Abstract Submitted for the GEC14 Meeting of The American Physical Society

Treatment of prostate cancer cell lines and primary cells using low temperature plasma DEBORAH O'CONNELL, ADAM HIRST, York Plasma Institute, Department of Physics, University of York, UK, FIONA F. FRAME, NORMAN J. MAITLAND, YCR Cancer Research Unit, Department of Biology, University of York, UK — The mechanisms of cell death after plasma treatment of both benign and cancerous prostate epithelial cells are investigated. Prostate cancer tissue was obtained with patient consent from targeted needle core biopsies following radical prostatectomy. Primary cells were cultured from cancer tissue and plated onto a chamber slide at a density of 10,000 cells per well in 200 microliter of stem cell media (SCM). The treated sample was previously identified as Gleason grade 7 cancer through tissue histo-pathology. A dielectric barrier discharge (DBD) jet configuration, with helium as a carrier gas, and 0.3% O2 admixture was used for treating the cells. Reactive oxygen and nitrogen species (RONS) produced by the plasma are believed to be the main mediators of the plasma-cell interaction and response. We found the concentration of reactive oxygen species (ROS) induced inside the cells increased with plasma exposure. Exposure to the plasma for >3minutes showed high levels of DNA damage compared to untreated and hydrogen peroxide controls. Cell viability and cellular recovery are also investigated and will be presented. All findings were common to both cell lines, suggesting the potential of LTP therapy for both benign and malignant disease.

> Deborah O'Connell York Plasma Institute, Department of Physics, University of York, UK

Date submitted: 13 Jun 2014

Electronic form version 1.4