Table of Contents:

Chapter 1: Introduction 7

Chapter 2: Induced Pluripotent Stem Cells in Brain Diseases (excerpts) 21

Chapter 3: Patterning factors during neural progenitor induction
determine regional identity and differentiation potential 49

Chapter 4: Simplified 3D protocol capable of generating early cortical
neuroepithelium 71

Chapter 5: Streamlined 3D cerebellar differentiation protocol
with optional 2D modification 85

Chapter 6: iPSCs, cerebellar neurons and oligodendrocyte progenitor cells
derived from 4H leukodystrophy patients 107

Chapter 7: 4H leukodystrophy transcriptome analysis identifies POLR3B
transcriptional targets in iPSCs and disease phenotype-relevant
genes in cerebellar neurons 119

Chapter 8: Discussion 137

Summary 153

Acknowledgments 155

CV 157