New Therapeutic Potential for Prostate Cancer

Epigenetic LSD1 controls Prostate Tumor Growth

Technology

Prostate Cancer represents the most frequent malignant disease in men worldwide and the second leading cause of death from malignant tumors.

The Lysine Specific Demethylase 1 (LSD1) co-localizes with Androgen Receptor (AR) in normal human prostate and in prostate tumor. LSD1 interacts with AR and stimulates AR-dependent transcription. LSD1 knockdown by RNAi abrogates androgen induced transcriptional activation and cell proliferation.

Proof of Principal: first active inhibitors of LSD1 block AR-dependent transcription. One pre-lead compound with in vivo efficacy in LSD1-transgenic mice was identified.

Current clinical trials for modulation of LSD1 activity in other cancers were initiated by third parties.

Innovation

- Modulation of LSD1 activity by MAO/ AO inhibitors (i.e. Tranylcypromine)
- Potential for better treatment of prostate tumors
- Free for licensing

Application

- Treatment of prostate tumors - covered by patent
- Application in other cancers currently under clinical investigation
- Also, in tissues where AR has a pivotal physiological role i.e.:
  - Control of fertility
  - Treatment of Alzheimer´s & Parkinson´s disease

Developmental Status

- LSD1 is an AR cofactor
- LSD1 demethylates repressive histone marks H3K9 at AR regulated promoters
- LSD1 controls androgen-dependent proliferation of prostate tumor cells
- LSD1 is a potential target to block prostate tumor growth

- Metzger et al., Nature 437, pp 436-9 (2005)
- Willmann et al., Int J Cancer;131(11), pp 2704-9 (2012)

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Therapy of Prostate Cancer

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