



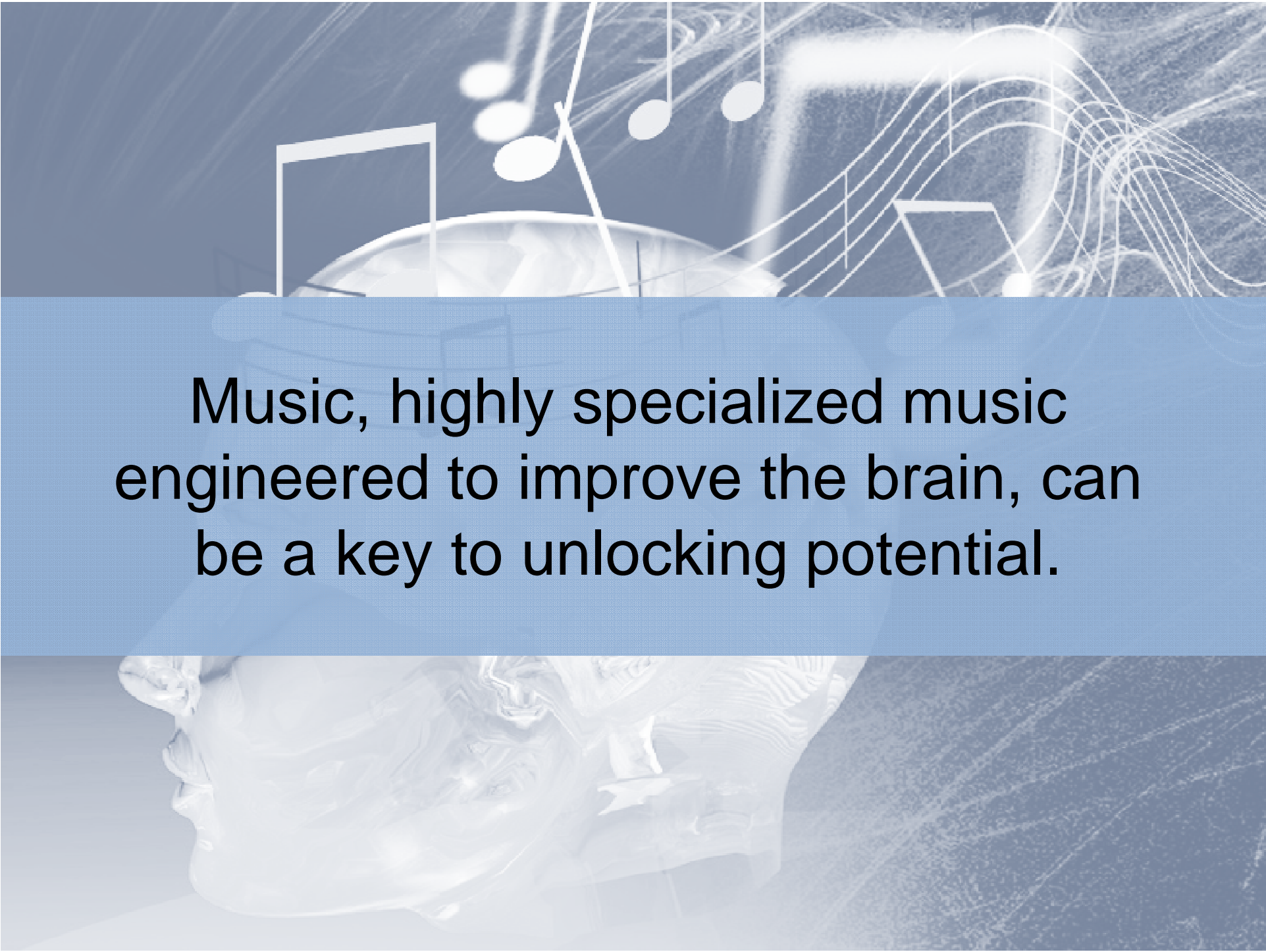
MUSIC AND THE BRAIN

Applications of The Listening Program
and inTime for Children with Special Needs

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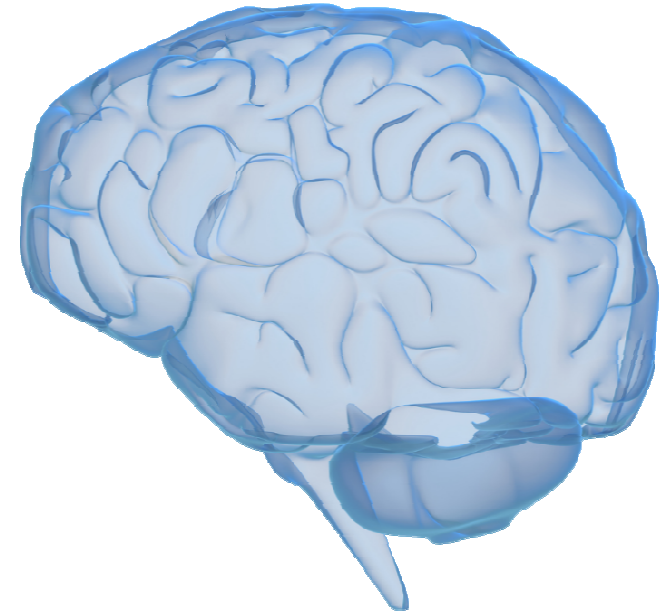
The image is a composite. The top half shows a human brain with several white musical notes floating above it, set against a dark blue background with white, wispy lines. The bottom half shows a profile of a human head with a crumpled, translucent brain inside, set against a dark blue background with white, wispy lines. A semi-transparent blue horizontal band across the middle contains the text.

Music, highly specialized music engineered to improve the brain, can be a key to unlocking potential.

What is the human
brain capable of?



Basic Brain Facts



3 pounds

1.1 trillion cells

100 billion neurons

5,000 connections per neuron

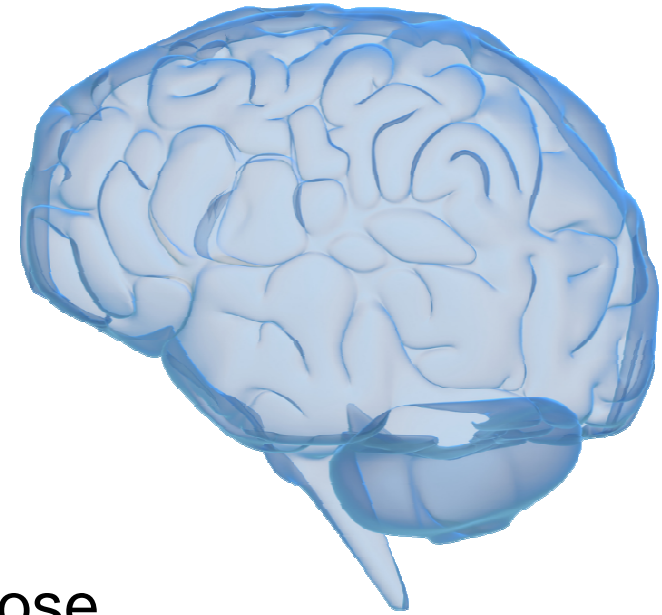
neurotransmitters

5-50 times a second

quadrillions of signals

conscious and unconscious processes

Basic Brain Facts



2% body weight

25% oxygen & glucose

10 to the millionth power

neurons make lasting circuits

works as a whole system

brain is the basis of the mind

co-dependent mind/brain system

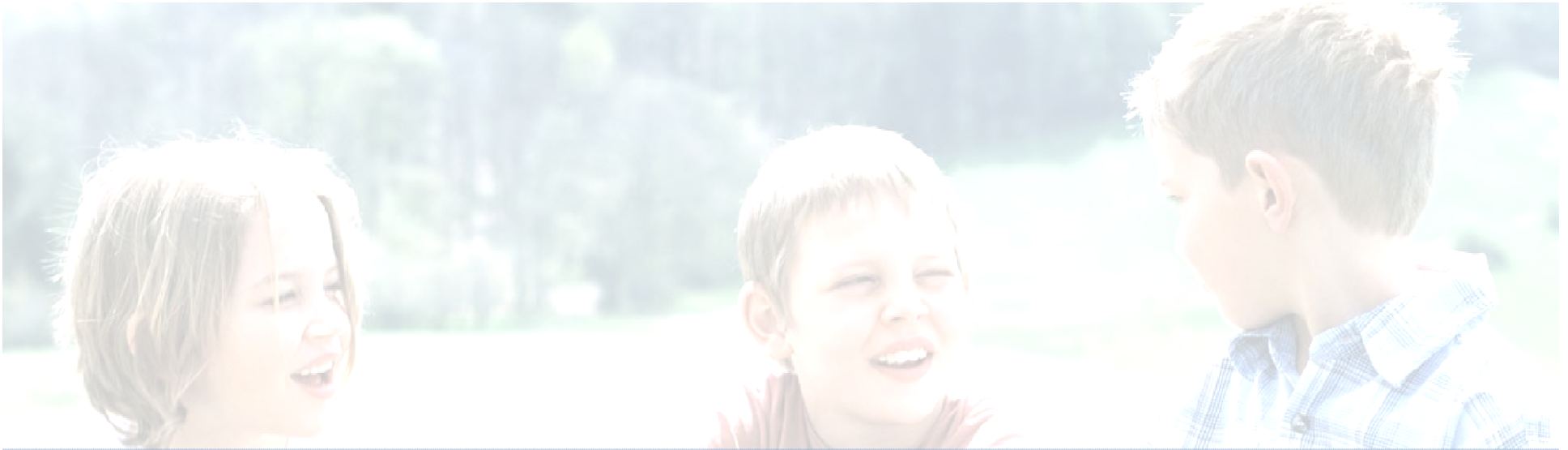


**Neuron's that fire together
wire together**

Chromosome 18

- Delayed attainment of neurodevelopmental milestones
- Auditory and other sensory processing deficits
- Chronic otitis media, placement of PE tubes, hearing loss
- Difficulties with; executive functions, behavior regulation, metacognition (initiating, planning, organizing), working memory, attention, social interaction, language & communication, time concepts, transitions, adapting to new things and situations.
- Speech therapy, occupational therapy, physical therapy likely required





The better children process auditory information, the better they can understand and engage with their environment.

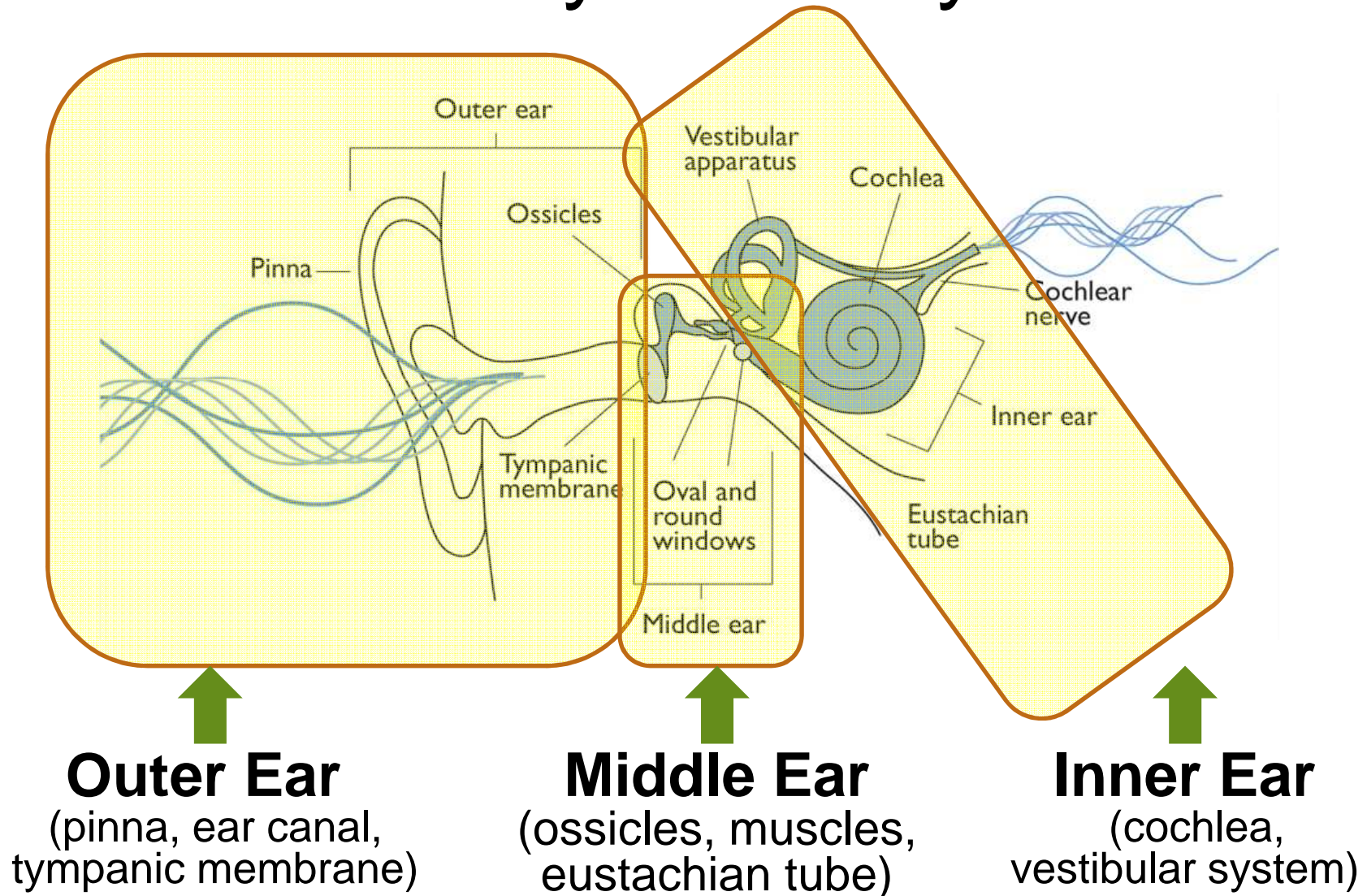
Hearing is passive

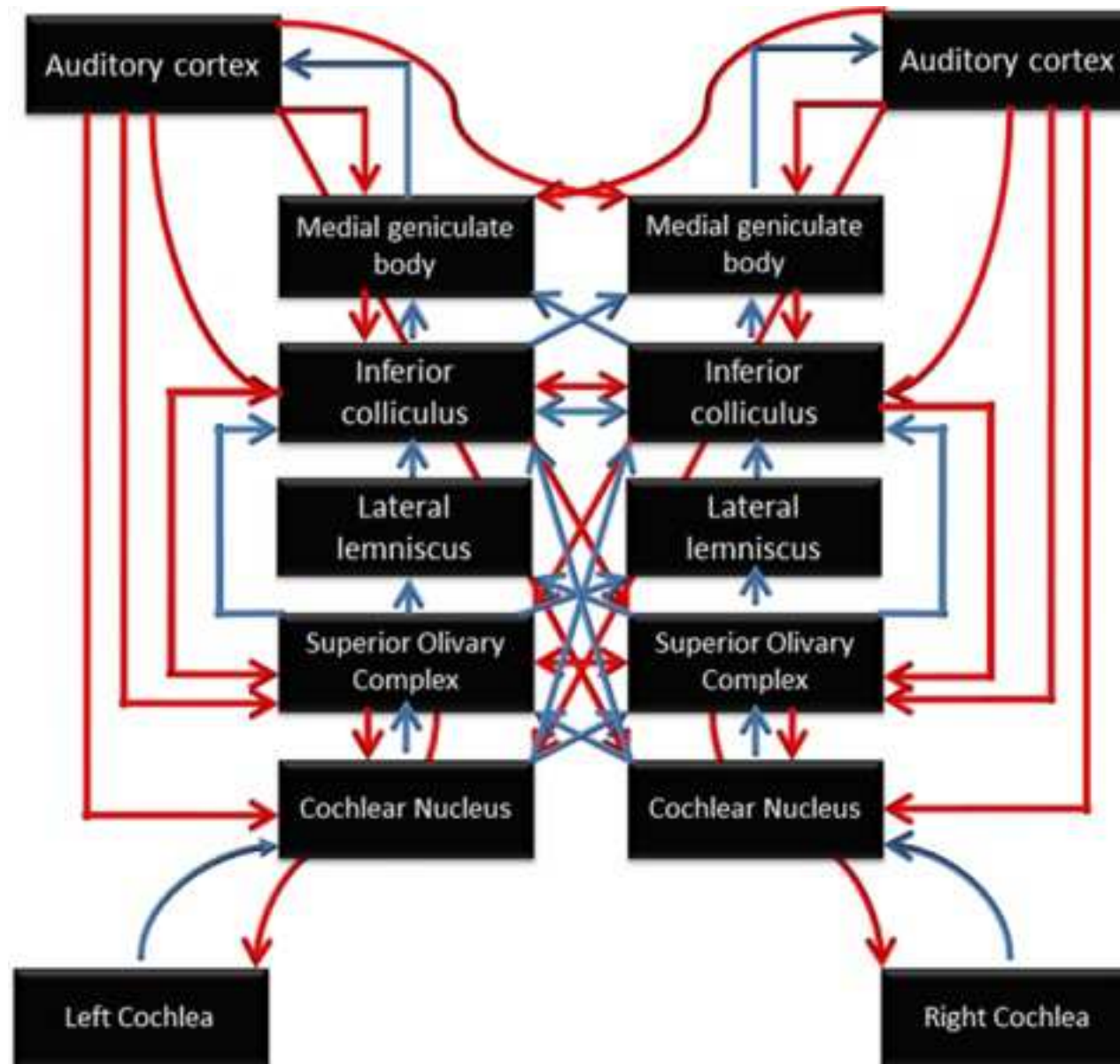


Six Integrated Systems

- Self regulation
- Auditory system
- Emotion
- Memory
- Language
- Cognitive decision making

Central Auditory Pathway





Source: [frontiers in Psychology](#)| Auditory Cognitive Neuroscience, 29 June 2011

Pathways of Sound's Influence

- Classical Auditory Pathway
- Classical Auditory Pathway Offshoots
- Non-Classical Auditory Pathway
- Autonomic Nervous System
- Enteric Nervous System
- Vestibular Pathways
- The Musical Brain

