Stanford

Irene L. Llorente

Assistant Professor of Neurosurgery

Bio

BIO

Originally from Spain, Irene L. Llorente joined the Neurosurgery Department at Stanford University in 2022. Following her undergraduate degree in Molecular Biology at the University of Leon in Spain, Dr. Llorente completed an MS in Molecular Biology and Biomedicine and a Ph.D. in Neuroscience between the Universities of Leon (Spain) and Florence (Italy). She conducted a postdoctoral fellowship in the Neurology Department at the David Geffen School of Medicine at UCLA where she also started her independent career as a Research Assistant Professor. Her research interests are largely directed toward understanding the biology of white matter repair in central nervous system disorders. She is particularly interested in leveraging the current technologies emerging in the stem cell field to develop more efficient and effective stem cell-based therapies for stroke, spinal cord injury, Traumatic brain injury, and vascular dementia patients.

ACADEMIC APPOINTMENTS

- Assistant Professor, Neurosurgery
- Member, Bio-X
- Member, Wu Tsai Neurosciences Institute

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, Society for Neuroscience (2009 - present)
- Member, International Society for Stem Cell Research (2013 - present)
- Member, American Society for Neural Therapy and Repair (2018 - present)
- Member, American Stroke Association (2013 - present)
- Member, European Network for CNS Transplantation and Restoration (NECTAR) (2022 - present)

PROFESSIONAL EDUCATION

- PhD, University of Leon, Spain and University of Florence, Italy. , Neuroscience (2013)
- Ms, University of Leon, Spain , Molecular Biology and Biomedicine (2009)
- BS, University of Leon, Spain , Molecular Biology (2009)

LINKS

- Llorente Lab: https://med.stanford.edu/llorente-lab.html

Teaching

COURSES

2025-26

- From Bench to Bedside: Stem Cell Therapies for CNS Injury: BIOS 205 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Sarah Wilson

Postdoctoral Faculty Sponsor

Maryam Chahin, Vanessa Kan, Maria del Mar Sanchez Martin

Publications

PUBLICATIONS

- **Patient-derived glial enriched progenitors repair functional deficits due to white matter stroke and vascular dementia in rodents** *SCIENCE TRANSLATIONAL MEDICINE*
  Llorente, I. L., Xie, Y., Mazzitelli, J. A., Hatanaka, E. A., Cinkornpumin, J., Miller, D. R., Lin, Y., Lowry, W. E., Carmichael, S.
  2021; 13 (590)

- **Customized Brain Cells for Stroke Patients Using Pluripotent Stem Cells** *STROKE*
  Kokaia, Z., Llorente, I. L., Carmichael, S.
  2018; 49 (5): 1091-1098

- **Hydrogel-delivered brain-derived neurotrophic factor promotes tissue repair and recovery after stroke** *JOURNAL OF CEREBRAL BLOOD FLOW AND METABOLISM*
  Cook, D. J., Nguyen, C., Chun, H. N., Llorente, I. L., Chiu, A. S., Machnicki, M., Zarembinski, T. I., Carmichael, S. T.
  2017; 37 (3): 1030-1045

- **Nogo receptor blockade overcomes remyelination failure after white matter stroke and stimulates functional recovery in aged mice** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Sozmen, E. G., Rosenzweig, S., Llorente, I. L., DiTullio, D. J., Machnicki, M., Vinters, H. V., Havton, L. A., Giger, R. J., Hinman, J. D., Carmichael, S. T.
  2016; 113 (52): E8453-E8462

- **Systematic optimization of an engineered hydrogel allows for selective control of human neural stem cell survival and differentiation after transplantation in the stroke brain** *BIOMATERIALS*
  Moshayedi, P., Nih, L. R., Llorente, I. L., Berg, A. R., Cinkornpumin, J., Lowry, W. E., Segura, T., Carmichael, S. T.
  2016; 105: 145-155

- **Temporal Patterning of Neurofilament Light as a Blood-Based Biomarker for Stroke: A Meta-Analysis**
  Sanchez, J., Martirosian, R., Chong, D., Tiedt, S., Uphaus, T., Groschel, K., Hinman, J. D.
  WILEY.2021: S57-S58

- **Reliable generation of glial enriched progenitors from human fibroblast-derived iPSCs** *STEM CELL RESEARCH*
  Llorente, I. L., Hatanaka, E. A., Meadow, M. E., Xie, Y., Lowry, W. E., Carmichael, S.
  2021; 55: 102458

- **Using organotypic hippocampal slice cultures to gain insight into mechanisms responsible for the neuroprotective effects of meloxicam: a role for gamma aminobutyric and endoplasmic reticulum stress** *NEURAL REGENERATION RESEARCH*
  Landucci, E., Llorente, I. L., Anuncibay-Soto, B., Pellegrini-Giampietro, D. E., Fernandez-Lopez, A.
  2019; 14 (1): 65-66

- **Bicuculline Reverts the Neuroprotective Effects of Meloxicam in an Oxygen and Glucose Deprivation (OGD) Model of Organotypic Hippocampal Slice Cultures** *NEUROSCIENCE*

Landucci, E., Llorente, I. L., Anuncibay-Soto, B., Pellegrini-Giampietro, D. E., Fernandez-Lopez, A.
2018; 386: 68-78

- **Engineered HA hydrogel for stem cell transplantation in the brain: Biocompatibility data using a design of experiment approach** *DATA IN BRIEF*
  Nih, L. R., Moshayedi, P., Llorente, I. L., Berg, A. R., Cinkornpumin, J., Lowry, W. E., Segura, T., Carmichael, S.
  2017; 10: 202-209
- **A Versatile Murine Model of Subcortical White Matter Stroke for the Study of Axonal Degeneration and White Matter Neurobiology** *JOVE-JOURNAL OF VISUALIZED EXPERIMENTS*
  Nunez, S., Doroudchi, M., Gleichman, A. J., Ng, K. L., Llorente, I. L., Sozmen, E. G., Carmichael, S., Hinman, J. D.
  2016
- **Hippocampus and cerebral cortex present a different autophagic response after oxygen and glucose deprivation in an ex vivo rat brain slice model** *NEUROPATHOLOGY AND APPLIED NEUROBIOLOGY*
  Perez-Rodriguez, D., Anuncibay-Soto, B., Llorente, I. L., Perez-Garcia, C. C., Fernandez-Lopez, A.
  2015; 41 (4): e68-e79
- **GLUTAMATE RECEPTOR AND TRANSPORTER MODIFICATIONS IN RAT ORGANOTYPIC HIPPOCAMPAL SLICE CULTURES EXPOSED TO OXYGEN-GLUCOSE DEPRIVATION: THE CONTRIBUTION OF CYCLOOXYGENASE-2** *NEUROSCIENCE*
  Llorente, I. L., Landucci, E., Pellegrini-Giampietro, D. E., Fernandez-Lopez, A.
  2015; 292: 118-128
- **Age-dependent modifications in vascular adhesion molecules and apoptosis after 48-h reperfusion in a rat global cerebral ischemia model** *AGE*
  Anuncibay-Soto, B., Perez-Rodriguez, D., Llorente, I. L., Regueiro-Purrinos, M., Manuel Gonzalo-Orden, J., Fernandez-Lopez, A.
  2014; 36 (5): 9703
- **Unfolded protein response to global ischemia following 48 h or reperfusion in the rat brain: the effect of age and meloxicam** *JOURNAL OF NEUROCHEMISTRY*
  Llorente, I. L., Burgin, T. C., Perez-Rodriguez, D., Martinez-Villayandre, B., Perez-Garcia, C. C., Fernandez-Lopez, A.
  2013; 127 (5): 701-710
- **GABA(A) receptor chloride channels are involved in the neuroprotective role of GABA following oxygen and glucose deprivation in the rat cerebral cortex but not in the hippocampus** *BRAIN RESEARCH*
  Llorente, I. L., Perez-Rodriguez, D., Martinez-Villayandre, B., Dos-Anjos, S., Darlison, M. G., Poole, A. V., Fernandez-Lopez, A.
  2013; 1533: 141-151
- **Age and meloxicam modify the response of the glutamate vesicular transporters (VGLUTs) after transient global cerebral ischemia in the rat brain** *BRAIN RESEARCH BULLETIN*
  Llorente, I. L., Perez-Rodriguez, D., Burgin, T. C., Gonzalo-Orden, J. M., Martinez-Villayandre, B., Fernandez-Lopez, A.
  2013; 94: 90-97
- **Differential effect of transient global ischaemia on the levels of gamma-aminobutyric acid type A (GABAA) receptor subunit mRNAs in young and older rats** *NEUROPATHOLOGY AND APPLIED NEUROBIOLOGY*
  Montori, S., Dos Anjos, S., Poole, A., Regueiro-Purrinos, M. M., Llorente, I. L., Darlison, M. G., Fernandez-Lopez, A., Martinez-Villayandre, B.
  2012; 38 (7): 710-722
- **Age-dependent modifications in the mRNA levels of the rat excitatory amino acid transporters (EAATs) at 48 hour reperfusion following global ischemia** *BRAIN RESEARCH*
  Montori, S., Martinez-Villayandre, B., Dos-Anjos, S., Llorente, I. L., Burgin, T. C., Fernandez-Lopez, A.
  2010; 1358: 11-19