

Method and Algorithm to Predict Relapse of Prostate Cancer Patients Treated by Radiation Therapy

PSA dynamics model predicting recurrence 15 months earlier than standard methods.

Researchers at Purdue University, Università degli Studi di Pavia, and Universidad de Castilla la Mancha have developed a biomechanistic model that provides personalized predictions of prostate-specific antigen (PSA) dynamics for patients after external radiotherapy. Detection of prostate cancer recurrence depends on measuring the sustained rise of serum PSA in patients, but this biochemical relapse is variable and unpredictable. Therefore, identifying patients with relapsing prostate cancer through radiation therapy usually occurs too late. Current observational metrics of PSA dynamics offer a limited representation of underlying tumor development, which delays diagnosis and treatment of tumor recurrence.

This method helps oncologists and doctors treating patients with prostate cancer identify tumor recurrence earlier than conventional methods after external radiotherapy. The model predicts the occurrence of biochemical relapse to facilitate an earlier diagnosis, maximizing the chances of tumor control. This method is an excellent tool for prostate cancer personalized medicine, as it is patient-specific and provides the opportunity to implement treatment more quickly.

Technology Validation:

The model-based predictors of relapse identified relapsing patients a median of 14.8 months earlier than the current clinical practice.

Advantages:

- Earlier detection of tumor reoccurrence for prostate cancer patients
- Accurately predicts PSA dynamics
- Personalized and patient-specific

Technology ID

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Category

Biotechnology & Life
Sciences/Biomarker Discovery &
Diagnostics
Biotechnology & Life
Sciences/Bioinformatics &
Computational Biology

Further information

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Applications:

- Personalized medicine companies
- Doctors using radiation therapy to treat patients with prostate cancer

TRL: 4

Intellectual Property:

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Utility Patent, 2024-03-07, United States

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