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# ***Wiring Happiness Into Your Brain***

***Stanford University  
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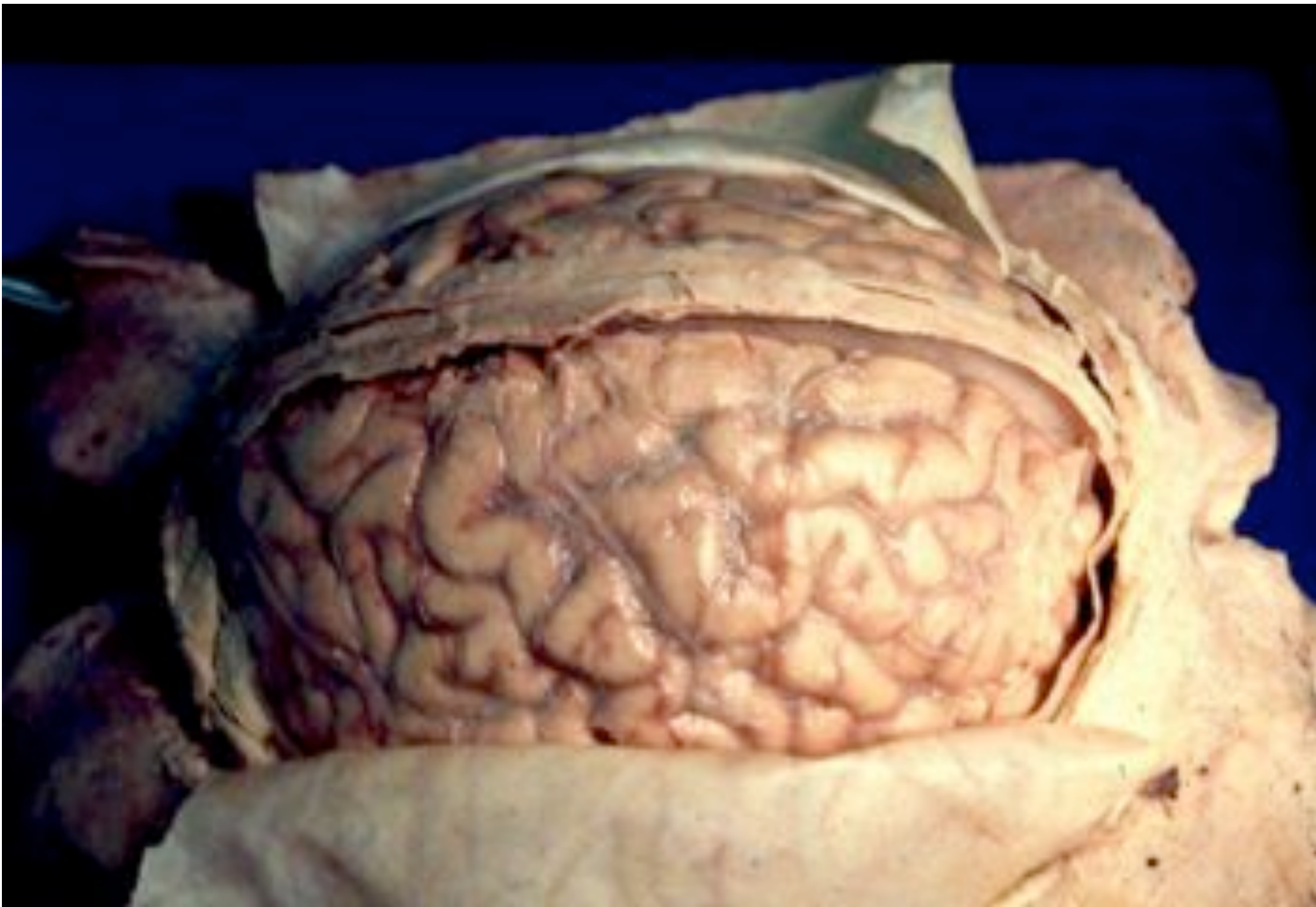
# Topics

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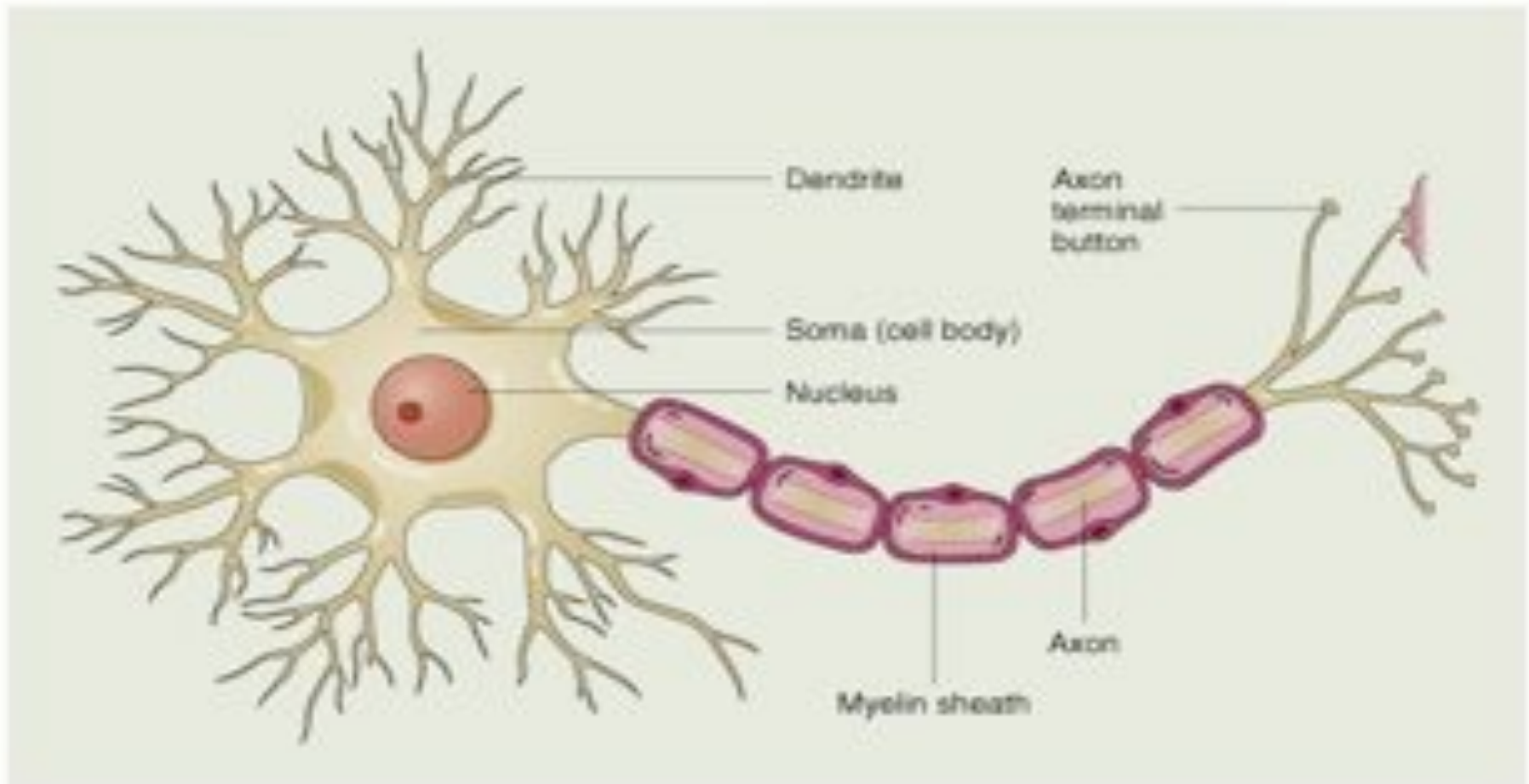
- **Self-directed neuroplasticity**
- **Self-compassion**
- **Natural happiness**



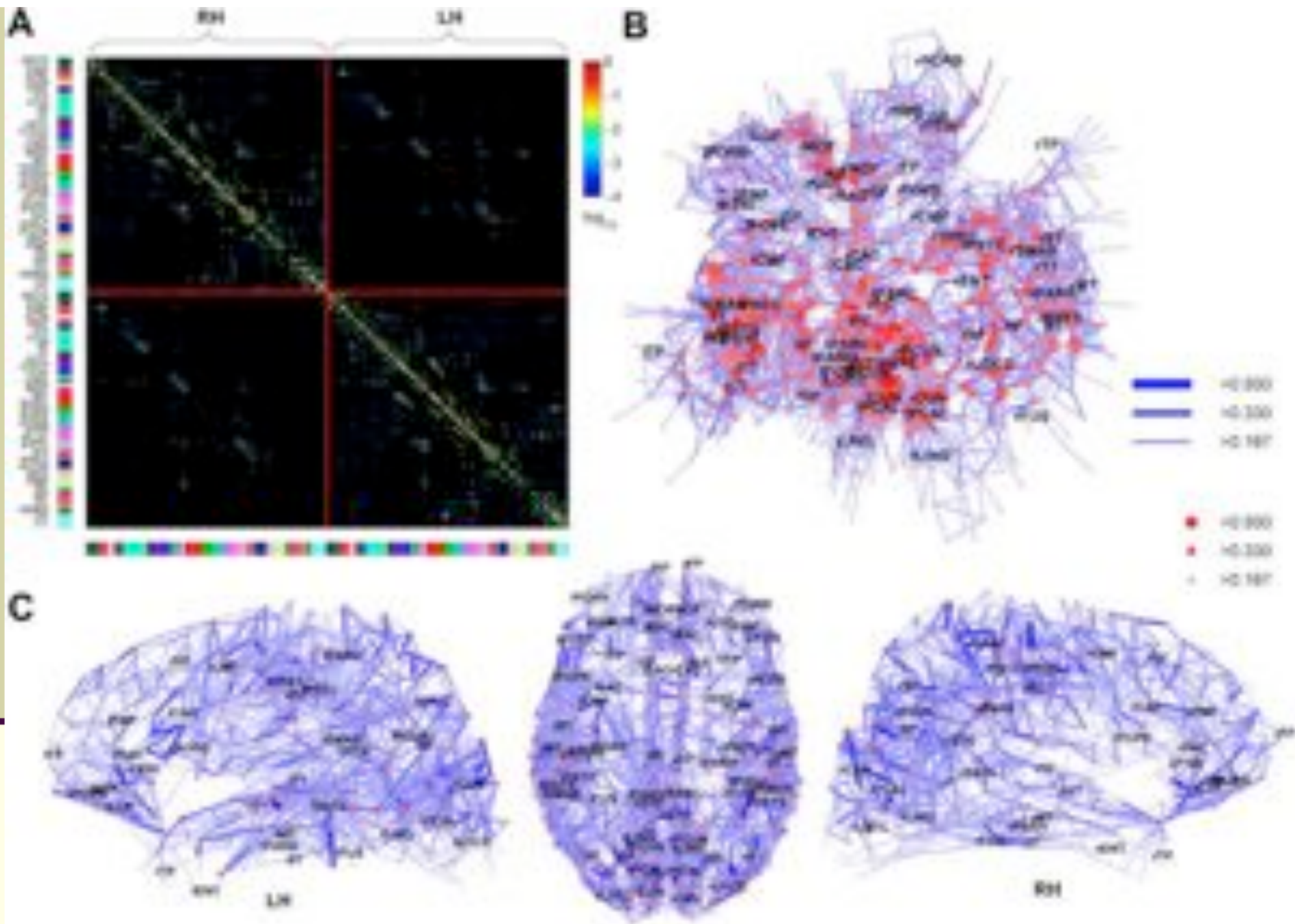
# **Self-Directed Neuroplasticity**



# A Neuron



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# Experience-Dependent Neuroplasticity

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**As your mind changes, your brain changes.**

Immaterial mental activity maps to material neural activity.

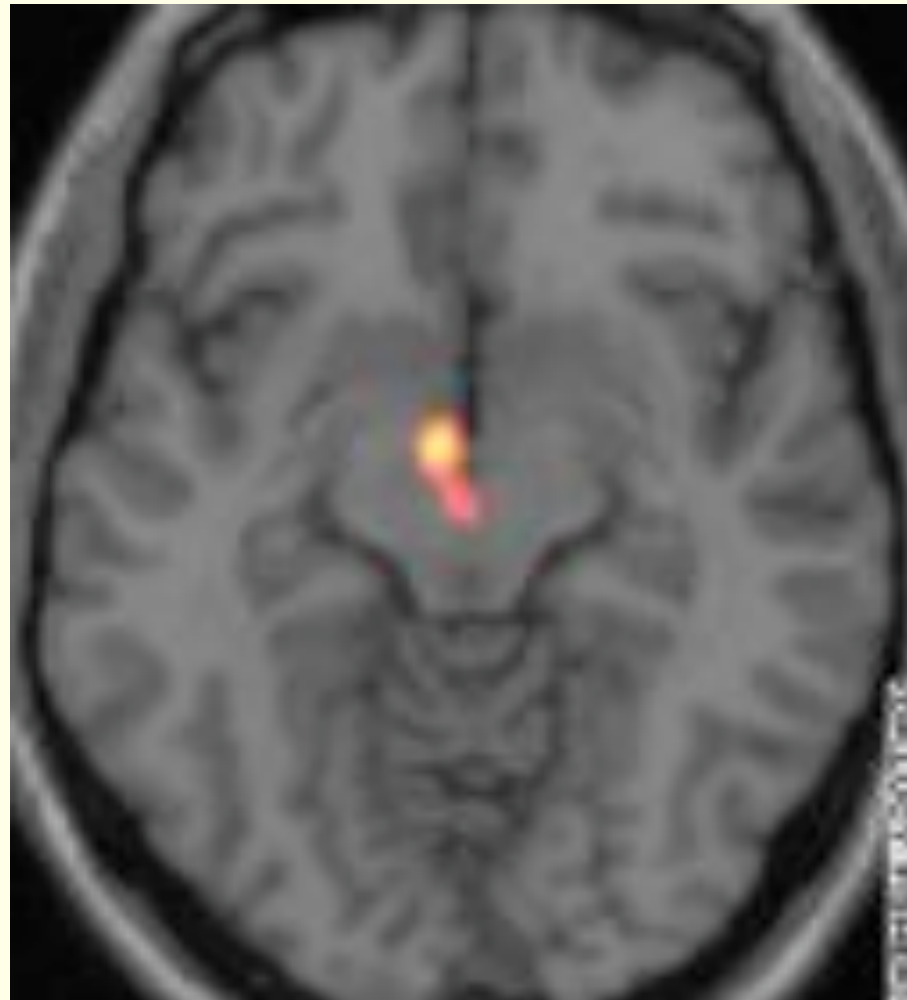
This produces temporary changes in your brain and lasting ones.

*Temporary* changes include:

- Alterations in brainwaves (= changes in the firing patterns of synchronized neurons)
- Increased or decreased use of oxygen and glucose
- Ebbs and flows of neurochemicals

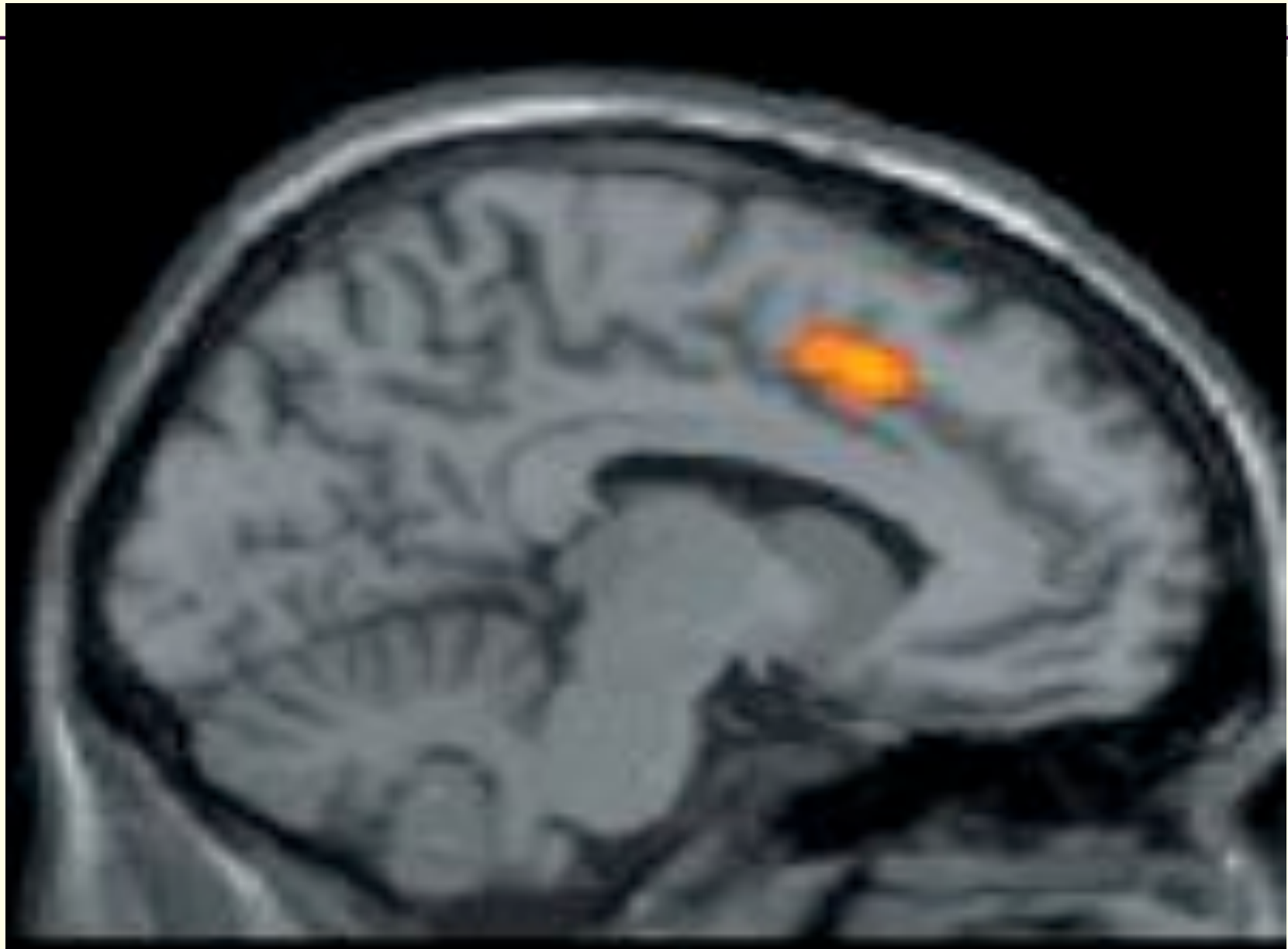
# The Rewards of Love

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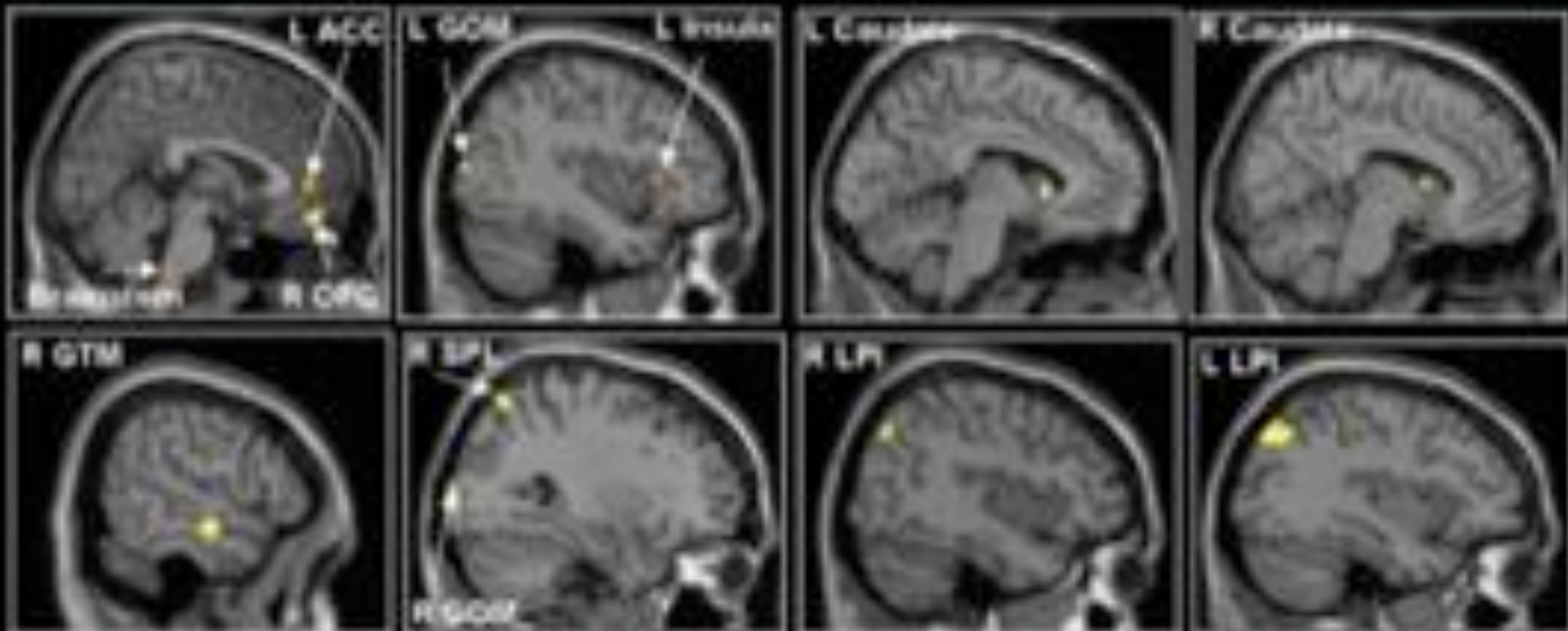


# Tibetan Monk, Boundless Compassion



# Christian Nuns, Recalling a Profound Spiritual Experience

Mystical > Baseline

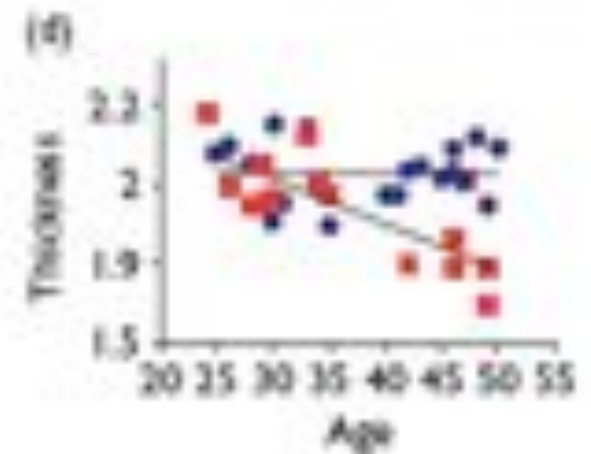
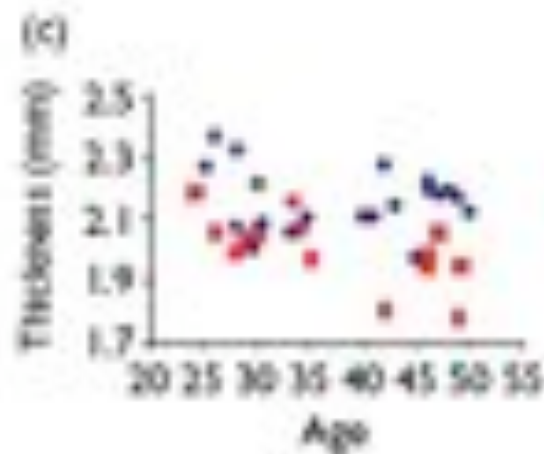
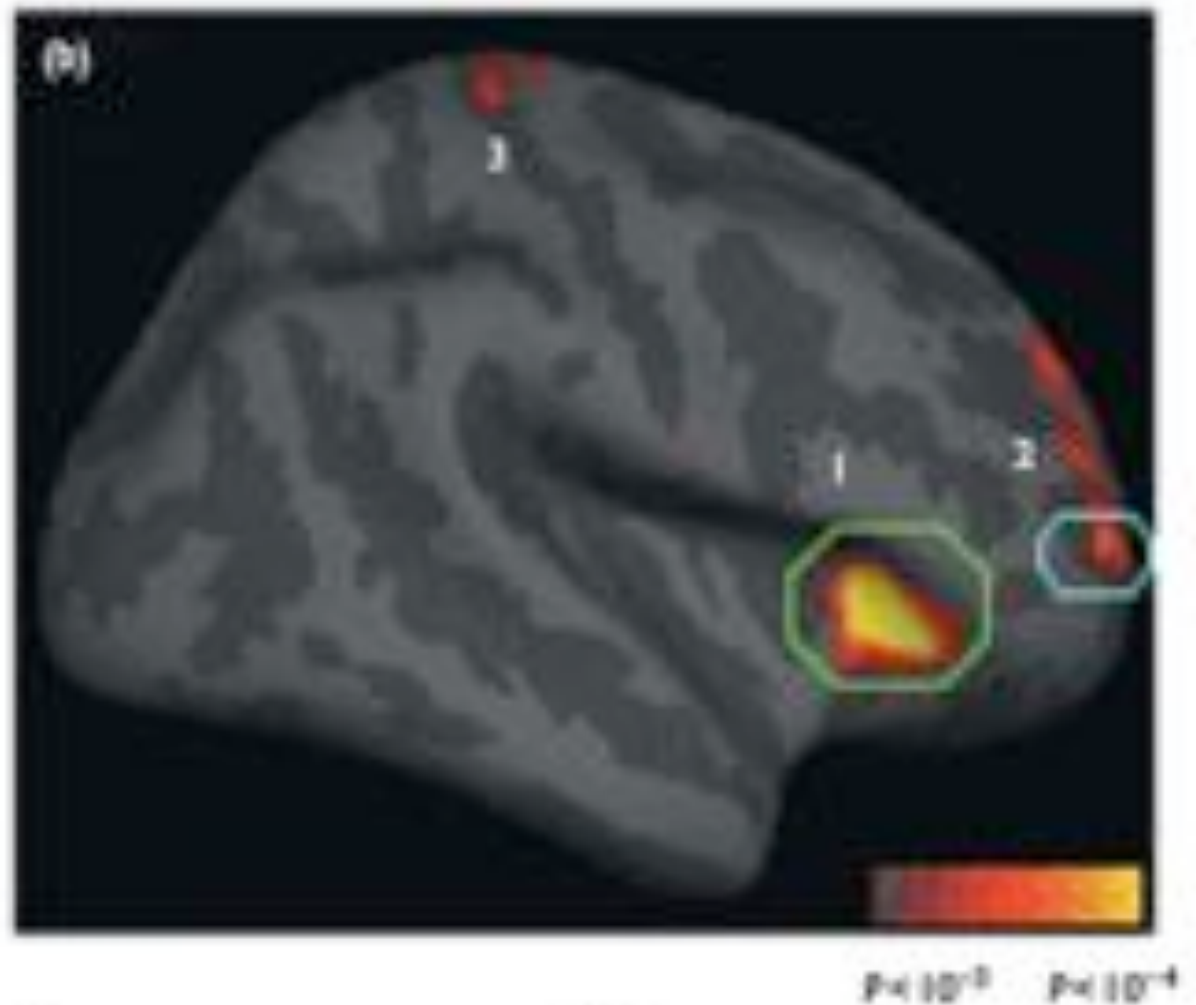


# Mind Changes Brain in Lasting Ways

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- What flows through the mind sculpts your brain. Immaterial experience leaves material traces behind.
- Increased blood/nutrient flow to active regions
- Altered epigenetics (gene expression)
- “Neurons that fire together wire together.”
  - Increasing excitability of active neurons
  - Strengthening existing synapses
  - Building new synapses; thickening cortex
  - Neuronal “pruning” - “use it or lose it”

Lazar, et al. 2005.  
Meditation  
experience is  
associated  
with increased  
cortical thickness.  
*Neuroreport*, 16,  
1893-1897.



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*The principal activities of brains  
are making changes in themselves.*

Marvin L. Minsky

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**Your experience *matters*.**

**Both for how it feels in the moment  
and for the lasting residues it leaves behind,  
woven into the fabric  
of your brain and self.**

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**You can use your mind  
to change your brain  
to change your mind for the better.**

**This is self-directed neuroplasticity.**

***How to do this, in skillful ways?***

# The Power of Mindfulness

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- Attention is like a spotlight, illuminating what it rests upon.
- Because neuroplasticity is heightened for what's in the field of focused awareness, attention is also like a vacuum cleaner, sucking its contents into the brain.
- Directing attention skillfully is therefore a fundamental way to shape the brain - and one's life over time.

*The education of attention  
would be an education par excellence.*

William James





# **Self-Compassion**

# Self-Compassion

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- Compassion is the wish that a being not suffer, combined with sympathetic concern. Self-compassion simply applies that to oneself. It is not self-pity, complaining, or wallowing in pain.
- Studies show that self-compassion buffers stress and increases resilience and self-worth.
- But self-compassion is hard for many people, due to feelings of unworthiness, self-criticism, or “internalized oppression.” To encourage the neural substrates of self-compassion:
  - Get the sense of being cared about by someone else.
  - Bring to mind someone you naturally feel compassion for
  - Sink into the experience of compassion in your body
  - Then shift the compassion to yourself, perhaps with phrases like: “May I not suffer. May the pain of this moment pass.”

# “Anthem”

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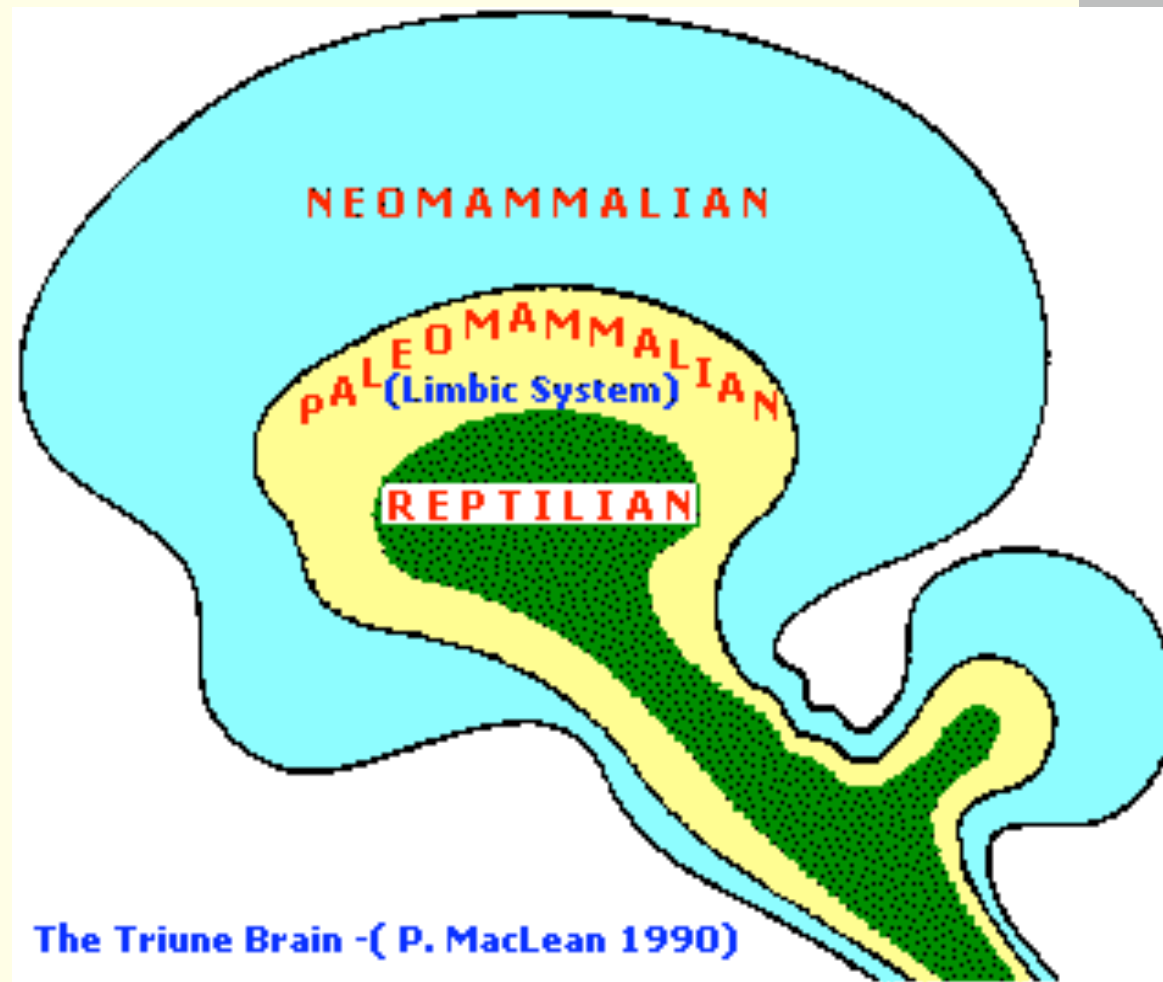
*Ring the bells that still can ring  
Forget your perfect offering  
There is a crack in everything  
That's how the light gets in  
That's how the light gets in*

Leonard Cohen



# Natural Happiness

# Evolutionary History



## The Triune Brain

# Three Stages of Brain Evolution

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## ■ Reptilian:

- Brainstem, cerebellum, hypothalamus
- Reactive and reflexive
- **Avoid** hazards

## ■ Mammalian:

- Limbic system, cingulate, early cortex
- Memory, emotion, social behavior
- **Approach** rewards

## ■ Human:

- Massive cerebral cortex
- Abstract thought, language, cooperative planning, empathy
- **Attach** to “us”

# Reverse Engineering the Brain

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*What's the nature of the brain when a person is:*

- In peak states of productivity or “flow?”
- Experiencing inner peace?
- Self-actualizing?
- Enlightened (or close to it)?

# Home Base of the Human Brain

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*When not threatened, ill, in pain, hungry, upset, or chemically disturbed, most people settle into being:*

- **Calm** (the Avoid system)
- **Contented** (the Approach system)
- **Caring** (the Attach system)
- **Creative** - synergy of all three systems

This is the brain in its natural, ***responsive*** mode.



# The Responsive Mode

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# Behind the Obscurations

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Sam sees *“peeping among the cloud-wrack . . . a white star twinkle for a while.*

*The beauty of it smote his heart, as he looked up out of the forsaken land, and hope returned to him.*

*For like a shaft, clear and cold, the thought pierced him that in the end the Shadow was only a small and passing thing: there was light and high beauty forever beyond its reach.”*

Tolkein, *The Lord of the Rings*

# Some Benefits of Responsive Mode

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- Recovery from “mobilizations” for survival:
  - Refueling after depleting outpourings
  - Restoring equilibrium to perturbed systems
  - Reinterpreting negative events in a positive frame
  - Reconciling after separations and conflicts
- Promotes prosocial behaviors:
  - Experiencing safety decreases aggression.
  - Experiencing sufficiency decreases envy.
  - Experiencing connection decreases jealousy.
  - We're more generous when our own cup runneth over<sup>27</sup>

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*The good life, as I conceive it, is a happy life.  
I do not mean that if you are good you will be happy;  
I mean that if you are happy you will be good.*

Bertrand Russell



# The Reactive Mode

# But to Survive, We Leave Home . . .

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- **Avoid:** When we feel threatened or harmed
- **Approach:** When we can't attain important goals
- **Attach:** When we feel isolated, disconnected, unseen, unappreciated, unloved

This is the brain in its *reactive* mode of functioning  
- a kind of inner homelessness.

# The Reactive Mode



# Health Consequences of Chronic Stress

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## ■ Physical:

- Weakened immune system
- Inhibits GI system; reduced nutrient absorption
- Reduced, dysregulated reproductive hormones
- Increased vulnerabilities in cardiovascular system
- Disturbed nervous system

## ■ Mental:

- Lowers mood; increases pessimism
- Increases anxiety and irritability
- Increases learned helplessness (especially if no escape)
- Often reduces approach behaviors (less for women)
- Primes aversion (SNS-HPAA negativity bias)



# Reactive Dysfunctions in Each System

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- **Approach** - Addiction; over-drinking, -eating, -gambling; compulsion; hoarding; driving for goals at great cost; spiritual materialism
- **Avoid** - Anxiety disorders; PTSD; panic, terror; rage; violence
- **Attach** - Borderline, narcissistic, antisocial PD; symbiosis; *folie a deux*; “looking for love in all the wrong places”

# Choices . . .



**Reactive Mode**

Or?



**Responsive Mode**

# Ways to “Take the Fruit as the Path”

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General factors: See clearly. Have compassion for yourself. Take life less personally. Take in the good. Deepen equanimity.

## Approach system

- Be glad.
- Appreciate your resources.
- Give over to your best purposes.

## Attach system

- Sense the suffering in others.
- Be kind.
- Act with unilateral virtue.

## Avoid system

- Cool the fires.
- Recognize paper tigers.
- Tolerate risking the dreaded experience.

# Coming Home . . .

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**Gladness**

**Love**

**Peace**

# Great Books

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See [www.RickHanson.net](http://www.RickHanson.net) for other great books.

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- Begley, S. 2007. *Train Your Mind, Change Your Brain*. Ballantine.
- Carter, C. 2010. *Raising Happiness*. Ballantine.
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# Key Papers - 1

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See [www.RickHanson.net](http://www.RickHanson.net) for other scientific papers.

- Atmanspacher, H. & Graben, P. 2007. Contextual emergence of mental states from neurodynamics. *Chaos & Complexity Letters*, 2:151-168.
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- Lazar, S., Kerr, C., Wasserman, R., Gray, J., Greve, D., Treadway, M., McGarvey, M., Quinn, B., Dusek, J., Benson, H., Rauch, S., Moore, C., & Fischl, B. 2005. Meditation experience is associated with increased cortical thickness. *Neuroreport*, 16:1893-1897.
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## *Where to Find Rick Hanson Online*

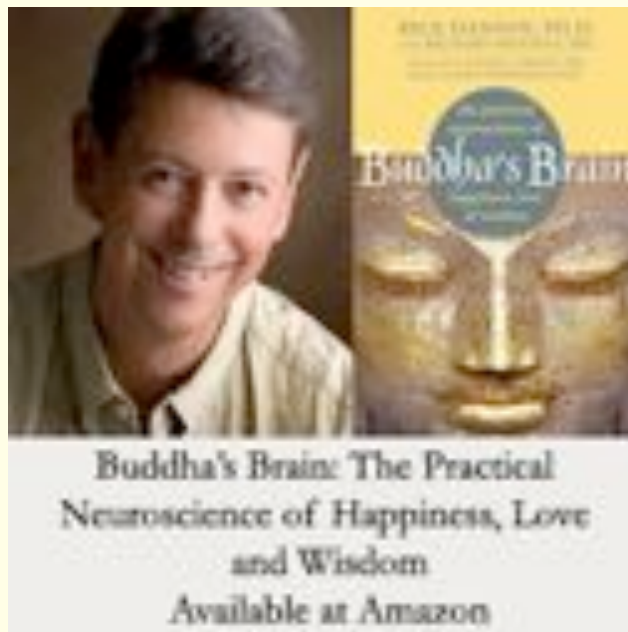
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<http://www.youtube.com/BuddhasBrain>



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