Tentative Outline

Special/Thematic Issue for the journal: "New Emirates Medical Journal (NEMJ)"

Title of the Thematic Issue:

CRISPR Mediated Genome Editing as an Adjunct to CAR T Cell Therapy

Guest Editor: Dr. Sami El Khatib (Associate Professor)

Scope of the Thematic Issue:

CRISPR-edited CAR-T cells are on their way to become a safe and effective cancer therapy while CAR-T products are getting closer to clinical testing. Many studies engaging various approaches and strategies are being published in this fast developing area.

Despite the fact that CAR T cells have showed a great potential in handling B cell malignancies, they are facing more challenges to target other blood cancers and solid tumors. The immunosuppressive tumor microenvironment is one of the barriers limiting the use of the CAR-T cells modality to eradicate solid tumors. CRISPR technology of gene editing has been used in a clinical trial to improve CAR-T cells' tumor-killing capabilities by suppressing the genetic activity of the genes involved in tumor cells development. This genetic alteration permits CAR-T cells to survive and attack tumor cells for an extended period.

Moreover, CRISPR-Cas9 may also be used to damage PD-1, a receptor that binds the ligand PD-L1 and inhibits T cell activity. CRISPR knocks out or down-regulates the expression of PD-1 on the surface of CAR-T cells, resulting in a higher response to PD-L1-expressing cancer cells, which improves the tumor-killing activity, and prevents cancer relapse.

CRISPR-based whole-genome screenings could also help improving the efficacy of CAR-T cell treatments. CAR-T cells had previously revealed a limited efficacy against glioblastoma, but a research published in 2021 employed whole-genome CRISPR screenings of both CAR-T cells and patient-derived glioblastoma stem cells to find genetic markers that define CAR-T cells' killing capabilities. These findings will support CAR-T cell potential to eradicate these "resilient" cancer cells.

The proposed issue will deals with the different themes related to the molecular basics, immunological pathways, and preclinical and clinical trials of the CRISPR and CAR-T cells. Authors will be invited to contribute by submitting their manuscripts on the subject for publication in a Special Issue of the New Emirates Medical Journal.

Keywords: effective cancer therapy, B cell malignancies, gene editing, tumor cells, CRISPR, glioblastoma stem cells, cancer relapse.

Sub-topics:

The sub-topics to be covered within the issue should be provided:

- The rationale behind the intervention of CRISPR technology with CAR-T cell therapy
- CRISPR-mediated CAR T cell enhancement in oncological practices
- CRISPR-mediated CAR T cell therapy in hematological disorders
- Generation of universal CAR T cell strain using CRISPR technology
- Impact of CRISPR mediated genome editing in CAR T cell therapy of solid tumors
- Place of CRISPR mediated genome editing in CAR T cell therapy of autoimmune disorders
- Safety Profile of CRISPR mediated CAR T cell therapy

Schedule:

✧ Thematic issue submission deadline:

Project's Phase	Thematic Description	Tentative Deadline
Phase I	Submission of the Thematic Issue Requirements to the NEMJ Editorial Office	01-07-2022
Phase II	Final Approval of the Thematic Issue by the NEMJ Editorial Office	15-07-2022
Phase III	Online Launching of the Thematic Issue Design on NEMJ Website	01-08-2022
Phase IV	Mailing the "Call for Submission" to the Target Authors	15-08-2022
Phase V	Feedback to the Responding Authors on Proposed Topics	15-09-2022
Phase VI	Collection of Submitted Manuscripts by Potential Authors	30-10-2022
Phase VII	Sending the Received Manuscripts to Start the Peer Review Process	30-11-2022
Phase VIII	Acceptance and/or Potential Revisions of Accepted Manuscripts	31-12-2022
Phase IX	Final Decision by NEMJ Editorial Board	15-01-2023
Phase X	Online Publication of Accepted Manuscripts	31-01-2023

Contacts:

Guest Editor Name: Sami El Khatib (Associate Professor)

Affiliation:

Lebanese International University

Department of Biomedical Sciences

Bekaa Campus

Khiyara – West Bekaa

Lebanon

Email: sami.khatib@liu.edu.lb