Exciting discovery about the origin of humans

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(PhysOrg.com) -- A major evolutionary biological study, performed partly by researchers at Uppsala University, reveals what has driven the evolution of new forms of life. The study also shows how such a complex life form as the human being could emerge. The findings are being published in the scientific journal *Science*.

By looking at and comparing the genomes of humans, mice, cows, and two types of fish, these researchers were able to discern general patterns in what led to the emergence of new life forms in different time periods. They have also found what lies behind the evolution of the complexity and diversity of mammals.

In the period when mammals evolved, some 100 million years ago, it turns out that genes that govern signals between cells were of great importance. Genes that alter proteins and make other molecules like sugar or phosphorous bind to proteins were also important. These findings surprised the scientists.

“We didn’t really know that it was so important in evolutionary terms for us humans, so this is an exciting discovery that can have a great impact on future research,” says Kerstin Lindblad-Toh, professor at the Department of Medical Biochemistry and Microbiology and one of the authors of the study.

What makes humans such complex organisms is thus not only how our organs were formed and developed but also the signals and advanced

modifications of proteins that take place in our body. The complexity of a human being, with many organs that work together and an advanced brain, is thus something that nature has enabled with efficient signal routes and multiple protein modifications. This, according to Kerstin Lindblad-Toh, indicates that scientists should look more at protein modifications to understand what makes us functioning human being/organisms.

“This will also provide us with key information about how evolutionary pressure affects the emergence of diseases, and not only what proteins are involved but also what protein modifications are required for normal functioning.”

Provided by Uppsala University