CDB SEMINAR

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Purdue University, USA

Wednesday, June 8, 2016

16:00-17:30 Seminar Room A7F

Dissecting the Regulatory Circuitry of microRNAs in Neutrophils

Summary

Neutrophilic inflammation drives the immunopathology involved in numerous human diseases, including those directly involving an immune component such as rheumatic arthritis and those that are not obviously linked such as diabetes, neurodegenerative disease and cancer. Recent evidences suggest that neutrophils are long-lived cells that initiate, disseminate and critically regulate the magnitude of the inflammation and that bridge innate and adaptive immunities in both sterile inflammation and infection. MicroRNAs are evolutionarily conserved, small non-coding RNAs that post-transcriptionally regulate protein synthesis. MicroRNAs and anti-microRNAs have recently become strategies for treating human diseases, and MRX34, a mir-34 mimic, has successfully entered cancer clinical trials. As of April 2016, 2588 human mature microRNAs have been identified, which are implicated in a wide variety of cellular processes and human diseases. A list of microRNAs has been identified by cloning and microarray in human neutrophils. However, with the exception of mir-223 and mir-142, the contributions of microRNAs in neutrophil migration as individuals or as a group have not been addressed. The absence of such knowledge creates a missed opportunity to harness microRNAs as tools in the prevention and treatment of inflammatory conditions. The Deng lab uses zebrafish as a model to identify and characterize microRNAs that regulate neutrophil migration in vivo. To date, we have identified 10 microRNAs that regulate neutrophil motility or mobilization out of the hematopoietic tissue, opening both new research and therapeutic horizons.

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