Profile of an Early-Career Researcher

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Alessio Ciulli is a Professor at the University of Dundee, whose research focuses on the understanding of protein-protein interactions, with particular emphasis on E3 ubiquitin ligases and chromatin reader domains. During his research career he has made significant contributions to our understanding and small-molecule targeting of the ubiquitin proteosome system (UPS). His research group is involved with fragment-based discovery approaches, medicinal chemistry optimization for probe compound development and proteolysis targeting chimera (PROTAC) technologies. The group's discoveries are rooted in creating greater understanding of fundamental biological systems and proteins with which their chemical ligands interact. New structural discoveries are advanced through medicinal chemistry, biophysical, computational, X-ray and NMR techniques and cellular studies. In particular, the lab's work on the von Hippel-Lindau E3 ligase complex ($CRL2^{VHL}$) has resulted in improved ligands for targeting VHL, application in PROTAC technologies and an understanding of the structural requirements for cooperative recognition and selective degradation of target proteins.

Prof. Ciulli graduated in Chemistry from the University of Florence in 2002. He was a Gates Cambridge Scholar during his PhD studies in Cambridge UK, under the supervision of Professor Chris Abell and in collaboration with Dr Glyn Williams' biophysics team at Astex Pharmaceuticals. After completing his PhD in 2006, Prof. Ciulli was awarded a College Research Fellowship to conduct research on biophysical fragment screening and fragment based drug discovery. The research was conducted within the framework of two international consortia funded by the Bill & Melinda Gates Foundation and the European Union FP6, jointly directed by Professor Abell and Professor Sir Tom Blundell. During this time Prof. Ciulli was awarded a Human Frontier Science Program (HFSP) Fellowship which enabled him to visit Yale University to start a collaboration with Professor Craig Crews laboratory on the design of small molecule ligands targeting VHL. Prof Ciulli returned to Cambridge UK to start his independent career in 2009 as a Fellow in the Department of Chemistry before moving to Dundee in 2013. He was promoted to Professor in 2016.

This issue of the Newsletter features a number of recent papers from the Ciulli group, including a fragment screen against the E2 conjugating enzyme Ube2T, the development of a potent and selective VHL inhibitor as chemical probe for the VHL E3 ligase, and a study of structural factors surrounding the efficacy of a BET targeting inducer of targeted protein degradation (PROTAC). Our last Newsletter (May 2017) included a recent article from the Ciulli group describing the structural basis for PROTAC cooperative binding. This article has been well received and widely covered by the scientific press.

The output and quality of research from the Ciulli group has greatly impacted the field and is increasingly recognized by the scientific community. As a result, Prof. Ciulli has been recently awarded the 2015 EFMC Prize for Young Medicinal Chemist in Academia, the 2015 ICBS Young Chemical Biologist Award, the 2016 RSC Capps Green Zomaya Award and is a Fellow of the Royal Society of Chemistry (FRSC, 2016). We are excited to highlight the excellent work of Professor Alessio Ciulli and his research group.