31_CONCORSO PUBBLICO, PER TITOLI ED ESAMI, PER LA COPERTURA A TEMPO DETERMINATO, DELLA DURATA DI CINQUE ANNI, SECONDO LA NORMATIVA CONCORSUALE, AI SENSI DEL D.P.C.M. DEL 21 APRILE 2021, PER N. 1 POSTO DI RICERCATORE SANITARIO, CAT. D, LIVELLO D SUPER DA ASSEGNARE ALLA DIREZIONE SCIENTIFICA

PROVA 1

1. Sviluppo di un prodotto medicinale per terapia cellulare: dalla ricerca di base al trattamento dei pazienti

2. Con il termine "Data base" si intende:
   a) un linguaggio di programmazione
   b) una collezione di dati, inerenti una specifica attività, opportunamente strutturati e accessibili tramite un software di gestione
   c) un insieme di dati distribuiti sulla rete e accessibili solo tramite un browser

3. Leggere e tradurre il seguente testo

Glioblastoma (GBM) is the most common primary brain tumor, yet prognosis remains dismal with current treatment. Immunotherapeutic strategies have had limited effectiveness to date in GBM, but recent advances hold promise. One such immunotherapeutic advance is chimeric antigen receptor (CAR) T cell therapy, where autologous T cells are extracted and engineered to express a specific receptor against a GBM antigen and are then infused back into the patient. There have been numerous preclinical studies showing promising results, and several of these CAR T cell therapies are being tested in clinical trials for GBM and other brain cancers. While results in tumors such as lymphomas and diffuse intrinsic pontine gliomas have been encouraging, early results in GBM have not shown clinical benefit. Potential reasons for this are the limited number of specific antigens in GBM, their heterogenous expression, and their loss after initiating antigen-specific therapy due to immunoediting. Here, we review the current preclinical and clinical experiences with CAR T cell therapy in GBM and potential strategies to develop more effective CAR T cells for this indication.

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PROVA 2

1. Sviluppo di un prodotto medicinale per terapia genica: dalla ricerca di base al trattamento dei pazienti

2. Se in Windows apriamo il programma "Paint" abbiamo intenzione di:
   a) effettuare calcoli
   b) inviare messaggi
   c) disegnare

3. Leggere e tradurre il seguente testo

Cancer immunotherapy is experiencing a renaissance spearheaded by immune checkpoint inhibitors (ICIs). This has spurred interest in 'upgrading' existing immunotherapies that previously experienced only sporadic success, such as dendritic cells (DCs) vaccines. In this review, we discuss the major molecular, immunological, and clinical determinants of existing first- and second-generation DC vaccines. We also outline the future trends for next-generation DC vaccines and describe their major hallmarks and prerequisites necessary for high anticancer efficacy. In addition, using existing data we compare DC vaccines with ICIs targeting CTLA4, PD1, and PD-L1, and argue that in various contexts next-generation DC vaccines are ready to meet some challenges currently confronting ICIs, thereby raising the need to integrate DC vaccines in future combinatorial immunotherapy regimens.

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PROVA 3

1. Produzione e controlli di qualità per prodotti medicinali per terapie avanzate

2. A cosa serve il programma Microsoft Excel?
   a) a realizzare fogli elettronici per analisi di dati
   b) a realizzare presentazioni
   c) a gestire spooler di stampa

3. Leggere e tradurre il seguente testo

The treatment of glioblastoma (GBM) faces significant challenges due to the difficulty of delivering drugs through the blood-brain barrier (BBB). Extracellular vesicles (EVs) have emerged as potential carriers for targeted drug delivery to brain tumors. However, their use and distribution in the presence of an intact BBB and their ability to target GBM tissue are still under investigation. This study explored the use of EVs for GBM targeting across the BBB. Canine plasma EVs from healthy dogs and dogs with glioma were isolated, characterized, and loaded with diagnostic agents. Biodistribution studies were conducted in healthy murine models and a novel intranasal model that preserved BBB integrity while initiating early-stage GBM growth. This model assessed EVs' potential for delivering the contrast agent gadoteric acid to intracranial tumors. Imaging techniques, such as bioluminescence and MRI, confirmed EVs' targeting and delivery capabilities thus revealing a selective accumulation of canine glioma-derived EVs in brain tissue under physiological conditions. In the model of brain tumor, MRI experiments demonstrated the ability of EVs to accumulate gadoteric acid within GBM to enhance contrast of the tumoral mass, even when BBB integrity is maintained. This study underscores the potential of EVs derived from glioma for the targeted delivery of drugs to glioblastoma. EVs from dogs with glioma showed capacity to traverse the BBB and selectively accumulate within the brain tumor. Overall, this research represents a foundation for the application of autologous EVs to precision glioblastoma treatment, addressing the challenge of BBB penetration and targeting specificity in brain cancer therapy.