

# RAFAELA RESEARCH

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## EDUCATION

**The University of Texas at Austin**, Austin, TX  
Bachelor of Science in Biology, GPA 3.5

May 2021

## RESEARCH EXPERIENCE

**Merck & Co. Inc.**, West Point, PA

May 2020 – August 2020

*Vaccine Process and Technical Operations Intern*

- Developed and implemented new manufacturing and processing technologies for wide scale production of measles, mumps, rubella (MMR), and varicella vaccines
- Participated in process development, scale up, and launch of vaccine discoveries from bench-scale to full size processes using both chemistry, engineering, and biology skills and lab techniques
- Maintained, optimized, and supported MMR and varicella vaccine process, production line, and manufacturing site to ensure high performance, efficiency, and yield of quality products

**Dr. Jane Smith Lab, The University of Texas at Austin**, Austin, TX

August 2018 – Present

*Undergraduate Research Assistant*

- Research interactions that occur between various drugs and polymers in order to improve the solubility and dissolution rate of the drugs (pharmacokinetics)
- Create new compounds through use of a hot-melt extruder to mix drugs and polymers together
- Analyze compounds through methods such as DSC, FTIR, XRPD, and HPLC to determine new physical properties
- Presented research findings monthly at lab meetings

**Freshman Research Initiative, Epidermal Cell Fate Regulation Stream**, Austin, TX

January 2017 – May 2018

*Research Mentor & Undergraduate Research Assistant*

- Performed molecular and genetic analysis on two regulatory loci, the Transparent Testa Glabra2 (TTG2) locus and the Glabra2 (GL2) locus, and explored the regulation of plant pigment pathways
- Isolated and identified mutants and genes in pigments such as trichome, testa, and anthocyanin

## PUBLICATIONS & PRESENTATIONS

- Smith, A. A., Brian, C. H., Ichthys, H.S., **Research, R.**, Larry, J.C. (2020). Transparent Testa Glabra2 (TTG2) locus and the Glabra2 (GL2) locus. *Biochemical Journal*, 400(2), 213-218. <http://dx.doi.org/12.456/123456>
- Poster Presentation, "Transparent Testa Glabra2 (TTG2) locus and the Glabra2 (GL2) locus," UT Undergraduate Research Forum, Spring 2019

## SKILLS

**Molecular Biology:** PCR, DNA extraction, RNA extraction, reverse transcription, gel electrophoresis, northern blot, western blot yeast transformation, primer design

**Organic Chemistry:** DSC, FTIR, XRPD, and HPLC

**Language:** Spanish (Native)

## COMMUNITY INVOLVEMENT

**Big Fish Club**, Austin, TX

August 2017 - Present

*Volunteer*

- Mentor East Austin children through games, songs, and meals at weekly gatherings
- Assist in cooking weekly meals for over 30 children and 10 volunteers and teach a craft during monthly Big Fish Art Day to connect with children in disadvantaged neighborhoods