Design a Complete RNAi System for Liver Cancer Treatment

On May 24th, Hongyu Wang interviewed Dr. Guoping Zhou, the chief physician of oncology Jiangsu Provincial Cancer Hospital. The interview covered the incidence, diagnostic and treatment of liver cancer.

Based on this interview and some literature research, we learned that patients with early-stage liver cancer are generally asymptomatic. Those diagnosed outside surveillance usually present at advanced stages and have already missed possible timely treatment. Clinical practice usually adopts chemotherapy or resection. However, recurrence within 5 years after those is up to 70%. Surgery prognosis requires drug-assisted treatment; advanced treatment also depends on systemic drugs, which keeps the demand for liver cancer drugs constantly at a very high level.

Liver cancer drugs are critical for the maintenance of patients' life quality. Because of the presence of primary drug resistance genes among patients, liver cancer are not so sensitive to these chemotherapy, so most of the drugs are poorly targeted and have undesirable side effects. Moreover, most liver cancer patients have impaired drug metabolizing capacity due to damaged liver function, which further aggravates the adverse effects of chemotherapy. Therefore, liver cancer patients need more effective targeted drugs.

Currently, Sorafenib is the only targeted drug among the first-line medicines recommended for advanced liver cancer, but some clinical data point out that it is not very effective. Meanwhile, Sorafenib presents unendurable side-effects.

At last, we came to the conclusion that we should apply our RNAi strategy to liver cancer. Among the many cancer targets, we chose MAP4K4. MAP4K4 is involved in a wide range of physiological processes, including cell migration, proliferation and adhesion. Its activity implicates the development of systemic inflammation, metabolic disorders, cardiovascular disease and cancer. This molecule is highly expressed in a variety of tumor cells and especially proves to be an independent predictor of poor prognosis in patients with HCC. Liu *et al.* and others all confirm the general therapeutic feasibility of inhibiting MAP4K4 in cancer and especially in HCC.