

Introduction to Genomic Medicine Using Galaxy Platform (Workshop)



INTRODUCTION :

Genomics is "an emerging medical discipline that involves using genomic information about an individual as part of their clinical care (e.g., for diagnostic or therapeutic decision-making). Already, genomic medicine is making an impact in the fields of oncology, pharmacology, rare and undiagnosed diseases, and infectious disease.

Pharmacogenomics involves using an individual's genome to determine whether or not a particular therapy, or dose of therapy, will be effective. Currently, more than 100 FDA-approved drugs [fda.gov] have pharmacogenomics information in their labels, in diverse fields such as analgesics, antivirals, cardiovascular drugs, and anti-cancer therapeutics.

DNA sequencing is being used to investigate infectious disease outbreaks, including Ebola virus, drug-resistant strains of *Staphylococcus aureus* and *Klebsiella pneumoniae*, as well as food poisoning following contamination with *Escherichia coli*.

Whole genome sequencing or whole exome sequencing (where only the protein-coding exons within genes, rather than the entire genome, are sequenced), has been used to help doctors diagnose-and in some extraordinary cases to identify available treatments-in rare disease cases

Cancer Cell genome sequencing determine which combination of chemotherapy will be given to the patient also determines prognosis and screening method for other family members .

Future of Health care : the cost of whole genome sequencing has dropped from 3 billion dollars to 1000 dollars in less than 10 years and expected to reach 100 or even 10 dollars with this cost we can sequence DNA for each newborn and store it on computers to determine disease that he might be susceptible to and drugs that are suitable for him with the correct doses .

WHAT IS GALAXY PLATFORM?

Project developed by 3 universities : Johns Hopkins , Penn State and Oregon university for Health and Science. Johns Hopkins (17th world rank times higher education), Penn State (68th world rank)



This project aims to make doing Genomics and Bioinformatics Research Easier for those who are still beginners in the field with its User Friendly interface , you will find Genomics more attractive and Easy to learn.

high reproducibility : The problem with Bioinformatics Research is Reproducibility ,Galaxy maintain a constant computer environment for your analysis to make it easy to get the same results when repeating the research .

Galaxy gives you large space on the web ,however you can download it locally on your computer or use it on the Cloud.

Galaxy Makes it easy to share your results with your colleague or with the world and they will have access to all steps you have done and they can repeat the analysis

Galaxy uses Common Workflow Language which makes it easy to apply the same steps of analysis for many datasets very easily without effort.

WHY SHOULD I ATTEND ?

You will **join our Arabic galaxy community**

You will attend the **2nd Galaxy workshop in Arabic region and the 3rd in Africa**

You will get **Certificate for attending the training which will add to your CV .**

You will get **training materials** e.g. power point presentation for free .

Who should attend ?

As a **medical student** it is important to have an introduction about the future of medicine , Genomics is entering all fields of medicine both Basic and clinical medicine involving all specialities not only clinical Genetics.

As a **pharmacy student** : genomics is used to predict drug response and side effects of the drug for the patient before taking the drug which is very helpful when we have to use drugs with serious side effects and also helpful in determining drug dosage .

As **science student (biology ,biochemistry, biotechnology)** : the main focus on cancer research now is genomics and bioinformatics Also student bacterial resistance , viral mutations , drug research . All these fields depend on good knowledge of Genomics .

As a **physician** you will need to deal with genomic testing in the coming years as the technology becomes cheaper and more widely available .

As a **researcher** in one of these fields(biochemistry ,Microbiology,pharmacology and pathology)Genomics is the current trend in medical and biological researches, you will use it as a part of your research.

As **clinical Geneticist** you will need to know what is behind the results you can get from Genetic Test and how they are performed and how they can be interpreted.

Training on the Galaxy is the easiest way to learn **Bioinformatics** with an Easy user Friendly interface and many tutorials on the web.

PROGRAM :

- 1.Register to join the community (5 min)
 - 2.From Genes to Genomes (30)
 - 3.inside lab(10)
 - 4.genomic analysis , calling variants (30)
 - 5.Practical : galaxyproject.org(60)
- Coffee Break : 20 mins
- 6.clinical genomics (genomics in every medical speciality) (40)
 - 7.pharmacogenomics : genomics and drug response and dosage (40)
 - 8.Free sources for Learning Genomics (10)

SPEAKER :

Abdelazeem Abdelhameed Elhabyan

6th year medical student ,Faculty of Medicine ,Tanta University .

Trainer for the Galaxy project in Arabic speaking countries and Africa(the only Arabic one)

Founder of the Arabic community for Galaxy .

International leaders in genomic medicine program member (Genomics Education England).

Faculty of Genomic medicine member (England).

Accepted to attend Functional genomics summer school in Wurzburg university Germany.

More than 25 online courses in genomics (+250 Credit hours) from Top ranked universities (Harvard , California ,Johns Hopkins , Munchen ,Exter,St George,Kings college ,Bath among others)

About Arabic Community :

We had a previous meeting which was the first one in Arabic region and Africa with more that 40 Attendees in May 2017 , The community founder is Abdelazeem Elhabyan . It was founded in October 2016.

Place and date

Computer lab 6th floor Faculty of Medicine Tanta University

Thursday 12th April 2018 10.30 AM

LINKS :

Website for Galaxy Project : galaxyproject.org

Announcement for the Arabic Community Foundation : <https://biostar.usegalaxy.org/p/20343/>

Webpage for trainers around the world (Abdelazeem with affiliation to Tanta University) :
<https://galaxyproject.org/teach/trainers/>

Website for Galaxy arabic : <https://galaxyproject.org/community/arabic/>

Facebook : Galaxy Community Arabic(Group)

Twitter : @Galaxy_Arabic

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