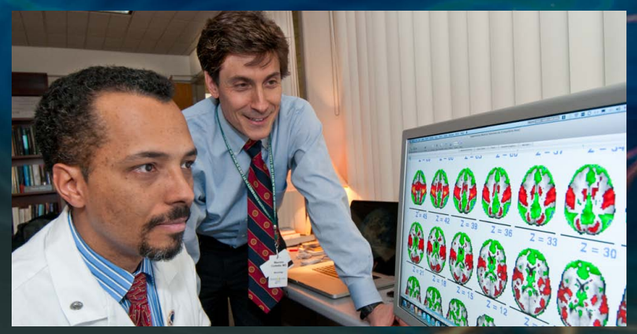
UNCEASING ACTIVITY

A device in your home uses energy nonstop. In fact, it consumes energy in vast quantities relative to its apparent output. Experts cannot fully account for this remarkable, seemingly wasteful discrepancy, and speculate that its perpetual engagement with tasks unknown may be vital for its overall utility. ▶

But don't pull the plug — that energy drain is your brain. For years, scientists studied what parts of the brain "fired" during tasks. Such interactions with the external world, however, used minimal mental resources. It turns out that most brain activity — and energy — is directed toward its unseen, inner workings. And these probably make all the difference for what it means to be human.

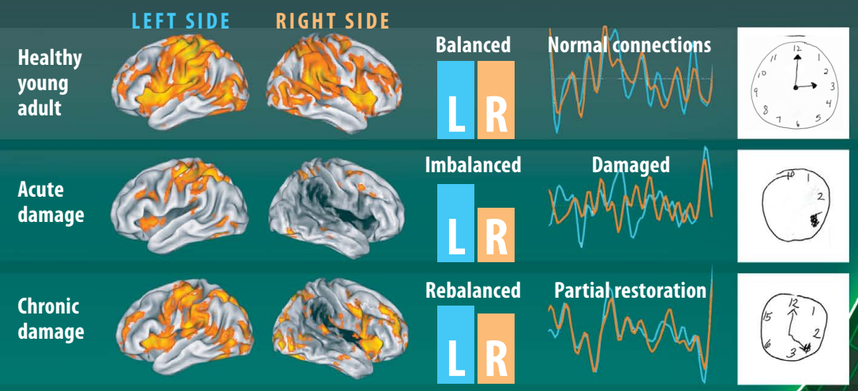


Alex Carter, MD, PhD, and Maurizio Corbetta, MD, assess brain imaging data.

Steven E. Petersen, PhD, right, and Nico U. Dosenbach, MD, PhD, in the laboratory.

Balancing the brain

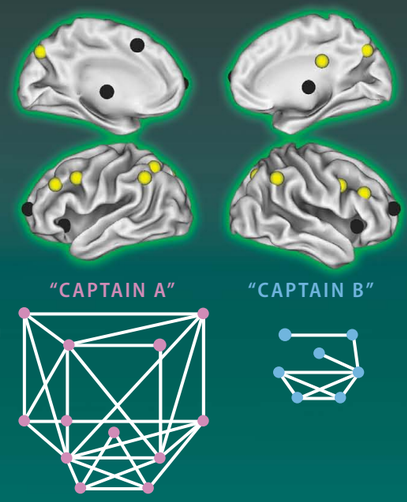
The left side of the brain controls the right side of the body, and vice versa. But brain function may not be so simple in practice. Networks within and between the two sides of the brain appear to balance each other. Damage such as stroke can disrupt this balance, making it hard, for example, for a patient to render both sides of a clock face. Scientists are working to find ways to help the brain rebalance itself.



One ship; two captains

Surely a master controlling network — functioning like the captain of a ship — was active in the brain, and researchers set out to find it. They were surprised to detect not one but two networks serving in tandem to guide goal-oriented behaviors. In adults, one network **(A)** helps to initiate behaviors, the other **(B)** to sustain them, and the networks are physically quite distant from one another. Further research has shown that the networks within children's brains differ significantly from adults.

Where the networks are located



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