



## Scientific Abstract

### SU2C–Prostate Cancer Foundation Prostate Dream Team: “Precision Therapy of Advanced Prostate Cancer”



The overarching theme of this proposal is that predicted clinical benefit of novel therapies for patients with metastatic castrate-resistant prostate cancer (CRPC) is influenced by the genetic makeup of an individual's cancer. In fact, recent studies using cutting edge DNA sequencing technologies (genomics) have allowed researchers to comprehensively evaluate the landscape of mutations for an individual cancer. This has revealed a diversity of prostate cancer that suggests that treatment decisions will require a personalized or precision approach—matching treatment to specific characteristics of a tumor. This is akin to tailoring the annual influenza vaccination based on the genes of the flu virus. As an example for CRPC, up to 50% of patients have a genetic aberration called a “gene fusion” that involves two genes including ETS genes. Another 50% of patients may have a “deletion” or loss of an entire gene called PTEN.

We hypothesize that the molecular qualities of an individual's CRPC may guide their doctor to choose a “personalized” treatment for that patient. The study will include any patient with metastatic prostate cancer and participants of four clinical trials for novel drugs for CRPC at five leading clinical centers. The study will capture a molecular snapshot of a patient's cancer and incorporate this information into the clinical trials. Emerging technological advances in the areas of DNA sequencing and analysis have now made it possible to perform a comprehensive analysis for patients participating in clinical trials. To tackle this challenging question, the proposal leverages multi-disciplinary expertise with established track records for clinical oncology research in prostate cancer, biology of prostate cancer, and cutting-edge DNA sequencing and analysis.

#### **To accomplish our objectives, we will:**

- 1) Implement a multi-center study that systematically evaluates patients enrolling in four clinical trials for CRPC,
- 2) Identify predictors of why some patients respond to these therapies, and,
- 3) Identify predictors of why some patients become resistant to these therapies.

This study will enable a framework that will facilitate progress towards a personalized approach for evaluating new drugs and treating patients with prostate cancer. The clinical impact of this proposal lies in the delivery of clinically valuable information to improve the lives of patients with prostate cancer. While state of the art technology in DNA sequencing has dramatically accelerated biomedical research, translation into a clinical setting has numerous barriers that limit the potential benefits possible. This multi-disciplinary, multi-institutional effort establishes a framework for translating research into precision prostate cancer medicine for patient care.

