Molecular Biology: Open Access

Takis, Mol Biol 2014, 3:1
DOI: 10.4172/2168-9547.1000e119

Editorial Article Open Access

Celebrating 30 Years since the Conception of the Human Genome Project (HGP): New Concepts Ahead-Molecular Biology Tools to Efficiently Modify the HG and/or Other Species-Genomes-Implications for Health and Disease

Takis Athanasopoulos*

Ph.D, Lecturer in Molecular Biotechnology, Faculty of Science and Engineering, University of Wolverhampton, City Campus South, Wulfruna St., Wolverhampton, WV1 1LY, UK.

***Corresponding author:** Athanasopoulos T, Ph.D, Lecturer in Molecular Biotechnology, Faculty of Science and Engineering, University of Wolverhampton, City Campus South, Wulfruna St., Wolverhampton, WV1 1LY, UK, Tel: ++44(0)1902322270; Fax: ++44(0)1902322680; E-mail: t.athanasopoulos@wlv.ac.uk

Received date: Jul 25, 2014; **Accepted date:** Jul 27, 2014; **Published date:** Jul 28, 2014

Editorial

In the 1950s, three groups made it their goal to determine the structure of DNA. The first group to start was at King's College London and was led by Maurice Wilkins and was later joined by Rosalind Franklin. Another group consisting of Francis Crick and James D. Watson was at Cambridge. A third group was at Caltech and was led by Linus Pauling. We have recently celebrated 60 years from the pioneering discovery of the Double Helix Structure (1953) announcing a series of articles in last year's editorial of this Journal. In 2003, coinciding with the 50thanniversary of this momentous achievement in biology and the description of the DNA double helix was also the year that NHGRI celebrated the historic culmination of one of the most important scientific projects in history: the sequencing of the human genome.

The Human Genome Project (HGP) [1] was an international scientific research project with the goal of determining the sequence of chemical base pairs which make up human DNA, and of identifying and mapping all of the genes of the human genome from both a physical and functional standpoint. It remains the world's largest collaborative biological project. The project was proposed and funded at least in its prime stages by the US government; the planning phase started in 1984 (30 years ago) [2,3] the project got underway in 1990, and was declared complete in 2003 immediately followed by the ENCODE project which now aims to identify all functional elements in the human genome plus the 'junk' DNA sequences. These projects involved a worldwide consortium of research groups, and data generated can be accessed through public databases.

It has been 30 years since the project planning of HGP has commenced, followed by ENCODE (and also GENCODE etc.) and the modern era of Human Molecular Genetics. As part of this year's (2014) activities we would like to dedicate this issue's editorial to the implications of the HGP which may lie ahead of us in the next 30 years to come (and anyway in the not so distant future): Tailored Medicine for Rare Genetic Diseases, Genome Surgery, Amelioration of Inherited Genetic Disorders by Gene/Cell Therapy and other Disruptive Technologies, Epigenetics, Big Data, Omics Technologies (Genomics, Transciptomics, Proteomics, Metabolomics) but also the Ethical concerns, insurance policies and considerations which bring along, may only form the tip of an iceberg in a Genetic Revolution [4].

We would like to celebrate the new concepts which lie ahead of HGP and their implications for human health by inviting a series of mini-review and research papers. These articles may be based but not limited on summarising ideas based on current bioinformatics and BIG data projects associated with the HGP involving the human and other genomes. We would like to attract papers which provide commentaries/briefs and ideas on the most recently available-state of the art-molecular biology tools, applications and technologies to efficiently modify the HG and that of other species-genomes. There are a number of such tools currently available: The CRISP-R/cas9 system, TALENs, ZNFs, transposons but also viral (AAV, lenti, Adeno, HSV) and non-viral vector systems for gene therapy applications.

HGP and the availability our current molecular biology tools to modify the genome have opened up an ever expanding and exciting era in modern Molecular Biology and Human Molecular Genetics. Let's celebrate together!

Declaration/Acknowledgement:

Dr Takis Athanasopoulos is currently serving as a Lecturer/SL in Molecular Biotechnology, Faculty of Science and Engineering, at the University of Wolverhampton (UoW), UK (www.wlv.ac.uk). He is also acting as a Research Consultant and Academic Visitor for the Gene Therapy Group, School of Biological Sciences, Royal Holloway University of London (RHUL) (www.rhul.ac.uk). His research interests in the field of Biomedical Sciences are 'focused' on viral vectors as gene therapeutics and genetic vaccines against a range of disorders including Duchenne Muscular Dystrophy (DMD), atherosclerosis, HIV and cancer. His research on DMD is currently funded by the Muscular Dystrophy Campaign (MDC), UK, Action Duchenne (AD), UK and the AFM-Telethon, France.

REFERENCES:

1. (2010). "The Human Genome Project: 10 years later." Lancet 375(9733): 2194.
2. Lewin R (1987) "National Academy looks at human genome project, sees progress." Science 235: 747-748.
3. Palca J (1987) "Interest in the human genome project reaches new heights." Nature 325: 651.
4. Bailey J N, et al. (2014) "The impact of the human genome project on complex disease." Genes (Basel) 5: 518-535.