‘Allosteric disulfides: Sophisticated molecular structures enabling flexible protein regulation’

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Bio:
Prof Philip Hogg is a NHMRC Senior Principle Research Fellow, heads the ACRF Centenary Cancer Research Centre and holds the Chair in Translational Cancer Research at the University of Sydney. He graduated with a PhD in biochemistry from the University of Queensland. His post-doctoral training was in the USA and Sweden followed by visiting fellowships at Children’s Hospital, Harvard University and the Dunn School of Pathology, University of Oxford.

Abstract:
The processes of life maintenance, replication, defence and reproduction are carried out by proteins. Most, if not all, proteins are chemically modified after they are made in order to control how, when, and where they function. It was thought that only the amino acid side chains and peptide bonds of proteins are chemically modified. Phil discovered that the disulphide bonds of proteins are also modified. His research has changed our understanding of disulphide bonds. They are no longer thought of as simply inert motifs in proteins, but rather dynamic bonds that can regulate a protein’s structure and function. He named these bonds ‘allosteric disulphides’ and has established them as a sophisticated means of controlling protein function across biological systems and lifeforms. The first efforts to target allosteric disulphides for the treatment of disease are being trialled in cancer patients.