

Media release

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Basic information

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Department of: Clinical Medicine

Main supervisor: Lars Dyrskjøt, PhD, Professor, Department of Molecular Medicine, Aarhus University Hospital

Title of dissertation: Characterization of tumor heterogeneity and cellular subpopulations in bladder cancer

Date for defence: Thursday the 27th of April - 2017 at (time of day): 12.00 Place: Ground Floor Auditorium, Department of Molecular Medicine, Aarhus University Hospital, Skejby - Brendstrupgaardsvej 21, 8200 Aarhus N

Media release (Danish)

Et indblik i tumor heterogenitet og klonal udvikling i blærekræft.

Et nyt ph.d.-projekt fra Aarhus Universitet, Health belyser klonal udvikling samt tumor heterogenitet i blærekræft. Studiet har genereret et bedre indblik i sygdomsudviklingen samt brugen af personaliseret medicin. Projektet er gennemført af MSc Mathilde Borg Houlberg Thomsen, der forsvare det d. 27/14-2017.

Blærekræft er en hyppig kræftform i Danmark med op til 2000 nye tilfælde årligt. Der skelnes overordnet mellem ikke-muskel-invasiv samt muskel-invasiv blærekræft, der også adskiller sig fra hinanden rent genetisk. For patienter med ikke-muskel-invasiv blærekræft er prognosen særdeles god, med en femårig overlevelseshastighed op mod 90%. Desværre vil 60% til 70% af patienterne opleve tilbagefald indenfor en treårig periode, og mellem 10% til 20% vil progredierte til muskel-invasiv sygdom. For patienter med muskel-invasiv sygdom falder den femårige overlevelseshastighed i takt med invasionsdybden (63% til 15%), og ved metastatisk blærekræft vil blot 6% være i live efter fem år. Tidligere studier har påvist, at blærens slimhinde, i patienter med blærekræft, bærer en høj grad af genetiske forandringer. Analyser af multiple tumorer fra samme patient viser at tumorerne stammer fra samme tumor klon, men at de også har udviklet egne private forandringer. Analyser af multiple tumorer fra samme patient giver dermed indblik i inter-tumor-heterogenitet og multiple prøver fra samme tumor, kan give indblik i graden af intra-tumor-heterogenitet. Dette ph.d. projekt har belyst det klonale ophav mellem metakrone tumorer, den klonale udvikling henover tid, graden af tumor heterogenitet samt analyseret påvirkningen af blæreslimhinden. Dette har givet et fundamentalt indblik i sygdomsudvikling samt sygdomsprogression. Ydermere har studiet belyst flere aspekter af brugen af personaliseret medicin i blærekræft.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 27/04-2017 kl. 12.00 i auditoriet i stue etagen ved Molekylær Medicinsk Afdeling, Aarhus Universitetshospital, Brendstrupgaardsvej 21, Aarhus N. Titlen på projektet er "Characterization of tumor heterogeneity and cellular subpopulations in bladder cancer". Yderligere oplysninger: Ph.d.-studerende Mathilde Borg Houlberg Thomsen, e-mail: mt@clin.au.dk, tlf. +45 28691335.

Media release (English)

Insight into the tumor heterogeneity and clonal evolution of bladder cancer.

A new PhD project from University of Aarhus, Health casts light upon the clonal evolution and the tumor heterogeneity in bladder cancer. The study has generated a better insight into the disease

development as well as the use of personalized medicine. The project was carried out by MSc Mathilde Borg Houlberg Thomsen, who is defending her dissertation on 27/04-2017.

Bladder cancer is a frequent cancer type, with about 2000 new incidences in Denmark on an annual basis. Bladder cancer is categorized into non-muscle invasive and muscle-invasive bladder cancer, which is further reflected at the genomic level. The prognosis for patients diagnosed with non-muscle invasive disease is rather good with a five-year survival rate as high as 90%. However, 60% to 70% experience recurrence within a three-year period of time where 10% to 20% will progress to muscle-invasive disease. The five-year survival rate for patients with muscle-invasive disease ranges from 63% to 15% depending on depth of invasion. For patients with metastatic disease, only 6% will be alive following five years. It has previously been shown, that the surrounding mucosa of the bladder is also highly affected by the disease harboring genomic alterations associated with the tumors, either present synchronously or metachronously. The tumors show a monoclonal origin, however also harbor private alterations. By studying and analyzing multiple tumors from the same patient one obtains insight into the inter tumor heterogeneity. Analyzing multiple samples from the same tumor, one obtains insight into the level of intra tumor heterogeneity. This PhD study has generated insight into both the inter and intra tumor heterogeneity of bladder cancer and collectively cast light upon the clonal evolution in both space and time. Also, the study has assessed the level of transformation of the mucosa of bladder cancer patients. The study has highlighted several aspects of the use of personalized medicine in bladder cancer.

The defence is public and takes place on 27/04-2017 at 12.00 in the ground floor auditorium at Department of Molecular Medicine, Aarhus University Hospital, Brendstrupgaardsvej 21, Aarhus N. The title of the project is "Characterization of tumor heterogeneity and cellular subpopulations in bladder cancer". For more information, please contact PhD student Mathilde Borg Houlberg Thomsen, email: mt@clin.au.dk, Phone +45 28691335.

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