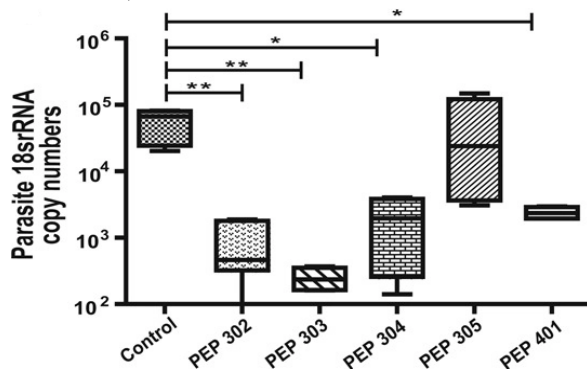


## Progress towards second-generation malaria vaccines

New Delhi, March 12: Despite promising progress in malaria vaccine development in recent years, an efficacious vaccine against malaria parasite remains to be licensed and deployed. Immune cell-mediated protection from liver-stage malaria relies on a sufficient number of specific immune cells (CD8+T cells) reaching or present in the liver during the time that parasites are developing. A vaccine combining two or more parasite proteins (antigens) could potentially increase both the size and breadth of the antigen-specific immune response. Antigen-specific CD8+ T cells have been shown to play a major role in mediating protective immunity against malaria liver stage parasites in mice. It is known that protection is dependent on inducing a sufficient number of T cells in the liver to locate and kill the small number of infected liver cells (hepatocytes ) in the short window when parasites are present. For malaria liverstage parasites, only few vaccine candidates are known moreover they provide short lived and low level of protection. The currently available first generation malaria vaccine Mosquirix (RTS/S) provide only 39% protection, which is less than the desired level (minimum 75% reduction in clinical malaria cases) recommended by WHO (WHO/IVB/14.09). Among children aged 5–17 months who received 4 doses of RTS,S, the vaccine prevented approximately 4 in 10 (39%) cases of malaria over 4 years of follow-up and about 3 in 10 (29%) cases of severe malaria.

Dr. Agam P. Singh and his coworkers have identified a new vaccine candidate (SLTRIP) that provides robust protection (at least 80%) against liverstage parasites. The small portions (8-14 amino acid long peptides, also known as T epitope) of this protein, which provides protective immune response was identified and characterized. Combining this antigen (SLTRIP) with existing first generation vaccine Mosquirix is the next step to get the second-generation vaccine. It should now be tested on priority basis to evaluate the efficacy, which Dr. Agam P. Singh believes is likely to give a potent malaria vaccine with high level of protection (greater than 95%).



**Figure legend:** Peptide immunizations (PEP302---PEP401) reduced the parasite burden by two-logarithmic scale (100 folds) in the immunized mice challenged with infectious sporozoites (parasite form that infect the liver cells)

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