

**Read all about it...** It can be awkward when a patient asks you about a report in their favourite tabloid detailing an amazing research breakthrough or a 'cutting-edge' new treatment / test and you don't know what they are talking about! So this section fills you in on the facts.

## New drug 'helps healthy cells kill prostate cancer'

The Daily Mail – 30 April 2015

This story reports on a piece of research due for publication in Nature journal. The general message in this newspaper article seems slightly confused though, opening with the line; "Prostate cancer resistant to conventional treatment could be all but wiped out by a therapy that boosts the immune system". Regular readers of this section of Urology News will know that a lot of key prostate cancer research at the moment is examining the immune system and its inadvertent assistance with cancer progression. This research specifically examines the role of B lymphocytes / B-cells. The research team at The University of San Diego has previously shown that B-cells recruited into prostate cancer tumours release lymphotoxin which activates IKB kinase  $\alpha$ , which in turn accelerates the emergence of castrate-resistant tumours. In this latest piece of research, the team examines the role of B-cells in the effectiveness of oxaliplatin chemotherapy. Three different mouse cancer models were treated with oxaliplatin with no effect unless they were first depleted of B-cells. This B-cell depletion was achieved through a combination of genetic manipulation of the cell lines and pharmaceuticals. The crux of this is that additional treatments to modulate the immune system may, in the future, allow chemotherapy to be more effective in advanced prostate cancer. Clearly, no 'boosting' of the immune system is taking place and the 'new drug' advertised in the headline does not exist. This work is more a 'proof of concept' for the role of immunomodulation in cancer treatment and it certainly is an excellent concept.

## Hope for prostate cancer patients as scientists discover breast cancer drug can also prolong the lives of men.

The Daily Mail – 21 April 2015

This news story relates to a press release concerning the upcoming publication of results of a phase II clinical trial in Cancer Discovery journal. This phase II trial has been running at The Royal Marsden and concerns treatment of BRCA2 cancers with PARP inhibitors.

BRCA2 is a tumour suppressor gene and a resulting protein (for which the gene codes). Originally, this gene was identified to be mutated in some early onset breast cancers (hence the name – BReast Cancer), but it is now clear than BRCA mutations (and the resulting absence of the DNA-repairing BRCA proteins) allow dangerous accumulation of DNA damage in cells and can lead to leukaemia and others cancers such as prostate adenocarcinoma. PARP inhibitors block the action of the enzyme PARP (poly-ADP ribose polymerase). PARP is another DNA repair mechanism. At the risk of grossly oversimplifying things, adding another reason for DNA repair to fail on top of the presence of a BRCA mutation leads to a state where there is so much DNA damage that the cancer cell 'self-destructs' and undergoes apoptosis.

The phase II study investigated the effect of a PARP inhibitor on 50 men with advanced, castrate-resistant prostate cancer. 32.7% of the men responded to the one month of PARP inhibitor treatment, as evidenced by radiological improvement or prostate specific antigen (PSA) falling by 50% or more. It was identified from analysis of biopsies that all the men with BRCA2 mutations responded to the PARP inhibitor. This is clearly very early data from an ongoing trial, but does highlight that we are slowly moving towards a world where biopsies are done not just for diagnosis, but also for genetic and molecular analysis of tumours to identify the best treatments.

## Dogs trained to detect prostate cancer with more than 90% accuracy

The Guardian – 11 April 2015

It is probably one of the most commonly asked questions after you offer a patient a prostate biopsy or indeed a repeat biopsy; "Isn't there some other way of finding out?" The Guardian reported on a piece of research in early April from a team in Italy, published in The Journal of Urology. The research team had two German Shepherd dogs (trained in detection of explosives) sniff urine samples from 362 patients with prostate cancer and 540 controls. After a period of training, 'Dog 1' had a 100% sensitivity and 98.7% specificity in correctly identifying urine from men with confirmed prostate cancer. 'Dog 2' achieved 98.6% sensitivity and 97.6% specificity. The Guardian sought opinion from a charity which supports the use of 'detection dogs' in medicine, whose comments have been quoted in the newspaper article to suggest that the NHS's use of conventional tests are "a huge waste of resources". Personally, I suppose I can vaguely imagine dogs being brought around to clinics in the same way a mobile lithotripter is, but I simply cannot imagine giving someone terrible, life-changing news on the say-so of a German Shepherd. The real news here is that there is clearly some detectable compound or molecule escaping from the urine of men with prostate cancer and research and resources need to be applied to finding whatever it is the dogs are able to smell.



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