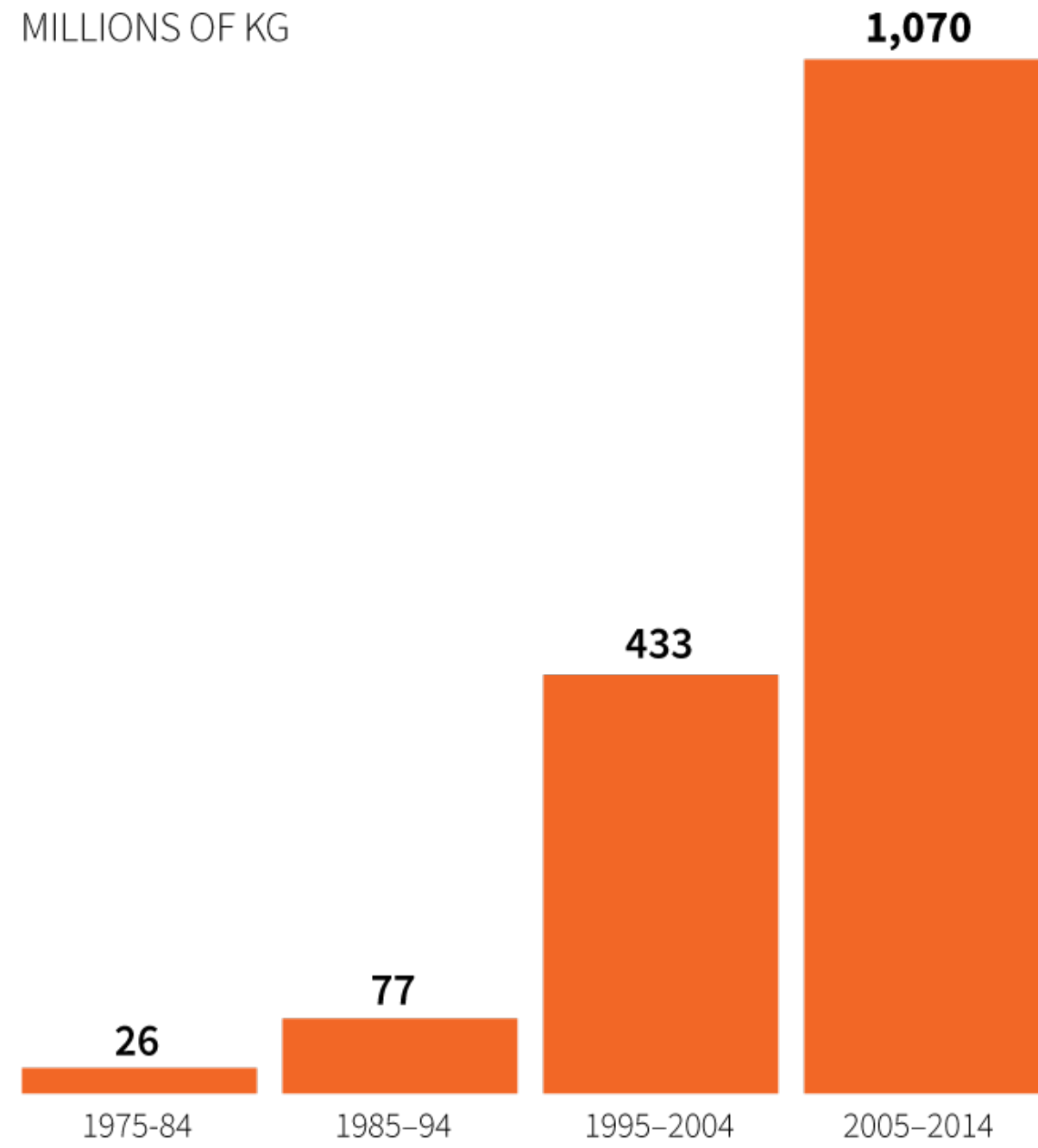


Glyphosate (N-(phosphonomethyl)glycine)

- Broad-spectrum systemic herbicide used to kill weeds.
- Initially patented and sold by Monsanto Company in the 1970s under the tradename Roundup.
- Glyphosate is marketed in different solution strengths under many tradenames: Roundup, Buccaneer, Razor Pro, Genesis Extra II, Roundup Pro Concentrate, Rodeo, Aquaneat, Aquamaster.

USDA data shows US farmers have applied 383 million more pounds of glyphosate herbicide on GE crops since 1996 than they likely would have applied on non-GE varieties of these crops.

TOTAL GLYPHOSATE ACTIVE INGREDIENT USE IN THE U.S. BY DECADE



Note: Estimated from National Agriculture Statistical Service, US Geological Survey, and Environmental Protection Agency data

Source: Charles M Benbrook

Herbicide active ingredients such as glyphosate are never applied alone, but always in their commercial formulations.

These formulations and their excipients are not tested at all or not tested extensively.

Adjuvants in pesticides are synergistically toxic with the active ingredient.

Mesnager *et al.* showed that Roundup® was **125 times more toxic** than glyphosate by itself.

Roundup Safety Claims Disputed

“It is commonly believed that Roundup[®] is among the safest pesticides. Despite its reputation, *Roundup[®] was by far the most toxic among the herbicides and insecticides tested.* This inconsistency between scientific fact and industrial claim may be attributed to huge economic interests, which have been found to falsify health risk assessments and delay health policy decisions.”

Mesnager R, Defarge N, Spiroux de Vendômois J, Séralini GE. Major pesticides are more toxic to human cells than their declared active principles. Biomed Res Int. 2014; 2014():179691.

None of the industry safety studies
have run for longer than 3 months.

Independent study examined the effects on rats fed Roundup GM food for their entire life span that showed increased risk to mammary tumors in females, as well as kidney and liver damage in the males, and a shortened lifespan in both females and males.

These effects only became apparent after 4 months.



Séralini GE, Clair E, Mesnage R, Gress S, Defarge N, Malatesta M, et al. Republished study: Long-term toxicity of a Roundup herbicide and a Roundup-tolerant genetically modified maize. Environ Sci Eur. 2014;26:14

“These data indicate that at doses >10 mg/ml, glyphosate significantly disrupts the barrier properties of cultured intestinal cells.”

Vasiluk L, Pinto, LJ, Moore MM (2005) Oral bioavailability of glyphosate: studies using two intestinal cell lines. Environ Toxicol Chem 24: 153-160.

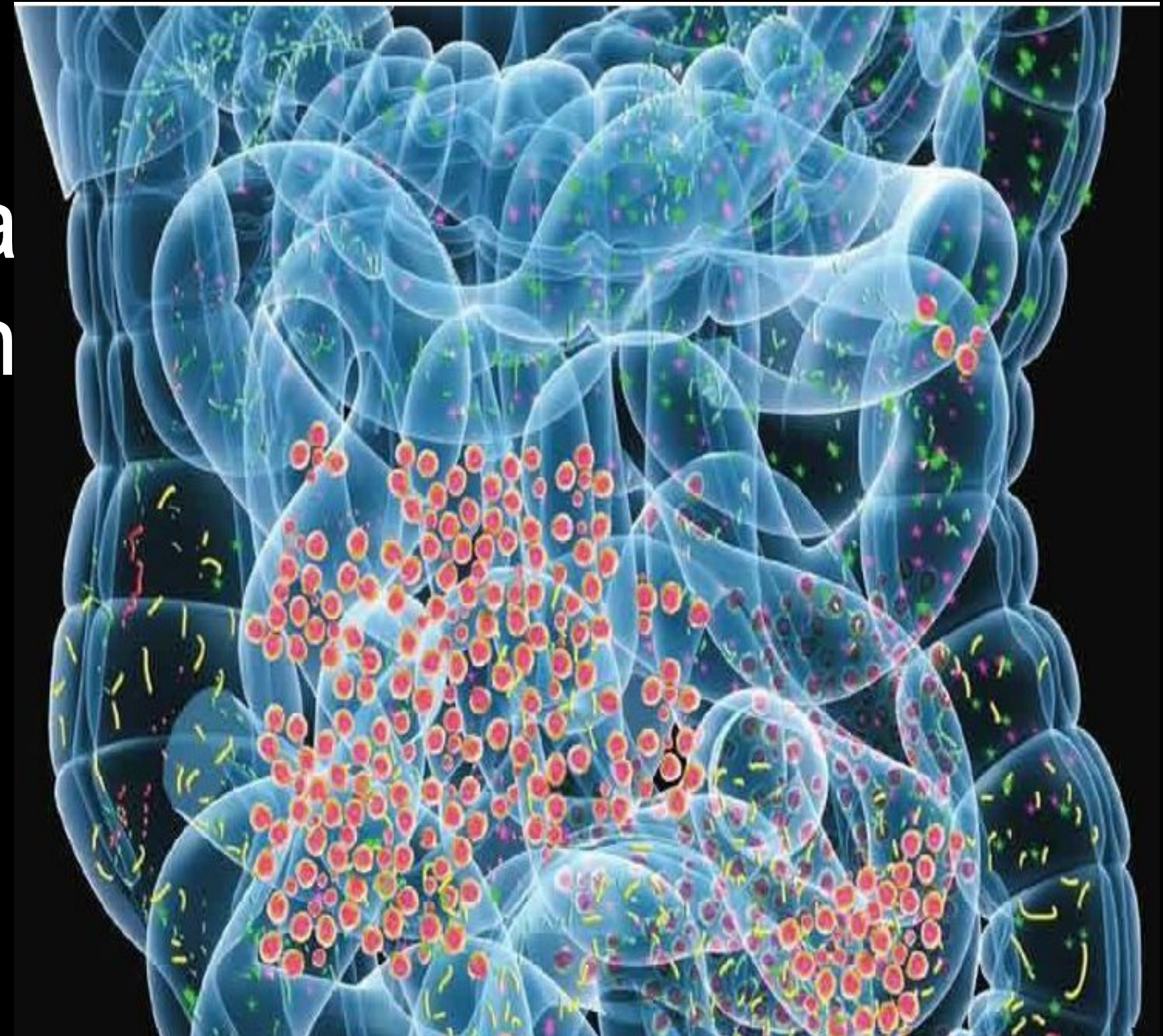
Intestinal Barrier Disruption

Our gut bacteria are harmed by glyphosate, as evidenced by the fact that it has been patented as an *antimicrobial agent*.

US Patent number 7,771,736 B2. Glyphosate formulations and their use for the inhibition of 5-enolpyruvylshikimate-3-phosphate synthase.

Publication date: August 10. 2010.

Glyphosate's disruption of gut bacteria may be a major player in the recent epidemic in antibiotic resistance.



Glyphosate CNS Toxicity

“Enhanced uptake into the epithelial cells at barrier mucosae, including the respiratory and gastrointestinal tracts, may result in more significant local and systemic effects than predicted from glyphosate's passive permeability, and enhanced uptake by the olfactory mucosa may result in further CNS disposition, potentially **increasing the risk for brain-related toxicities.**”

Xu J, Li G, Wang Z, Si L, He S, Cai J, Huang J, Donovan MD. The role of L-type amino acid transporters in the uptake of glyphosate across mammalian epithelial tissues. Chemosphere. 2016 Feb; 145:487-94. Epub 2015 Dec 14.

Glyphosate - manganese deficiency and toxicity

Glyphosate paradoxically creates both Mn deficiency and Mn toxicity due in part to its disruption of CYP enzymes - the liver becomes impaired in its ability to dispose of Mn via the bile acids, and instead it transports the Mn via the vagus nerve to brainstem nuclei, where excess Mn leads to Parkinson's disease.

Anthony Samsel and Stephanie Seneff. "Glyphosate, pathways to modern diseases III: Manganese, neurological diseases, and associated pathologies." *Surgical neurology international* 6 (2015).

Mn Deficiency Can Lead To:

- The overexpression of ammonia and glutamate in many neurological diseases
- a reduction in Lactobacillus in the gut
- a mitochondrial dysfunction associated with suppressed Mn superoxide dismutase (Mn-SOD)

Glyphosate and the ECM

A 2017 paper identified how the toxic chemical glyphosate may replace the amino acid glycine, or be integrated in its place of protein synthesis.

Anthony Samsel and Stephanie Seneff; Glyphosate pathways to modern diseases VI: Prions, amyloidoses and autoimmune neurological diseases: *Journal of Biological Physics and Chemistry* 17 (2017) 8–32 Received 16 November 2016; accepted 15 March 2017

Glyphosate (*N*-(phosphonomethyl)**glycine**)

- Glyphosate tends to accumulate in the ECM - bone, collagen, marrow and ligaments.
- Glyphosate incorporation into collagen leads to an inability for proteolytic processes to degrade it, leading to a potential autoimmune attack against the collagen itself.

Isoxaflutole

“Classified as toxicity category III; a Group B2 carcinogen

(probable human carcinogen).

Isoxaflutole is persistent and mobile, and may leach and accumulate in groundwater and through surface water.” -
(EPA)



Detoxification of the Pesticides/Herbicides

- Humic substances (humates) are organic residues originating from decaying organic matter, and specifically include humic acid, fulvic acid as principal constituents.
- A humic substance has been used for thousands of years in the Ayurvedic and Tibetan medical traditions (also known as **shilajit**) is recognized as a rejuvenator and adaptogen.

Shilajit

Shilajit is a plant based mineral complex found in the Himalayan mountains that is known to have 85+ different micro minerals and trace elements in an ionic and bioavailable form.



Shilajit

Shilajit is a **humate** rich blackish-brown substance, traditionally used for many diseases and has been extensively researched and validated as a panacea.

Humates stimulate the “good” microbes while suppressing the “bad”.

- Schultz, H., 1965. Investigations on the viricidal effects of humine-acids in peat-mull. *Deutsche Tierärztl Vochenschr.*, 72: 294-297.
- Chopra RN, Chopra IC, Handa KL, Kapoor KD. 1958. In *Indigenous Drugs of India*. U.N. Dhar & Sons: Calcutta, 457–46.
- Huck, T.A., N. Porter and M.E. Bushell, 1991. Effect of humates on microbial activity. *Gen. Microbiol.* 137: 2321-2329.
- Acharya SB, Frotan MH, Goel RK, Tripathi SK, Das PK. 1988. Pharmacological actions of Shilajit. *Indian J Exp Biol* 26: 775–777.
- Ghosal S. 1990. Chemistry of Shilajit, an immunomodulatory Ayurvedic rasayan. *Pure Appl Chem (IUPAC)* 62: 1285–1288.
- Ghosal S, Mukherjee B, Bhattacharya SK. 1995c. Shilajit – A comparative study of the ancient and the modern scientific findings. *Indian J Indig Med* 17: 1–10.
- Agarwal SP, Khanna R, Karmarkar R, Anwer MK, Khar RK. Shilajit: a review. *Phytother Res.* 2007 May; 21 (5):401-5.

Benefits of Shilajit

- ▶ Antioxidant
- ▶ Assists Memory Ability and Supports Mental Health
- ▶ Purifies Blood - Liver and Kidney Detoxification
- ▶ Supports Immune System
- ▶ Helps to Increase Strength and Endurance
- ▶ Supports Sexual Function – spermatogenic increases sperm count and motility and; Ovogenic
- ▶ Assists with Normal Regulation of Blood Sugar Levels
- ▶ Helps Balance Triglycerides Levels
- ▶ Supports Metabolism and Corrects Protein Synthesis
- ▶ Mitigates effects of Fatigue by Increasing ATP
- ▶ Cardioprotective
- ▶ High in bioavailable calcium and trace minerals

Microbiome Balance:

Shilajit

- The major physiological action of shilajit was found to be due to the presence of the bioactive dibenzooalpha-pyrones and humic and fulvic acids which act as carrier molecules for the active ingredients.
- The composition of shilajit is influenced by factors such as the geological nature of the rock, local temperature profiles, humidity and altitude.

Ghosal S. 1990. Chemistry of Shilajit, an immunomodulatory Ayurvedic rasayan. Pure Appl Chem (IUPAC) 62: 1285–1288.

Drugs Toxic to the ECM



Fluoroquinolones

Shown to increase metalloproteinases (which degrade the ECM), and can lead to degradation of collagen and tendon rupture.

Sendzik J1, Shakibaei M, Schäfer-Korting M, Stahlmann R. Fluoroquinolones cause changes in extracellular matrix, signalling proteins, metalloproteinases and caspase-3 in cultured human tendon cells. *Toxicology*. 2005 Aug 15;212(1):24-36.

Nick Daneman Hong Lu, Donald A Redelmeier; Fluoroquinolones and collagen associated severe adverse events: a longitudinal cohort study: *BMJ Open*. 2015 Nov 18;5(11):e010077. doi: 10.1136/bmjopen-2015-010077.

Members

Quinolones

- Nalidixic acid

Fluoroquinolones

First Generation

- Ciprofloxacin
- Norfloxacin
- Pefloxacin
- Ofloxacin

Fluoroquinolones

New Generations

- Lomefloxacin
 - Levofloxacin
 - Prulifoxacin
 - Sparfloxacin
 - Gatifloxacin
 - Gemifloxacin
 - Moxifloxacin
 - Trovafloxacin
 - Alatrofloxacin
 - Finafloxacin
- Second
- Third
- Fourth

Dosage determines toxicity – Paracelsus

462 pharmaceuticals were withdrawn from the market
between 1953 and 2013.

The most common reason being hepatotoxicity.

Sauna and hot mineral springs are beneficial for releasing stored toxins within the ECM and lymphatic circulation.



Infrared Sauna

- Heat penetrates more than 1.5 inches into the body
- FIR wavelengths resonate with water molecules release toxins from adipose tissue and the ECM.
- Capillaries are dilated from heat and toxins are excreted through sweating.
- Spring/alkalized water and magnesium potassium supplement prior to sauna
- Skin brushing with a natural bristle brush to aid sauna treatment.
- Take a shower using natural soap after the sauna. Use a water filter (preferably).

Basic Strategies to Detoxify the ECM

- Hydration – quality spring water
- Electrolytes – Magnesium, Potassium
- Eat organic non-GMO
- Make sure organs of elimination are functional
- Provide lymph drainage support – remedies, dry brushing, lymphatic Massage, rebounder, lymphstar
- Algae + Cilantro
- Humic Substances - Shilajit
- Proteolytic Enzymes
- Sauna and colonhydrotherapy

**The best detoxification is a
GRADUAL one**

NEVER GIVE UP!

