PhD seminar "title"

CURRICUL VITAE

Silvia Fossati

1 Short CV

Silvia Fossati is the Director of the Alzheimer's Center at Temple University and a Professor of Neural Sciences at the Lewis Katz School of Medicine. From the earliest stages of her career, she has been strongly committed to advancing the understanding of the molecular pathogenesis and pharmacology of neurodegenerative disorders.

For more than 20 years, her research has focused on elucidating the mechanisms of cell death and cellular stress that underlie neurodegeneration in Alzheimer's disease (AD), Cerebral Amyloid Angiopathy (CAA), and the Vascular Contributions to Cognitive Impairment and Dementia (VCID). Her work places particular emphasis on stress pathways in the cells that compose the neurovascular unit – especially endothelial cells – along with mitochondrial dysfunction, deregulation of apoptotic factors, and deterioration of the blood–brain barrier.

Her laboratory pursues two primary goals: to identify novel targets and pharmacological strategies capable of protecting vascular and neural cells from neurodegenerative and neurovascular pathology, and to discover new biomarkers with significant implications for human health. Conducted at NYU School of Medicine until 2019 and currently at Temple University, her research has identified key pathways of cerebral endothelial cell dysfunction in AD and CAA, revealing new targets for drug discovery, including specific mitochondrial and apoptotic mechanisms, TRAIL death receptors, and carbonic anhydrases.

Her team was also the first to demonstrate that FDA-approved carbonic anhydrase inhibitors can prevent mitochondrial dysfunction and Aβ-induced cell death in cerebrovascular, neuronal, and glial cells, as well as in mouse models—representing a promising therapeutic avenue for AD and CAA.

In addition, her research efforts aim to clarify the relationship between cardiovascular risk factors (CVRF) and AD/CAA, establishing the additive or synergistic molecular mechanisms through which amyloid pathology and CVRF – including hypertension, hypoperfusion, and hyperhomocysteinemia – affect cerebrovascular integrity and blood–brain barrier function, thereby

increasing the risk and progression of AD and CAA. Her group is also working to identify new biofluid biomarkers for AD and VCID.
Silvia Fossati has received numerous awards as Principal Investigator, including NIH R01s, an R21, grants from the American Heart Association and Alzheimer's Association, the PA Cure Award from the Pennsylvania Department of Health, Department of Defense funding, and others. She currently serves as Chair of the ISTAART Vascular Cognitive Disorders PIA and as Co-Chair of the VCID Committee for the NINDS (NIH) ADRD Summit 2025.

Awards and Honors:

2025 Invited Keynote Lecture at the Stark Neuroscience Symposium IU, Indianapolis, July 2025
2024 Invited Plenary Lecture at the 11th Meeting on Translational Research in Mitochondria, Aging & Disease (TRiMAD), Rochester
2024 Invited Keynote Speaker at the Sleep Festival, University of Miami Miller, June 2024
2024 Chair of 2 Featured Research Sessions at AAIC 2024 Conference and of 1 Session at AAIC for All.
2021 Selected by Temple University to participate in the "AAMC Leadership Development Seminar for Women in Medicine and Science".
2020- Karen Toffler Charitable Trust Original Scholar at Temple University and PI of the Temple Scholarship Program (2020-Present).
2020 Recipient of the Edward N. and Della L. Thome Memorial Foundation Awards Program in Alzheimer's Disease Drug Discovery Research.
2020 Recipient of the PA Cure Alzheimer's disease Research Award from the PA Department of Health.
2016 Recipient of the Leon Levy Fellowship in Neuroscience.
2015 Chair of the Jury at the ISSNAF Award for Young Investigators in Medicine, Biosciences and Cognitive Sciences 2015 (Italian Embassy, Washington, DC).
2015 Invited speaker at the Rita Hayworth Luncheon organized by the Alzheimer's Association, NY.
2015-2019 Director of the Biofluid Biomarkers Core of the NYU Cohen Veteran Center.
2014 Recipient of the Blas Frangione New Investigator Research Award.
2013 Awarded the Scientist Development Grant from the American Heart Association.
2012 New Investigator Research Award from the Alzheimer's Association.
2010 Awarded the NYU ADRC Pilot Study Award from the Center of Excellence on Brain Aging, NYU.

2 Bibliometric data

Number of documents: 57; Citations: 3094; H-index: 31.
Source: Scopus; 24.11.2025

3 Selection of the 10 most relevant publications and/or patents

1. Parodi R., Ghiso J., Cabrera E., Rostagno A. and Fossati S. Alzheimer's amyloid β heterogeneous species differentially affect brain endothelial cell viability, blood-brain barrier integrity, and angiogenesis. *Aging Cell.* **2020** Nov 6:e13258. doi: 10.1111/acel.13258.

2. A M Carey, R Parodi-Rullan, R Vazquez-Torres, E Canepa, S Fossati. Homocysteine potentiates amyloid β-induced cerebral endothelial cell apoptosis, blood brain barrier dysfunction and angiogenic impairment. *Aging Cell*. **2024** Feb 15:e14106. doi: 10.1111/acel.14106.
3. E Canepa, R Parodi-Rullan, R Vazquez-Torres, B Gamallo Lana, R Guzman-Hernandez, N L. Lemon, F Angiulli, L Debure, M A. Ilies, L Østergaard, T Wisniewski, E Gutiérrez-Jiménez, A C. Mar and S Fossati. "FDA-approved carbonic anhydrase inhibitors reduce Amyloid-β pathology and improve cognition by ameliorating cerebrovascular health and glial fitness" *Alzheimers Dement.* **2023** Apr 26. doi: 10.1002/alz.13063.
4. Guzmán-Hernández R, Fossati S. Fibrillar tau alters cerebral endothelial cell metabolism, vascular inflammatory activation, and barrier function in vitro and in vivo. *Alzheimers Dement.* **2025** Mar;21(3):e70077. doi: 10.1002/alz.70077.
5. R Parodi-Rullán, JY Sone, and S Fossati. Endothelial Mitochondrial Dysfunction in Cerebral Amyloid Angiopathy and Alzheimer's Disease. *Journal of Alzheimer's Disease*, **2019** Jul 8. doi: 10.3233/JAD-190357.
6. Amy Anzovino, Elisa Canepa, Micaelly Alves, Nicole L. Lemon, Roxana O. Carare and Silvia Fossati. Amyloid Beta Oligomers Activate Death Receptors and Mitochondria-Mediated Apoptotic Pathways in Cerebral Vascular Smooth Muscle Cells; Protective Effects of Carbonic Anhydrase Inhibitors. *Cells* **2023**, 12(24), 2840.
7. Ashley Carey and Silvia Fossati. "Hypertension and hyperhomocysteinemia as modifiable risk factors for Alzheimer's disease and dementia: New evidence, potential therapeutic strategies, and biomarkers." *Alzheimers Dement*. **2023** Feb;19(2):671-695. doi: 10.1002/alz.12871.
8. ME. Solesio, P. Peixoto, L. Debure, SM. Madamba, MJ. DeLeon, T. Wisniewski, EV. Pavlov and S. Fossati. Carbonic Anhydrase Inhibition Selectively Prevents Amyloid β Neurovascular Mitochondrial Toxicity. *Aging Cell* **2018**, Jun 5:e12787. doi: 10.1111/acel.12787.
9. N. Lemon, E. Canepa, M.A. Ilies and S. Fossati. Carbonic Anhydrases as Potential Targets Against Neurovascular Unit Dysfunction in Alzheimer's Disease and Stroke. *Front. Aging Neurosci.*, 16 November **2021** | https://doi.org/10.3389/fnagi.2021.772278
10. Elia A, Fossati S. Autonomic nervous system and cardiac neuro-signaling pathway modulation in cardiovascular disorders and Alzheimer's disease. *Front Physiol*. **2023**;14:1060666. doi: 10.3389/fphys.2023.1060666.