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Dr. Yunching Chen has received her Ph.D. degree in Pharmaceutical Sciences at the University of North Carolina at Chapel Hill in May 2010. She completed her doctoral thesis under the supervision of Dr. Leaf Huang and developed various novel nanoparticle formulations to deliver RNA therapeutics and chemotherapy drugs for cancer therapy. She later worked with Drs. Rakesh Jain and Dan Duda as a research fellow of Radiation Oncology at Harvard Medical School and Massachusetts General Hospital. She found the tumor stroma plays an important role in immunosuppression, drug resistance, and cancer cell survival and metastasis (*Hepatology*, 2014; *PNAS*, 2014). Dr. Chen joined the faculty of National Tsing Hua University as a tenure-track Assistant Professor in 2013. She rose through the ranks to Associate Professor in 2016. Her work provides a molecular understanding for effective combination therapeutic approaches and develops various nanoscale drug and gene delivery systems for the treatment of cancer and liver fibrosis. Her work has been recognized by her publications in outstanding journals including *Advanced Drug Delivery Reviews*, 2014; *Hepatology*, 2015; *Nature Protocols*, 2015; *Biomaterials*, 2015; *Journal of Controlled Release*, 2015; *Hepatology*, 2018; *Theranostics* 2018; *Nature Nanotechnology* 2019; *Science Advances* 2020. She has published 34 journal papers with nearly 3600 citations and an h-index of 22.

Topic: Multifunctional Nanocarriers for Efficient Cancer Immunotherapy

Gene therapy using siRNAs against oncogenes or plasmid DNAs (pDNAs) encoding tumor suppressor genes may serve as a potentially promising approach to treat cancer. However, systemic gene therapy is hampered by the barriers for therapeutic siRNA/pDNA to reach the target cells and to exert enhanced therapeutic activity. To this end, effective gene therapy relies on suitable gene carriers that can protect siRNA/pDNA against enzymatic degradation in the blood circulation, enhance cellular uptake in tumor cells and facilitate the intracellular release of siRNA/pDNA and nuclear entry of pDNA. We developed various tumor-targeted nanoparticle (NP) formulations to deliver therapeutic pDNAs and siRNAs into hepatocellular carcinoma (HCC). The genetic cargoes were encapsulated in a pH stimuli-responsive calcium phosphate (CaP) core, and cationic polymers were added to facilitate nuclear delivery of pDNA. Therapeutic pDNAs and siRNAs co-delivered by HCC-targeted NPs in combination with the conventional chemotherapy or immunotherapy attenuated HCC progression. Overall, our study presents effective cancer gene therapy approaches that could be developed for clinical applications.

