Alpha-synuclein over-expression in mice: striatal transcriptome changes prior to DA loss

- 137 genes down-regulated
- 96 genes up-regulated

Disruption of neuronal function

Neuroprotective response

Pathways related to degenerative diseases

**Signaling**
- MAPK; Ca2+ signaling (Carpt)
- phosphodiesterases

**Synaptic function**
- synaptic vesicle (Syn2)
- synaptic plasticity
- endocytosis vesicle recycling (Pacsin 1)

**Post-synaptic Signaling**
- receptor expression (Drd2, Grm1, Gabbr1)

- Disrupted cortico-striatal transmission
- Behavioral impairments

**Apoptosis**
- pro-apoptotic
- pro-survival (Thr, Dhr24)
- insulin-like growth factor system

**Protein oligomerization**
- Transglutamination (Tgm2c)

**Lipid metabolism**
- Cholesterol biosynthesis

**Neuron differentiation**
- Neurogenesis (Bdnf)

**Diabetes**
- Transcription factor 7-like 2

**Vascular system**
- vasculature development (Clgf, Mef2c, Tgm2)

**Involvement of metabolic and extraneuronal pathways in alpha-synuclein pathology**

**Compensatory neuroprotection**

**No loss of striatal neurons in PD**