

# Grief Recovery:

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## *Implications of Neuroscience and Contemplative Wisdom*

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## Plan for This Talk

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- 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

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

## The Union of Mind and Brain

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- 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”**

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

***We don't know,***

***yet we are thinking continually."***

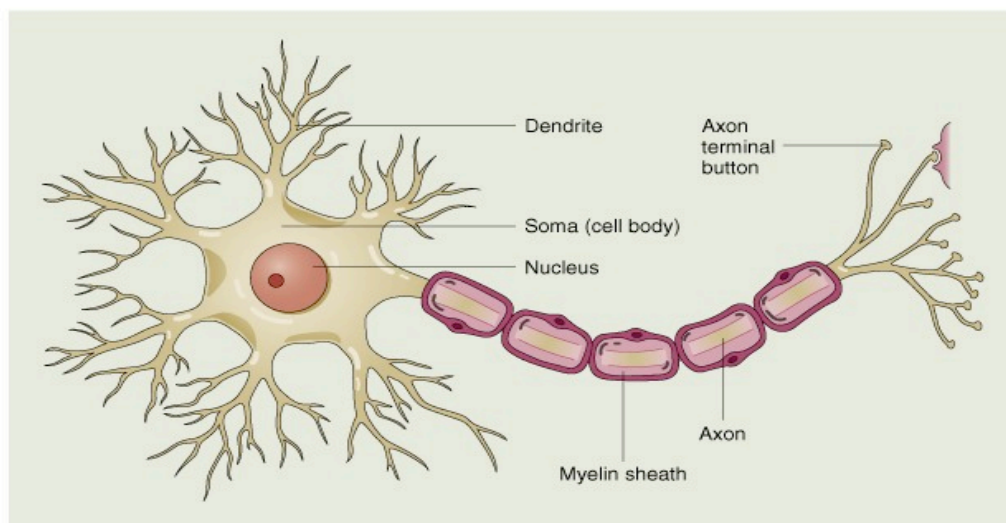
- Ven. Tenzin Palmo

# 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 5 to 50 times a second
  - Signals crossing your brain in a tenth or hundredth of a second

## One Simple Neuron . . .



## ... Multiplied by Billions of Neurons

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- 100,000,000,000 neurons (and that's only gray matter)
- Each with about 1000 synapses, 100 trillion total
- Possible brain states: 1 followed by a million zeros
- Circular loops
- Overlapping, connected sub-networks

## ... A Profoundly Complex System

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

*MORE COMPLEX THAN THE CLIMATE,  
OR A SUPERNOVA*

## Limits of Neurological Explanations

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

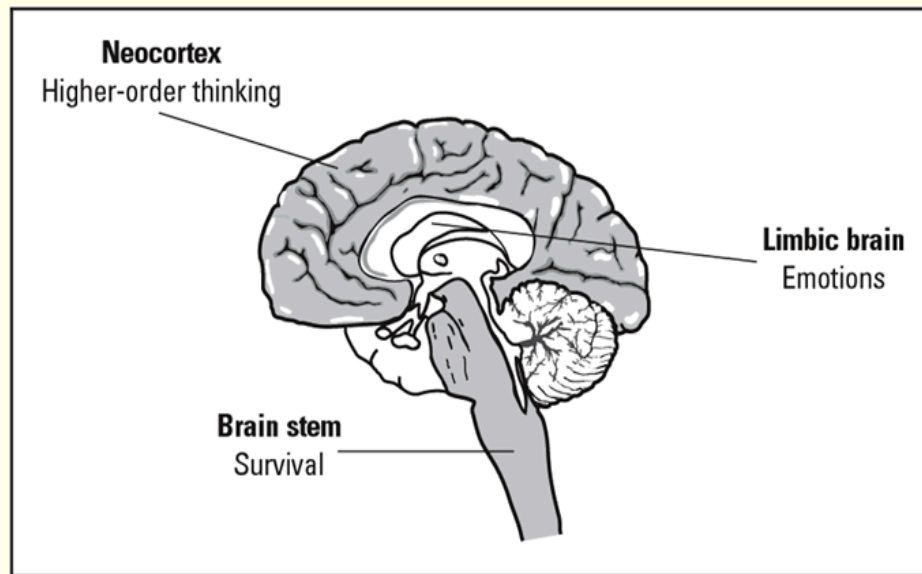
## Your Natural Condition

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- 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

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- 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

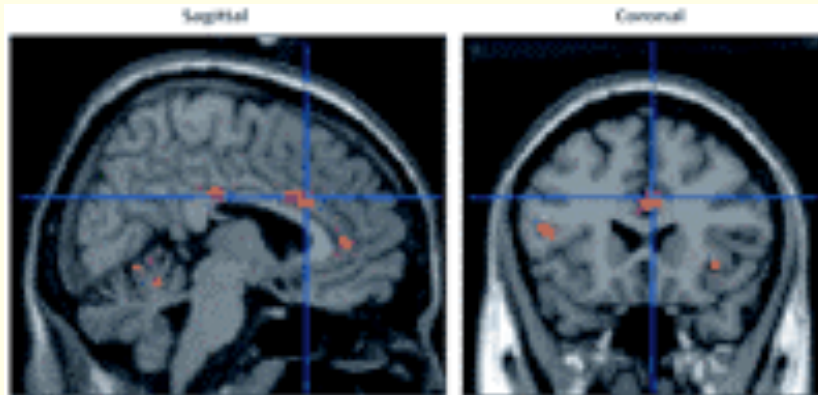
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- Since grief has many psychological elements, it draws on many resources in the brain.
- These include those dealing with attention, memory, emotion, planning, language, and relationships.
- So, the experience of grief tends to activate both specific 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

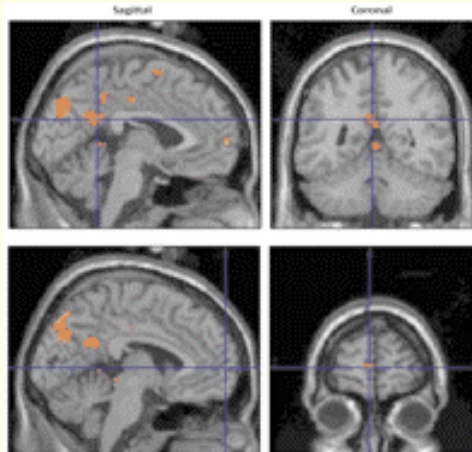
- Women looking at a picture of a recently deceased loved one
- Activated cuneus, superior lingual gyrus, insula, dorsal anterior cingulate cortex, inferior temporal gyrus, and fusiform gyrus



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

# Nurturing the Grieving Brain

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- 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

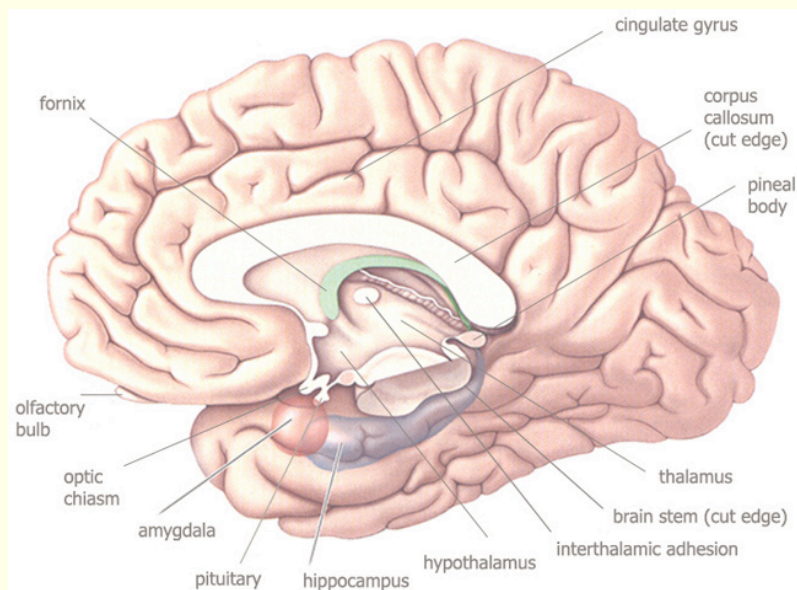
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- This wing of the autonomic nervous system:
  - Handles maintenance functions: “rest and digest”
  - Balances the “sympathetic” wing: “fight or flight”
  - Is primary; unlike SNS, is necessary for life
- Activate and strengthen it by:
  - Breathing
  - 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

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- 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

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- 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 yourself over to wholesome practices and precepts

# "I" Is a Fictional Character

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- 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

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- 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

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- 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

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- 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

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

# Amygdala

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- 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

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- 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

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

- 3rd Zen Patriarch



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

**Thank you!**