Open Source collaborations to identify new leads for Neglected Disease Drug Discovery

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Medicines for Malaria Venture is a non-profit organization catalyzing the discovery development and delivery of medicines targeting the control and eventual elimination of malaria. Over the last decade we worked with partners from academia and industry to screen some 7 million compounds directly against the parasite. This resulted in thousands of hits, or compounds which had activity against Plasmodium, the malaria parasite, at submicromolar concentrations. Although we have published the majority of these data in Pubchem, we had many partners who requested physical samples, and so created a Malaria Box which contained 400 representatives; and made this freely available to the community. Freely in this case means no intellectual property restrictions, no strings attached. With over 200 boxes distributed, we found that many groups using these compounds were not malaria specialists, and indeed many hits were found against related, or even distantly related pathogens. Some of these projects are now in hits-to leads stages and show in vivo activity. Based on this success assembled a second collection, Pathogen Box (www.pathogenbox.org) which contains phenotypic hits, which is now being distributed, and contributing to discovery or rediscovery of new series against important pathogens. This too has been distributed to close to 200 different groups, way beyond our normal circles of collaborators. With collaborators we are planning a third set of compounds, focusing on anti-viral and anti-bacterial compounds, and are interested in talking with anyone with an interest in pathogens causing fever. The lesson is that in neglected tropical disease there is not enough resource for everyone to drive primary screening, but by the use of informal networks and sharing compounds, we have been able to facilitate moving drug discovery forwards in ways that few could have imagined.