Establishing the Frontotemporal Dementia Research Center (FTDRC)

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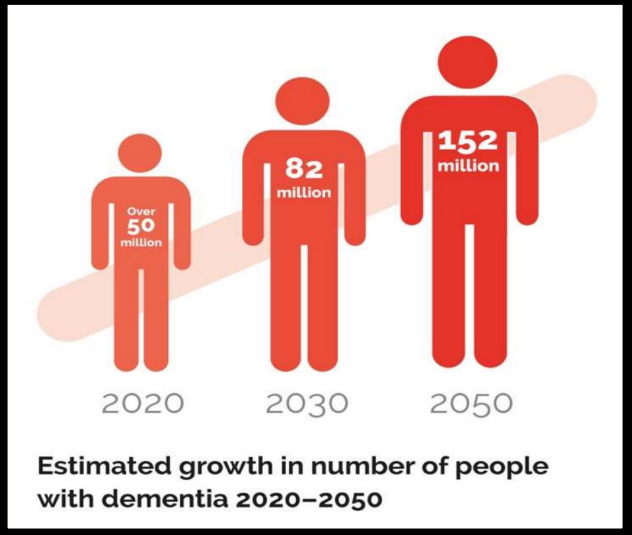
"There's really realistic hope that we will get a breakthrough and unlock the mystery of ALS and even other neurodegenerative diseases like Alzheimer's. So it's a very promising time."

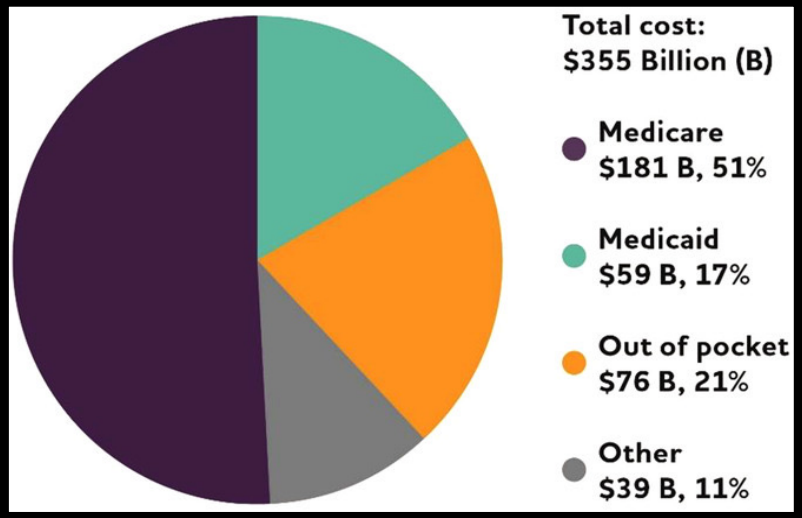
--Governor Paul Cellucci (1948–2013)

UMass Chan Medical School Chancellor Michael Collins,
Dr. Robert Brown and the late Gov. Paul Cellucci in 2011

Alzheimer disease (AD) and AD-related dementias (ADRDs) such as frontotemporal dementia (FTD), vascular dementia, dementia with Lewy bodies, and others (such as after a stroke and HIV infection) are a major health challenge in the 21st century.



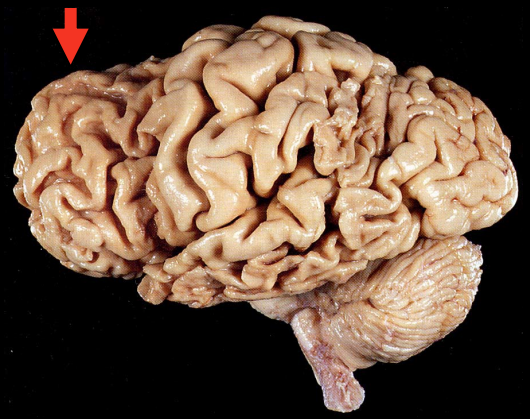
Richard J. HODES,
Director,
Office of the Director



"For FY 2024, NIH estimates the overall funding needed for AD and ADRD totaling $3.87 billion."

(Alzheimer's Association, 2023)

Frontotemporal Dementia (FTD)



- One of the major Alzheimer's disease-related dementias (ADRDs), and the most common dementia for people under age 60.
- Refers to a group of brain disorders including behavioral variant FTD (bvFTD), primary progressive aphasia (PPA), corticobasal syndrome (CBS), progressive supranuclear palsy (PSP), FTD-motor neuron disease (FTD-MND).

- Progressive deficits in cognitive behaviors (such as social disinhibition and loss of empathy) and/or language, as well as personality changes.
- Affecting 60,000 people in the US, 40% of FTD cases are familial.
- Some genetic, pathological and clinical overlaps with ALS.

Dementias and Frequency of Criminality

Clinical Diagnosis	Frequency of Criminality
Behavioral Variant FTD	37.4%
Vascular Dementia	14.8%
Alzheimer's Disease	7.7%
Mild Cognitive Impairment	3.3%

Thus, FTD is not only a medical issue but also a social issue.

(Liljegren et al., *JAMA Neurol.* 2015)

Vision for the FTD Research Center

Within 5-10 years, build the Center into a leading place in the nation and the world for FTD (and related neurodegenerative disorders) research and RNA-based therapeutic development.

My Qualifications

1990–1995	Duke University Medical Center, USA	PhD	RNA biology
1995–1997	University of College London, UK	Postdoc	Neurobiology
1997–2000	University of California, San Francisco	Postdoc	Neurobiology

07.2000–05.2006	Assistant Investigator, Gladstone Institute of Neurological Disease (GIND) Assistant Professor, Department of Neurology, UCSF
06.2006–02.2010	Associate Investigator, GIND; Associate Professor of Neurology, UCSF
02.2010–present	Professor, Department of Neurology, UMass Chan Medical School
08.2023–present	Professor, RNA Therapeutics Institute, UMass Chan Medical School

My Qualifications

>130 papers. Representative papers in FTD/ALS research since I came to UMass Chan in 2010:

As the (co) corresponding author

Almeida et al., *Cell Reports* 2012
Lu et al., *Mol. Cell* 2013
Gascon et al., *Nat. Med*. 2014
Yang et al., *Acta Neuropathol.* 2015
Tran et al., *Neuron* 2015
Freibaum et al., *Nature* 2015
Lopez-Gonzalez et al., *Neuron* 2016
Gao et al., *EMBO J*. 2017
Gao et al., *Cell* 2017
Yuva-Aydemir et al., *Trends Neurosci*. 2018
Lopez-Gonzalez et al., *PNAS* 2019
Yuva-Aydemir et al., *Nat. Commun*. 2019
Choi et al., *Nat. Neurosci*. 2019
Krishnan et al., *Acta Neuropathol*. 2020
Lu et al., *Acta Neuropathol.* 2021
van't Spijker et al., *RNA* 2021
Loveland et al., *Nat. Commun.* 2022
Krishnan et al., *Nat. Commun*. 2022
Jun et al., *Autophagy* 2023
Lee et al., *Neuron* 2023

As a collaborator

Boxer et al., *Alzheimer's and Dementia* 2013a
Boxer et al., *Alzheimer's and Dementia* 2013b
Filiano et al., *J. Neurosci.* 2013
West et al., *J. Cell Biol*. 2015
Peters et al., *Neuron* 2015
Burguete et al., *Elife* 2015
Woehlbier et al., *EMBO J*. 2016
Kramer et al., *Science* 2016
Yin et al., *Cell Reports* 2017
Markmiller et al., *Cell* 2017
Chen et al., *Neuron* 2019
Li et al., *Cell Reports* 2020
Maor-Nof et al., *Cell* 2021
Sonobe et al., *Nat. Commun*. 2021
Arredondo et al., *Neuron* 2022
Meijboom et al., *Nat. Commun*. 2022
Hung et al., *Cell* 2023
Philips et al., *Neuron* 2023
Fang et al., *Front. Neurosci.* In press.

(With UMass Chan collaborators: Zhiping, Andrei, Jon, Bob, Joel, Neal, Miguel, Michael Green…..)

My Qualifications

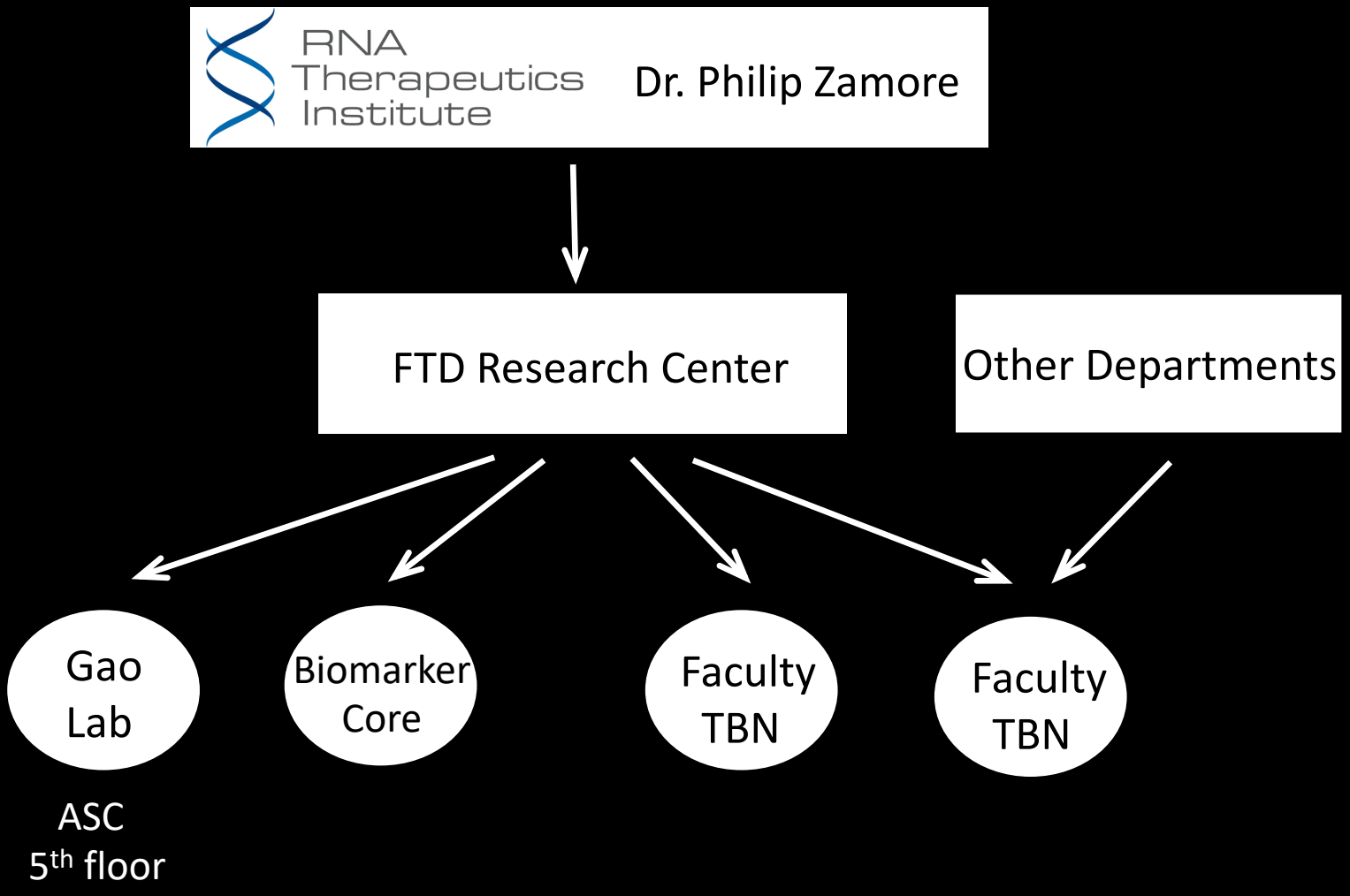
Leadership positions and professional services:

--Vice Chair of Research, Department of Neurology
--Chair of Tenure Committee, Department of Neurology
--Member of the University Tenure Committee

--Co-organizer of “RNA Metabolism in Neurological Disease” conferences 5 times
--Co-organizer of other meetings
--Member of the NIH Cellular Molecular Neurodegeneration study section (2019–2023)
--Member of the NIH F03A Fellowship Study Section (2011–2015)
--Member of the NIH Synapse and Trafficking study section (2007–2011)
--Senior Editor, Brain Research (2011–2021)

2023–present: Member of the Medical Advisory Council, Association for FTD
2023–present: Member of the Postdoctoral Fellowship Review Panel, King Trust
2020–present: Member of the SAB, NINDS Human Cell and Data Repository
2018–present: Section Editor, *Translational Neurodegeneration* (IF>12)
2017–present: Member of the Research Advisory Council, Muscular Dystrophy Association
2015–present: Member of the Grant Review Panel, ALS Association
2015–present: Member of the Grant Review Panel, Association for FTD

Organizations



Recruitments

2-3 highly talented, driven, and diverse junior faculty in 4-6 years.

- Dysregulation of RNA metabolism in FTD.
- Synaptic and circuit mechanisms underlying abnormal behaviors in FTD.
- Neuropathologist (MD/PhD), dementia brain bank, scRNA-seq, AI etc.
- Other cutting-edge research areas.
- Focus on people (next Craig Mello, Philip Zamore…..), not projects.

Fundings

- Private donations.
- Foundation grants (Alzheimer's Association, Association for FTD, etc.).
- NIA FTD program grant (P01) (Due January 25, 2024, $1.5–1.7 million direct/year). *"Frontotemporal Dementia: From Cryo-EM, Neural Mechanisms to RNA Therapy"*
- Campus-wide NIH/NINDS T32 training grant on FTD (Due May 25, 2024, or 2025).
- Future program grants and multi-PI R01 grants, once the Center grows.

Services to RTI, UMass Chan and Beyond

- Contribute to the exciting, respectful and inclusive research and teaching environment at the RTI.
- Use my expertise in grant writing to help junior faculty and trainees in the Center and the Department to obtain external fundings.
- Foster scientific excellent in the FTD Research Center and encourage collaborations with other departments.
- Bridge the interactions between basic scientists and clinicians in dementia field across the UMass Chan campus.
- Engage with the public in Massachusetts and promote dementia awareness. (September 24–October 1, World FTD Awareness Week)

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