X-TRA-NET ChIP-Seq workshop:
ChIP Sequencing – From Technology to Data Analysis

Workshop details:
Location: The Institute of Genetics and Molecular and Cellular Biology (IGBMC), Illkirch, Strasbourg, France

Start: 24 June 2009 - 9:00am

End: 25 June 2009 - 18:30pm

Workshop Topics:
In vivo protein-DNA interactions can be mapped on a genome-wide scale using a combination of chromatin immunoprecipitation with deep sequencing technology (ChIP-Seq).
ChIP-Seq provides a highly accurate mapping of the binding sites of DNA associated factors such as transcription factors, replication factors and structural proteins such as histones. In addition, binding sites of histones and other proteins with specific posttranslational modifications can be mapped to the genome.

In the workshop you will learn the Illumina Sequencing technology, the analysis pipelines for ChIP-Seq as well as strategies for efficient data mining. This includes;

- the technology used to generate the sequence data
- essential steps in the sample preparation process
- algorithms and software tools used to generate the DNA sequence from the raw images
- data files generated, their format and information contained
- mapping of raw sequence tags
- down stream analysis of tag enriched regions
- hardware requirements and software tools available for data analysis

The course will focus on biological relevant examples and the down stream biological mining of enriched regions from ChIP-Seq. The focus will be on transcription factor (TF) analysis in terms of TF overrepresentation in enriched regions and the discovery of functional motifs and patterns of TFs.

In the practical afternoon hands-on sessions participants will get the possibility to work with some sample data and analyze this using commercial and public available software.

Workshop Schedule

Wednesday, 24 June
Morning - Day 1
Introduction to Illumina Genome Analyzer: Technology, Applications, Pipeline and Data Analysis
Introduction by the IGBMC core facility: Sample preparation, Sample flow, Primary data treatment, Filtering, IT requirements and Data storage.

Afternoon – Day 1
Short talks selected from participant abstracts
Software introduction

Hands-on training

Thursday, 25 June
Morning - Day 2
Introduction to bioinformatics analysis of ChIP-seq data
Introduction to publicly available software

Afternoon – Day 2
Software introduction
Hands-on training

Morning talks are free for everyone.
The afternoon hands-on training sessions are limited to 30 people.

Hands-on training sessions will include examples for ChIP-Seq:
- mapping of tags
- peak detection
- analysis of overrepresented TF binding sites and modules
- positional correlation of different data sets and genomic annotation
- visualization in genome browser

Training data set will be available, but participants are encouraged to bring their own data.
Please make sure that the format of your data is in accordance with the specifications outlined <u>here.</u>

<u>**Registration:**</u>

Registration deadline: 1/6-09

Registration fee: 200 EUR
Registration fee includes lunch and coffee/tee

The application should contain a brief CV, a short description of your current research, motivation for workshop participation and abstract for short talk.
Application and Info addresses: Marco Mendoza (marco@igbmc.fr) and Ronni Nielsen (ronni.n@bmb.sdu.dk)

The workshop hands-on training sessions are limited to 30 participants.

<u>**Confirmation and Payment:**</u>
Registration fee includes lunch and coffee/tee.

The registration fee should not be paid before acceptance to the workshop.

<u>**Scientific Organizers:**</u>
X-TRA-NET partners;
Hinrich Gronemeyer, Institut de Génétique et de Biologie Moléculaire et Cellulaire (IGBMC)

Susanne Mandrup, Department of Biochemistry and Molecular Biology, University of Southern Denmark

Additional Information:
Please find here the accepted data formats for the hands-on training sessions of the workshop.
Participants must download software for the hands-on training sessions before the workshop
(www.rxrnet.dk).

Hotel:
A good option is the Holiday Inn hotel in Illkirch, close to the IGBMC.
A room (single or double) costs 85€per day. The buffet breakfast costs additional 10€per person.
We have made a reservation of a few rooms, so please contact Jørgen Bjerring (bjerring@bmb.sdu.dk -
X-TRA-NET project administrator at the Department of Biochemistry and Molecular Biology at the
University of Southern Denmark) before you make your own booking at the Holiday Inn hotel.

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