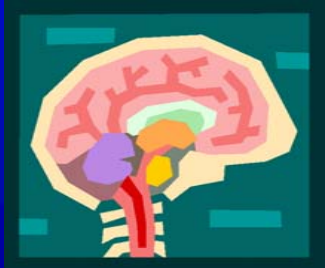# Penn Joins The NINDS Morris K. Udall Parkinson's Disease Research Centers of Excellence Network

Supported by National Institute of Neurological Disorders and Stroke (NINDS)

- Now **14** centers across the U.S.:
    - Harvard U, Brigham and Women's Hospital, Boston, MA
    - Columbia U, NYC
    - Duke U, Durham, NC
    - Harvard U, /McLean Hospital, Belmont, MA
    - Johns Hopkins U, Baltimore, MD
    - Harvard U/MIT Massachusetts General Hospital, Boston, MA
    - Mayo Clinic, Jacksonville, FL
    - Northwestern University, Evanston, IL
    - UCLA, Los Angeles, CA
    - U of Kentucky Medical Center, Lexington, KY
    - U of Virginia, Charlottesville, VA
    - U of Pittsburgh, Pittsburgh, PA
    - U of Rochester – Parkinson's Disease Data Organizing Center, Rochester, NY
    - **University of Pennsylvania, Philadelphia, PA**

PENN Udall Research Center

Focus of the Penn Udall Research Center:

- – Elucidate mechanisms of brain degeneration in patients with Parkinson's disease (PD) and dementia with a special focus on PD dementia

- – Build on existing collaborations among senior and junior Core/Project Leaders

- – Recruit new PENN faculty to the research program.

PENN Udall Research Center Cores A-B

Core A – Administrative Core
John Q. Trojanowski, MD, PhD, Core Leader

- Oversight of PURC goals, finances and progress; exchange and dissemination of research findings; ensure compliance with NIH and NINDS policies

Core B – Clinical and Educational Core
Howard Hurtig, MD, Core Leader

- Recruit patients with PD and PD dementia (PDD) and normal control subjects for Projects 1-4 of the PURC to identify potential bio-and genetic markers of PD-related neurodegeneration
    - Blood, urine, and cerebrospinal fluid, and brain tissue upon death
- Conduct educational efforts aimed at physicians and the lay community on PD and PDDor Dementia with Lewy Bodies (DLB)
    - Educational symposia for practicing physicians on the diagnosis and management of Parkinson's and cognitive disorders
    - Education of patients, families and support group leaders/members
    - Training of movement disorders research fellows

PENN Udall Research Center (PURC) Cores C-D

Core C – Neuropathology Core
John Q. Trojanowski, MD, PhD, Core Leader

- Acquire and characterize biological fluids and post-mortem brains patients with PD, PDD, DLB, and controls

Core D – Data Management and Biostatistics Core
Sharon Xie, PhD, Core Leader

- Develop and maintain a relational database of demographic, clinical, genetic, biomarker and neuropathology data gathered by Cores B and C

- Provide database, computing and biostatistical consulting support to entire Center

- Data sharing between Penn Udall Research Center and other Udall Centers through the PD Data Organizing Center (PD-DOC)

- Create and maintain Penn Udall Research Center website

PENN Udall Research Center Projects

Project 1 – Functional Consequences of Cognitive Impairment in PD
Andrew Siderowf, MD, MSCE, Project Leader

- Address hypothesis that the distinct cognitive profile of PDD/DLB leads to distinct effects on functional status
    - Develop a new rating scale of activities of daily living (ADL) for use in patients with PDD/DLB
    - Separate impairments due to impaired cognition from those due to motor aspects of PD
        - » Assess validity, reliability, and responsiveness to change in a longitudinal study

Project 2 – Executive Difficulty in Parkinson's Dementia
Murray Grossman, PhD,MD, Project Leader

- Investigate neural basis of cognitive deficits in PD
    - Determine 'executive resources' by investigating planning and mental organization
    - Evaluate cortical atrophy through high resolution structural MRI of PD patients and bold fMRI studies of healthy adults
        - » Script processing
        - » Comprehension of structurally ambiguous sentences
        - » Narrative processing
    - Examine role of impaired planning and organization in instrumental ADL to investigate the role of the dorsolateral prefrontal cortex (dlPFC) in higher coritical functioning

PENN Udall Research Center Projects

Project 3 – Animal Models of Parkinson's Disease Dementia (PDD)
Virginia M.-Y. Lee, PhD, Project Leader

- To study human brain tissue and a mouse model of PDD/DLB to test whether filamentous alpha-synuclein inclusions are linked to the onset/progression of synucleinopathies leading to dementia
  - Develop more informative models of synucleinopathies associated with dementia and address questions on mechanisms leading to the pathologies and their contribution to brain degeneration and cognitive impairments

Project 4 – Interactions of Protein Aggregation in PD Dementia
Benoit Giasson, PhD, Project Leader

- To study the relationship between abnormal protein aggregation and the spectrum of clinical impairments in PD and PDD.
- To investigate the molecular mechanisms that produce alpha-synculein and tau inclusions in PD, PDD/DLB, and the Lewy body variant of Alzheimer's disease
- To search for new directions in molecular therapies for neurodeneration and dementia