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### *Evolution of the Connectome*

The connectome, the wiring diagram of the brain is one of the greatest promises of today's neuroscience. Over 100 years ago, Ramon y Cajal hypothesized that neurons and their connections must be designed according to the "laws of conservation for time, space and material". Indeed, recent studies of the human connectome suggest that it is a dynamic component of the brain that takes an active role in neuroplasticity and adaptation to environment. In addition, with a unique database of MRI brain scans of more than a hundred mammalian species, we revealed that the callosal inter-hemispheric connections are highly important for network balancing and regulation through evolution. This universal conservation law was also able to explain also inter-subject connectivity variability within species on the HCP connectome database. In the lecture, I will describe the rules of inter-hemispheric connections in brain plasticity and evolution and the universal connectivity conservation law.