



Name

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Stem Cell Research and Application in Treating Cancer

Treating different types of cancer is a challenging process which requires continuous research and innovation to identify new courses of action which may be useful in supporting patient needs and improving quality of life. These tools require an effective understanding of critical challenges which impact patients and which lead to critical developments in new types of therapies. Stem cell research has been instrumental in advancing different types of cancer research and provides opportunities for patients to obtain treatments which can save and extend their lives. These actions require an understanding of some of the most critical opportunities associated with stem cell research and how these therapies have been useful in treating cancer in patients and providing them with the necessary resources for survival and growth. In this capacity, it is important to examine some of these breakthroughs and to explore the options that are available which impact patient health and wellbeing in positive ways to support the availability of different types of cancer treatments which will lead to effective outcomes for many patients across different population groups.

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Butof, Dubrovskaya, & Baumann (2013) address the significance of cancer stem cells (CSC) because these cells can engage in self-renewal and continue to proliferate within a tumor to minimize the impact of different therapeutic interventions. This poses a serious problem for patients and limits their ability to fight different forms of cancer; therefore, additional treatment methods are required to ensure that cancers can be minimized and treated as best as possible. With the use of radiotherapy and an examination of key factors related to radiobiology, it is evident that many patients may respond to various forms of therapy under specific conditions if they have the necessary treatments which can eradicate CSCs and minimize the resistance of

tumors to treatment. (Butof et al., 2013). The primary objective of radiotherapy in these examples is to inactivate CSCs and to minimize tumor growth in the process, thereby creating an environment in which patients can obtain the best possible forms of treatment and have a greater chance of survival due to these treatment mechanisms (Butof et al., 2013). However, it is necessary to conduct preclinical evaluations to determine if radiotherapy can be effective in some patients, based upon the results of tumor control assays to determine how to best proceed with the most practical treatment method (Butof et al., 2013).

Cancer stem cells require further examination to determine how to best treat different types of cancers effectively and to ensure that all possible options are explored which indicate that treatments could be effective in minimizing tumors in some patients (Dick, 2009). In this context, a comprehensive understanding of tumor composition is essential to this process and supports a greater understanding of their possible “morphologic heterogeneity,” thereby indicating that some patients will not respond effectively to one type of treatment because a patient’s tumor type does not fit the profile for a specific type of treatment (Dick, 2009). This is highly problematic because they can limit the overall effectiveness of different treatment options and require additional research to identify the appropriate means of treatment going forward (Dick, 2009). The use of different murine models of cancer are necessary to determine treatment options and how to overcome the rejection of specific types of treatment which are based upon these models (Dick, 2009). Furthermore, it is necessary to evaluate some of these models relative to their impact on human beings as patients because some cancer stem cells have developed a strong resistance to radiotherapy and other types of therapies, thereby requiring other treatment options to support greater survival rates (Dick, 2009). These factors are critical to the success of any type of treatment method which may emerge in future research studies and require an

examination of key factors which may be effective in determining how to overcome treatment resistance or develop new therapies for future studies (Dick, 2009). Patients rely on the continuation of research methods to explore the use of stem cells to improve treatment options, and these projects must continue to have a greater understanding of key factors which influence outcomes for patients with different types of cancers; therefore, additional funding and guidance are necessary to develop new discoveries and to accomplish treatment goals effectively for these patients.

Conclusion

To evaluate a patient's options for the treatment of different forms of cancer, it is necessary to evaluate the use of stem cell therapies in this process and how they impact decision-making for patients and clinical teams. It is important for patients to obtain the best possible knowledge and resources to accomplish their treatment goals and to be mindful of the risk factors that are likely to occur with any type of cancer, as well as the prognosis and the likelihood that treatment methods will be successful. This process is essential to the discovery of new forms of treatment which may involve the use of stem cells; therefore, expanding research regarding stem cells is of critical importance and provides a framework for understanding how to best address the challenges related to different types of cancers. Research must include a variety of models to better understand cancers and how they impact human health and wellbeing; furthermore, it must demonstrate the importance of expanding knowledge and resources to determine how different types of treatments may be effective in treating patients and reducing or eradicating different types of tumors in some cases.

References

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