Year: 2023 **Type of Awards (Young)**

Name of Principal Investigator: Mingyuan Du Affiliated Institution: Wuhan university

About of the PI

- Introduction & Education:

2016.09-2019.06 wuhan university PhD
2014.09-2016.06 wuhan university Master

- Career Trajectory:

2019.12-Now Hospital of stomatology of wuhan university Doctor-in-Charge
2019.09-2019.11 Hospital of stomatology of wuhan university Doctor

- Research Contributions, Impact & Recognition:

2021.01-2023.12 Hosted a project funded by National Natural Science Foundation of China
Published articles on *Journal of Periodontal Research*, *Oral Diseases*, *Inflammation, Biochim Biophys Acta Mol Cell Res.*

- Personal Insights:

Interested in the biological mechanism of orthodontic tooth movement, and engaged in the mechanism of orthodontic-induced inflammatory root resorption; Passionate about exploring clinical issues in orthodontics from the perspectives of cell biology, molecular biology and immunology.

- Future Directions:

In future research work, research on the biological mechanisms of orthodontic tooth movement will be studied in depth. Cell mechanics and Mechanobiology will be focused in my study in biological mechanisms of orthodontic tooth movement.

Brief Summary of the Project:

Root resorption is a common iatrogenic complication of orthodontic treatment. Cementum, a bone-like mineralized tissue covering the root surface, plays a vital role in protecting the root. Regeneration of cementum is advantageous for the repair of root resorption, and cementoblasts are functional cells responsible for cementum formation. In recent years, circRNAs, a novel class of non-coding RNA, have been extensively reported to participate in various physiological and pathological processes, demonstrating great potential for clinical application. Based on previous experiments, this project intends to examine the effect of circHIPK3 on the differentiation and mineralization of cementoblasts in an inflammatory environment, to elucidate the molecular mechanism by which circHIPK3 regulates DOHH to participate in the differentiation of cementoblasts and to assess the effect of circHIPK3 on root resorption in an animal model for experimental orthodontic tooth movement. By pursuing these studies, we aim to gain a more comprehensive understanding of the role of circRNAs in cementum metabolism and provide a novel treatment strategy for root resorption in orthodontic treatment.