Increased proliferation and lipid secretion by oligodendrocytes exposed in simulated Microgravity

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For 35 years, we have studied oligodendrocytes, a type of brain cell that forms myelin, the protective coating for nerve cells that supports the fast travel of electrical impulses. In brain trauma and certain diseases, such as multiple sclerosis, myelin is destroyed or disrupted, resulting in disability. But what if cells that make myelin could be transplanted into patients, replacing the myelin they’ve lost to disease? In previous research, Espinosa-Jeffrey and the late Jean de Vellis, who was a neurobiologist at the Semel Institute, demonstrated a promising early step: immature oligodendrocytes transplanted into animals became part of the host animals’ central nervous system. Espinosa-Jeffrey and de Vellis found that if they exposed immature oligodendrocytes to simulated microgravity in the laboratory, these “primed” cells matured, proliferated and secreted fatty acids faster than unprimed cells, suggesting a method for producing healthy cells in quantities large enough for transplantation.