Yang Fan, Dentistry 2013, 3:2
http://dx.doi.org/10.4172/2161-1122.S1.004

OMICS Group Conferences
Accelerating Scientific Discovery

International Conference on
Dental & Oral Health

August 19-21, 2013 Embassy Suites Las Vegas, NV, USA

Identification of oral squamous cancer cell specific targeting agents by screening one bead one compound combinatorial libraries

Yang Fan
University of California San Francisco, USA

Oral cancer is the 6th most common form of cancer in the world. However, despite the improved application of multimodal therapy, the average five-year survival rate remained disappointingly low for the last 30 years. This indicates the need for new approaches concerning early diagnosis and treatment alternatives.

Objective: In this study, we use a novel drug discovery strategy termed one-bead one-compound (OBOC) combinatorial library to efficiently identify OSCC specific ligands to develop OSCC optimal imagine agents as well as targeting nanotherapeutics.

Method: OBOC libraries were generated using "split-mix" synthesis approaches. The OBOC libraries were color coded, mixed and incubated with live OSCC cells to select the libraries having the OSCC binding beads. The preferred OBOC libraries were then screened in a large-scale with human live OSCC cells and the OSCC cells binding beads were re-screened with normal human keratinocytes (NHK) to select the compound beads which were able to bind to OSCC cells but not bind to NHK cells. The chemical structures and sequences of selected compound beads were determined by Edman chemistry. Human blood hemolytic assay was employed to evaluate the potential cytotoxicity of identified compounds. The immuno-histochemistry assay was used to evaluate the imagine agent's binding affinity toward OSCC cells grown on culture chamber slides.

Results: After screening 24 OBOC libraries, we identified six compounds with the high affinity binding to different human OSCC cells but showed no binding to normal human keratinocytes, endothelial cells, fibroblast cells and granulocytes. None of six compounds were cytotoxic to human blood cells. A specific motif was observed. Initial immunohistochemistry studies reveals that the biotin conjugated OSCC ligand LYL13 was able to detect OSCC grown on the slide chamber at level of 1uM.

Conclusion: The six ligands can be serves as the lead compounds to generate the more focused OBOC libraries to search for more potent and specific ligands for OSCC. The candidate ligands have the diagnostic potential to develop the sensitive and specific OSCC imagine agents for Oral squamous carcinoma.

Fan.Yang@ucsf.edu