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CAES SEMINAR SERIES

"Photodynamic Inactivation of *Leishmania braziliensis*: A Potential Strategy for Vaccination Against Cutaneous Leishmaniasis"

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Wednesday, January 8, 2020

12:00 noon to 1:00 p.m.

Food and coffee will be available at 11:45 a.m.

Jones Auditorium

The Connecticut Agricultural Experiment Station

123 Huntington Street, New Haven, CT

Leishmaniases are neglected tropical diseases caused by protozoan pathogens of *Leishmania* spp. In Brazil, *Leishmania braziliensis* is the leading cause of cutaneous and mucocutaneous leishmaniasis, characterized by skin ulcers and extensive facial tissue destruction, respectively. There is no vaccine available, although it has long been considered feasible, since individuals who recover from leishmaniasis develop life-long immunity. We explored photodynamic therapy or treatment (PDT) of *L. braziliensis* as a strategy to achieve parasite inactivation for use as whole-cell vaccines. A transgenic line of porphyrinogenic parasites was generated for their photodynamic inactivation by UV irradiation, which excites porphyrin for producing cytotoxic singlet oxygen and ROS generated secondarily. *In vitro* interactions of a uroporphyrinogenic clone with primary macrophages were examined, suggested the immunity-favorable activation macrophages indicated by NO production, CD86 expression and the generation of TNF and IL6. Results provide *in vitro* evidence that photodynamically inactivated *L. braziliensis* may be potentially used for vaccination against leishmaniasis.