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Editorial

Discovery of "Nobody", a Microprotein, Versus Human Genome Project

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Proteins are the key players for the whole show of a body as living. If we look into the real mechanism of the events going on in a living system one by one, we will always find the involvement of one protein or may be many playing vital roles in each event. To justify this statement, we can insert a summary of the functions of proteins already documented.

As **structural component**, proteins like collagen, elastin, keratin etc are taking vital role in the making and supporting of our body tissues. **Enzymes** belong to a family of proteins produced by our own cell as biocatalyst just to enable all the biolecular transformations to proceed in a finely regulated manner. **Antibodies** are the specialized proteins produced by our immune system for defence of our body against foreign bodies and infection. For movement, actin, myosin, troponins and tropomyosin are the proteins involved in muscle contraction and relaxation. Opsins are light sensitive proteins working in our photoreceptor cells of retina for **vision**. Different metabolites, vitamins, hormones metal ions etc. can be transported from one site to another with the help of specific protein as **transporters**. Hormones and neurotransmitters can transmit their signal only, when they are received and fixed by proteins as **receptors** at their target organs. **Hormones** are chemical messengers coordinating the metabolic pathway, they are mostly proteins or peptides. **Disposal of unwanted proteins,** if it is foreign origin, liposomal proteolytic enzymes will do the necessary digestion and disposal but for those endogenously expressed proteins, when their assigned duties are over, a molecular labeling will be given by fixing with a protein known as ubiquitin. The labeled proteins are then fed into a protein complex known as proteasome, where they are chopped into pieces and disposed.

Now, as a most recent discovery, Proteins for **disposal of unwanted genetic materials** has started pouring in. RNAS transcribed by DNAS for synthesis of proteins, when their functions are over, they are to be cleared from inside the cells for a better cell health. For this, a microprotein, named "**NoBody**" (the full form being a nonannotated P. body dissociating polypeptide) has been discovered as a molecular work horse for sweeping out of unneeded. RNAS. Experiments conducted by yale university researchers, showed that "**NoBody**" interacts with another group of proteins involved in RNA recycling process known to form P. body granules When the intracellular level of "**NoBody**" increases, the disappearance of P. body granules also increases. When there is any fluctuation in

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maintaining "**NoBody**" level, the recycling process gets distributed indicating the role of this microprotein as a crucial one and also to be a potential target for future therapeutics related to RNA dysfunction. But, for confirmation as a member of the group listed above, it is yet to be identified and change the name by deleting the term "nonannotated".

Alan sanghatalian of salk institute reported as saying that researchers can sequence the whole human genome but they never knew a protein like "**NoBody** as it was too short and fall below the usual length requirement for gane assignment algorithm [1]. Gisela store at al., reported as saying that the activities and structure of hundreds and thousands of proteins have been studied in detail but, one class of proteins has largely been ignored. These are microproteins encoded directly by small open reading frames **(smORFs**) [2]. Juan Pablo also reported the existence of DNA sequences coding small reading frames (**smORFS)** having fewer than 100 codons in each eukaryotic genome in numbers much higher than the corresponding annotated protein coding genes. Due to difficulties with bioinformatic detection and experimental analysis, **smORFS** have been ignored most of the time [3]. We all know, that the proteins listed above including '**NOBODY**' are to be synthesized in our own cells after being expressed by their own respective genes. As such, after the completion of human genome project, all the proteins so far isolated have already been characterized and annotated but, for the microprotein, we are focusing now "**NoBody**" it is yet to be completed. Almost all the parts of the human genome had been sequenced, maped, the resulted data used worldwide in biomedical sciences, anthropology, forensic science etc. but still, many more are yet to be known.

Considering all the above mentioned facts, like discovery of **'NOBODY'** as an established housekeeping protein yet to be annotated, detection of many more microproteins having potential of becoming biologically functional proteins, discovery of small open reading frames (**smORFs**) as the main sources or many of the microproteins so far detected, we can very well expect beginning of a fresh project by giving more emphasis towards sequencing of **smORFs** which was neglected by the workers of human genome project, to be followed by repeated characterization of the microproteins so far isolated. After the completion of this second genome project, if sanctioned, the recovery of the protein coding genes may come up nearer to the earlier expected level of 50,000-1, 00,000 and many of the microproteins including "**NOBODY**" may get their proper recognition with their own assigned genes.

Lastly, I just want to share the following lines with our researchers that human genome is like a book of life. Buried in this large volume, are our genes, which are scattered as small DNA fragments and smaller fragments as small open reading frames, the total still being a small percentage of the total text (genome). Till now, only 1.5% of the human genome has been identified as protein coding genes, 98.5% is still opening for exploration of genes for those proteins still hiding undetected".

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