

Grief Recovery:

Implications of Neuroscience and Contemplative Wisdom

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Plan for This Talk

- Setting the Context
- Mind and Brain Are One Unified System
- Your Brain - the FAQs
- Perspectives on Neurological Explanations
- The Natural, Wholesome State of Your Brain
- Your Brain When It's Upset or Traumatized
- The Psychology and Neurology of Grieving
- Nurturing the Grieving Brain
- Discussion

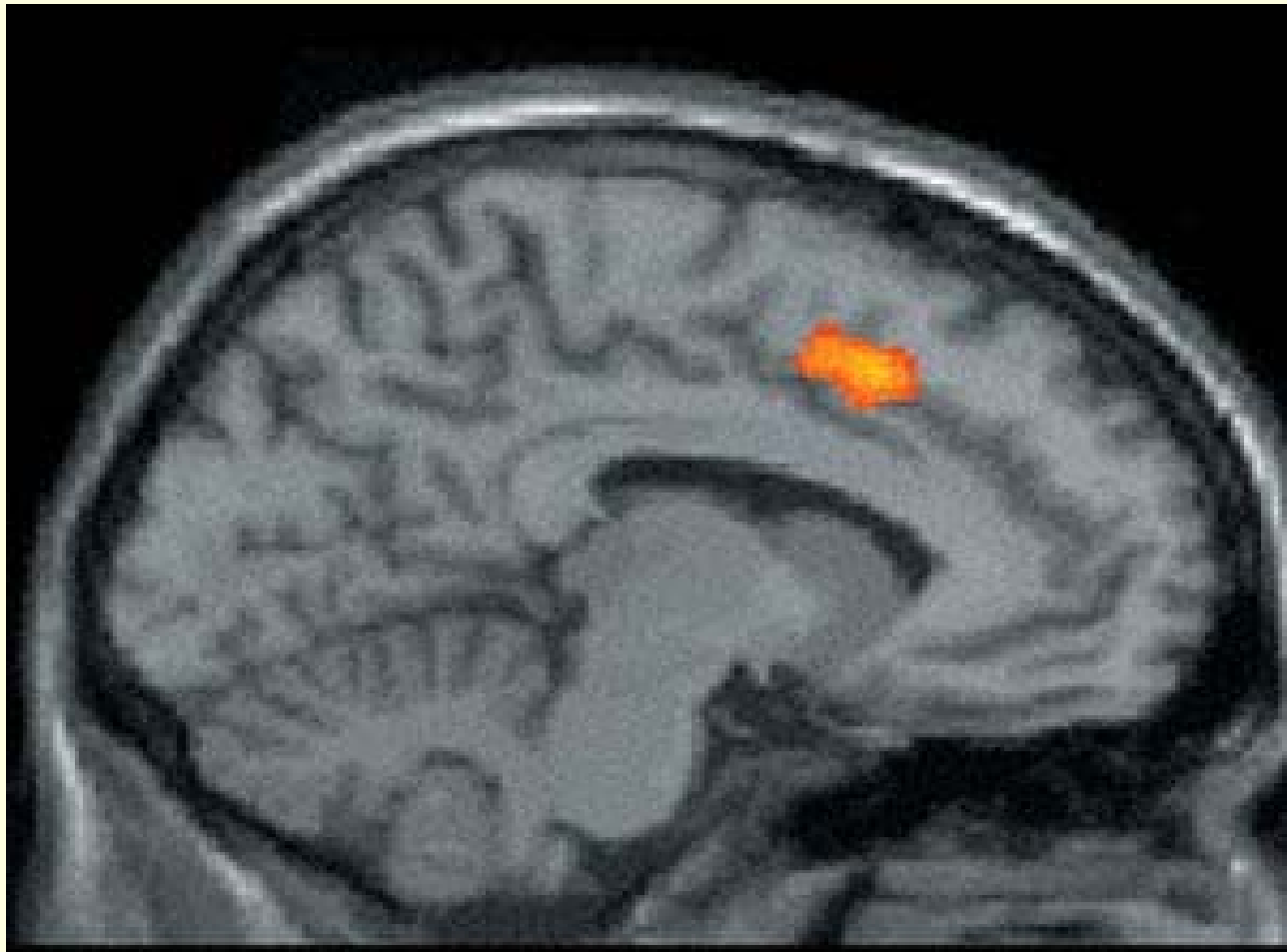
Setting the Context

- Limitations of a “recovery” framework
- Limitations of neuropsychological approach
- Many contemplative perspectives
- Many kinds of loss

The Union of Mind and Brain

- Subjective experience correlates with brain activities.
- Change your experience - and you change your brain, temporarily and then permanently.
- Change your brain - and you change your experience.

“Ardent, Resolute, Diligent, and Mindful”



"We ask, 'What is a thought?'"

We don't know,

yet we are thinking continually."

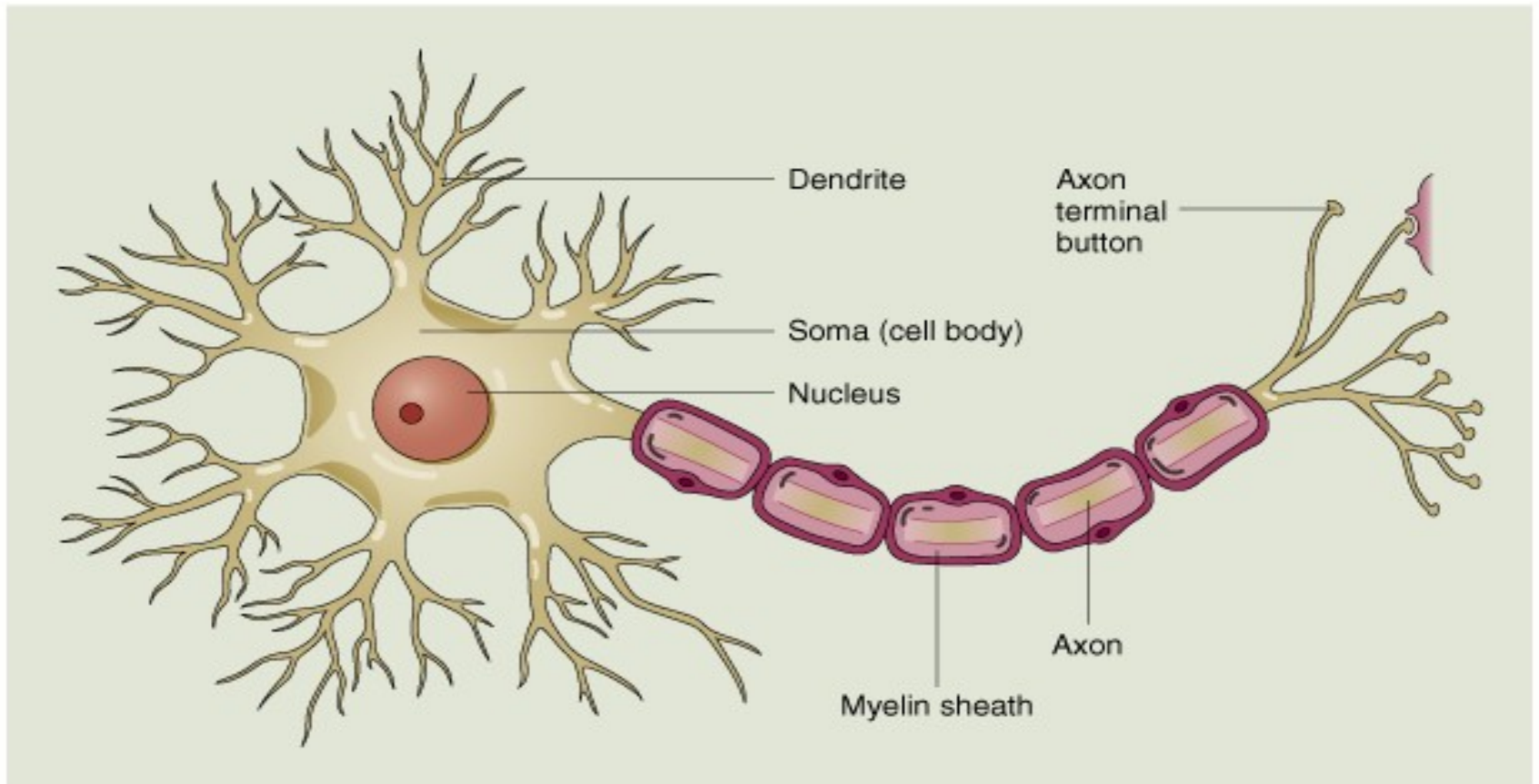
- Ven. Tenzin Palmo

Your Amazing Brain

Major Features

- **Size:**
 - 3 pounds of cottage cheese
 - 1,100,000,000,000 neurons, total
 - 100 billion "gray matter" neurons
- **Activity:**
 - Always on 24/7/365 - Instant access to information on demand
 - 25% of the body's blood flow, oxygen, and glucose
- **Speed:**
 - Neurons firing 10 to 100 times a second
 - Signals crossing your brain in a tenth or hundredth of a second

One Simple Neuron . . .



... Multiplied by Billions of Neurons

- 100,000,000,000 neurons (and that's only gray matter)
- Each with 10,000 synapses:
 - One quadrillion - 1,000,000,000,000,000 - synapses total
 - Most synapses flickering 1 - 50 times a second
 - Neural nets rocked by bursts of 80/second waves
- Possible brain states: 1 followed by a million zeros
- Circular loops
- Overlapping, connected sub-networks

... A Profoundly Complex System

*YOUR BRAIN IS THE MOST COMPLEX OBJECT
KNOWN IN THE UNIVERSE.*

*MORE COMPLEX THAN THE CLIMATE,
OR A SUPERNOVA*

Limits of Neurological Explanations

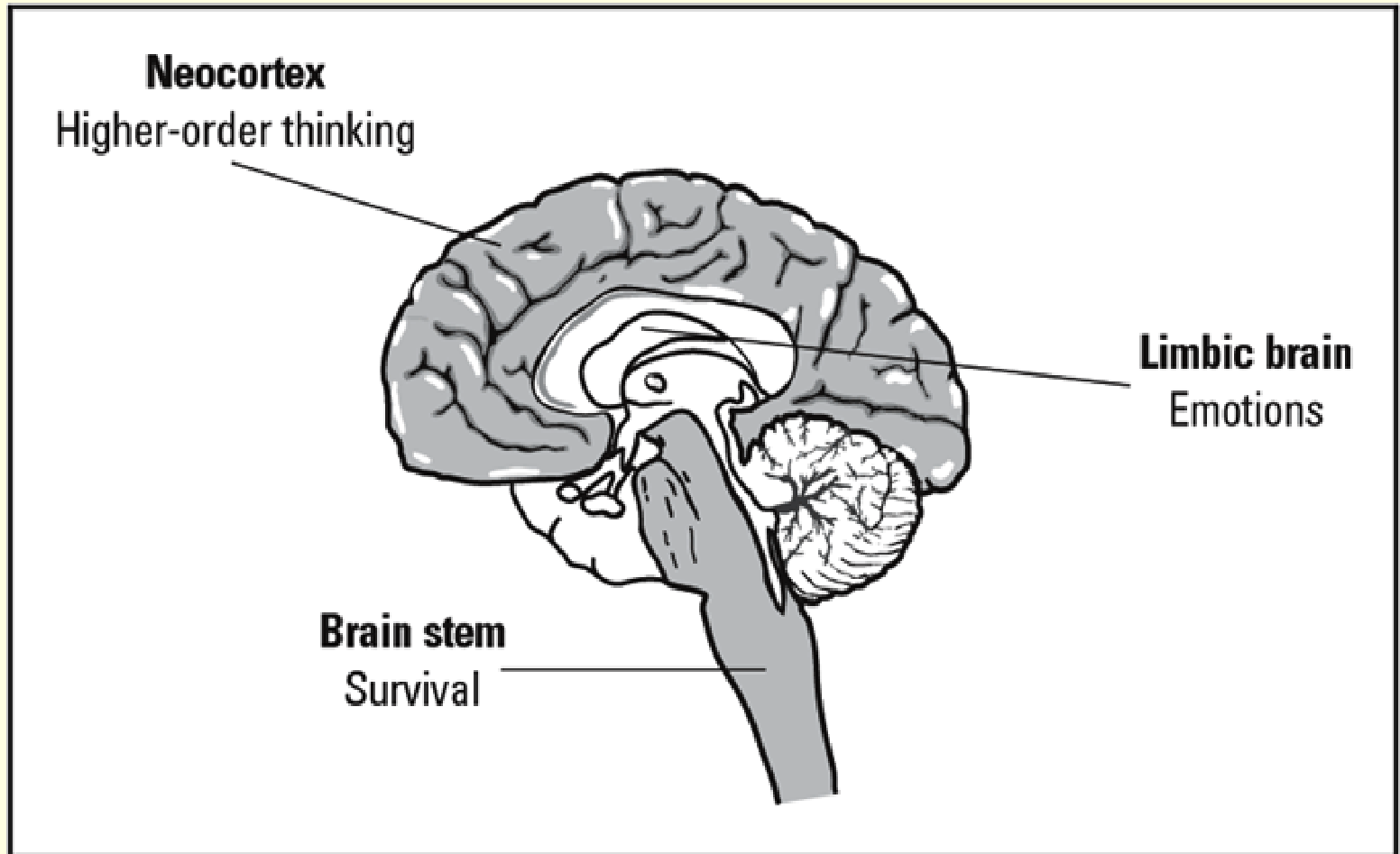
- Just one level of analysis
- Pitfalls of reductionism, fascination with the physical
- Influenced by social factors (e.g., economics, culture, desire for quick fix)

Your Natural Condition

- Parasympathetic activation
- Pleasant hormones and neurotransmitters:
Norepinephrine, oxytocin, dopamine, endorphins
- Brain waves: Increased coherence and resonance
- Example of EMDR

What are you like when you are not stressed or anxious?

Circuits of Emotional Responses



Stressed, Upset, or Traumatized

- Incoming stimuli processed by amygdala
 - Central switchboard; evolutionarily ancient structure
 - Primed to go negative: anxious combativeness
- Snap judgments (influenced by ties to hippocampus [memory]):
 - Pleasant → Approach; Unpleasant → Avoid, fight, freeze, appease
- Reacts before frontal lobes can process perception signals
 - *“Jump first, ask questions later!”*
- But leads primitive reactions to hijack modern, reasoning mind
 - (Especially with history of trauma)
 - Triggering cascade of SNS and stress hormone reactions
 - Which shape thoughts, beliefs, perceptions, “memories”
 - And sensitize the amygdala and desensitize the hippocampus (disconnecting emotional reactivity and clear memory for events)

The Psychology of Grieving

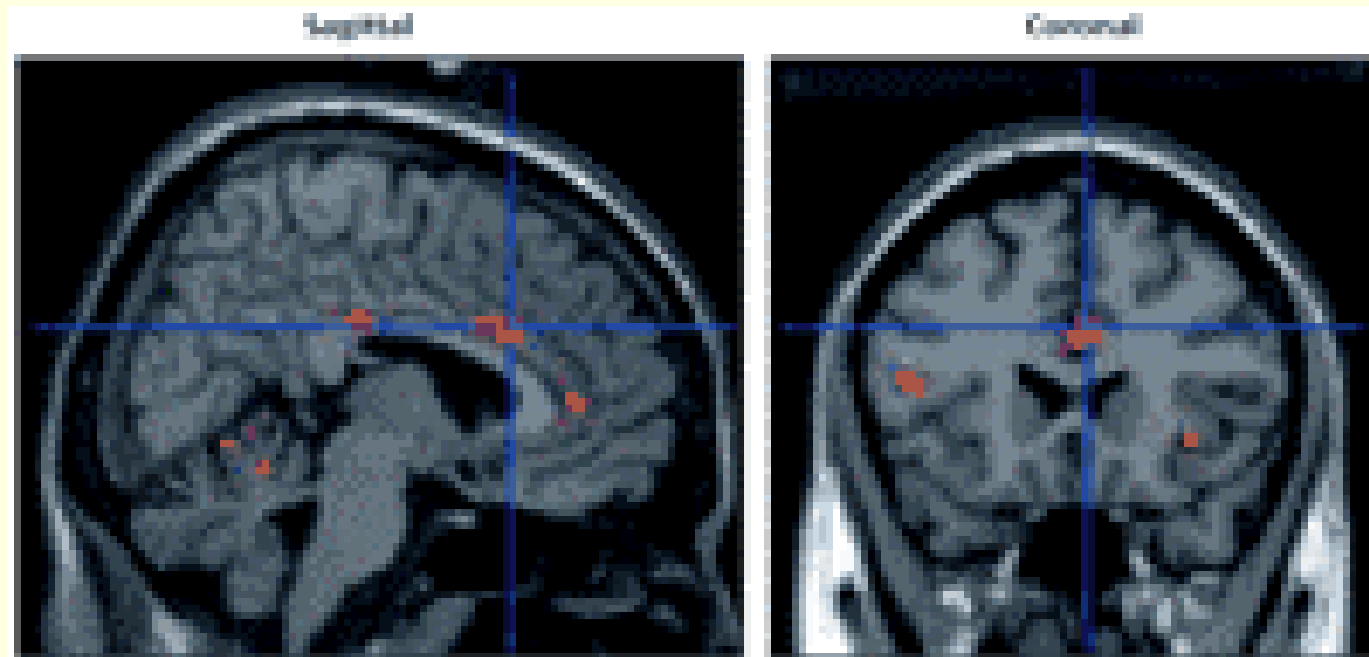
- Feelings of loss; deep sorrow and distress
 - Thoughts, images, memories of what was lost
 - Pining, yearning for what was lost
 - Related reactions (e.g., anger, guilt, unresolved communications, stress of dealing with the aftermath, demoralization, anhedonia, depression, suicidal inclinations)
- > Compelling, even intrusive quality to this material
- > Verbal, visual, sensory, and behavioral elements
- > Can be anticipatory

The Neurology of Grieving

- Since grief has many psychological elements, it draws on many resources in the brain.
- These include those dealing with attention, memory, emotion, planning, language, and relationships.
- So, the experience of grief tends to activate both specific brain areas linked to the aspect of grief that's primary in the moment, and a more general network of structures and processes.

Grief with Imagery

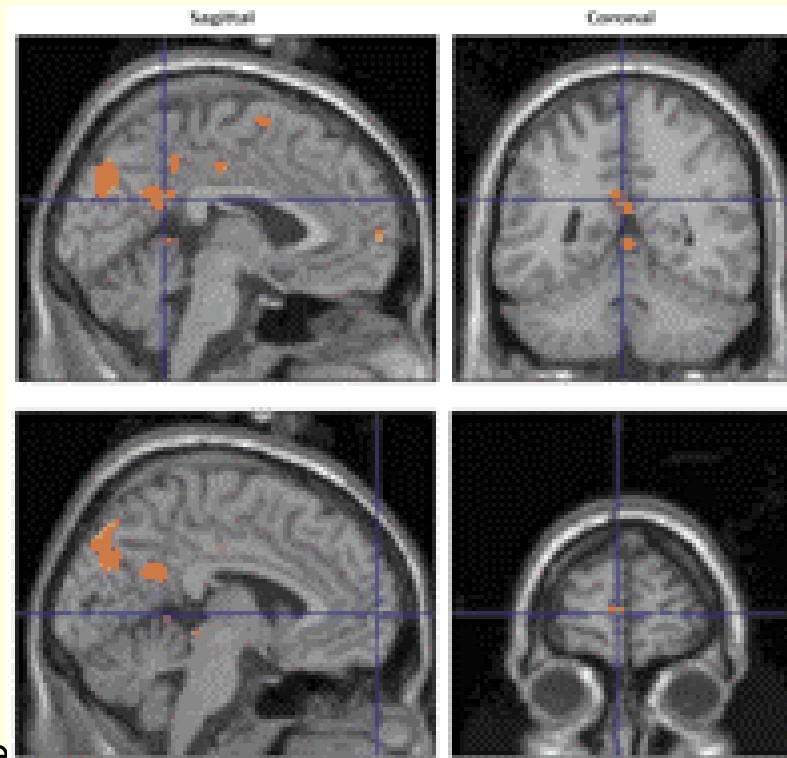
- Women looking at a picture of a recently deceased loved one
- Activated cuneus, superior lingual gyrus, insula, dorsal anterior cingulate cortex, inferior temporal gyrus, and fusiform gyrus



- Functional Neuroanatomy of Grief: An fMRI Study. *Am J Psychiatry* 160:1946-1953, November 2003. Gündel, O'Connor, Littrell, Fort, Lane.

Grief with Words

- Women looking at words related to the death of a loved one
- Activated the precuneus, precentral gyrus, midbrain, and vermis



- Functional Neuroimaging of Grief, *Journal of Clinical Psychiatry* 160:1946-1953, November 2003. Gündel, O'Connor, Littrell, Fort, Lane.

Nurturing the Grieving Brain

- Parasympathetic nervous system
- Frontal lobes
- Cingulate gyrus
- Insula
- Amygdala

-> Systematically apply familiar methods to neurological targets.

-> Simple activation strengthens circuits, making activation easier the next time.

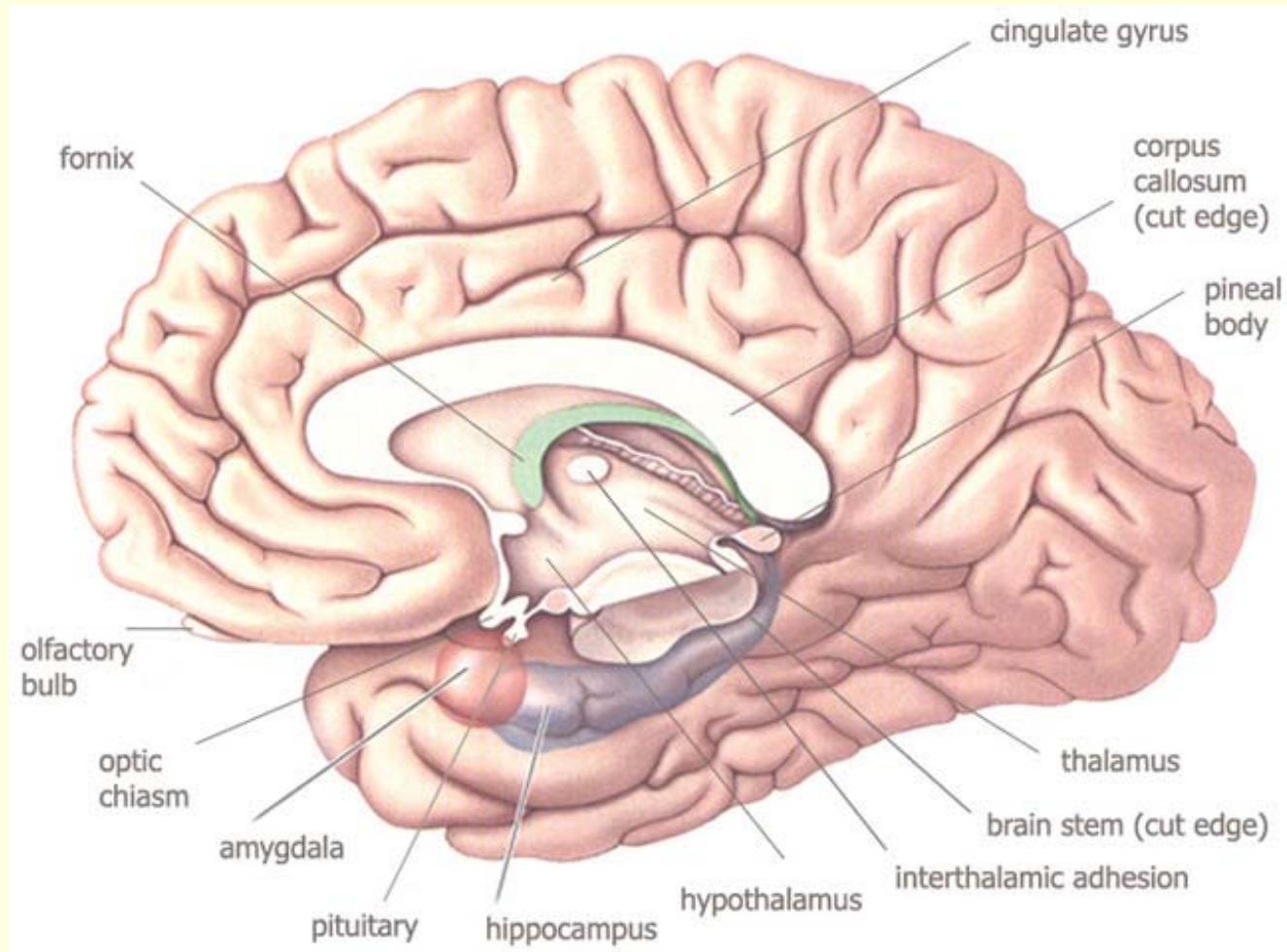
Parasympathetic Nervous System

- This wing of the autonomic nervous system:
 - Handles maintenance functions: “rest and digest”
 - Balances the “sympathetic” wing: “fight or flight”
 - Is primary; unlike SNS, is necessary for life
- Activate and strengthen it by:
 - Breathing
 - Relaxation
 - Improving heart rate variability
 - Yawning
 - Positive emotion
 - Fiddling the lips

PNS and Contemplative Practice

- Lovingkindness for self and others
- Cultivation of intensely positive feelings (e.g., joy, contentment, tranquility, bliss, rapture)
- Resting in core consciousness; “fair witness”
- Abiding as “true nature,” Bodhicitta, the Divine

Geography of the Brain



Frontal Lobes

- Grieving-related functions:
 - Finding meaning
 - Planning responses to loss
 - Bringing verbal thought to emotional and somatic processes
 - Controlling problematic expressions of feelings and desires
- Activate and strengthen it by:
 - Have conscious reasons for self-care; be for oneself
 - Deliberately exercise the will
 - Make intentions conscious, multi-modal, and vivid; call to mind a strong sense of the desired state
 - Give instructions to oneself
 - Re-intend at short intervals

Frontal Lobes and Contemplative Practice

- Hold helpful perspectives on loss
 - Impermanence
 - Compounded and interdependent nature of everything; “not-self;” the departed loved one is part of everything
 - Personally meaningful religious/spiritual context
- “Channel” a teacher or mentor
- Give oneself over to wholesome practices and precepts

"I" Is a Fictional Character

- Self functions are widely distributed throughout the brain.
 - No homunculus inside your head
 - Nervous system activities co-arising due to causes and conditions
- Fostering selflessness:
 - Quiet parietal lobes to dissolve body-in-world and self-in-body
 - Open into spaciousness, emptiness, blurred boundaries of "me"
 - Abandon, release sense of self in this moment
 - Receive the breath as a space, not as an "agent" pursuing it
 - View experience as provisional, just the flickering brain, not "mine"

Cingulate Gyrus

- Grieving-related functions:
 - Retrieving autobiographical memories (i.e., with the person)
 - Integrating emotion and memory, and thinking and feeling
 - Controlling attention
 - Interest in other people

- Activate and strengthen it by:
 - Activities which call for monitoring performance (e.g., careful crafts, precision sports)
 - Deliberately linking emotion and memory (e.g., scrapbooks)
 - Linking thinking and feeling (e.g., speaking one's experience or reflecting about it in present time, therapy)

Cingulate Gyrus and Contemplative Practice

- Meditation or prayer:
 - Regular, longstanding practice leads to measurable thickening in the anterior cingulate
 - Effects are most noticeable with age; meditation may slow the cognitive declines of aging
 - Many kinds; consistent practice is best
 - Concentration practices (require close observation of performance)
 - Reflections or visualizations that intensely integrate thinking/imagery and feeling (e.g., chanting, repeating the Lord's Prayer, Tibetan tonglen practice)

Insula

- Grieving-related functions:
 - Sensing internal bodily (especially visceral) states
 - Involved in the sense of weight, heaviness, even loss of some literal part of the self
- Activate and strengthen it by:
 - Internal sensing activities (e.g., sensory awareness, Feldenkrais, yoga)
 - Abiding in physical pleasure

Insula and Contemplative Practice

- Whole body awareness
- Links to activating right hemisphere in general
 - Visualization
 - Musical chanting, singing, drumming
 - Meditations on spaciousness (e.g., blue sky)

Amygdala

- Grieving-related functions:
 - Interprets stimuli (internal and external) as unpleasant, and sends instructions to avoid or resist them
 - Active in nightmares
 - Major role in any traumatic components to grieving
- Incline the amygdala more positively:
 - Shift memories in a positive direction:
 - Memories are not recalled, but reconstructed.
 - Infuse the reconstruction with positive qualities:
 - Context of spaciousness
 - Compassion and encouragement for yourself
 - That you coped and got through; your own good qualities
 - Forgiveness practices
 - Re-condition amygdala labeling: In addition to cultivating positive emotion and activating PNS, increase sensitivity to neutral stimuli.

Amygdala and Contemplative Practice

- Close attention to the feeling tone: Frontal lobe oversight short-circuits the secondary cascade.
- Impartiality toward the ten thousand things:
 - Good, bad, beautiful, ugly, etc. are all “empty”
 - Relax judgmental labelling
 - Compassion and lovingkindness, no matter what
- Disenchantment and dispassion

*The Great Way is easy
for one with no preferences.*

- 3rd Zen Patriarch

***May you know love, joy,
wonder, and wisdom,
in this life,
just as it is.***

Thank you!