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Targeted cancer treatment using anti-EGFR and -TFR antibody conjugated gold nanoparticles stimulated by non-thermal air plasma¹ SANG RYE PARK, SEOUL HEE NAM, JEONG HAE CHOI, GYOO CHEON KIM, Department of Oral Anatomy, School of Dentistry, Pusan National University, GON JUN KIM, JAE KOO LEE, Department of Electronic and Electrical Engineering, Pohang University of Science and Technology, GYOO CHEON KIM TEAM, JAE KOO LEE TEAM — Non-thermal air plasma killed SCC25 oral cancer cells targeted by antibody conjugated gold nanoparticles. Although plasma alone is effective in killing cancerous cells, it also affects normal cells during the treatment process. For enhanced effects, gold nanoparticles and cancer specific antibodies were pretreated before plasma treatment. Gold nanoparticles taken up by the cancerous cells are stimulated by the plasma treatment. The selectivity of killing process is achieved by conjugating gold nanoparticles with anti-epidermal growth factor receptor (EGFR) and -transferrin receptor (TFR) antibodies. These conjugates can bind specifically to cancer cells. This technique shows the possibility of using plasma therapy for killing cancer cells selectively and effectively.

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