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Allahabad University expert decodes human brain mystery

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ALLAHABAD: Watching the game of baseball is fun for many, but have we ever thought as to what goes on in the brain of the batter's brain while might be interpreting rules of the game, choosing the best move, and planning a swing of his bat and everything in a split second while facing the ball of size no bigger than an orange coming straight from the pitcher at a speed faster than a racing car.

A faculty member of the Centre of Behavioral and Cognitive Science (CBCS) of Allahabad University, Supriya Ray, during his post-doctoral experiment, has tried to unravel the mystery and investigated the pattern of electrical activity of neurons present in human brain, results of which has been published in Experimental Brain Research Journal, by Springer this year.

"We have found that the neurons reject a rule that they do not prefer before selecting their preferred rule. Discrimination between rules happens in a couple of hundreds of milliseconds (a millisecond is a thousandth of a second) and using advanced computer simulation techniques we showed that each group of neurons try to inhibit activity of other group of neurons to show their dominance," he said.

In his post-doc experiment conducted on trained monkeys in Smith-Kettlewell Eye Research Institute, San Francisco, US, Ray along with the PI (principal investigator) Stephen J Heinen, made the monkeys play a game similar to baseball on a computer screen and rewarded them with juice every time they made a correct action.

Scientists recorded eye movements and electrical activity of neurons near the front part on the midline of the brain. The study has found that neurons reject a rule that they do not prefer before selecting their preferred rule and this discrimination between rules happens in a couple of hundreds of milliseconds.

"The results of the experiments will go a long way for a better understanding of human brain as now we know how the neurons act in decision-making, especially in terms of following the rules, and the results could help the scientists, working in the area of artificial intelligence, design their robot which can take commands and strictly follow the rules," said the associate professor at CBCS Supriya Ray.

Neurons are special type of cells in our nervous system that process information by generating electrical pulses and passing information on to other neurons for further processing. The total number of neurons in brain is roughly the same as the number of galaxies in the universe; with this piece of information one can imagine the vastness of our brain. An action is produced when a group of neurons in a network modulate their activity in cohort.