CaMKK2 as target for Hematopoietic Stem Cell regeneration

Unmet Need

Stem cell research and medicine in recent years has yielded various therapies for the treatment of numerous diseases. Hematopoietic stem and progenitor cells (HSPC) are found in both the bone marrow and blood and are responsible for the formation of mature red and white cells. During tissue injury, such as radiation exposure, HSPCs are known to be localized to the site of damage to promote regeneration. However, extrinsic factors often negatively regulate HSPCs into premature death causing decreased tissue regeneration. There is an unmet need to increase our understanding of these negative-regulative mechanisms against HSPCs to increase their efficiency during injury. Currently, HSPCs are being used to treat blood-related diseases such as leukemia and sickle cell disease. Identifying what mechanisms could be reducing HSPC efficacy in these therapies could provide novel targets to increase HSPC efficiency to regenerative various tissue injuries.

Technology

Dr. Racioppi and colleagues have identified a novel kinase target in HSPCs that could increase their survival and regenerative potential. This is intended to be used a new therapeutic strategy for treating tissue injury. Compared to a control, animals deficient in CaMKK2 showed increased regeneration after injury. Furthermore, Dr. Racioppi and colleagues showed that using a kinase-specific small molecule inhibitor in animal models after injury had increased survival and hematopoietic induced regeneration.

Advantages

- A first-in-class approach to promoting hematopoietic recovery after bone marrow injury
- Enhanced recovery with CaMKK2 small molecule

inhibitor demonstrated in mouse models

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Patent Information

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Publication(s)

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External Link(s)

• From the lab of Dr. Luigi Racioppi