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**Education**

1974	BS	UNPHU, Dominican Rep.	Education/Biology
1977	MS	Florida Inst. of Techology	Biology
1981	PhD	Florida Inst. of Techology	Biology
1983	Post-Doctoral	Baylor College Medicine	Cell Biology

**Research Interest**

Two major projects: **(a) HIV infectivity in vitro:** That HIV causes AIDS, is a master of disguise and a source of warfare to CD4 lymphocytes for which is tropic, is undisputed. In vivo, teasing out the changes of fast-frequent mutating HIV forms is a tremendously difficulty task. In vitro analysis of human tumor derived cells (e.g., H9) allows teasing out variables, because viral-cellular interactions are more easily controlled. In most cells uptake of foreign bodies occurs through one of several well-characterized endocytotic pathways. Yet, recent work suggests that HIV probably overwhelms cells that infect through multiple and simultaneous routes of penetration. Cells with tropism for HIV may be penetrated via all known pathways including the exploitation of lipid rafts. Thus, effective therapeutic interventions of the future will require understanding multiple ways of viral penetration to cells. This topic and other related to HIV infectivity are under investigation with collaborator Robert Garry from Tulane Medical School. **(b) Developmental neurobiology of vertebrates vestibular complex:** Balance/equilibrium allows vertebrates to remain erect, control motion, and resist gravity. Two ears communicate symmetrically to both sides of the brain through a series of neuronal relays allowing very complex biological-signaling that keep registry of the body position with help from the eyes, the cerebellum and the limbs. On each side of the head three angular accelerometers and two linear accelerometers generate-receive signals to recognize the ever present reference of the horizon on earth. In outer space, the azimuth reference is temporarily lost and disorientation emerges leading to dizziness. On earth, medications, trauma, ageing disease/genetic disorders contribute to disorientation. This research centers on the coordinated development of connections (neurons and axons) that bring peripheral stimuli to brain centers, evaluating calcium binding proteins isoforms with neurotrophic properties.

**Recent Publications**

Bongkun Choi, Paul J. Gatti, Cesar D. **Fermin**, Sandor Vigh Allyson M. Haislip and Robert F. Garry. Down-regulation of cell surface CXCR4 by HIV-1. **Virology Journal** 2008, 5:6.  
**Fermin**, CD and Garry, RF. Alterations of lymphocyte membranes during HIV-1 infection via multiple and simultaneous entry strategies. **MRT**, 68(3): 149-167, 2005.  
 Sander, DM, Sara Szabo, S, Gallaher, WR, Deas, JE, Thompson, JJ, Cao, Y, Luo-Zhang, H, Leonita, G, Liu, LG, Colmegna, I, Koehler, Espinoza, LR, Alexander, SS, Darren J. Hart, DH, Tom. D, **Fermin**, CD, Jaspan, JJ, Kulakosky, PC, Tenenbaum, SA, Russell B. Wilson, RB, and Garry, RF. Involvement of human intracisternal A-type retroviral particles in autoimmunity. **MRT**, 68(3): 222-234, 2005.  
 Sander, DM, Wolfsheimer, K, Gallaher, WR, **Fermin**, CD, Haislip, AM, and Garry, RF. Seroactivity to A-type retrovirus proteins in a subset of cats with hyperthyroidism. **MRT**, 68(3): 235-238, 2005.  
 Zhang, Z, Zhang, X, Avniel, WA, Song, Y, Jones, SM, Jones, TA, **Fermin**, CD and Chen, Y-P. The malleal processus brevis is dispensable for normal hearing in mice. **Developmental Dynamics** 227:69-77, 2003.