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Therapeutic targeting of the inflammasome: Insights into drug development

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The inflammasome is a multiprotein complex involved in the activation of caspase-1 and the pro-inflammatory cytokines IL-1β and IL-18. The inflammasome was first described by Tschopp and colleagues in 2002 as a regulator of the innate immune inflammatory response in THP1 cells. We first started working on the inflammasome in the central nervous system (CNS) in 2005. Today there are more than 4500 articles that have been published on the inflammasome and the inflammasome in the CNS has become a widely known and accepted key regulator of IL-1β after CNS injury and in neurodegenerative diseases. Our work on spinal cord injury, traumatic brain injury and stroke identified therapeutic antibodies to inhibit inflammasome activation. We are currently developing a biologic targeting the inflammasome. This presentation will cover our experience from drug discovery to drug manufacturing, including steps in the development of therapeutic monoclonal antibodies as well as issues pertaining to intellectual property and funding.

Biography

Juan Pablo de Rivero Vaccari has received his Bachelor of Science degree in Biology in 2004 from Florida International University, where he became a Member of Phi Beta Kappa Honor Society. In 2004, he joined the University of Miami as a graduate student in the Department of Physiology and Biophysics and worked in the laboratory of Dr. Robert W. Keane. He has obtained his PhD in 2007 and then joined the laboratory of Dr. W. Dalton Dietrich at the Miami Project to Cure Paralysis as a Postdoctoral fellow. In 2010, he became a Research Assistant Professor in the Department of Neurological Surgery and the Miami Project to Cure Paralysis at the University of Miami. Currently, he works on identifying biomarkers and therapeutic targets in the innate immune response to improve outcomes after central nervous system injury and disease. In addition, his work has resulted in the filing of several patents with the United States Patent and Trademark Office and abroad. To move inventions forward, he Co-Founded InflamaCORE, LLC., USA.

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