Cells of the immune system can both kill and nurture newly born cancer cells, but how do they find and interact with pre-cancer cells in the first place? And how do they help to make cancers spread?

Paul Martin, Professor of Cell Biology, works with various early cancer models in translucent zebrafish larvae. By direct visualisation of the interaction of the larval immune system with (pre-)cancer cells, his group have identified some of the first signals that attract immune or inflammatory cells to early cancer cells. The immune cells can engulf and kill pre-cancer cells; however, if the pre-cancer cells do not interact with immune cells, they grow at a much slower rate, suggesting that the immune cells can deliver growth signals as well. In zebrafish larvae this growth promotion also happens after simulated surgery, with inflammatory cells tasked with wound healing actually supporting cancer cell growth; which, if true for humans, would have implications for the surgical excision of cancers.

This observation supports recent studies that have shown how low-dose aspirin, an anti-inflammatory drug which might block some of the cancer growth signals, can stave off the onset of bowel and other cancers. In collaboration with Dr Tom Creed at University Hospitals Bristol NHS Trust, he has also found evidence that could point to local inflammation being one of the drivers for the formation of polyps – the precursors of most bowel cancers. His team continues to investigate the cell biology of wound healing and its associated inflammatory response using fruit fly, zebrafish and mouse models, to gain further insights into immune:cancer interaction at the site of biopsies and surgery in cancer treatment.

www.bris.ac.uk/biochemistry/people/paul-b-martin/index.html


Zebrafish are invaluable in our cancer research because they are translucent, which means that it is possible to watch – live, in real-time – the interactions between cancer cells and immune cells.