

Project Title: Novel histone demethylase inhibitors: potential treatment against cancer metastasis and relapse by targeting cancer stem cells.

Grant Awarded: \$45,164

Principal Investigator: A/Professor Sudha Rao, Faculty of Applied Science, University of Canberra

Progress Thus far:

1. Our recent findings in collaboration with Prof Jane Dalhstrom, pathologist show that our nuclear LSD1 protein and key breast cancer stem marker, CD44 are highly expressed in ER- human breast cancer tissue compared to normal breast tissue. This further shows the importance of targeting LSD1 enzyme for breast cancer recurrence.
2. We have now undertaken extensive cellular analysis on our new LSD1 inhibitor, NCD38, which we have shown to be highly specific for LSD1 and importantly to be highly bio available. We have shown in a number of gold standard breast CSC assays that this compound completely abrogates breast CSC formation. In addition, at the gene level a cohort of CSC expressing genes are completely inhibited.
3. We are in the process of appointing a research assistant part-time to support us with the cancer recurrence studies in vivo in mice.
4. We are currently finalizing the mice numbers and experimental plans to commence in vivo mice recurrence studies with our LSD1 specific inhibitors. We have been synthesizing sufficient quantities of the inhibitors for administration in vivo, this has taken a little extra time as we have had to ensure that the compounds are highly pure.
5. We are at an exciting phase of commencing the in vivo mice experiments within the next month.
6. We are in the process of writing a manuscript on the work based on this project and hope to submit within the next 4-6 weeks [as at August 2013].