Alessio Ciulli

Alessio graduated in Chemistry (2002) from his hometown Florence under the late Ivano Bertini and obtained his PhD from the University of Cambridge (Chemistry, 2006), studying as a Gates Cambridge Scholar under the supervision of Chris Abell and in collaboration with Astex Pharmaceuticals. Following post-doctoral research on fragment-based drug design with Chris Abell and Tom Blundell, and an HFSP visiting Fellowship at Yale University to begin collaboration with Craig Crews (2009), he was awarded a BBSRC David Phillips Fellowship and returned to Cambridge to start his independent career in 2010. In 2013 Alessio was awarded an ERC Starting Grant and moved his laboratory to the School of Life Sciences at Dundee where he is currently an Associate Professor in Chemical & Structural Biology and Principal Investigator within the Division of Biological Chemistry and Drug Discovery. Alessio is the recipient of the 2014 Talented Young Italian award, the 2015 EFMC Prize for Young Medicinal Chemist in Academia, the 2015 ICBS Young Chemical Biologist Award, the 2016 RSC Capps Green Zomaya Award in medicinal computational chemistry, and the 2016 MedChemComm Emerging Investigator Lectureship.

Current Research

Research in the Ciulli Lab is concerned with understanding molecular recognition of protein-protein interactions (PPIs) within the ubiquitin/proteasome and the chromatin/nucleosomes systems, and exploiting druggability to small molecule modulators for chemical biology and drug discovery. We employ a question-driven, multi-disciplinary approach that combines chemical, biochemical, biophysical and structural techniques with the concepts of fragment-based and structure-based drug design. Current research efforts are directed towards interrogating PPIs and protein recognition within protein families of biological and medical relevance including

1. The Cullin RING E3 ubiquitin ligases (CRL) multi-subunit complexes; small-molecule binders of CRLs are being developed in their own right as CRL inhibitors, and exploited as CRL-recruiting ligands for targeted protein degradation
2. Multi-domain proteins containing paired chromatin reader bromodomains and plant homeodomain finger domains. We seek to understand the chemical nature of the surfaces and intersubunit interfaces of these proteins, and to exploit their tractability and selectivity toward small molecule. The chemical probes we design and develop are evaluated biophysically, structurally and inside cells as tools to address biological questions and early leads for potential therapeutics.

Selected References

1. Baud, M.G.J. et al. Science 346, 638–641 (2014)
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3. Zengerle, M., Chan, K.-H. & Ciulli, A. ACS Chem. Biol. 10, 1770–1777 (2015).
4. Runcie, A.C. et al. Curr. Opin. Chem. Biol. 33, 186–194 (2016).