OPEN SOURCE DRUG DISCOVERY

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An Open Source approach to science involves the complete sharing of data and ideas, and the possibility that anyone may participate. The approach is distinct from one now widely used in pharma, open innovation, in which there is no requirement to share data with others. Patents underpin traditional drug discovery but are not sought in open source. My laboratory has applied open source principles to drug discovery and development in two areas relevant to tropical diseases. The first project, run in collaboration with the World Health Organisation, discovered a new route to the active enantiomer of praziquantel, the drug of choice for the hundreds of millions of people at risk of schistosomiasis.[1][2] The second project, in collaboration with the Medicines for Malaria Venture performs hit to lead/lead optimisation projects based on small molecule compounds identified and released by the pharmaceutical industry.[3][4] Four series have been examined to date (below) by a consortium of around 80 researchers and several potent, in vivo active compounds have been identified that are currently in the public domain. This talk will highlight the challenges and benefits of such an approach, and show that the consortia have been built with tools that are publicly available or open source; thus any community of researchers can collaborate in a similar way.

1.) Woelfle, M., Olliaro, P., Todd, M. H., Nature Chemistry, 2011, 3, 745–748. DOI: 10.1038/nchem.1149
4.) http://opensourcemalaria.org/
Matthew Todd was born in Manchester, England. He obtained his PhD in organic chemistry from Cambridge University in 1999, was a Wellcome Trust postdoc at The University of California, Berkeley, a college fellow back at New Hall College, Cambridge University, a lecturer at Queen Mary, University of London and since 2005 has been at the School of Chemistry, The University of Sydney where he is Associate Professor.

His research interests include the development of new ways to make molecules, particularly how to make chiral molecules with new catalysts. He is also interested in making metal complexes that do unusual things when they meet biological molecules or metal ions. His lab motto is “To make the right molecule in the right place at the right time”, and his students are currently trying to work out what this means.

He has a significant interest in open science, and how it may be used to accelerate research, with particular emphasis on open source discovery of new medicines. He founded and currently leads the Open Source Malaria (OSM) consortium. In 2011 he was awarded a NSW Scientist of the Year award in the Emerging Research category for his work in open science and in 2012 the OSM consortium was awarded one of three Wellcome Trust/Google/PLoS Accelerating Science Awards. He is on the Editorial Boards of PLoS One, Chemistry Central Journal, ChemistryOpen, Nature Scientific Reports and Nature Scientific Data.