

Year: 2024

Type of Awards (Young/Elite/Clinical) Young

Name of Principal Investigator: Renglei Gan (甘初蕾)

Affiliated Institution: School of Stomatology, Nanchang University, China

About of the PI

- Introduction & Education:

Overview of your academic background and research focus, highlighting milestones of your journey as a researcher.

The experience of obtaining a Master's degree in Orthodontics has enabled me to undergo clinical skill training and cultivate a research-oriented mindset. Therefore, I have chosen to research antimicrobial materials, which may potentially be utilized as surface coatings for other medical supplies in the future.



- Career Trajectory:

Pivotal moments in your career, including positions held, significant projects, and notable achievements.

I am currently a PhD student, and for the project I am researching, the most critical moment was undoubtedly receiving this grant. It is a tremendous recognition and encouragement for both me and my team.

- Research Contributions, Impact & Recognition:

Highlight major findings and contributions to your field, emphasizing the impact of your research.

I mainly engage in research on antimicrobial coatings for dental materials surfaces. I have demonstrated that GL13K self-assembled coatings on titanium surfaces can effectively reduce bacterial biofilm formation and exhibit bactericidal effects. In the future, I will work on improving the performance of this coating with the hope of its practical application in treatment.

- Personal Insights:

Offer insights into your personal interests, values, and motivations as a researcher, sharing anecdotes that have influenced your perspective.

I find research in dental materials to be very intriguing. It's like cooking, designing recipes, adding ingredients, and then waiting for the results just like anticipating a delicious meal.

- Future Directions:

Outline your envisioned research directions and aspirations, detailing how you plan to continue advancing knowledge and addressing emerging challenges in your field.

Maybe I will hold the roles of a leadership in my field, potentially serving as professors in educational institutions, helping shape the future of orthodontic professionals.

My career goals for orthodontists is to make meaningful contributions to the field of orthodontics, including translating research findings, improving the quality of life for patients, and advancing the industry.

Long-term research career goals involve continuously improving orthodontic treatment methods and enhancing treatment outcomes through in-depth research and innovation. I aim for academic achievements, including publishing high-quality research papers, participating in international conferences, earning academic awards and honors, and enhancing their industry reputation.

Brief Summary of the Project:

This study endeavors to fabricate titanium-based mini-implants featuring surface modification with GL13K peptide (Ti-N3-tk-GL13K), designed to be responsive to reactive oxygen species (ROS) and to enhance the antimicrobial and anti-inflammatory efficacy of the mini-implants. The primary objective is to achieve a controlled and precise release of antimicrobial peptides, simultaneously mitigating excessive ROS, maintaining the stability of the local microenvironment, and fostering new bone formation. The research will encompass physicochemical characterization and mechanical performance evaluation of the multifunctional coated mini-implants (Ti-N3-tk-GL13K), assess the intelligent and precise release of GL13K, and investigate the in vitro antimicrobial and osteogenesis-promoting properties, with a specific focus on biosafety performance.