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The ability to reprogram adult skin fibroblast into induced pluripotent stem cells (iPSCs) provides a source of unlimited cells genetically matched to a patient. Beside the therapeutic applications within regenerative medicine field, these cells have an exiting potential for basic research for the *in vitro* modeling of diseases. However, modeling of late onset disorders such as Alzheimer's (AD) or Parkinson (PD) by conventional differentiation paradigms remains a challenge, as current iPSC differentiation protocols yield cells that typically show the "age" of fetal-stage cells. My main objective is to be able to recreate a late onset disease phenotype such AD or PD by accelerating aging *in vitro*. Based on the premature aging syndromes associated to mutation in telomerase components, I want to explore the effect of telomerase down regulation in human iPSC prior or during neural differentiation.