

INNOVATION WORKS™

Technology from the European Molecular Biology Laboratory

Novel biomarkers for detection of testicular carcinoma *in situ* and derived cancers in human samples

EMBLEM Ref. 272

Challenge

- virtually all testicular cancer originate from the carcinoma in situ cell (CIS)
- the disease is rarely diagnosed at a symptomatic stage since the existing diagnostic procedures are either invasive or imprecise

Commercial Opportunity

- develop and validate a non-invasive diagnostic test kit for early detection of testicular cancer
- licensing and collaboration opportunities

Technology

- identification of novel CIS biomarkers was conducted
- AP-2gamma was identified among others and later shown to be highly specific for testicular CIS testing
- due to its specificity the biomarker has opened the possibility to identify CIS cells and derived testicular cancer cells without biopsy in semen samples (Hoei-Hansen et al. 2005)
- the diagnostic capacity of AP-2gamma was proven in clinical studies carried out internally and by external laboratories (Hoei-Hansen et al. 2006, Carstensen et al. 2007)

Contact

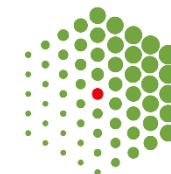
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Intellectual Property

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EMBLEM
TECHNOLOGY TRANSFER

Novel biomarkers for detection of testicular carcinoma *in situ* and derived cancers in human samples

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Carcinoma in situ (CIS) cells are the precursor of all forms of testicular cancer. If left untreated, CIS will invariably progress into testicular cancer.

Unfortunately, the disease is rarely diagnosed at this asymptomatic stage, since it hitherto has required a testicular biopsy to identify CIS. The existing diagnostic procedures are either invasive or imprecise:

- Tissue biopsy is usually performed by surgical removal of the testicle. After the testicle is removed, the tissue is examined.
- Scrotal ultrasound is used to confirm solid mass.
- Blood tests for tumour markers: alpha-fetoprotein (AFP), human chorionic gonadotrophin (beta HCG), and lactic dehydrogenase (LDH). Approximately 85% of non-seminomas will have elevations only in beta HCG or LDH.
- A chest X-ray is done to look for potential metastasis (spreading of cancer) to the lungs.
- An abdominal CT scan may be done to look for potential metastasis.

Identification of novel CIS biomarkers, including AP-2gamma, was done by Kristian Almstrup in collaborations with the Ansorge group at EMBL (Almstrup et al. 2004). The use of detecting AP-2gamma was later shown to be highly specific for testicular CIS testing (Hoei-Hansen et al. 2004). Due to its specificity the biomarker has opened the possibility to identify CIS cells and derived testicular cancer cells without biopsy in semen samples (Hoei-Hansen et al. 2005). This was proven in clinical studies carried out both internally but also by external laboratories (Hoei-Hansen et al. 2006, van Casteren et al. 2007)

References

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