



**Wound Healing
Foundation**
Funding Research for Tomorrow's Innovations



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Project Title: Novel Approach to Diagnostics: Identifying Distinctive Biomarkers of Pyoderma Gangrenosum
Year Awarded: 2024
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What do you hope to/did you learn through this research?

Our goal is to elucidate the molecular pathways responsible for PG pathogenesis and utilize this new knowledge for developing targeted diagnostic and therapeutic approaches. This project will uncover the intricate cellular makeup and crosstalk between key players, keratinocytes, fibroblasts and immune cells and assess cellular mechanisms contributing to PG pathology. The data and knowledge gained from this project will be invaluable to the field as it will not only identify and explore the feasibility of using specific targets as diagnostic biomarkers of PG, but also uncover druggable targets for new therapeutic approaches

How can this research help patients, clinicians and/or scientists?

For patients, this research offers hope for improved diagnosis and treatment outcomes. PG is notorious for being misdiagnosed, leading to prolonged suffering and even unnecessary amputations. By delving into the molecular mechanisms underlying PG, researchers can identify biomarkers that distinguish it from other similar conditions, such as venous stasis ulcers. This could lead to quicker and more accurate diagnoses, sparing patients from unnecessary procedures and accelerating their access to appropriate

treatments. Additionally, understanding the pathogenesis of PG can pave the way for the development of more targeted and effective therapies, potentially reducing the time it takes for ulcers to heal. Clinicians stand to benefit from this research by gaining a deeper understanding of PG and its underlying mechanisms. Currently, diagnosis relies heavily on exclusion criteria and specific scoring systems, which can be imprecise and time-consuming. By uncovering the dysregulation of both innate and adaptive immune systems in PG, clinicians may be able to refine diagnostic criteria and develop more tailored treatment approaches. Moreover, by shifting the focus to include epidermal keratinocytes and dermal fibroblasts in PG studies, clinicians can gain insights into previously overlooked aspects of the condition's pathophysiology, potentially leading to novel therapeutic targets. From a scientific perspective, research on PG fills crucial gaps in our understanding of skin wound healing and immune dysregulation. By elucidating the intricate interplay between immune cells, keratinocytes, and fibroblasts in PG pathogenesis, scientists can uncover fundamental principles of wound healing that extend beyond this specific condition. This knowledge could have broader implications for the treatment of various dermatological disorders and inflammatory conditions. In summary, research into PG holds promise for transforming the lives of patients by improving diagnostic accuracy, accelerating treatment timelines, and reducing unnecessary suffering. Clinicians stand to benefit from enhanced diagnostic and therapeutic strategies, while scientists can uncover novel insights into wound healing and immune dysregulation with potential applications beyond PG.

How did you get interested in wound healing and this area in particular?

I received my PhD in Cancer biology. After my PhD, in my last two years of medical school I rotated through the Wound Department in a dermatology elective rotation. I was fascinated by the parallels between wounding disease and cancer biology. I began research with my mentor Dr. Marjana Tomic and fell in love with the field, it was reinvigorating to study a disease from the standpoint of regeneration/healing rather than trying to eliminate cells which was the focus of cancer biology. I also have deep respect for patients with wounding diseases, especially pyoderma gangrenosum and hidradenitis suppurativa which many people do not know about, and rigorous research is just beginning to focus on.

What are your future plans for your work in wound healing?

I hope to become a research physician at an academic center, where I split my time between patients and lab. Interacting and treating patients drives my passion and sparks my curiosity to study wounding diseases in a lens that is patient focused and with an end goal of translatability to therapeutics.

Who do you consider your mentors and your close associates in this project? How did you start working with them?

Dr. Marjana Tomic has been my inspiration. Her curiosity, drive, and tenacity have inspired me to grow as a physician scientist in the wonderful world of Wound Healing.

Tell us about your life away from the lab and/or clinic?

I live in Miami Beach, Florida and love the beach lifestyle which allows me to decompress, go to the actual beach, which is therapeutic, and take advantage of the wonderful weather of South Florida.

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