



Team Challenge 2016

Every year EMU McNair Cadets and Recruits, working on teams of four to five students, create research proposals on a current topic from their academic discipline. The teams meet during the fall McNair Research Seminars to produce proposals including an Abstract, Literature Review, Methodology, Timeline and Budget.

Team One: *Methods of Breast Cancer Treatment Enhancements Using Genetic Therapeutic Practices.*

Members: Larry Borum, Robert Green, Semora Bell and Tahsina Shimu (Winners of the 2016 Team Challenge)

Recent research in molecular genetics has led to the development of new approaches to cancer management, such as the use of gene therapy (Amer et. al 2014). We propose to identify the effects of gene therapy on breast cancer in mice undergoing chemotherapy. Two different methods of therapeutic practices will be analyzed: suicide and bacterial gene therapy. Suicide gene therapy involves converting a prodrug into a cytotoxic compound, and bacteria is used to disrupt and destroy solid tumors. A new delivery method will be examined using nano-technology. The nanosystems will be a more efficient and precise method to deliver the modified genes into the cancerous cells. Over the course of 10 years, we seek to assess whether or not gene therapy can enhance current cancer treatment methods.

Team Two: *Minimizing Opioid Abuse by Therapy with a DOP-receptor Antagonist.*

Members: Sam Carano, Precious Humphrey, Jesse Smith, Jaylen Taylor, and Amanda Wardin

Research has found that there are minimal differences in chemical structure of prescription opioids (legal) and non prescription opioids (illegal). Commonly used in healthcare settings, opioid abuse is common due to the different receptor subtypes innervated within the central nervous system, specifically, MOP and DOP receptors. Previous data show that MOP receptor activity provides the analgesic effects, while DOP receptor activity causes the euphoric effects during opioid use. In this research we plan to test whether or not prescribing a DOP-receptor antagonist along with oxycodone will reduce opioid abuse in mice models.

Team Three: **Transgender Rights: How do You Really Feel?**

Members: Faith Williams, Kala Sherman, Mahogany Anderson, Karess Taylor, Deziray Taylor, and Courtni Montgomery

Recent recognition of transgender rights in America has come to affect the culture in many complex ways that most are unaware of. According to a 2016 study from the New York Times, there are approximately 2.4 million adults in the United States who identify as transgender. With the topic of transgender individuals becoming more public, it is likely that the number of known transgender individuals will continue to rise. In contrast, transgender people still face a plethora of psychological and social problems due to the private ideas people have of transgender people. We will examine the private attitudes toward transgender people by distributing an anonymous survey to college students in the Midwest region. Survey questions will ask participants of their demographics (age, race, class, income, EMU McNair Challenger December 2016 etc.), political party association, and their opinions on critical transgender rights. Analysis of these results will help demonstrate how recognition of transgender rights have come to affect American culture.

Team Four: The Influence Of Socio-Economic Status on Children's Mental Health.

Members: Alyssia Hence, Jasmine Stout, Sina Webster, Ivan Lebron, and Anthony Terry

According to Yoshikawa, Aber, & Beardslee (2012), twenty percent (20%) of children ages 18 and under are living in poverty, and “[p]overty is a critical risk factor for many of the mental, emotional and behavioral (M-E-B) disorders of children and youth” (p. 272). The hardship of living in poverty affects children because of its effects on their parents, who also often experience depression, leading to relationship conflicts. Such conflicts typically result in inconsistent discipline in the home, bringing about a domino effect where children end up with disorganized attachment issues in early childhood, and adolescent distress (Yoshikawa et. al, 2012, p. 275). We intend to explore the way that parenting styles affect the mental health of African American male students between the ages of 17 and 18 who are eligible for free school lunch through a mixed methods approach, employing a survey and individual interviews.

Team Five: Use of Caffeine in Olympic Sports.

Members: Chelsey Eatmon, Demarco Johnson, Yeliani Valdez, and Victoria Fields

In the athletic world, performance is key to success. Concerns about how illegal substances are used in athletics have been a part of academic research for years, and caffeine has emerged as one of the most controversial substances under review. Caffeine has been proven to enhance performance and was on the list of banned substances from 1984-2004 by the World Anti-Doping Agency (WADA) (Coso, Muñoz & Muñoz-Guerra, 2011). Caffeine has just as many dangers and side effects as many illegal substances, and is considered as performance enhancing as blood doping. Our study will measure the effects of caffeine on male Olympic track athletes at the U.S Olympic Complex in Colorado, Springs, to determine whether it is as effective as substances banned by the WADA. The study will consist of a survey that measures

caffeine intake, habituation, and performance trials. We expect to find a significant improvement in performance when the athletes consume caffeine.