

iSEQ lunch seminar series

Wednesday 6 May 2015 at 12.00 – 13.00

Merete Barker Auditory, The Lakeside Theatres, Aarhus University
Bartholins Allé 3, 8000 Aarhus C



Nuria Lopez-Bigas, PhD
ICREA Research Professor
University Pompeu Fabra
Barcelona

Talk:

Analyzing thousands of tumor genomes to identify cancer drivers and their targeted therapeutic opportunities.

Abstract:

Large efforts dedicated to sequence thousands of tumor genome/exomes are expected to lead to significant improvements of precision cancer medicine. However, high inter-tumor heterogeneity is a major obstacle in the road to develop an arsenal of targeted cancer drugs to treat most cancer patients. Therefore, it is critical to understand the current scope of anti-cancer targeted drugs for different tumor types in order to use them with the highest efficacy, and to define priorities for the development of new ones. We have developed a novel methodology to interpret the genomes of a cohort of tumor samples and to assess their therapeutic opportunities. Starting with somatic mutations detected across the cohort, the methodology identifies the driver genes, highlights those that dominate the clonal landscape of the tumors and determines their mode of action. It then does an in-silico prescription of approved and candidate targeted drugs to each patient in the cohort. The application of this approach to a cohort of 6795 cancer samples of 28 different tumor types showed that the fraction of patients that could benefit from prescribed FDA-approved drugs is strikingly small. Nevertheless, it improves significantly if repurposing opportunities are taken into consideration, with large differences between tumor types. In addition, we identify 80 therapeutically unexploited cancer genes, tightly bound by pre-clinical small molecules or potentially suitable for molecule binding. The resource created with this analysis is also intended to provide interpretation of newly sequenced cancer genomes and to design pan-cancer and tumor type specific sequencing panels for efficient early cancer detection and clinical insight.

Refreshments:

Sandwiches will be provided. Therefore, please email Anne Hedemand (anne@biomed.au.dk) no later than 5 May 2015, if you would like to participate.