

Hannah Alford

The Racial Disproportionality of the Foster Care System

Mentor: Todd Edmondson

Racial disproportionality has been a factor in the foster care system since 1950 when the American foster system began accepting children of color. Since then, children of color have been significantly overrepresented. This disproportionality is primarily seen in African American children. In 2019 the total percentage of African American children in the United States was 14%, however the total percentage of African American children in the foster care system was 23%. No other ethnic group comes close to matching this amount of overrepresentation. This research will examine the primary causes and factors associated with this racial disproportionality. These causes include: the unconscious racial biases and prejudices that have been systematically embedded in the foster care system, systemic racism, the high rates of poverty and single-parent households among African American communities and the locality of these communities, and the effects of abuse, maltreatment, and racism in the removal of children from their homes. This research shows how each of these factors contributes to the overall problem of overrepresentation and it examines how the history of foster care have contributed to this racial disproportionality.

Keywords: Foster Care, Racial Disproportionality, Child Abuse, Poverty, Racism

Amy Hyder and Leah Jamerson

Exhaling a Breath to Foster Healing: Unnatural Dipeptide Synthesis targeting *Pseudomonas aeruginosa* in
Cystic Fibrosis Patients

Mentor: Kristen Mudrack

Cystic Fibrosis (CF) is an autosomal recessive condition caused by a mutation in the CFTR gene. As a result, thick mucus accumulates in crucial organs such as the lungs and pancreas, providing optimal conditions for bacteria to assemble. *Pseudomonas aeruginosa* is a gram-negative bacterium which commonly infects the CF lung, and can quickly become resistant to current antibiotics on the market. Due to biofilm formation in the lungs, it can be difficult for antibiotics to treat *P. aeruginosa* infections, and recurrent infections are common. Bacteria quickly become resistant to common antibiotics due to their rapid genetic evolution, making it a top priority to produce safe and effective antibiotics for consumption. Even though the need for powerful antibiotics is significant, larger companies find it unprofitable to fund antibiotic development due to the drugs' primary purpose of treating serious infections in order to prevent antibiotic resistance. Synthesizing novel dipeptide antibiotics to target *P. aeruginosa* is crucial for fighting antibiotic resistance, as well as expanding the treatment options available upon infection. Wang Resins were acylated with 2- and 3-chlorobenzyl bromide and 2- and 3-bromobenzyl bromide. The resins were then alkylated with amino acids D-histidine, D-methionine, and D-valine. The products were cleaved from the resin, and a bioassay was performed to determine the efficacy of the twelve synthesized dipeptides against *P. aeruginosa*. Finally, the crude products were purified, and a second bioassay was executed in order to accurately determine which of the dipeptides demonstrated the most promise in suppressing *P. aeruginosa* growth.

Keywords: Cystic Fibrosis, *Pseudomonas aeruginosa*, dipeptide synthesis, antibiotics

Andrea Hyder

Societas and Salvation: Augustine and his Theological Discourse on Marriage

Mentor: Lee Blackburn

The concept of Christian marriage is one that extends from the early Church up until the present day. However, while marriage appears commonplace to modern Christians, early Christian theologians wrestled with affirming marriage when celibacy was often prioritized. Augustine of Hippo, a North African theologian, is no exception to this struggle, and is often cited as the sole figure who ruined sex and marriage in contemporary Christianity. Even so, I contend that he finds value in Christian marriage through *societas*, or the mutual, benevolent, and compassionate relationship between the wife and the husband. I argue that Augustine finds soteriological value within the marriage bond, being substantiated by *On the Good of Marriage*, *On Virginity*, and Sermon 354A. I examine how *societas* safeguards the couple's salvation, and how this contributes to sacramental marriage in Augustine's thought. Further, I discuss the impact that virginity, celibacy, sexual intercourse, and childbearing has on his theology of marriage. While many Christians remember Augustine in a dualistic sense, that is, merely pessimistically or optimistically, I hope to indicate that *societas* is something that he believes enhances the couple's salvation, and that his thought is not binary.

Keywords: *societas*, salvation, marriage, virginity, celibacy, sacrament