

TITLE:

Perfluorocarbon Emulsions as Resuscitation fluids and Organ preservatives

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FACULTY MENTOR DEPARTMENT

Anesthesiology
Surgery
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RESEARCH PROJECT

Multiple applicants welcome

Perfluorocarbons (PFCs) are well-known chemical molecules that have entered and exited the medical field over the last 5 decades with mixed results. From a mass media consumer, they were well popularized in movies like *The Abyss* that portray deep water divers who breathed it for a liquid oxygen resource. New and promising avenues of interest for PFCs that have recently emerged are centered around utilizing PFC's ability to significantly facilitate oxygen transport rather than being an oxygen substitute. This project will have multiple sub-projects to offer to interested medical students that will explore specific overlapping areas that can maximize PFCs capability to support oxygenation which include:

1. The development of new resuscitation fluids that can preserve oxygenation of organs to sick patients in hospitals or even soldiers in the battlefield.
2. The development of a new cardioplegia solution to preserve oxygenation to arrested hearts during cardiac surgery
3. The development a new organ preservation solution (liver, cardiac, pulmonary, kidney) that can be used to improve oxygenation during organ transport that will improve the quality of the organ and the length of time that the organ can be stored.
4. Lengthen kidney preservation during partial nephrectomy surgery to improve oxygenation by infusing PFC's to the resected kidney