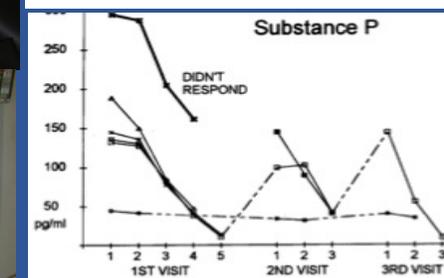
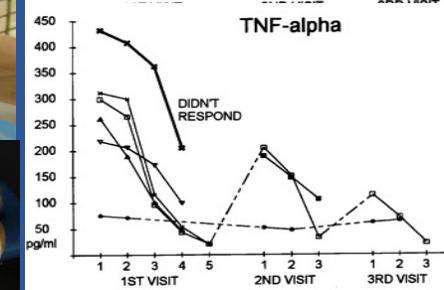
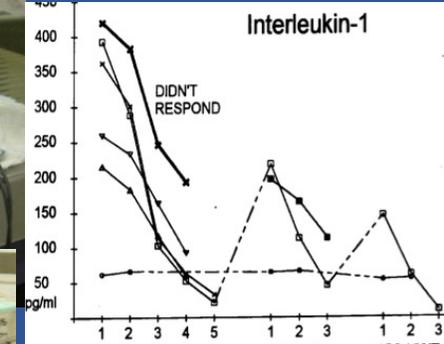


Treating RSD, CRPS
Pain Syndromes with Autonomic Components
Using Frequency Specific Microcurrent



FSM History

- Frequencies from the 1920's first used in 1995 - 1996 to treat muscle pain
- First taught in 1997 to find out if the positive results were real or placebo
- 1997 – 10 practitioners
- 1998 – treated nerve pain
- 1999 – treated fibromyalgia and RSD
- 2022 – 5,000 practitioners in 23 countries
- Consistent benefits and effects are teachable and reproducible
- Research in animals and humans and clinical results have accumulated
- 15 peer reviewed papers, 2 books



FSM Blinded Animal Research

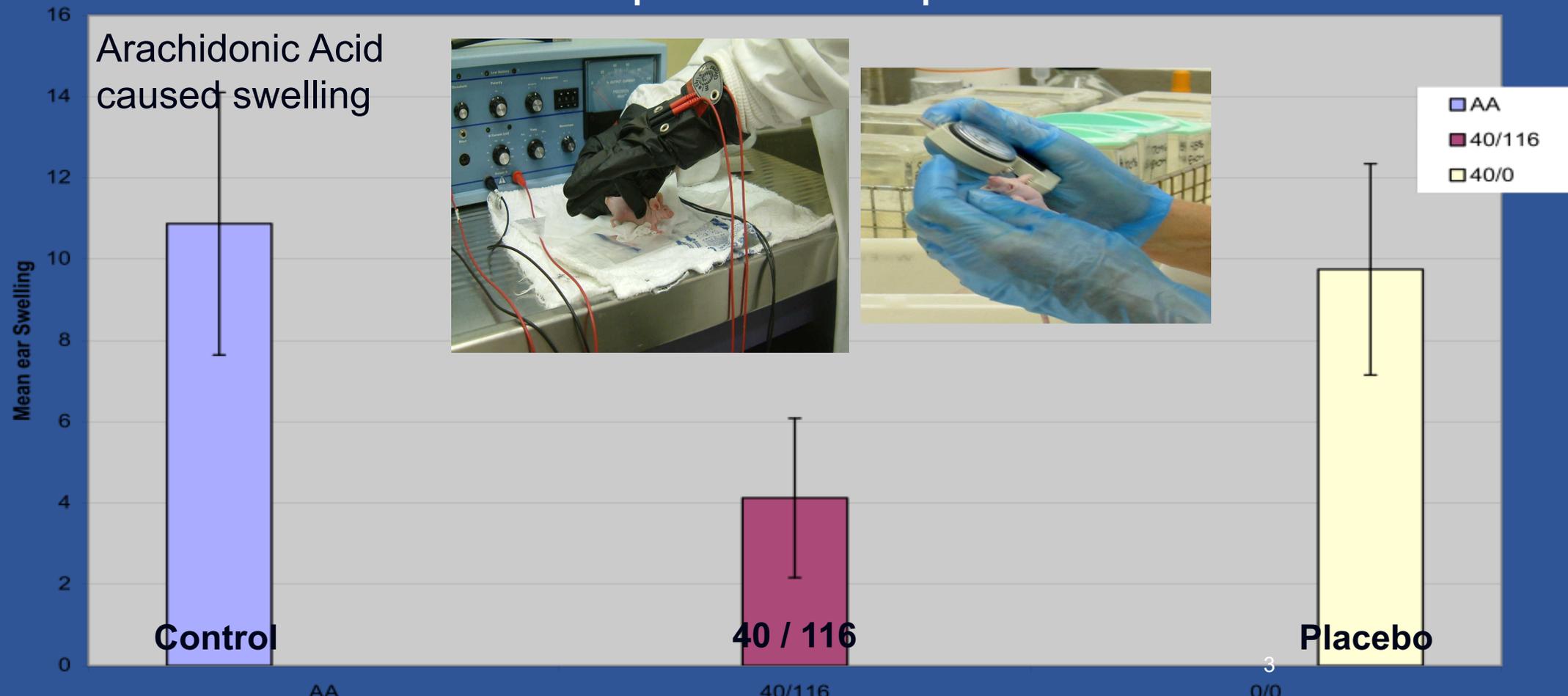
62% reduction in LOX Mediated Inflammation

30% reduction in COX Mediated Inflammation

All animals responded

4 Minute time dependent response

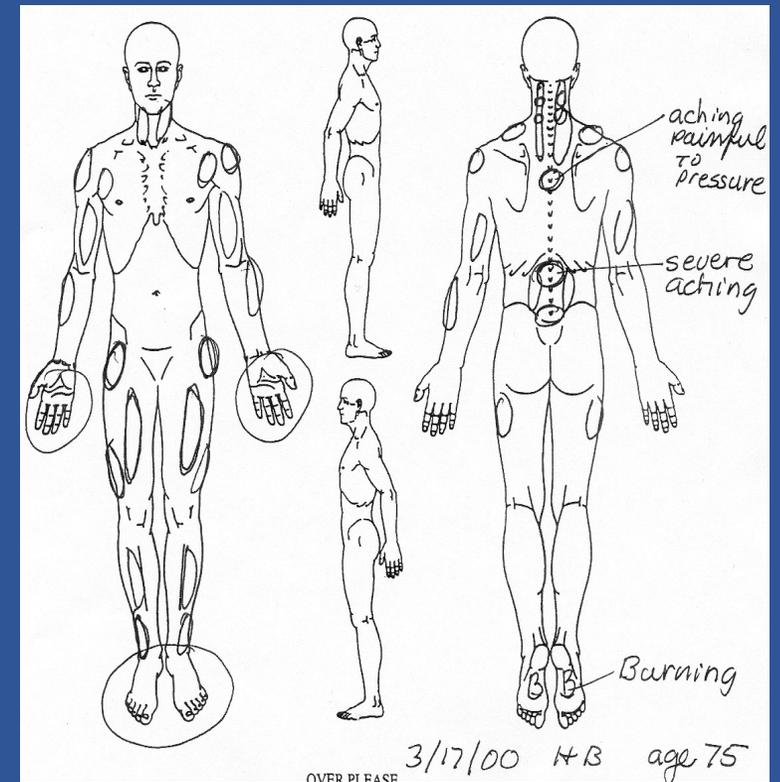
Repeat of 40/116 Experiment



Cytokine changes with microcurrent treatment of fibromyalgia associated with cervical spine trauma

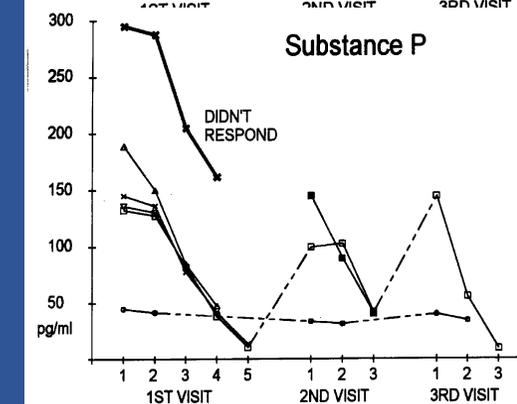
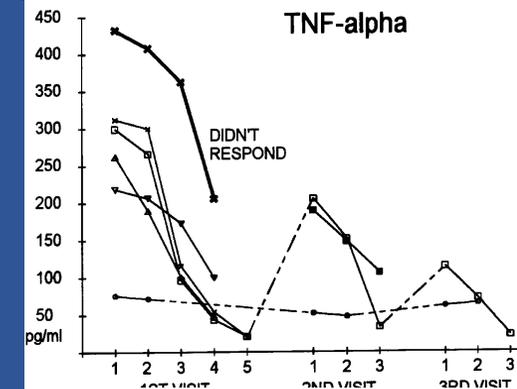
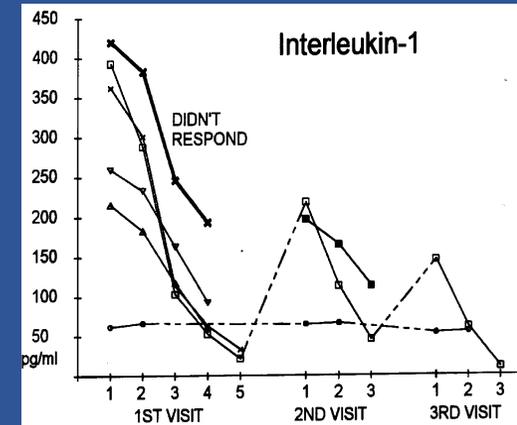
JBMT, July 2005, 9 169-176

- 54 fibromyalgia patients with history of trauma
 - 9.5yrs (1-50 years) Chronicity
- Blood sample data from NIH
 - Control = myofascial trigger points
- Characteristic Pain Pattern
- Hyperactive patellar reflexes
- Dermatomal hyperesthesia



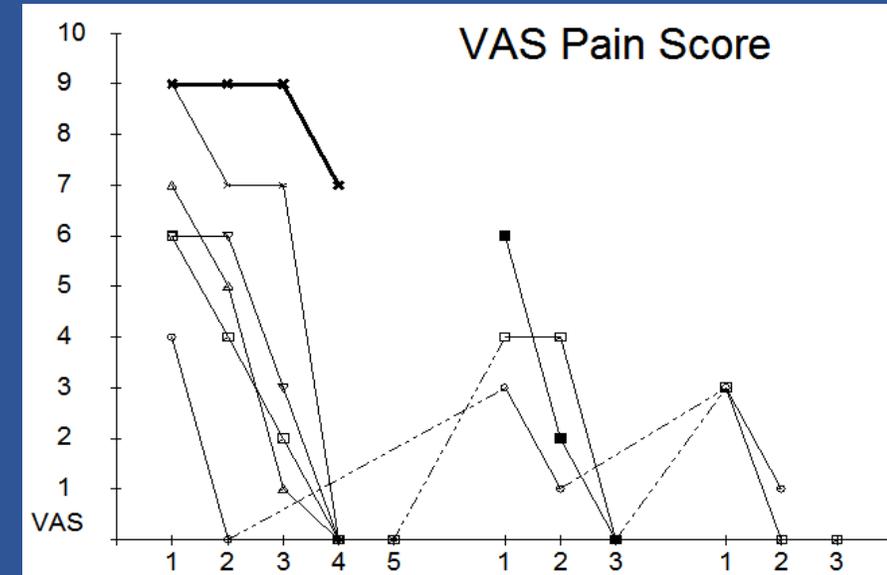
Cervical Trauma Fibro Treatment Protocol

- Only one frequency combination reduced pain – 40hz / 10hz
 - Reduce inflammation in the spinal cord
- Unprecedented cytokine and Substance-P reductions
- Polarized + current – contacts at neck and feet – 60 minutes



Pain Reduced

- $7.3/10 \pm 1.2$ reduced to $1.3/10 \pm 1.1$ $P < 0.0001$
- Lasts two hours to two weeks
 - All patients had pain relief
 - 58% Recovered within 4 months
 - Recovery Individualized
 - Keep pain below 4/10
 - FSM in office, FSM home unit, PT, reconditioning, Supplements
 - 13 / 54 patients discontinued treatment
 - For reasons not related to treatment side effects



Outcomes in Neuropathic Pain

Pain Practitioner Fall, 2010

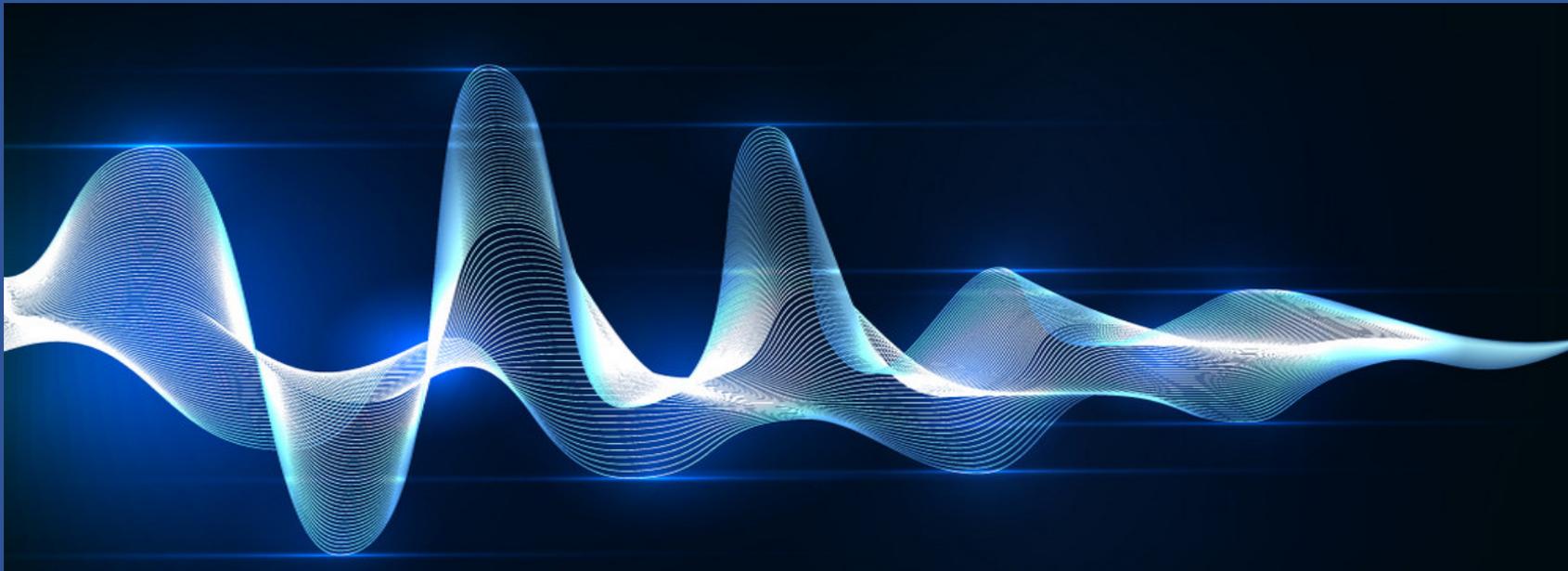
- N=20 – average chronicity 6.7 years
- All patients experience pain reduction
- Pain reduced 1st Tx = 6.8/10 to 1.8
 - P <.001
- Pain reduced 2nd Tx = 4.8/10 to .97/10
 - P<.001
- 65% fully recovered (n=13)
 - 4.6 Treatments (1-15)
- No adverse reactions
- 25% terminated care prior to recovery (n=5)



Non-pharmacologic treatment of neuropathic pain with frequency specific
Microcurrent, Pain Practitioner, Fall 2010

How does this happen?

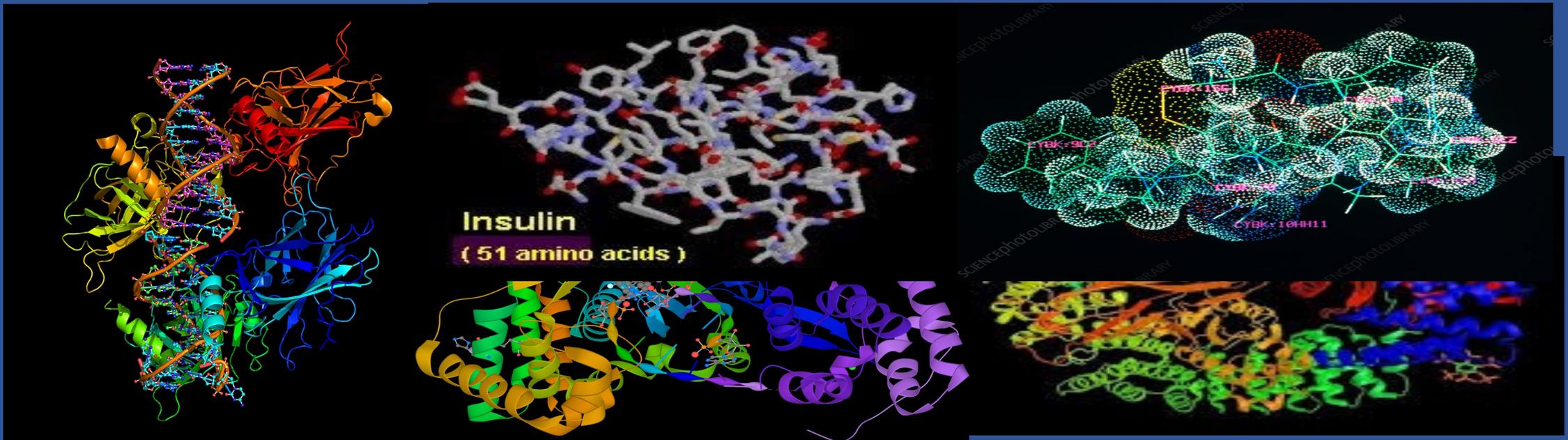
With just frequencies and microcurrent?



How does science explain the observed effects and objective findings of FSM?

Newtonian physics describes large objects
But fails to describe molecular behavior

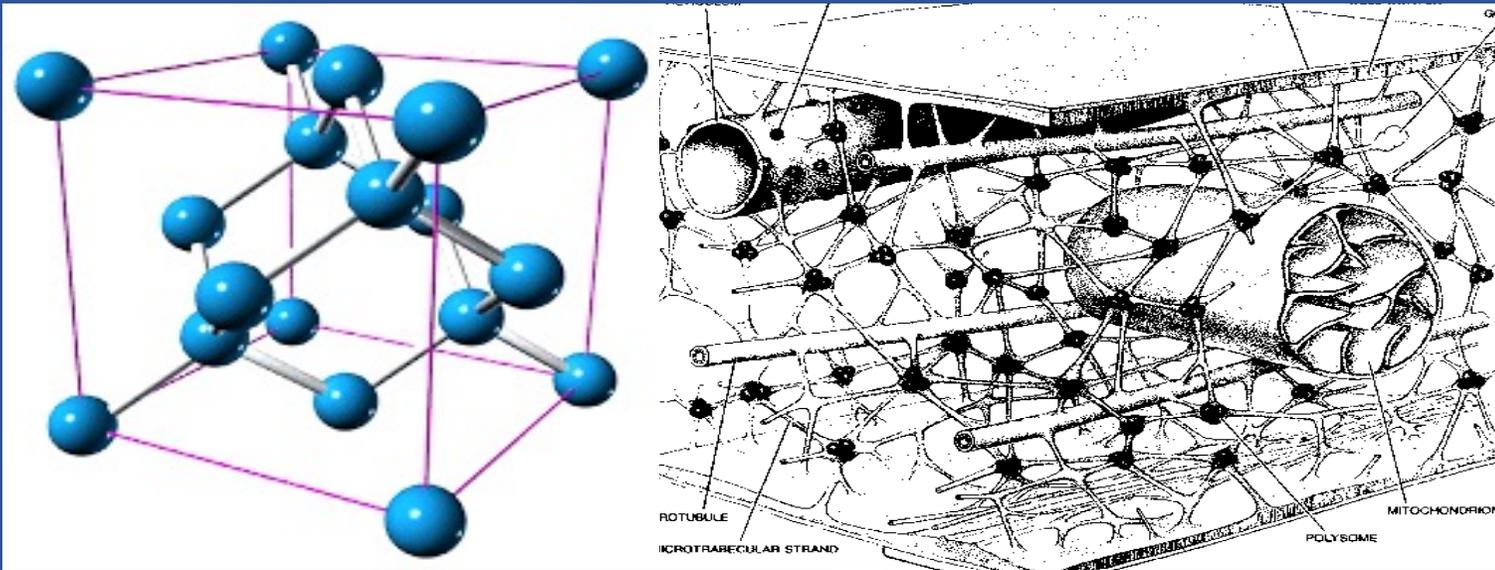
Your body is a large object made of
Molecules. Atoms . Subatomic Particles
Held together by electromagnetic bonds



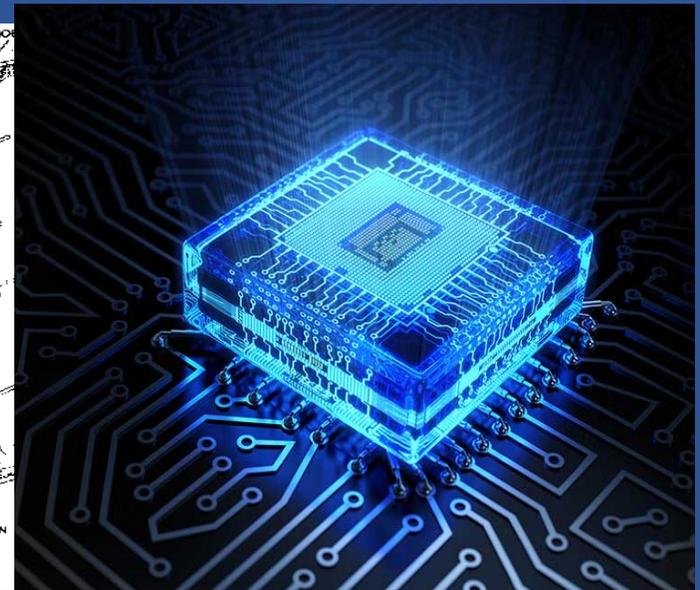
Every Bond has a Resonant Frequency

How does the body conduct current and frequencies?

Water lines the gel inside cells and forms structures that act as a semiconductor St Gyorgi 1986

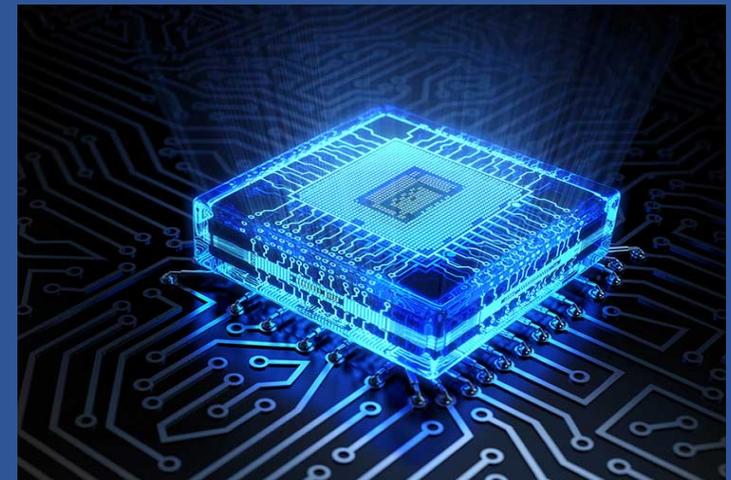
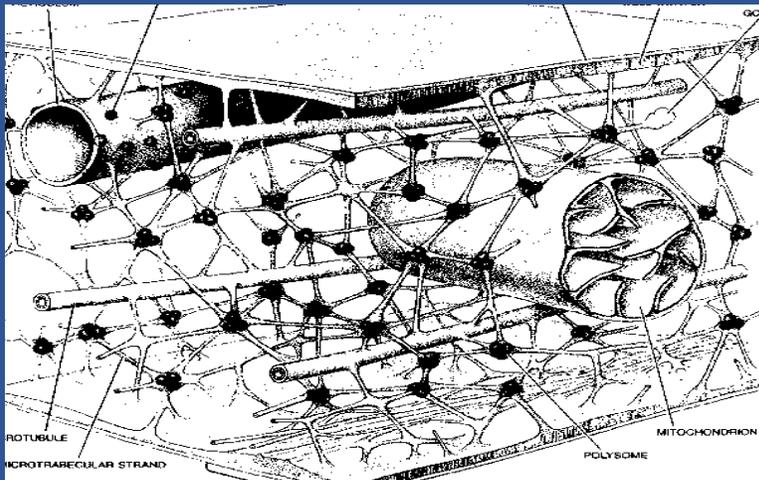


Silicon crystal



According to Bio-Physics
Your body is an
Electromagnetic System
that looks solid
but the cells function as a
Semiconductor Network
that conveys

Current
Charge
Information



Resonance

Resonance is the tendency of a system or bond to oscillate at large amplitudes in response to some frequencies and not others
At the resonant frequency very small forces can produce very large amplitude vibrations



Soldiers marching in step can collapse a bridge

Resonance

Explains the Frequency Effects

Singer Breaks a Lead Crystal Glass

There is a precise frequency holding lead atoms together in a crystal matrix

Lead-atom bonds vibrate with singer's note, if it is precise and sustained

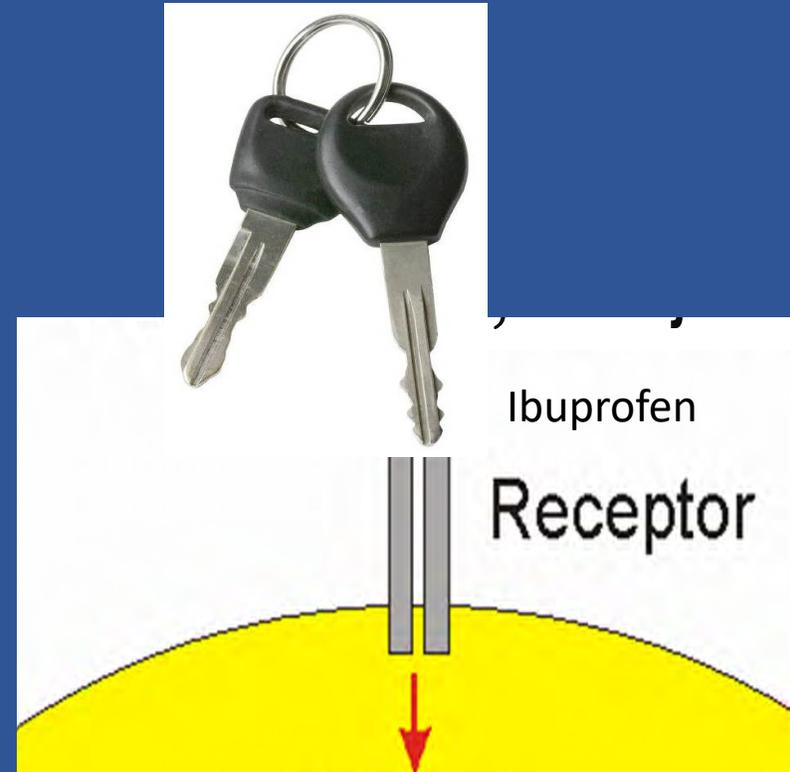
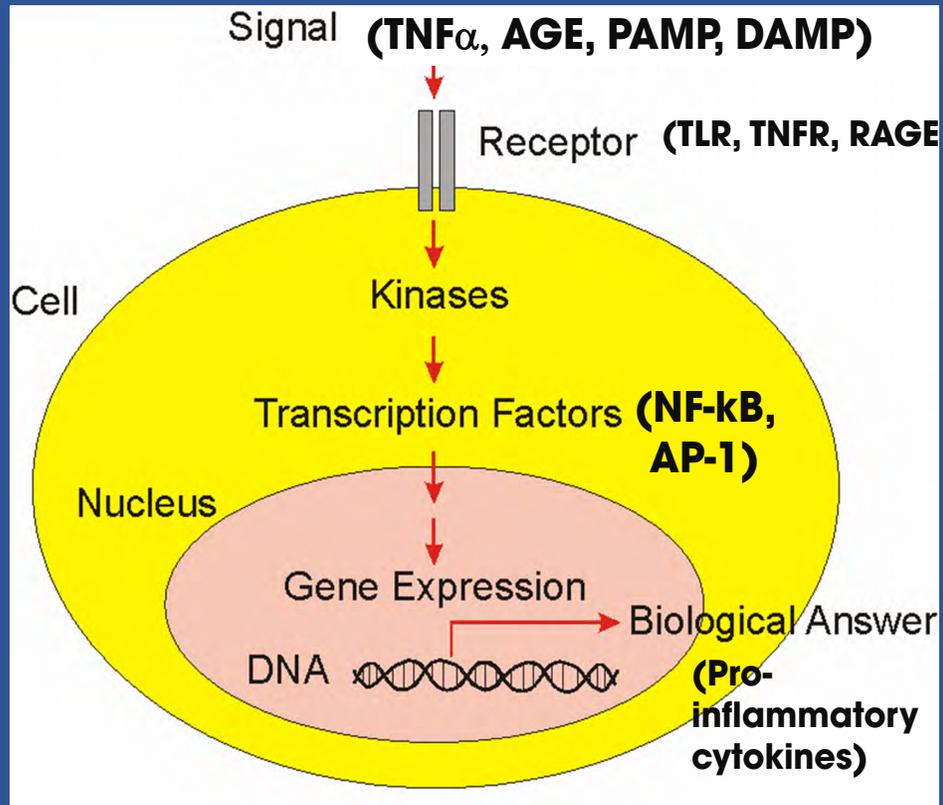
Lead crystal comes apart



BIOLOGIC RESONANCE

Explains the Effects on Living Tissue

- Drugs or nutrients act like keys in a lock to change membrane receptors and change intracellular function

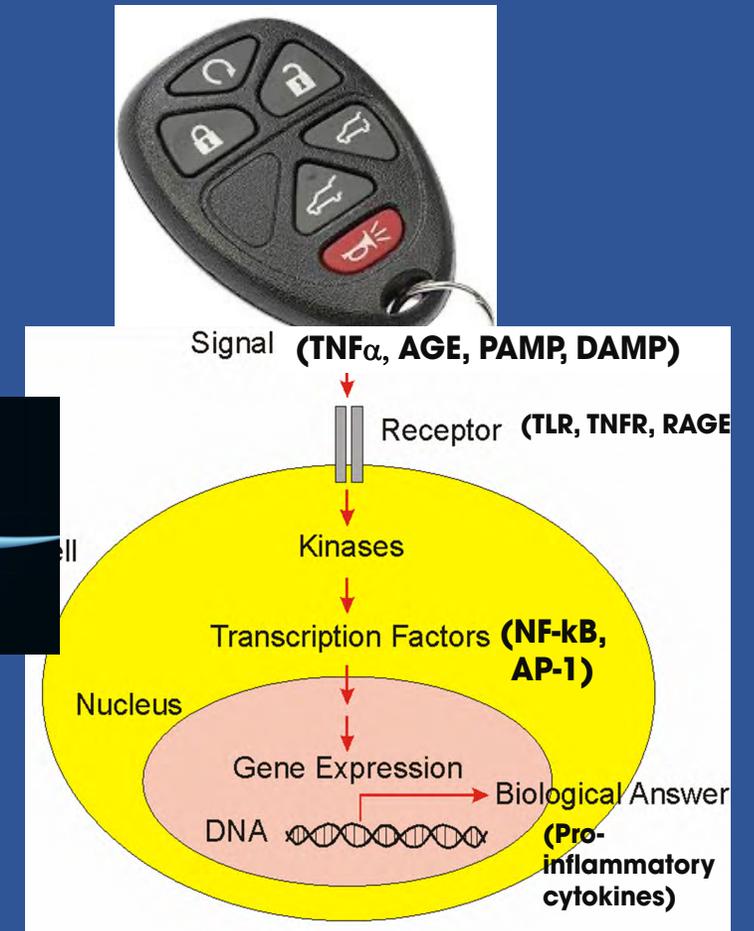
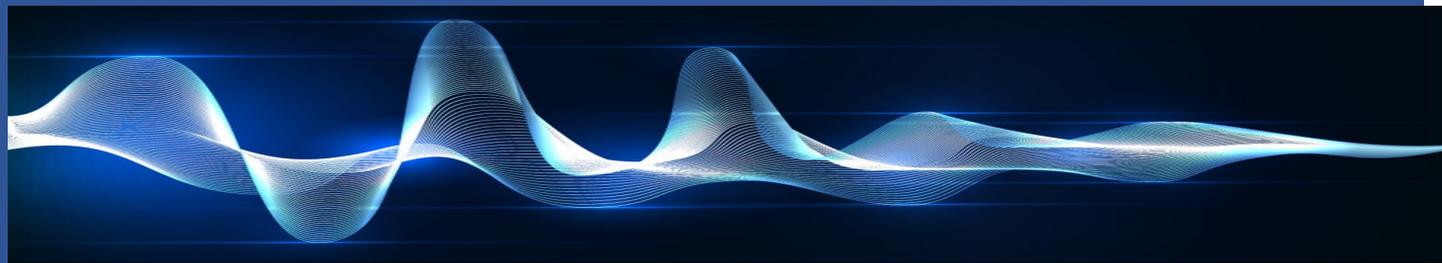


BIOLOGIC RESONANCE

Frequencies act like the key remote opening a lock with an electromagnetic signal

Frequencies appear to change membrane protein configuration and cell function electromagnetically

with a specific frequency signal.



Your key remote sends a signal exactly and only to ONE car

- Your key fob opens only your car even if there are 12 identical cars in a row
- Your remote opens only your car with a single frequency tuned exactly to your car
- FSM seems to work like that with specific problems in specific tissues
- If you have used a key remote, you have used resonance to change function.



FSM has been treating CRPS / RSD since 1998

Understanding the Basics

RSD - CRPS

- Reflex Sympathetic Dystrophy
- CRPS, Complex Regional Pain Syndrome
- Sympathetic nerves are affected by some peripheral injury
 - Fracture, compression, needle stick, sprain, others

■ Symptoms

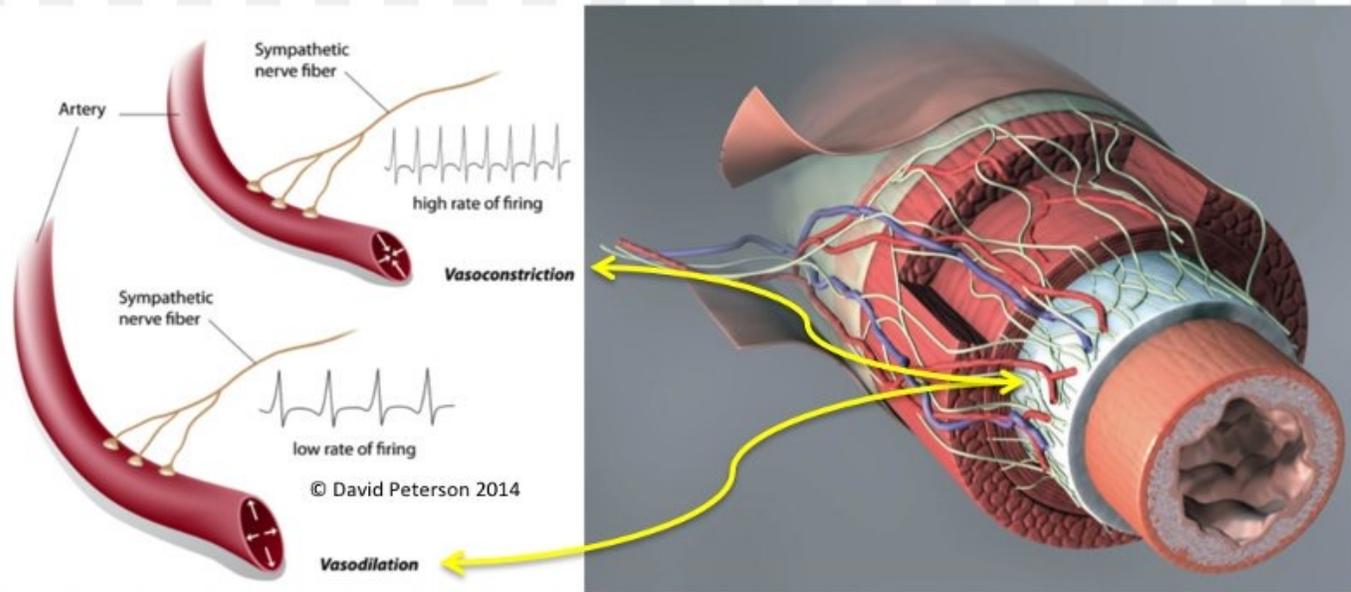
- Deafferentation hyperesthesia – soft touch painful
- Nerve pain
- Temperature change in the affected limb
 - The area may be cold and damp, hot and dry, or cold and dry with changes in skin color and temperature.
- Motor loss: Affected area is no longer connected to brain motor center. Input stops at the thalamus / pain centers.



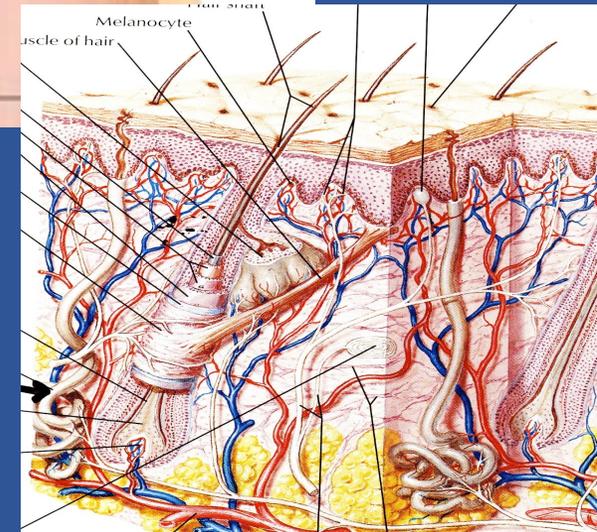
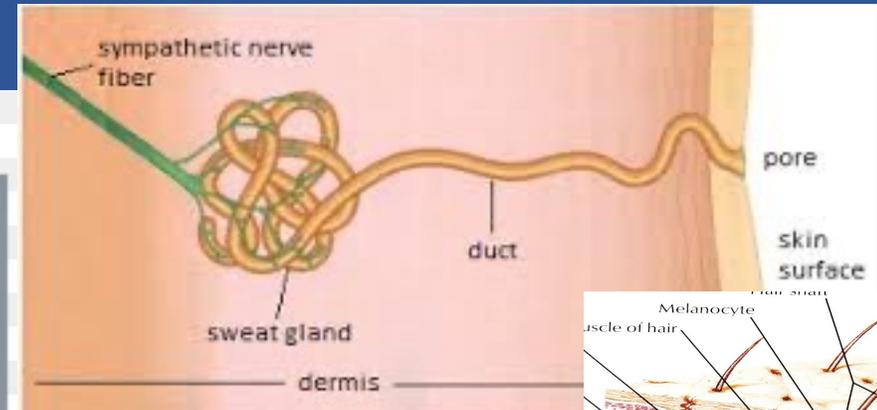
RSD Mechanism

- Sympathetic nerves regulate sweating, vasoconstriction (Think stage fright)
 - Secrete epinephrine and norepinephrine to receptors in arteries and sweat glands.
- When a tissue becomes deafferented the receptors on the tissue proliferate in an effort to attract a nerve

Autonomic Vasomotor Control of Blood Supply

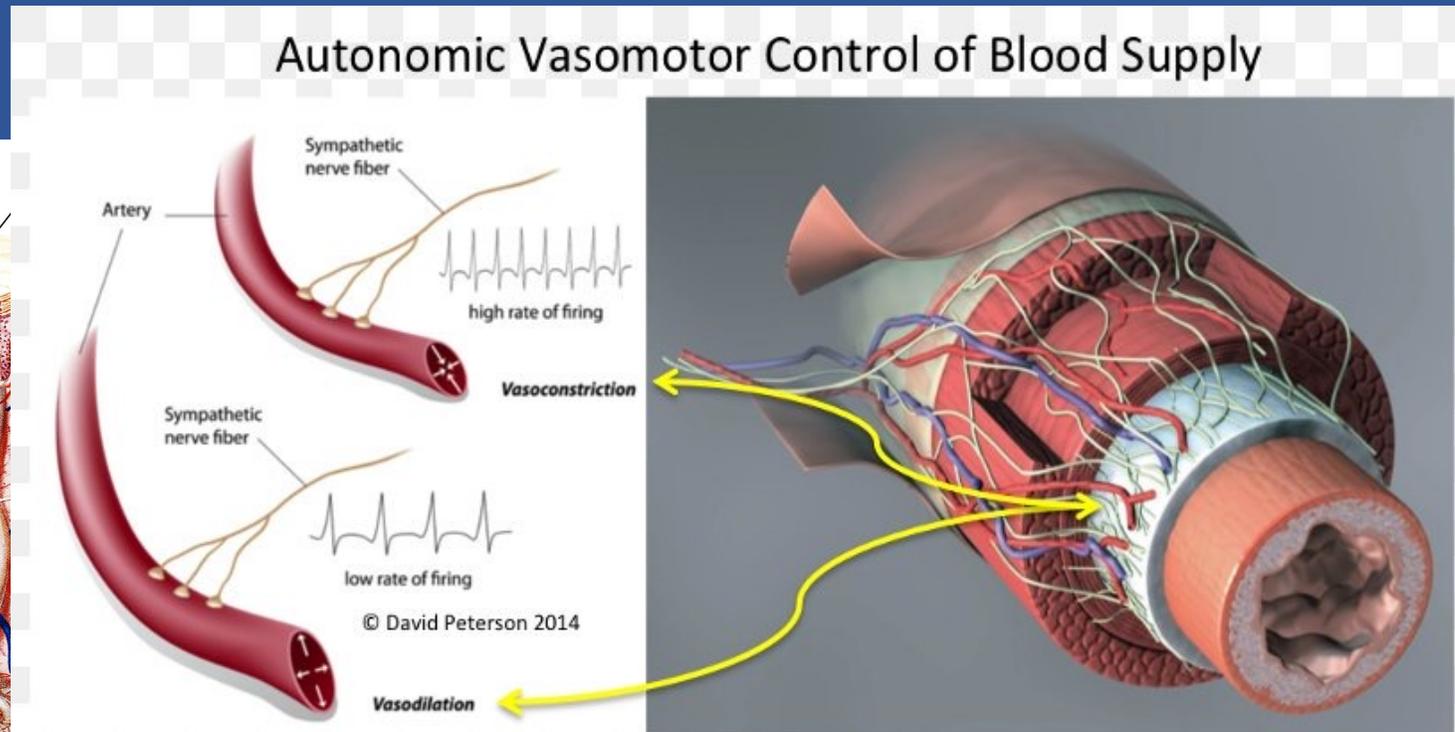
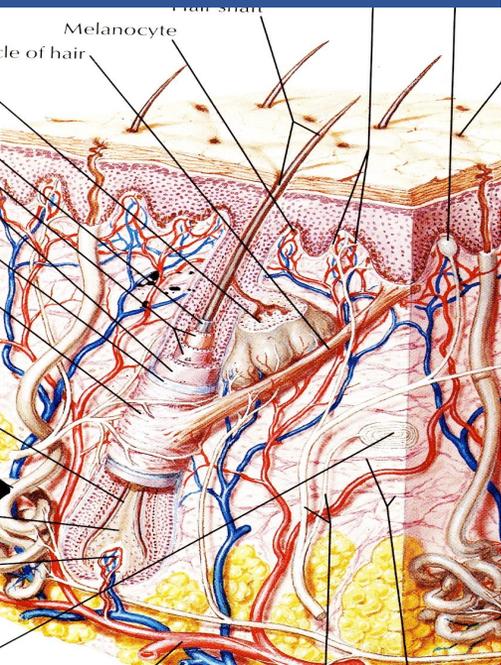


Vasoconstriction by 16% will reduce blood flow by half. Vasodilation by 19% will double the blood flow



RSD Mechanism

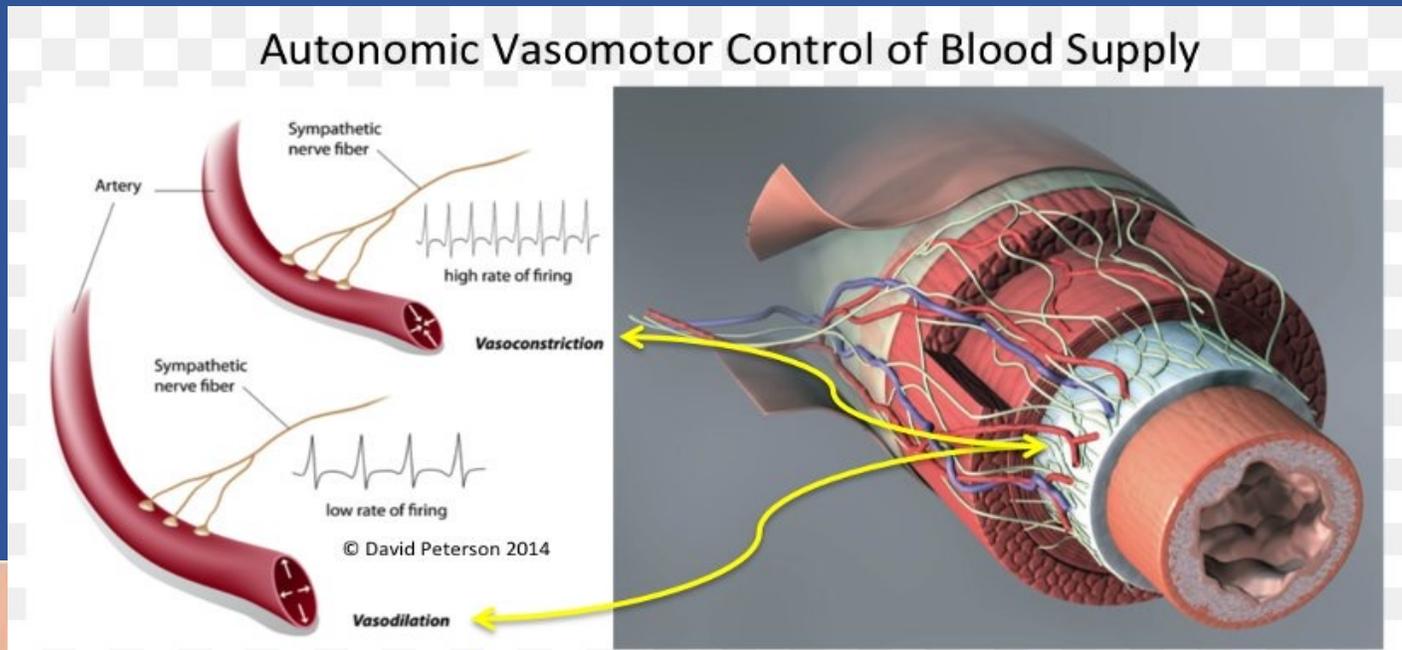
- Sympathetic receptors on the blood vessels have affinity for circulating catecholamines (Epinephrine and Norepinephrine) from adrenals
- Catecholamines bind to those receptors and cause vasoconstriction that is unregulated by nervous system
- Affected limb can be as much as 5° to 22°F colder



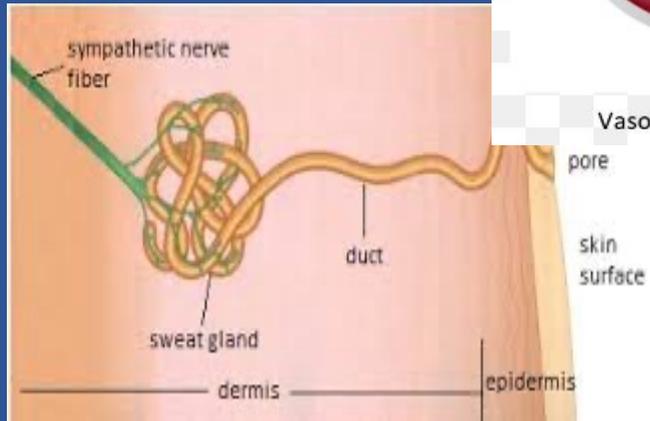
Vasoconstriction by 16% will reduce blood flow by half. Vasodilation by 19% will double the blood flow



Blood vessels are sensitive to catecholamines secreted by the nerve and circulating catecholamines from adrenals



Vasoconstriction by 16% will reduce blood flow by half. Vasodilation by 19% will double the blood flow



Sweat glands are sensitive only to catecholamines from direct nerve stimulation

RSD / CRPS Mechanism

- Sympathetic nervous system mediates sweating – Think stage fright
 - Sweat glands are only responsive to catecholamines from the sympathetic nerves.
- The area is cold and wet when sympathetics are connected and hyperactive due to local inflammation usually immediately after the injury



- The area is cold and dry when the sympathetics are disconnected – sweat glands denervated



- If the sympathetics are newly disconnected the vascular receptors haven't had time to proliferate and the area may be hot and dry.
 - I actually do not understand hot and dry RSD/CRPS

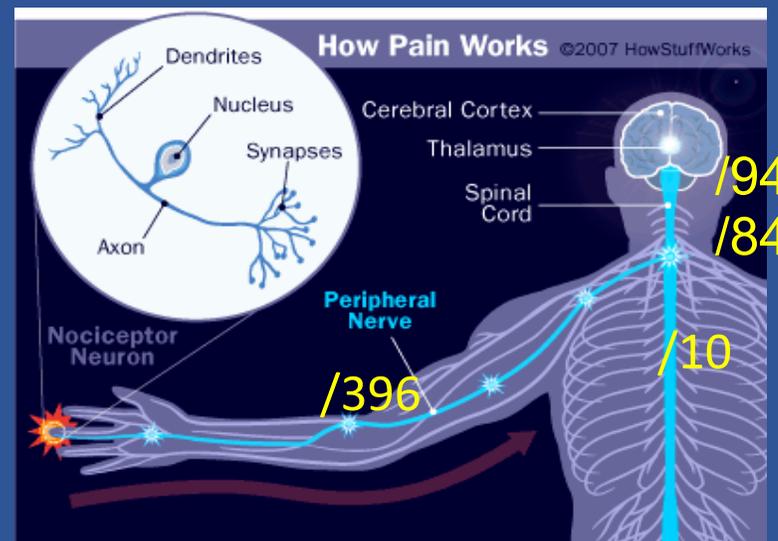
RSD – CRPS

- The skin can become dystrophic from ischemia, hence dystrophic as part of the name RSD.
- The nerve dysfunction and temperature changes can spread to the unaffected side when pain is centralized and affects sensory cortex representation on the opposite side.
- Loss of motor function not uncommon d/t central and peripheral changes
- Challenging to treat
- Positive responses suggest that a treatment trial is worthwhile.



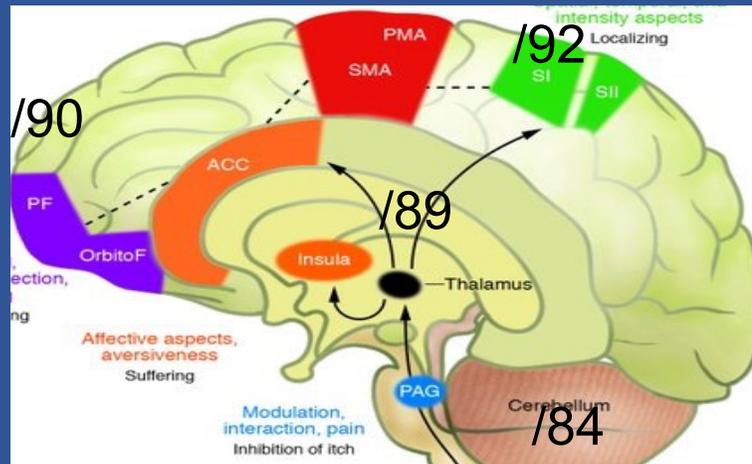
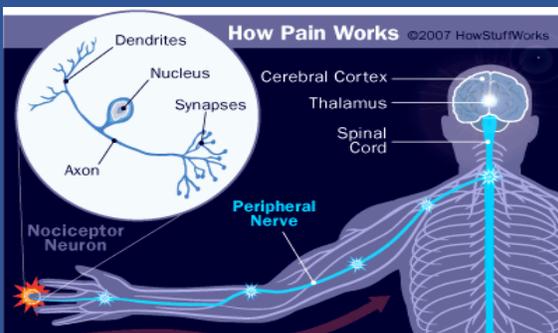
Pain Pathways – Peripheral to Central Concepts and Frequencies

- /396 – Nerve transmits sensory and nociceptive impulses to the brain and motor impulses from the brain to the cord to the peripheral tissue
- /10 - Spinal Cord transmits sensory, pain, proprioception from periphery to brain. Can amplify or inhibit pain signals. Transmits descending motor impulses and motor and pain inhibition
- / 94 Medulla – all motor and sensory pathways, autonomic response, stress response – up and down
- / 84 – Hindbrain, Cerebellum – Balance, movement , coordination, coordinates or inhibits movement based on proprioception, pain, sensation



Pain Pathways – Central Processing Concepts and Frequencies

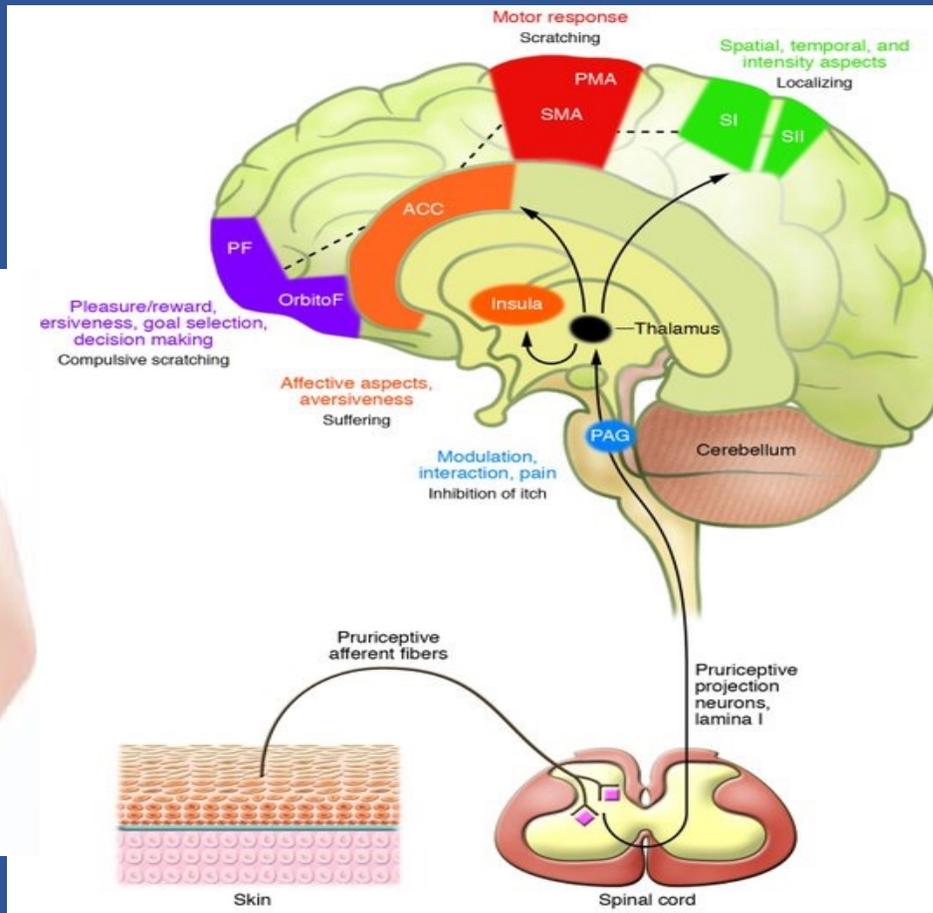
- / 89 – Midbrain
 - Thalamus normally suppresses pain but can amplify chronic pain
 - Hippocampus - emotional memories of all painful events
 - Amygdala - emotional responses to painful events. Can be unconscious
- / 92 - Sensory / Motor Cortex
 - Processes sensory and pain information, initiates motor action.
- /90 – Forebrain – cognitive processing, executive function, judgement, communication.
How you think about pain; what you tell yourself about it.



Pain Processing

Why and how you scratch when you itch.
Itching sensation uses pain pathways

It's not as simple as you'd think



Nerve is irritated by histamine or inflammation

Cord: Transmits the signal – normal or amplified

Peri-aqueductal grey: Modulates pain intensity

Insula: Assessment of pain intensity

Thalamus: Suppresses or amplifies pain

Anterior Cingulate cortex: appropriate to scratch ?

Prefrontal Cortex: How good will this feel?

Motor /Sensory Cortex: Where exactly is it?

What needs to move and how to scratch it?

Cerebellum: Coordinates the muscles

Cord: Transmits messages to muscle and from nerve

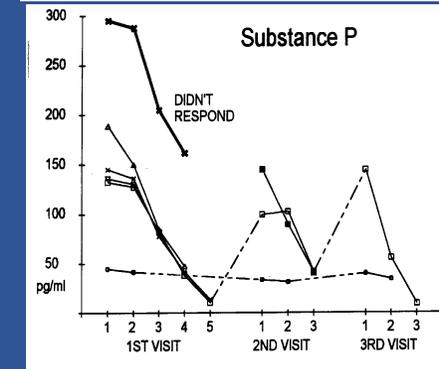
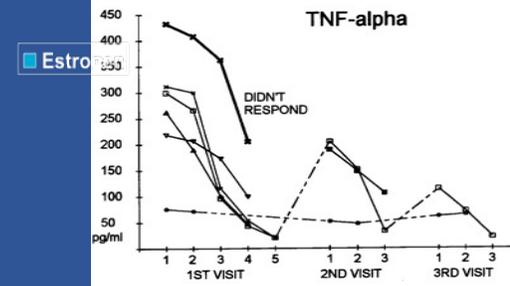
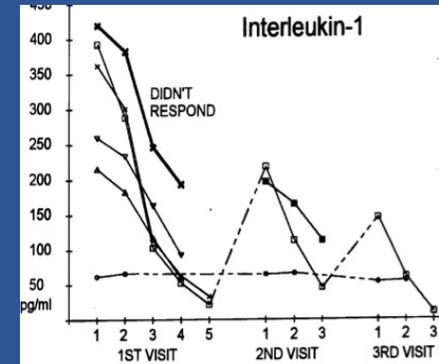
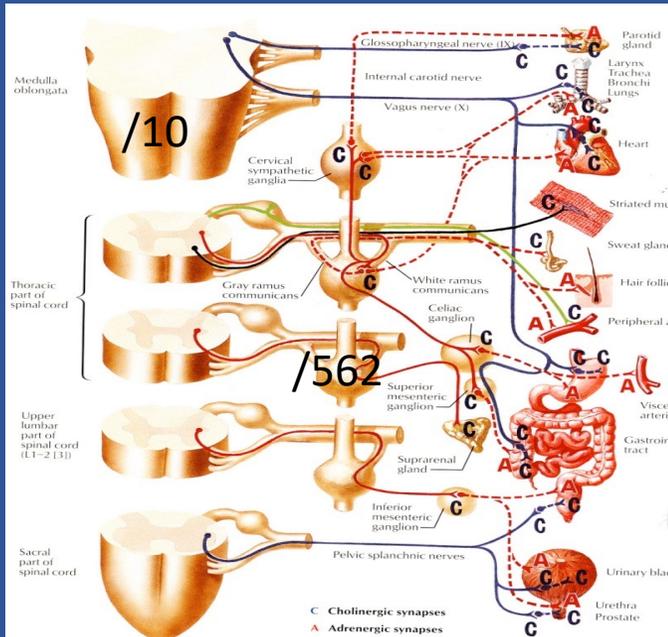
Nerve: Transmits pain, heat, cold, position, motor

Result: Scratch the exact spot at the right time

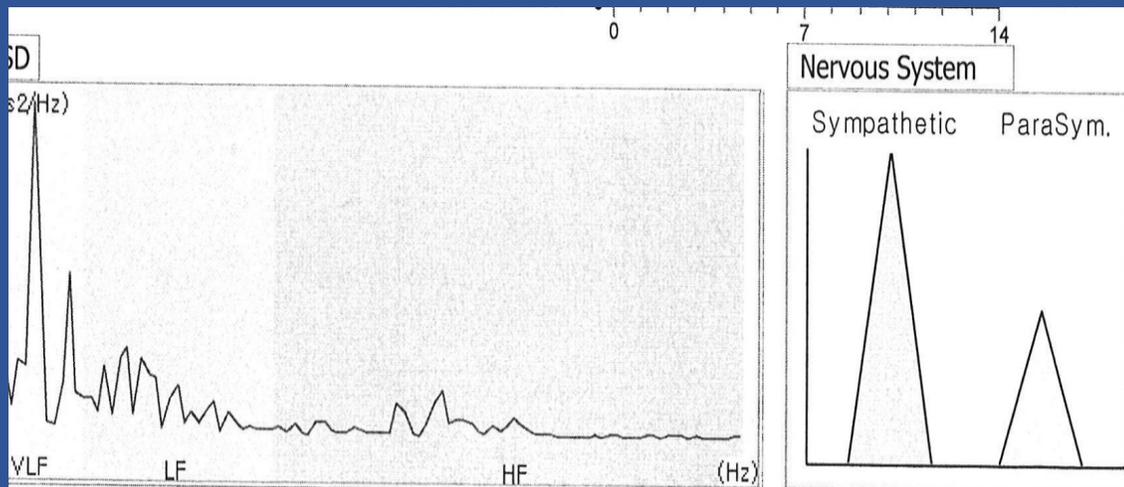
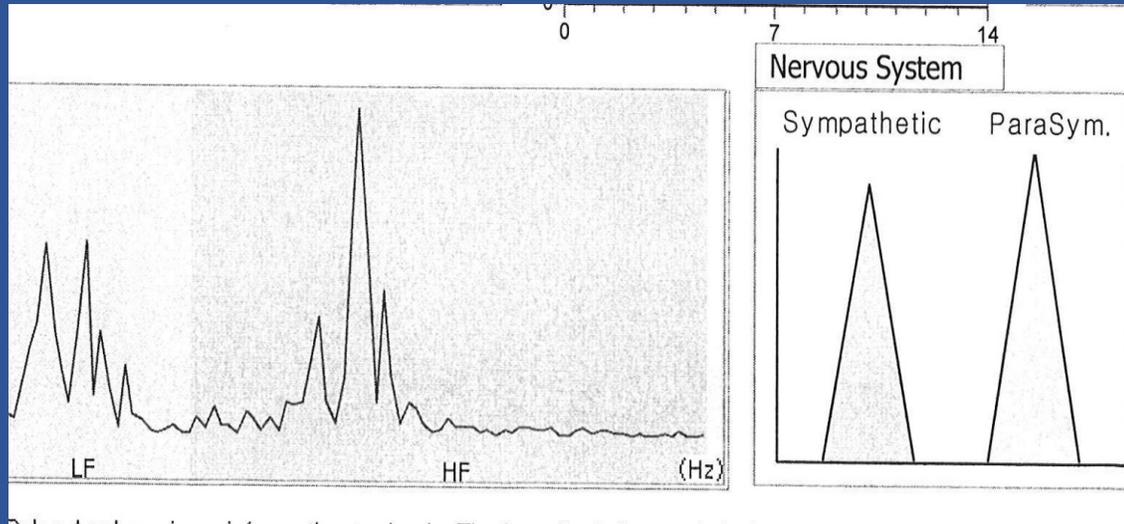
RSD - CRPS Treatment

FSM Tissue Frequencies: Channel A

- Reduce inflammation or Quiet the activity of a tissue: 40 /
- Increase secretions in a tissue: 81/
- Release scar tissue: 13/



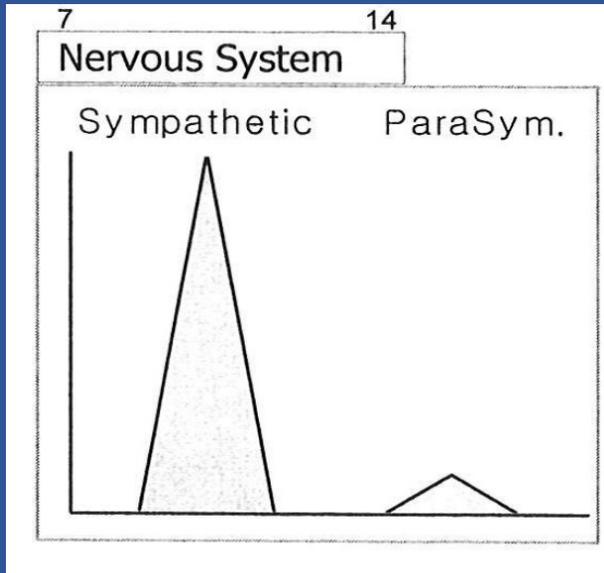
Frequencies Change Autonomic Function



Test
After Lunch
1 minute treatment
40 / 709
Quiet Parasympathetics
2 minute wait
Re-test

Roger Billica MD, 2013

Frequencies Change Autonomic Function Quickly



Test

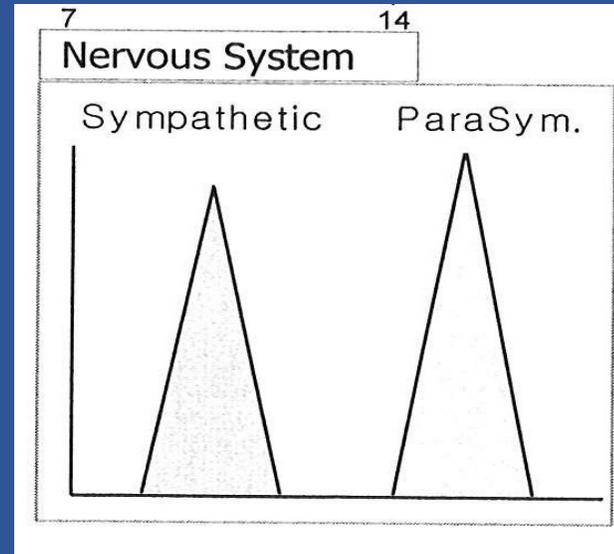
1 minute treatment

81, 49 / 562

Increase secretions / Sympathetics

2 minute wait

Re-test



Test

1 minute treatment

81, 49 / 709

Increase secretions / Parasympathetics

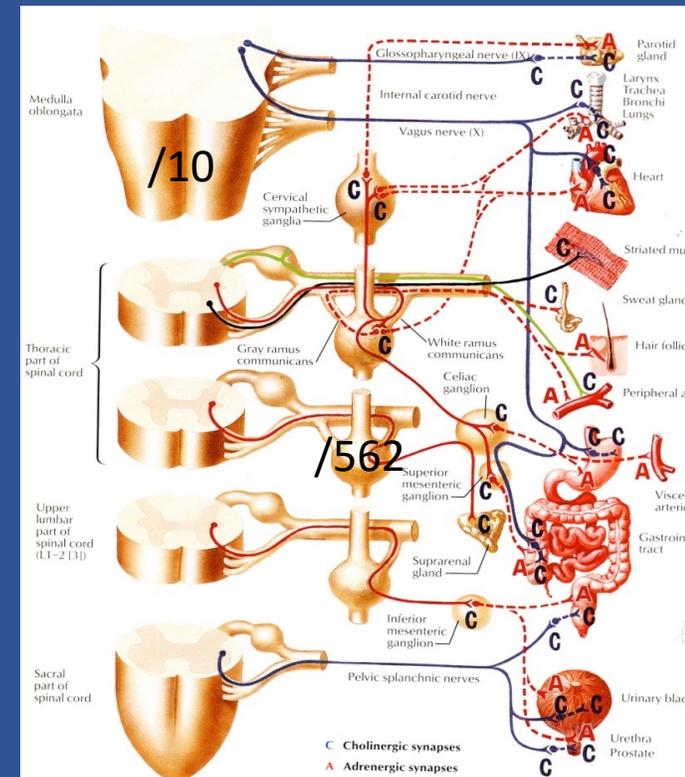
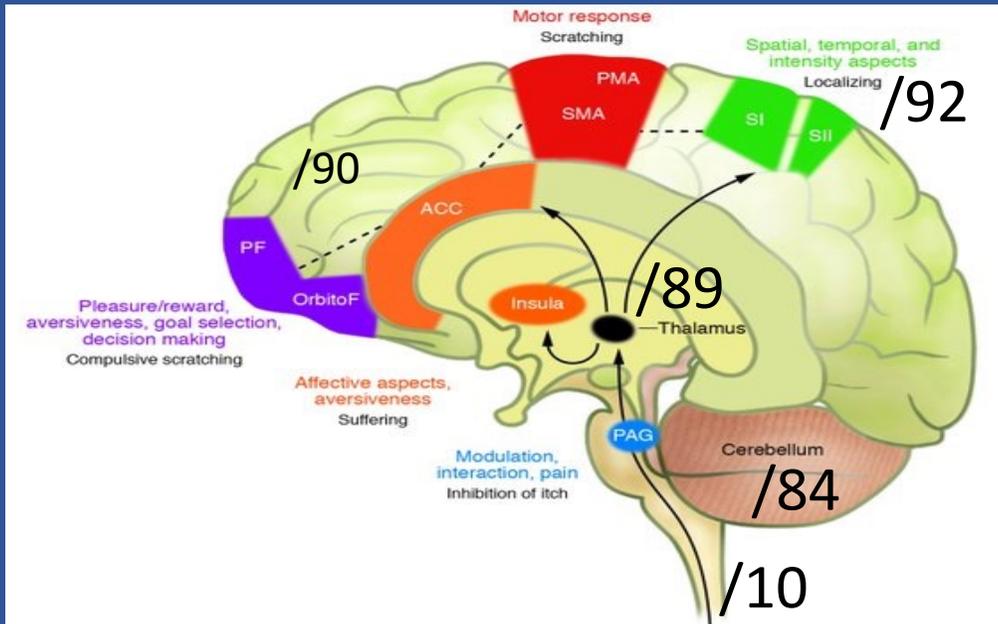
2 minute wait

Re-test

CRPS Treatment

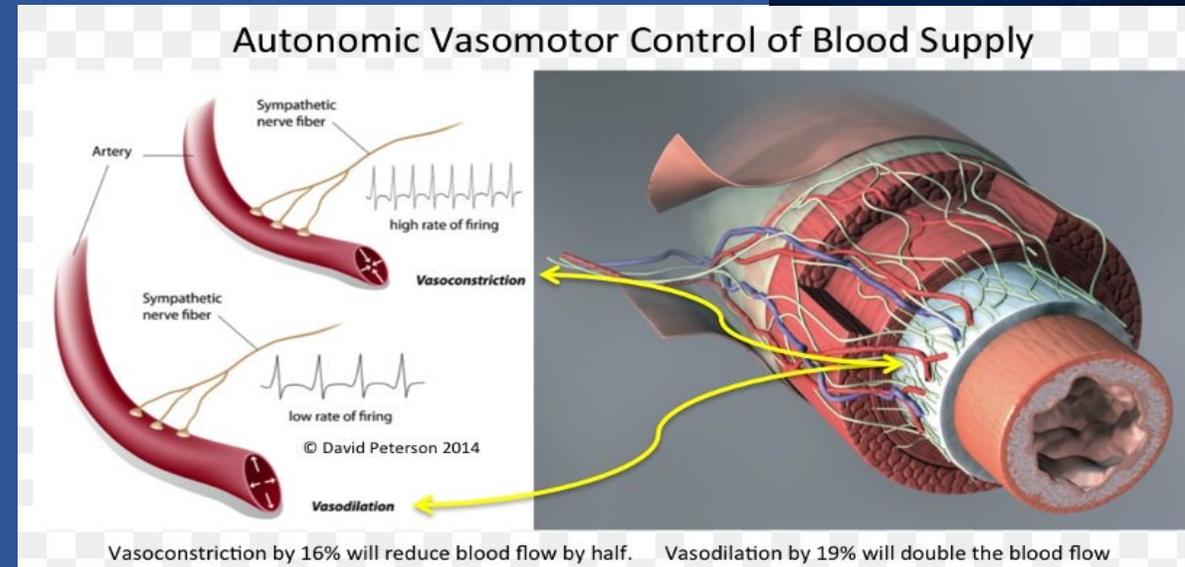
FSM Tissue Frequencies: Channel B

- Sympathetic Nerves: Fight or Flight, sweating, vasoconstriction / 562
- Peripheral nerve: Carries sensory and motor information / 396
- Cord- transmits pain, sensory to brain, pain suppression and motor to body / 10
- Cerebellum – Coordinate or inhibit movement /84
- Midbrain –Pain suppression, Central sensitization / 89
- Sensory / Motor Cortex –Sensory awareness, Initiates movement /92
- Frontal Cortex – Cognitive processing, judgement /90



FSM Resonance For Cold / Wet RSD

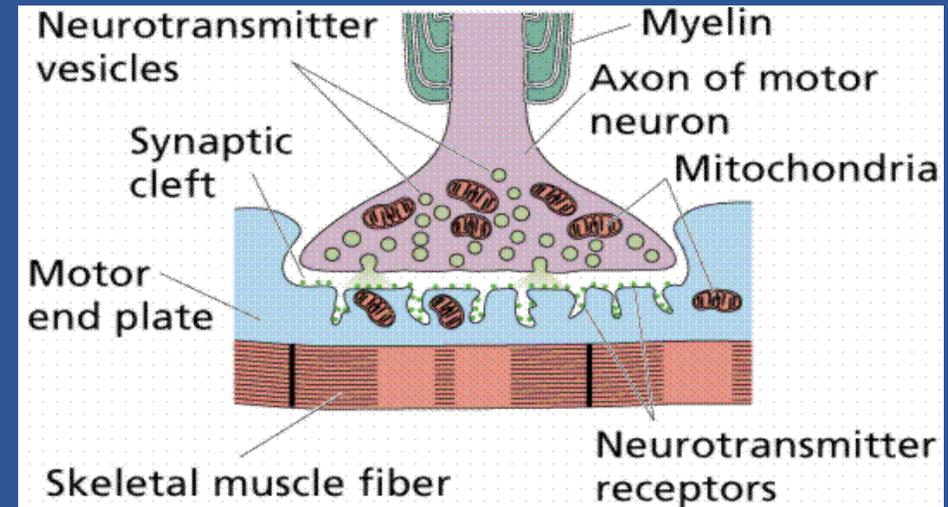
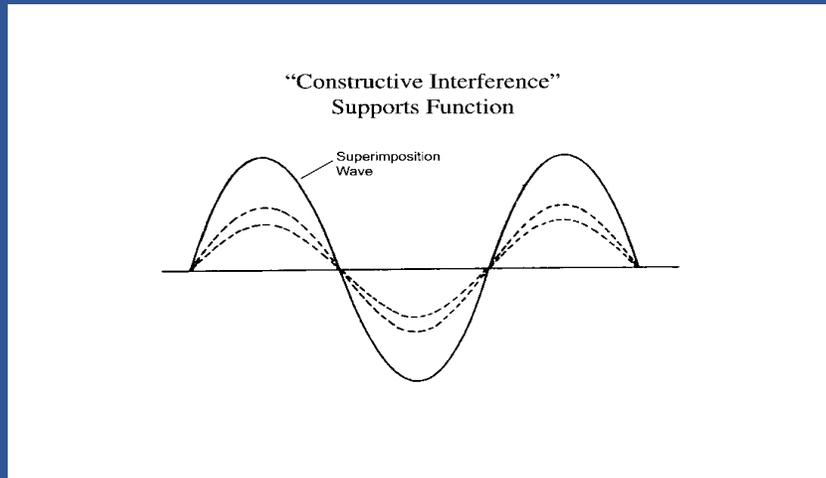
- Some peripheral injury creates inflammation in the nerve and sympathetics
- The limb is cold and wet (damp)
- The sympathetics are still connected to the vascular tissue and are hyperactive because of local inflammation.
 - Such as wrist sprain.
- This is usually an early stage immediately after the injury.
- 94, 970, 30, 40 / 562, 396 + polarized
 - Reduce inflammation in the nerve and sympathetics
 - Notice that 81, 49 / 562 is missing
- **Treat the precipitating injury**
 - The peripheral injury that caused the inflammation
- Typically responds well and quickly
- Early Phase
 - Unusual to catch condition this quickly



Cold and Wet CRPS has not centralized Peripheral treatment is usually enough

First Reduce inflammation in the nerve and sympathetics

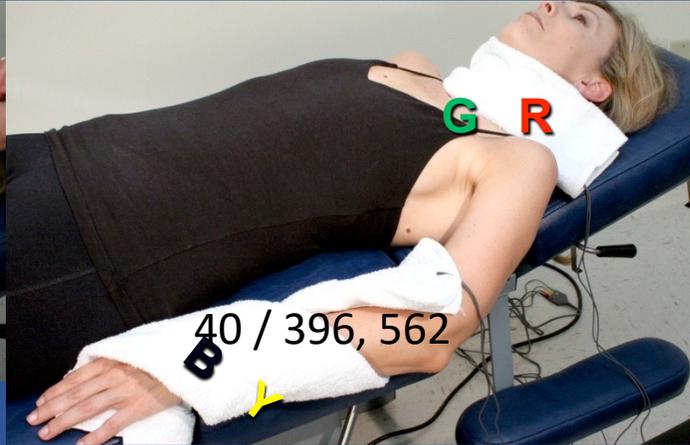
- Then increase secretions between the nerve and peripheral tissue
 - 81/ 396
 - Nerves secrete neurotransmitters
- Reconnect nerve to sweat glands and sensory receptors
- Restore motor and sensory function
- Support secretions and vitality in the nerve



Setting up the Devices



Wet towels conduct the current



- Use TWO units
- One unit neck to feet, the other spine to affected limb
- Second unit – to treat peripheral nerve
 - (+) R/G leads towel up the spine from S1 to C1
 - Puts current through all spinal sympathetic ganglia
 - (-) B/Y leads contact to a towel at the involved peripheral dermatome

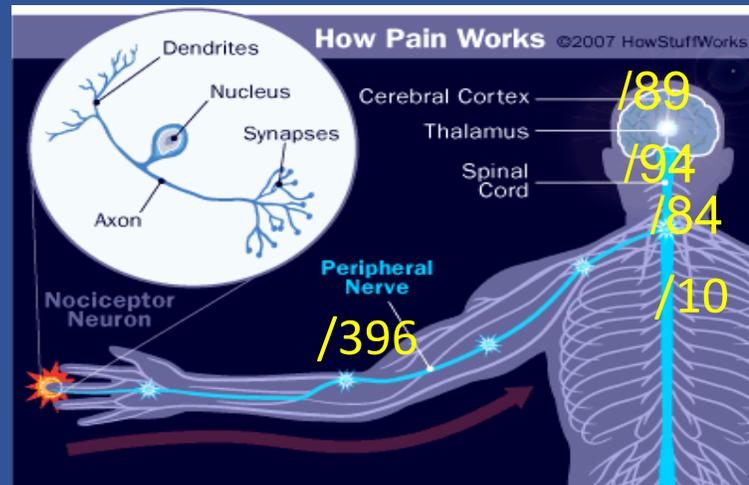
Resonance For Cold / Dry RSD

- If on narcotics run 19, 43, 46 / 10, 396
 - Reduce effects of narcotics on cell signaling
 - 1-2 minutes
- 40 / 396, 562 polarized +
 - 81 / 396 + occasionally
 - From spine to affected limb
 - For as long as it takes
- 40 / 10 polarized +
 - Use second unit simultaneously from neck to feet if possible
- Once pain is down run 81 / 562, 396 +
 - 40, 284 / 562, 396 used for the longest time
 - It may take an hour to reduce pain and normalize the temperatures



Pain Pathways – Central to Peripheral

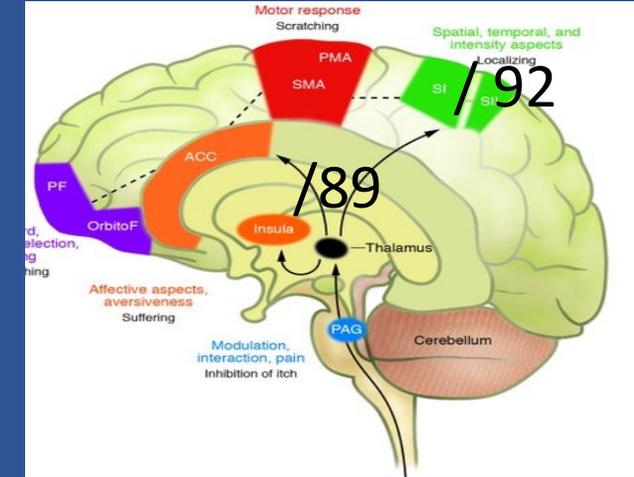
- / 92 - Sensory / Motor Cortex - processes sensory and pain information, initiates motor action.
- /89 – Thalamus – is it safe to move?
- / 84 – Hindbrain, Cerebellum – Coordinates or inhibits movement based on proprioception, pain, sensation
- / 94 Medulla – all motor and sensory pathways, autonomic response, stress response
- /10 - Spinal Cord transmits sensory, pain, proprioception from periphery to brain. Can amplify or inhibit pain signals. Transmits descending motor impulses and motor and pain inhibition.
- /396 – Nerve transmits sensory and nociceptive impulses to and motor impulses from the cord to peripheral tissue



Cold / Dry RSD

Restoring Motion & Sensation

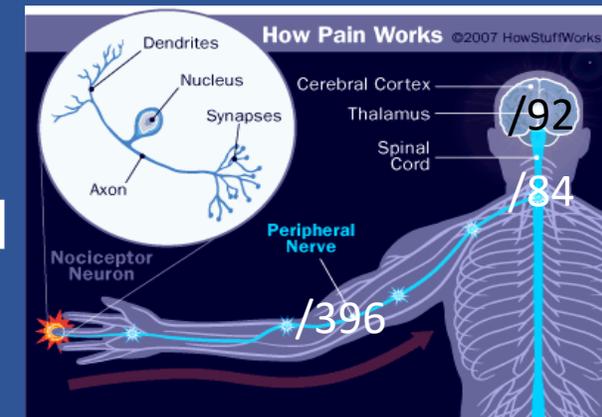
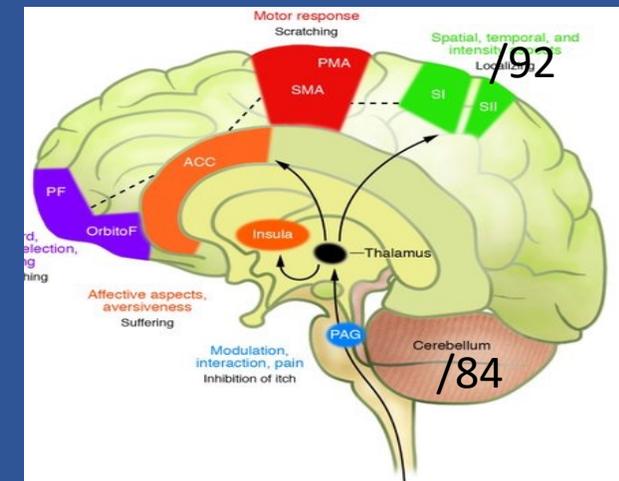
- Use 40 /89 to quiet the thalamic representation
 - Place contacts neck to feet
- The limb is disconnected centrally
- The only representation for the limb is in the thalamic pain centers
- No representation for limb in sensory / motor cortex
 - Limb is only represented in the thalamic pain centers
 - The limb will feel “numb” – the patient can’t find it with the sensory cortex – it will feel weird. Especially bothersome in children.



Cold / Dry RSD

Restoring Motion & Sensation

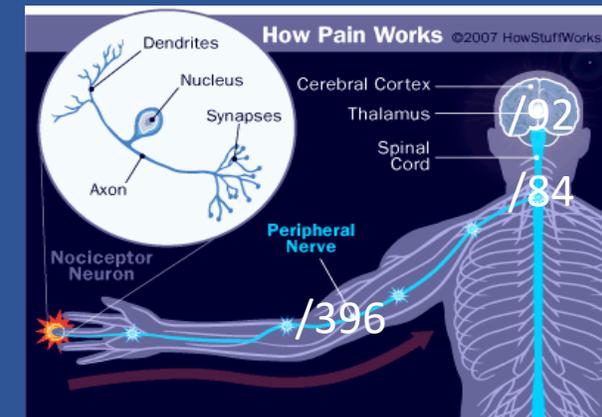
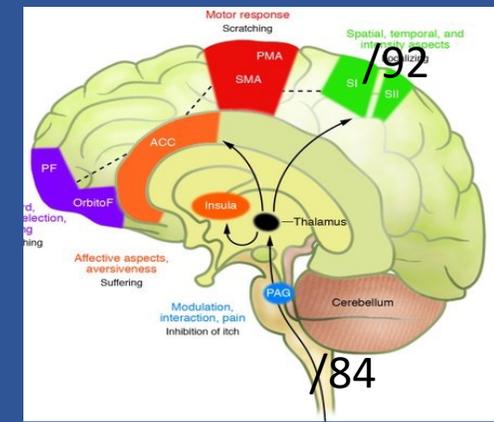
- If bilateral spread – the pain has expanded to both hands and feet
- Use 40 / 92 +
 - Quiets sensory cortex expansion
- To restore motion - Use 94, 81 / 92 (sensory /motor cortex) +
 - Increase secretions in sensory cortex
 - 81 / 92 usually restores motion fairly quickly
 - Have patient move the limb while running the current and 81/92 +
- Place contact at contralateral ear and distal part of involved limb as long as there is no seizure history
 - If seizure concern, contacts at neck - limb
- Use 81 / 84 + (Increase secretions in the cerebellum) with active movement to help coordinate movement once sensation and motor are restored



Cold / Dry RSD

Restoring Motion & Sensation

- Use 81 / 396 + to increase motor secretions to the muscle
- Use 81 / 46 + to increase motor function in sarcomere
 - Have the patient actively move the limb until motion is normal
- 81 / 10 + as needed to support sensory and motor cord pathways
- Release adhesions in nerve to allow normal motion
- Use 13 / 396 and mobilize the nerve fascia adhesions



FSM resolves chronic pain and adhesions after ulnar transposition surgery

Journal of Novel Physiotherapy and Rehabilitation September 2017
Jodie Adams, DPT

- Age 19 - Ulnar nerve transposition surgery
 - Surgery produced no change in pain or ROM
- Age 28 – increased pain (5/10), reduced ROM, TAOS 86%
 - 11 physical therapy sessions ASTYM, e-stim, ice, exercise.
 - Pain at discharge 4/10. TAOS 92%
- Age 29 – Pain 7/10, limited ROM, TAOS 80%
- Three sessions of FSM eliminated pain
 - and improved range of motion
- Pain at discharge 0/10, TAOS 100%
- Results maintained at 1 year follow up.



Reducing nerve adhesions
Allows comfortable movement



Cold / Dry RSD

Restoring Motion & Sensation

- Once the pain is down to 2-3/10
- Move the limb gently & slowly to edge of pain while running
- 13 / 396 + (remove scarring from the nerve)
- Use 40 / 396 to bring pain down, if it goes up with movement
- Go SLOWLY – Be gentle



ADDRESS THE ORIGINAL INJURY

- For RSD to resolve successfully you **MUST** use protocols to address the original injury
 - Except for nerve traction injuries or direct nerve trauma
- Various instigating factors
 - Disc bulges, cord irritation
 - Bone bruises
 - Fractures, tight cast on fracture
 - Needle stick puncture
 - Tetanus shot
 - Wrist or ankle sprain
 - Post surgical nerve injury

Precautions - Side effects

- Shivering, goose bumps – use 40 / 562
- Soft touch is irritating – Firm touch is OK
- Return of sensation – teach them to walk again – toe / heel walking to get information to brain about new state of peripheral tissue
 - Use 81 / 84, 92 with movement
- Feeling of congestion remains – treat over time for nerve, cord, sensory cortex

You Tube Video RSD Treatment in Real time

<https://www.youtube.com/watch?v=hdIGVjrZ6aQ>
or
www.frequency-specific.com/RSD



CAUTION

- Children seem to respond differently – CRPS Patients who are under age 18 may require modified treatment.
- CRPS in children is often psychogenic
 - No success so far in psychogenic CRPS
- Treating pediatric patients with FSM for other conditions is just fine

Follow up

Address The Central Component

- It feels strange to be pain free!!
 - The patient will look or report feeling odd
 - “It feels as if I should be in pain but I’m not”
- Tell the patient:
 - “If it worked the first time, there will never be a time when it doesn’t work and it is OK if you don’t believe me”
- Schedule a follow up for three to four days later

Follow up

Treat any recurrence of peripheral pain

Address The Central Component

- Repeat peripheral treatment as necessary until pain is 1-2/10 and temperatures are equal
- Address central sensitization
 - 40 / 89, 90, 84, 94
 - 20 / 10, 89, 90, 84, 92
 - Polarized neck to feet or neck to involved area
- Might need 81 / 396, 10, 84, 94, 90, 92 (motor cortex)
 - To reconnect brain to nerve again
 - Combine with active movement

Follow up

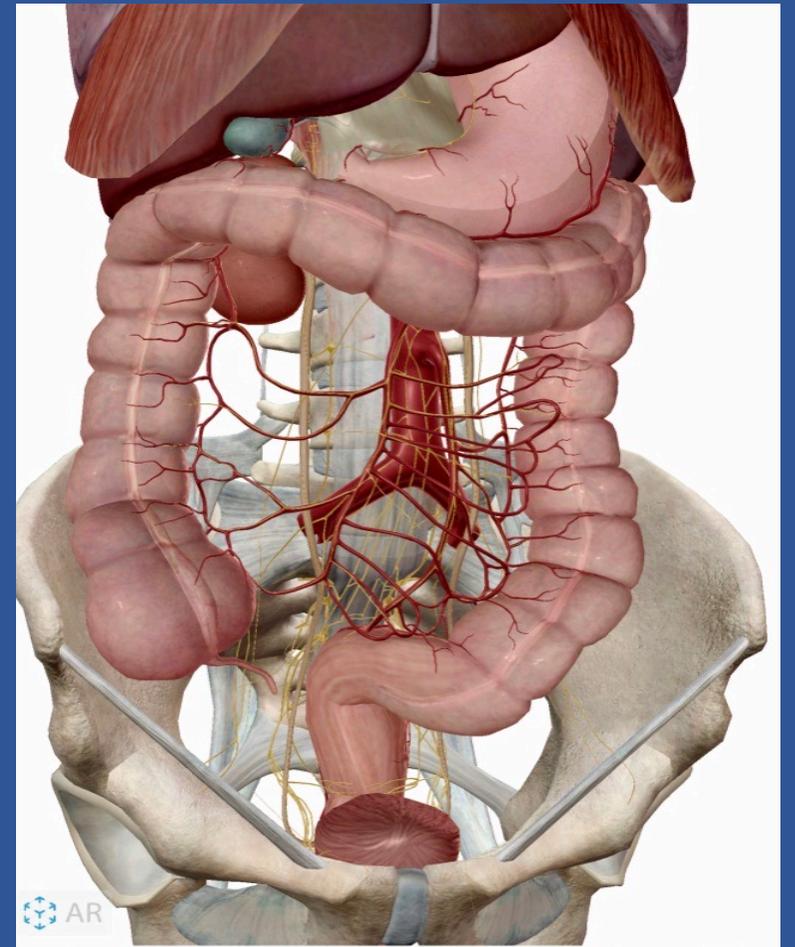
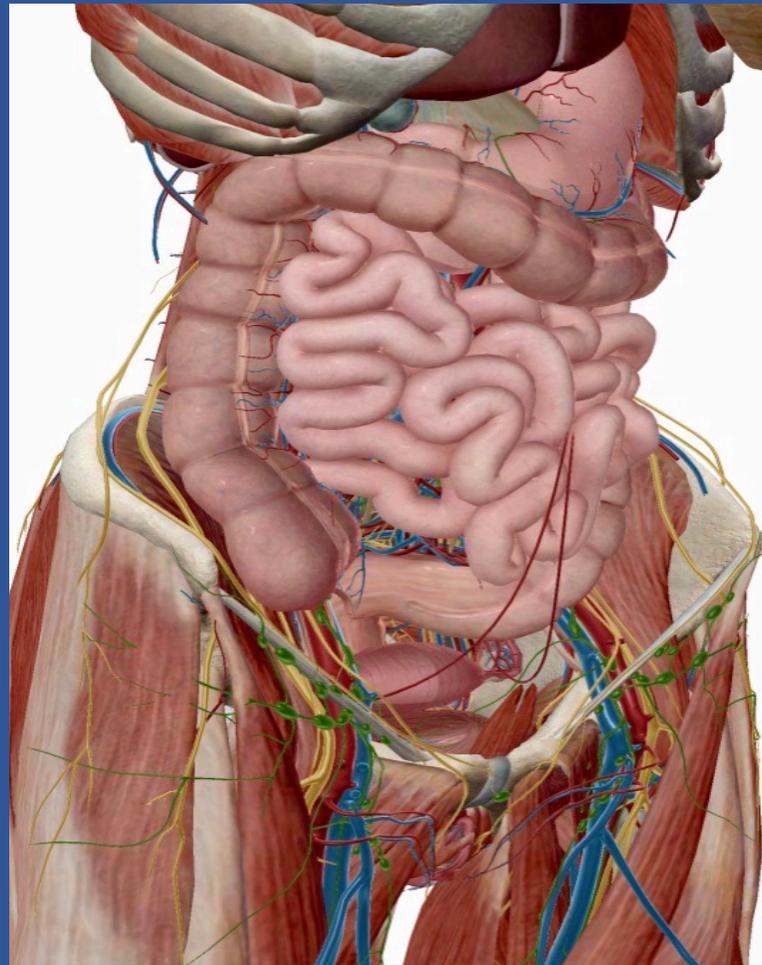
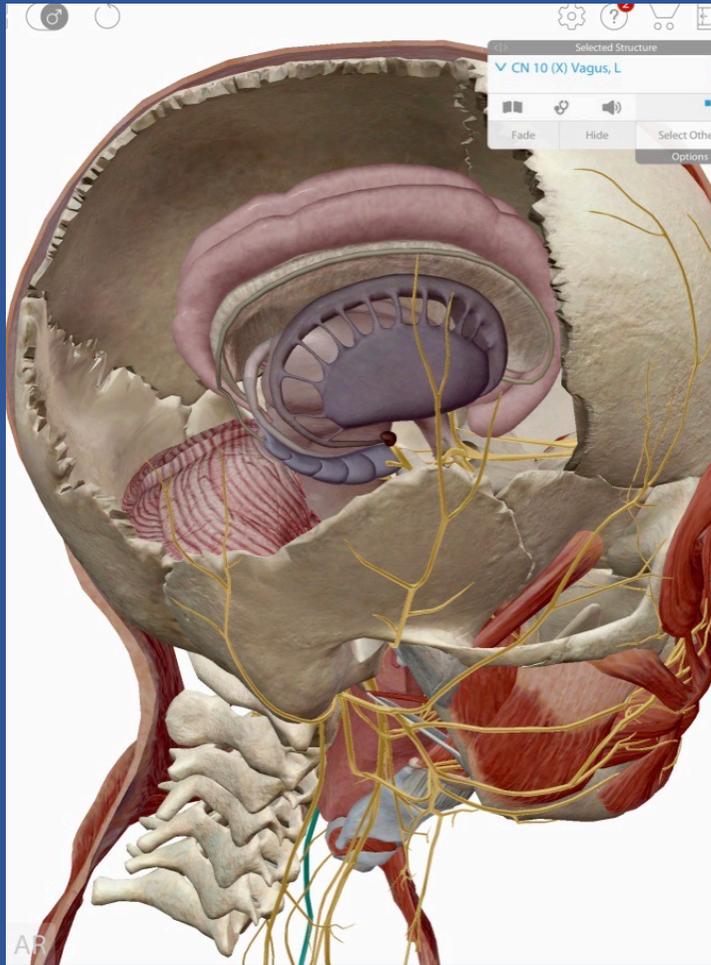
Medication Management and Withdrawal

- Depending on the medication used, once the pain is 1-2/10, the patient is automatically over medicated.
- Caution patient not to discontinue use of opiates and certain antidepressants abruptly, even if pain remains 1-2/10
- Reduce medication slowly with advice of prescribing physician
 - As opiates and antidepressants are reduced pain may increase
 - Schedule follow up appointments to maintain pain free state
- Schedule follow up appointments 1 / week or 1 / 2 weeks to monitor symptoms and patient's physical and mental recovery

Full Body or Visceral RSD

- RSD can become central or full body instead of affecting just a peripheral limb.
- RSD/CRPS associated with abdominal pain appears to be coming from deafferentation of the pain fibers of the vagus and central sensitization in the thalamus.
- Use 40 / 89 and 40 / 10 + - Neck-feet
- Treat to rehabilitate the vagus with vagal tone protocols.

Visceral – Full Body CRPS – Case Report



Visceral – Full Body CRPS – Case Report

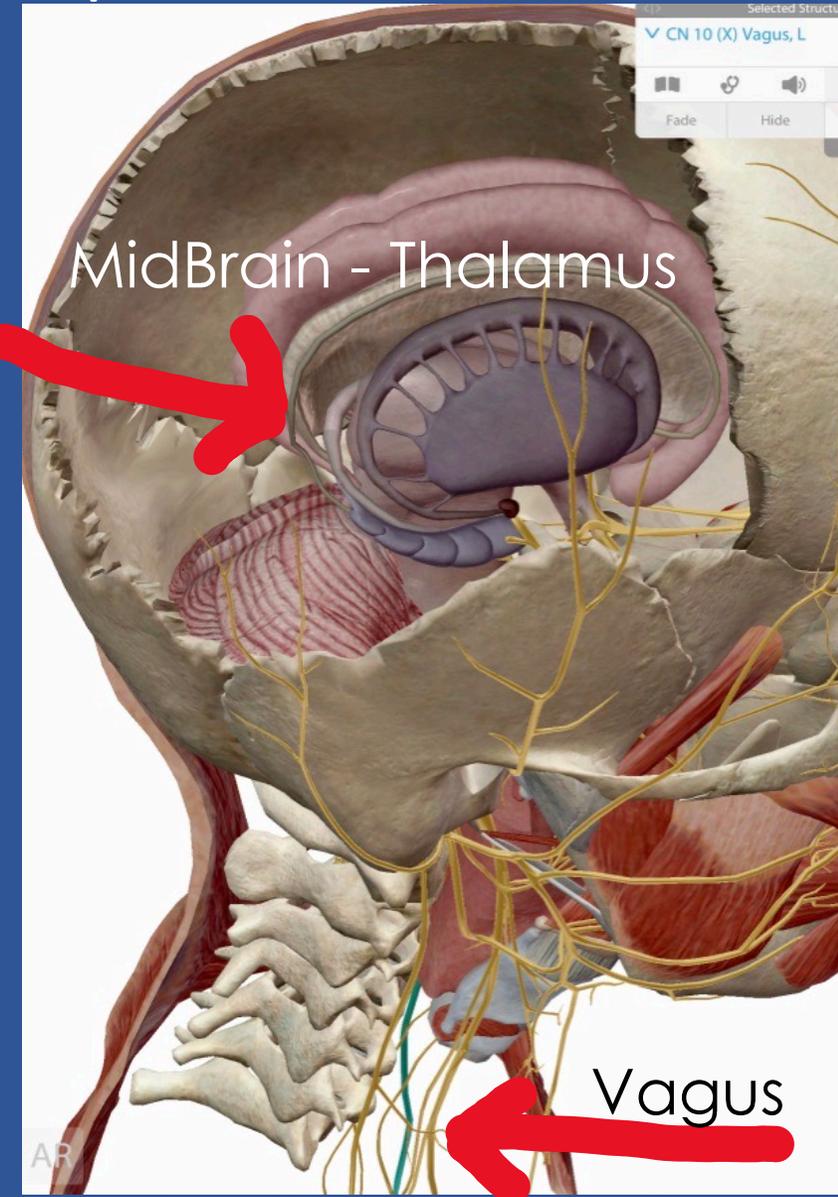
- 19-year-old patient with full body pain, gastroparesis, POTS, abdominal pain, urination feels like urine is glass shards
- Severe Infection (Viral) in mouth and throat at age 6
- Complaints of stomach pain after that. Left class daily for nurses office. Constipation and gut pain daily
- DX: Gastroparesis with vomiting at age 11 – Port installed
 - Feeding tube leaked at time internally – abdominal adhesions
- Dx: POTS age 12 or 13
- Blood draws at age 16 caused immediate sharp arm pain and full body pain and allodynia hyperesthesia persisting to present

Visceral – Full Body CRPS – Case Report

- Current Symptoms at age 19
- Fully Body Pain, abdominal pain
- Allodynia – full body skin hyperesthesia, even on face
- Pain with soft touch everywhere
- Pain with eating, slow digestion
- Abdominal pain
- Severe pain with urination, defecation, gut movement
- Heart rate 90 at rest

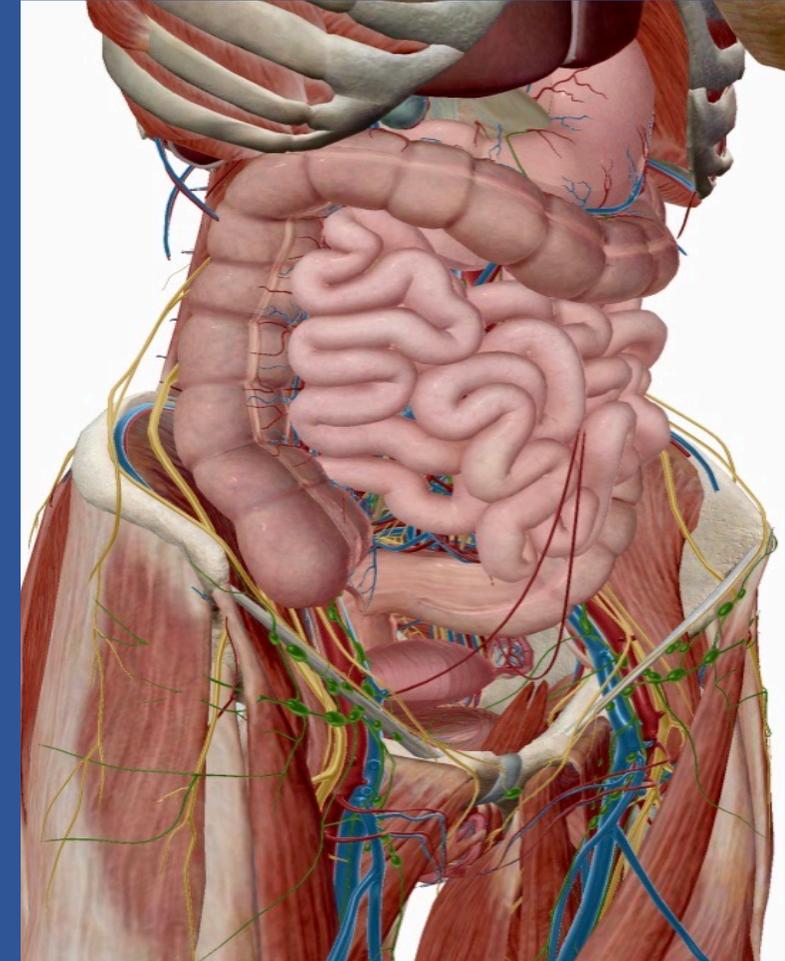
Visceral – Full Body CRPS – Case Report

- The KEY to the solution 🤔
- The vagus has PAIN fibers
- CRPS is a denervation condition
 - The peripheral nerves disconnect from the blood vessels in single limb RSD/CRPS
- What if the vagus disconnected from the gut?
- BUT full body CRPS is CENTRAL
- So use 40 / 89 for allodynia instead of 40/10, 396, 562



Visceral – Full Body CRPS – Case Report

- What if vagus disconnected and denervated at age 16 when the pain centralized and the allodynia started? 🤔
- THE VAGUS HAS PAIN and SENSORY FIBERS
- Pain fibers that disconnect from periphery cause CRPS pain
- What if vagus has disconnected from gut and bladder? 🤔
- ANY SENSATION WOULD BE PERCEIVED AS PAINFUL



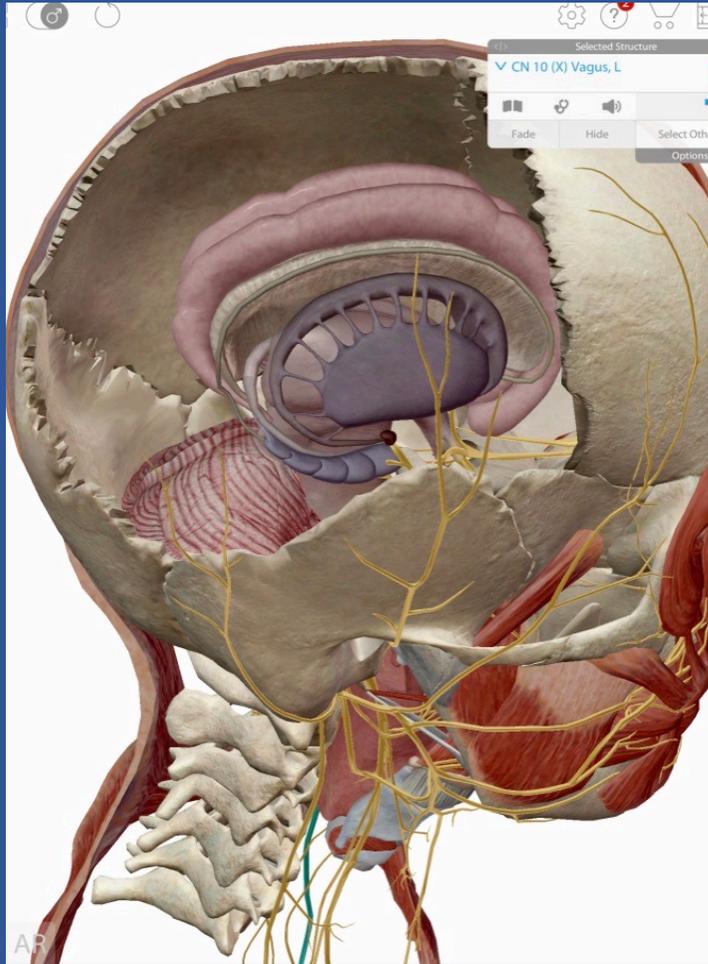
Visceral – Full Body CRPS – Case Report

- TREATMENT
- **#1 – Allodynia** - 40 / 89 – polarized + - contacts at Neck and feet
 - Evaluate allodynia with soft touch on the forehead
 - It reduced in 10 minutes and receded from head to feet over 60 minutes
- **# 2 Treat the Vagus** – what caused the problem originally?
 - 160 / 109 – Polarized + with contacts at Neck and pubic bone – 1Hr
 - Remove pattern of the Virus from the Vagus
 - 94, 49 / 109 – 30 minutes each
 - Remove trauma, support function of the vagus
 - I did not use 81/109 because of the POTS – uncertain – just didn't
- **#3 Treat the Medulla** – Concussion modified to include 40 / 94
 - Quiet the medulla stress and autonomic centers

Visceral – Full Body CRPS – Case Report

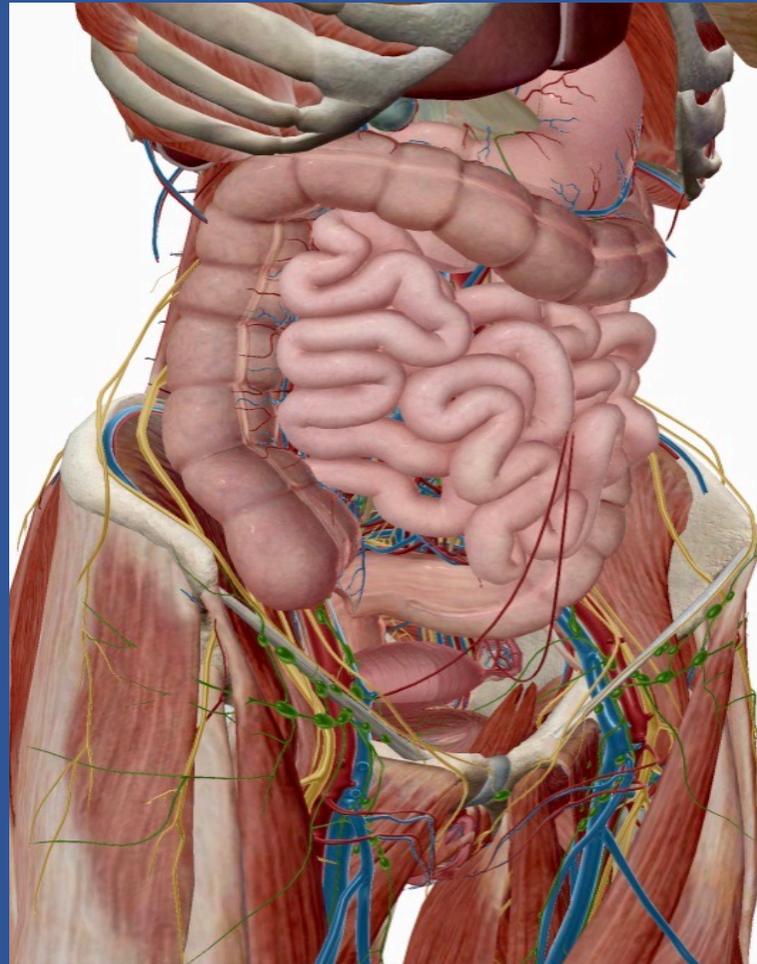
Quiet central sensitization

40 / 89



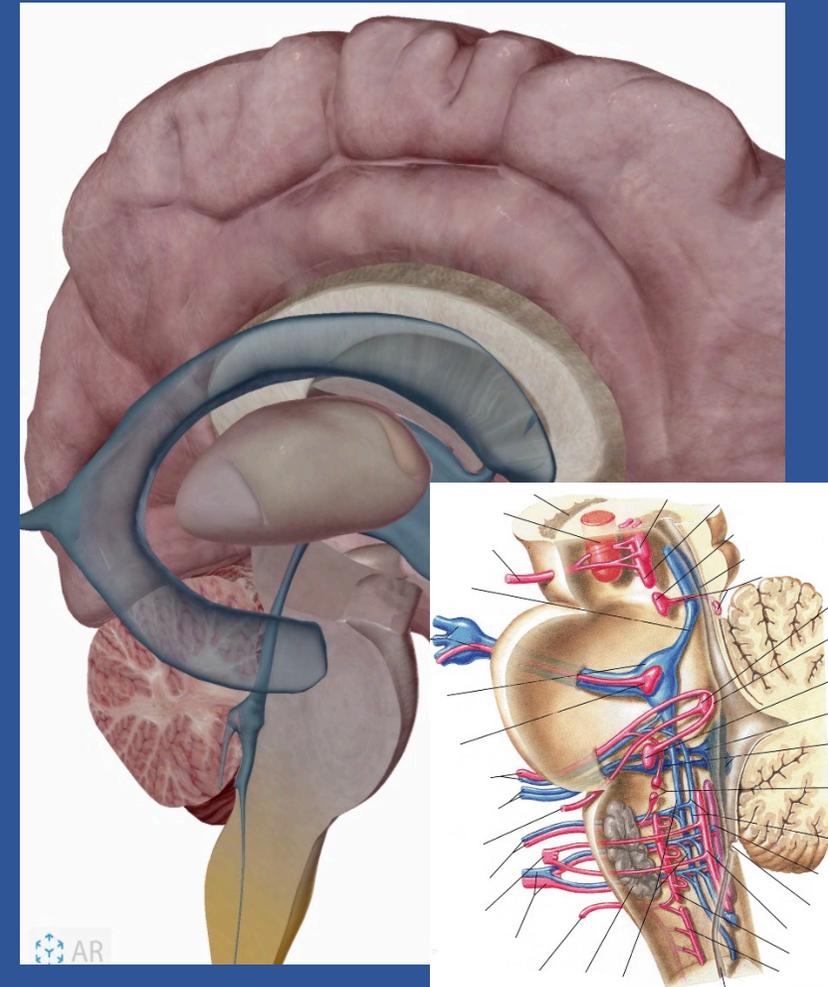
Treat the original precipitating factor
Reconnect the Vagus

160, 94, 49 / 109



Quiet the pain , stress pathways

40, 94 / 94 etc



Visceral – Full Body CRPS – Case Report

- Gentle manual melting of vagus abdominal adhesions - 13 / 109
- Outcome after 2 Hours
- Pain = 0/10
- POTS – symptoms gone
- Allodynia – Gone, sensation normal
- Urination pain free
- Heart rate 67
- Recovery was permanent



This is not a slam dunk!

- Many / Most RSD cases have recovered but no guarantees
- Use common sense
- Be sensitive to the patient's pain and aware of its meaning.
- There is little to lose since these patients have little hope or help available
- Risk with resonance treatment is minimal.
- Ask your therapist or physician to take an FSM course and learn how to treat CRPS
 - frequencyspecific.com

There is hope here!

Dr. McKeefus
FSM
Frequency Specific Microcurrent™

www.FrequencySpecific.com