

Disruptions on the highways of cellular signalling

By

Dario Alessi.

MRC Protein Phosphorylation and Ubiquitylation Unit, College of Life Sciences, University of Dundee, Dundee, UK DD1 5EH, UK.

I will present research that my laboratory undertakes that focuses on unraveling the roles of components that regulate protein phosphorylation or ubiquitylation pathways-whose importance in biology has been revealed from genetic analysis of human disease. I will discuss why this work has taken on added urgency, as it is now clear that many human diseases are caused by disruptions of these highways of communication. I will focus on our studies of poorly characterized components pathways that are mutated in human diseases such as Parkinson's disease (LRRK2), Cancer (SGK3) and hypertension (WNKs). I will present data that demonstrates how these pathways are organized to elicit physiological responses and how disruptions result in disease. I will also show examples of how our research findings has led to new ideas to better treat and diagnose human disease.